Measurement • Protection • Advancement
Since 1935

In our mission to provide measurement technologies that protect the safety of society, we seek to contribute to the advancement of a brighter and more prosperous future.

Hioki’s measurement technology is widely used in the maintenance, repair and operation of factories, businesses and infrastructures, contributing to the safety and security of our daily lives. We also support the development of next generation technologies in the automotive and new energy sectors by delivering high quality instruments at a reasonable cost.

Founded in 1935, Hioki has grown to become a world leader in providing consistent delivery of test and measuring instruments. By integrating both R&D and manufacturing in a central facility, we succeed in implementing a fully sustainable end-to-end product innovation life cycle to deliver instruments characterized by precision, safety and quality to customers around the world.

Hioki’s measurement technology is widely used in the maintenance, repair and operation of factories, businesses and infrastructures, contributing to the safety and security of our daily lives. We also support the development of next generation technologies in the automotive and new energy sectors by delivering high quality instruments at a reasonable cost.

ISO 14001 / ISO 9001 certified

ISO14001 : The HIOKI head office is certified under the ISO14001 international standard for environmental management systems.
ISO9001 : HIOKI’s development, production, sales and service (repair and calibration) of electric measuring instruments are certified under the ISO9001 international standard for quality management and quality assurance.
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#### About the Marks

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<td>CE</td>
<td>Compliant with CE</td>
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<tr>
<td><img src="new_icon" alt="" /></td>
<td>New release</td>
</tr>
<tr>
<td><img src="GENNECT_Cross_icon" alt="" /></td>
<td>GENNECT Cross Free app for mobile devices to verify and manage measurement data</td>
</tr>
<tr>
<td><img src="GENNECT_One_icon" alt="" /></td>
<td>GENNECT One Free PC software to verify and manage measurement data</td>
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#### Safety standard categories*

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<th>Description</th>
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<td>Drop proof</td>
<td>Robust design capable of withstanding a drop from a height of 1 m onto concrete</td>
</tr>
<tr>
<td>Backlight</td>
<td></td>
</tr>
<tr>
<td>Auto power OFF</td>
<td>Automatically turns off after a certain time</td>
</tr>
<tr>
<td>Display hold</td>
<td></td>
</tr>
<tr>
<td>True RMS</td>
<td>True RMS measurement for accurate measurement of even distorted current waveforms</td>
</tr>
<tr>
<td>Low-pass filter</td>
<td>Cuts high frequency content to provide stable numerical values for measurement</td>
</tr>
<tr>
<td>AUTO AC/DC</td>
<td>Automatically detects and measures AC and DC voltage</td>
</tr>
<tr>
<td>Decibel conversion</td>
<td>Displays AC voltage measurements converted to decibel values (dbm/dbv)</td>
</tr>
<tr>
<td>MAX/MIN/AVG value*</td>
<td>Displays the maximum, minimum, and average of the displayed values</td>
</tr>
<tr>
<td>Peak measurement*</td>
<td>Displays the wave maximum and minimum peak values</td>
</tr>
<tr>
<td>Relative display</td>
<td>Pressing the REL button displays subsequent measurements as values relative to that displayed when the button was pressed</td>
</tr>
<tr>
<td>Current sensor can be connected</td>
<td></td>
</tr>
<tr>
<td>Flexible current sensor can be connected</td>
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#### Measurement Functions

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<tr>
<th>Function</th>
<th>Description</th>
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<td>AC voltage</td>
<td></td>
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<tr>
<td>DC voltage</td>
<td></td>
</tr>
<tr>
<td>DCV + ACV</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
</tr>
<tr>
<td>Resistance</td>
<td></td>
</tr>
<tr>
<td>Capacitance</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td></td>
</tr>
<tr>
<td>ACA current</td>
<td></td>
</tr>
<tr>
<td>DCA current</td>
<td></td>
</tr>
<tr>
<td>DCA + ACA</td>
<td></td>
</tr>
<tr>
<td>DC Power</td>
<td></td>
</tr>
<tr>
<td>Continuity check</td>
<td>Buzzer sounds when continuity is detected</td>
</tr>
<tr>
<td>Diode check</td>
<td>Displays voltage if in the correct direction, and OVER if in the reverse direction</td>
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<tr>
<td>Voltage detection</td>
<td>Buzzer sounds when AC voltage is detected</td>
</tr>
<tr>
<td>Inrush (Rush current)</td>
<td>Measures inrush current when power is turned on, etc.</td>
</tr>
</tbody>
</table>

*For more detailed information, please refer to the next page.

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*For the latest information about countries and regions where wireless operation is currently supported, please visit the HIOKI website.*
Measurement Category • Anticipated Transient Overvoltage

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.

<table>
<thead>
<tr>
<th>CAT II</th>
<th>CAT III</th>
<th>CAT IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement at a point from the power plug to the equipment's power circuits, where equipment is directly connected to an outlet.</td>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>

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

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.

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.

Rectification Methods: True RMS and Mean

A measuring instrument uses one of two rectification methods, “True RMS” or “Mean”. Using mean rectification assumes that the signal is based on a sine wave without distortions in order to calculate the value. Distorted waveforms cannot be measured accurately using this method. As the performance of equipment increases, so do distorted waveforms. In order to accurately measure in these situations, using the True RMS method is necessary.

Low-Pass Filter Reduces the Effects of Harmonics and Measures the Fundamental Wave Component Accurately

Switching power supplies and the secondary side of inverters include harmonic components. Waveforms containing harmonics are distorted and difficult to measure with accuracy. By using a low-pass filter to remove harmonic components, accurate measurement values can be obtained.

MAX/MIN/AVG/PEAK value

The ability to identify the maximum, minimum, average, and crest maximum and minimum values for equipment like machine tools whose load current fluctuates is useful in preventive maintenance and quality control.
Applications

Factory

- Motors
- Elevators
- Air conditioning
- UPS
- Data servers
- PV systems
- LED
- Emergency lights
- Switchboards
- Machines
- Power control boards
- Grounding rods
- Substations
- Robots
- Machines
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<th>5</th>
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<tr>
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<td>PV systems</td>
<td>UPS</td>
<td>Earth • Ground</td>
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<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
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<tr>
<td>Machines • Robots • Motors</td>
<td>Elevators</td>
<td>Air conditioning</td>
<td>Servers</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## 1. Elevators
- **Verify phase rotation**
  - PD3259 (pp. 36-37)
  - PD3129 (pp. 36-37)
- **Test insulation**
  - IR405Xs (pp. 22-27)
- **Test supply voltage**
  - DT42XXs (pp. 28-35)
- **Verify load current**
  - CM437Xs (pp. 12-21)
  - CM414Xs (pp. 12-21)
- **Detect leakage current**
  - CM4001 (pp. 12-21)
  - CM4003 (pp. 12-21)
- **Detect electrical disturbances • Analyze power quality**
  - PD3100 (pp. 40-45)
  - PD8198 (pp. 40-45)
- **Record and analyze electrical consumption**
  - PW3363 (pp. 42-45)
  - PW3365 (pp. 42-45)
- **Test 5kV insulation**
  - IR3455 (p. 27)

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- **Test bypass diodes**
  - FT4310 (p. 48)
- **Verify grounding**
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- **Test PV insulation**
  - IR405Xs (pp. 22-27)
- **Verify string current**
  - DT4254 (pp. 28-35)
- **Test battery resistance and voltage**
  - BT3554 (pp. 46-47)
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## 3. Machines • Robots • Motors
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  - CM437Xs (pp. 12-21)
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- **Test load current**
  - FT3405 (p. 55)
- **Measure rotation speed**
  - FT3700 (p. 54)
- **Check temperature**
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- **Verify motor insulation**
  - FT3701 (p. 54)
- **Test supply voltage**
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- **Check temperature and humidity**
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  - FT3424 (p. 54)
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## 5. UPS
- **Test bypass diodes**
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- **Verify grounding**
  - FT6031 (pp. 38-39)
- **Test string current**
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  - CM414Xs (pp. 12-21)
- **Test battery resistance and voltage**
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- **Verify grounding**
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## 6. Earth • Ground
- **Test bypass diodes**
  - FT4310 (p. 48)
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- **Check temperature**
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- **Test string current**
  - DT4254 (pp. 28-35)
- **Test battery resistance and voltage**
  - BT3554 (pp. 46-47)
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  - FT6031 (pp. 38-39)
Applications
Data Centers

1 Substations
2 Power control boards
3 Switchboards
4 UPS
5 In-house generators
6 PV systems
7 Grounding rods
8 Air conditioning
9 5G Antennas
10 Data servers

Data Centers
Applications
# Power receiving and transforming equipment · Power control boards · Switchboards

## UPS

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<tr>
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<th>Test insulation</th>
<th>Test supply voltage</th>
<th>Verify load current</th>
<th>Detect leakage current</th>
<th>Detect electrical disturbances · Analyze power quality</th>
<th>Record and analyze electrical consumption</th>
<th>Test 5kV insulation</th>
</tr>
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<tbody>
<tr>
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<td>IR405Xs (pp. 22-27)</td>
<td>DT42XXs (pp. 28-35)</td>
<td>CM377Xs (pp. 12-21)</td>
<td>CM414Xs (pp. 12-21)</td>
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</tbody>
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<tr>
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<th>Verify motor insulation</th>
<th>Test supply voltage</th>
<th>Test load current</th>
<th>Verify phase rotation</th>
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<td>DT425Xs (pp. 28-35)</td>
<td>CM377Xs (pp. 12-21)</td>
<td>PD3259 (pp. 36-37)</td>
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</table>

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<thead>
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<th>Verify grounding</th>
<th>Test PV insulation</th>
<th>Verify string current</th>
<th>Verify string current</th>
<th>Verify grounding</th>
</tr>
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<td>IR405Xs (pp. 22-27)</td>
<td>DT4254 (pp. 28-35)</td>
<td>CM377Xs (pp. 12-21)</td>
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</tr>
</tbody>
</table>

## Earth · ground

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<th>Test 5kV insulation</th>
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<tr>
<td>IR405Xs (pp. 22-27)</td>
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<th>Check temperature</th>
<th>Test insulation</th>
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<th>Verify LAN wiring</th>
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<td>FT3700 (p. 54)</td>
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<td>DT425Xs (pp. 28-35)</td>
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<td>3665 (p. 53)</td>
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<th>Test 5kV insulation</th>
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<tr>
<td>IR405Xs (pp. 22-27)</td>
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Residences & Commercial Buildings

1. Power lines
2. Watt meters
3. Breaker panels
4. Power outlets
5. PV systems
6. Grounding rods
7. Air conditioning
8. Boilers
9. LAN
10. LED
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<th>Test insulation</th>
<th>Test supply voltage</th>
<th>Verify load current</th>
<th>Detect leakage current</th>
<th>Record and analyze electrical consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR405Xs (pp. 22-27)</td>
<td>DT42XXs (pp. 28-35)</td>
<td>CM437Xs (pp. 12-21)</td>
<td>CM414Xs (pp. 12-21)</td>
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<td>3283 (pp. 12-21)</td>
<td>PW3365 (pp. 42-45)</td>
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## 2 Power outlets

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<th>Test supply voltage</th>
<th>Test supply voltage</th>
<th>Verify load current</th>
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## 3 PV systems

<table>
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<th>Test bypass diodes</th>
<th>Verify grounding</th>
<th>Test PV insulation</th>
<th>Verify string current</th>
<th>Verify string current</th>
</tr>
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<td>FT4310 (p. 48)</td>
<td>FT6031 (pp. 38-39)</td>
<td>IR4053 (pp. 22-27)</td>
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<td>CM414Xs (pp. 12-21)</td>
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## 4 Earth • ground

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<th>Verify grounding</th>
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## 5 Air conditioning

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<tr>
<th>Check temperature and humidity</th>
<th>Check temperature</th>
<th>Test insulation</th>
<th>Test supply voltage</th>
<th>Test load current</th>
<th>Detect leakage current</th>
</tr>
</thead>
<tbody>
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<td>DT42XXs (pp. 28-35)</td>
<td>CM437Xs (pp. 12-21)</td>
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<td>3283 (pp. 12-21)</td>
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</table>

## 6 Boilers

<table>
<thead>
<tr>
<th>Test insulation</th>
<th>Test supply voltage</th>
<th>Test load current</th>
<th>Detect leakage current</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR405Xs (pp. 22-27)</td>
<td>DT42XXs (pp. 28-35)</td>
<td>CM437Xs (pp. 12-21)</td>
<td>CM4001 (pp. 12-21)</td>
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</thead>
<tbody>
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<td>3665 (p. 53)</td>
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</table>

## 8 LED

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<th>Measure illuminance</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT3424 (p. 54)</td>
</tr>
</tbody>
</table>

---

**Notes:**
- IR405Xs and CM414Xs are used for testing insulation, bypass diodes, and other PV components.
- FT42XXs and CM437Xs are used for testing supply voltage and current in power lines.
- PW3360 and PW3365 are used for analyzing electrical consumption.
- FT6031 is used for verifying grounding in power outlets.
- LT7001 and IR4050s are used for checking temperature and humidity in air conditioning systems.
- CM4001 and CM414Xs are used for testing load current in boilers.
- FT3424 and FT3425 are used for measuring illuminance in LED systems.
Verify the data captured by your test equipment on mobile devices in real time. The app downloads the measured data from the test tool using Bluetooth® wireless technology, letting you check, save, and create reports right on your smartphone or tablet.

**Supported instruments**

- CM4372
- CM4374
- CM4376
- CM4141
- CM3286-01
- IR4058
- FT3425
- BT3554-01,-11
- FT4310
- CM7291
- AC/DC CLAMP METER : CM4372
- AC/DC CLAMP METER : CM4374
- AC/DC CLAMP METER : CM4376
- AC CLAMP METER : CM4142
- AC CLAMP POWER METER : CM3286-01
- INSULATION TESTER : IR4058
- LUX METER : FT3425
- BATTERY TESTER : BT3554-01,-11
- BYPASS DIODE TESTER : FT4310
- DISPLAY UNIT : CM7291

**Downloading GENNECT Cross**

Data can be downloaded to tablets and smartphones using Hioki’s dedicated apps available from the Google Play or App Store. Search for “HIOKI” and download the “GENNECT Cross” app.
About GENNECT Cross (for mobile devices) and GENNECT One (for PCs)

GENNECT One
Verify data captured by your test tool in real time right on your PC. Connect up to 15 measuring instruments via a hub to monitor all the results in one place and save data in one batch.

Present data from multiple sources as a graph or list together

Available items to monitor on PC

<table>
<thead>
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<th>Voltage</th>
<th>(Each interval)</th>
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<td>Power</td>
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<td></td>
<td>MIN</td>
</tr>
<tr>
<td></td>
<td>AVG</td>
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</table>

Temperature* | (Each interval) |

Temperature* | Instantaneous value |

*Analog Input

Supported instruments

- POWER ANALYZER : PW6001
- POWER ANALYZER : PW3390
- POWER QUALITY ANALYZER : PQ3198
- POWER QUALITY ANALYZER : PQ3100
- CLAMP ON POWER LOGGER : PW3365
- CLAMP ON POWER LOGGER : PW3360
- MEMORY HiLOGGER : LR8450
- WIRELESS LOGGING STATION : LR8410
- MEMORY HiCORDER : MR6000

Other functionality

LAN remote control
Change the settings on your measuring instrument, start and stop testing and conduct many other functions via LAN.

LAN automatic file download
Automatically download data reflecting abnormal phenomena or daily power consumption data captured by a measuring instrument installed on site to your PC.

Congratulations on your purchase of GENNECT Cross and GENNECT One!

For more information, visit the dedicated website.

Download GENNECT One
GENNECT One is a free PC application. Please download from the HIOKI website by going to the "GENNECT One" landing page.
CLAMP METERS
Remarkable Ease of Use, New "Slim Jaw" Design

Easily Clamp Within Crowded Cables with New Slim Jaw Design

Innovative slim jaw resolves worksite issues such as crowded wiring to deliver safe, accurate and high-performance testing.

Manage measurement data using GENNECT Cross™

-25°C to 65°C² operating temperature

Dustproof and waterproof performance²

CAT IV 600V²

CM4000 Series can be used in freezing temperatures or on the hottest summer days.

International Protection Code: IP54
Jaws (current sensor portion): IP50
Measurement functionality is maintained despite exposure to sand or dust as well as water droplets.

Safely measure embedded cables and electric panels with a maximum rated voltage to earth of 600V.

*1 Supported models : CM4372, CM4374, CM4376, CM4142, CM3286-01
*2 Supported models : CM4371, CM4372, CM4373, CM4374, CM4375, CM4376, CM4141, CM4142, CM3286, CM3286-01
### Lineup

<table>
<thead>
<tr>
<th>Measurement type</th>
<th>AC / DC Current</th>
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<tbody>
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<td>Dustproof and waterproof</td>
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<td>6F22 x1 Stacked manganese</td>
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<td>CR2032 x1 Coin type</td>
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</tr>
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<td>CR2032 x1 Coin type</td>
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<tr>
<td>Dimensions ( W x H x D )</td>
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<tr>
<td>65 x 250 x 35 mm</td>
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<tr>
<td>2.56 x 9.8 x 1.38 in</td>
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<td>150 g / 5.3 oz</td>
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</tbody>
</table>
1. The circuit under measurement is isolated from the commercial power grid.  
2. The circuit under measurement is isolated from ground.  

**DANGER of short-circuit accident.**

*No sleeve attached*

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

*Sleeve attached*  
CAT III, CAT IV  
With a sleeve attached, the test leads can be used in a CAT III environment.

**Sleeve**

included as a standard accessory.  

*This sleeve cannot be attached to previous products included as a standard accessory*  

**Insulated sleeves prevent short-circuits**

![Previous model](Image)

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

![NEW model](Image)

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

---

### Measurement type / AC Current / Leakage Current / AC Power

<table>
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<th>Model</th>
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<th>3280-10F</th>
<th>CM3289</th>
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<td>φ33 mm (1.30 in)</td>
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<tr>
<td>Electrostatic capacity</td>
<td>✔</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
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</tr>
<tr>
<td>Frequency</td>
<td>999.9 Hz</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
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</tr>
<tr>
<td>Rush current</td>
<td>✔</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuity check</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
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</tr>
<tr>
<td>Diode check</td>
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<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
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<tr>
<td>Voltage detection</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>✔</td>
<td>N / A</td>
<td>N / A</td>
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<tr>
<td>Low-pass filter</td>
<td>✔</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>□</td>
<td>✔</td>
<td>N / A</td>
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</tr>
<tr>
<td>Auto power off</td>
<td>□</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>□</td>
<td>✔</td>
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<tr>
<td>Auto range</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>□</td>
<td>✔</td>
<td>□</td>
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<td>Data hold</td>
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<td>MANUAL</td>
<td>MANUAL</td>
<td>MANUAL</td>
<td>AUTO / MANUAL</td>
<td>MANUAL</td>
<td>AUTO / MANUAL</td>
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<tr>
<td>Automatic AC/DC detection</td>
<td>✔ (Voltage only)</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
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</tr>
<tr>
<td>MAX / MIN / AVG</td>
<td>✔</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
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<tr>
<td>Output</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
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<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
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</tr>
<tr>
<td>Bluetooth® communication</td>
<td>✔ (2MHz only)</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>✔ (with 232/10)</td>
<td>N / A</td>
<td>✔ (CM3283 only)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backlight</td>
<td>✔</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>✔</td>
<td>N / A</td>
<td>✔</td>
<td></td>
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</tr>
<tr>
<td>Display refresh rate</td>
<td>5 times / s</td>
<td>2.5 times / s</td>
<td>2.5 times / s</td>
<td>2.5 times / s</td>
<td>2.5 times / s</td>
<td>✔ (3283 only)</td>
<td>2 times / s</td>
<td>✔</td>
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<td></td>
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<tr>
<td>CE</td>
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<td>✔</td>
<td>✔</td>
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<tr>
<td>Dustproof and waterproof</td>
<td>IP54 3*</td>
<td>IP40</td>
<td>IP40</td>
<td>IP40</td>
<td>IP40</td>
<td>N / A</td>
<td>IP40</td>
<td>IP54 3*</td>
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<tr>
<td>Auto-diagnosis</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>N / A</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>LR03 x2 Alkaline</td>
<td>CR2032 x1 Coin type</td>
<td>CR2032 x1 Coin type</td>
<td>CR2032 x1 Coin type</td>
<td>CR2032 x1 Coin type</td>
<td>LR03 x1 Alkaline</td>
<td>6F22 x1 Stacked manganese</td>
<td>LR03 x2 Alkaline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (W × H × D)</td>
<td>65 x 247 x 36 mm</td>
<td>2.56 x 9.72 x 1.38 in</td>
<td>57 x 175 x 16 mm</td>
<td>2.24 x 6.89 x 0.63 in</td>
<td>57 x 181 x 16 mm</td>
<td>2.24 x 7.13 x 0.63 in</td>
<td>57 x 196 x 16 mm</td>
<td>2.24 x 7.80 x 0.63 in</td>
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<td></td>
</tr>
<tr>
<td>Mass</td>
<td>300 g / 10.6 oz</td>
<td>100 g / 3.5 oz</td>
<td>100 g / 3.5 oz</td>
<td>103 g / 3.6 oz</td>
<td>103 g / 3.6 oz</td>
<td>115 g / 4.1 oz</td>
<td>400 g / 14.1 oz</td>
<td>450 g / 15.9 oz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1. Your instrument can be used to measure voltages in excess of 1000 V DC if and only if both of the following conditions are satisfied:
   - The circuit under measurement is isolated from the commercial power grid.  
   - The circuit under measurement is isolated from ground.
2. Grip only, jaws: IP50, measurement functionality is maintained despite exposure to sand or dust as well as water droplets.
3. 4 times / s (FAST), 2 times / s (NORMAL), 1 time / 3s (SLOW)
4. Input Voltage  
5. 0 displayed 0 with below 0.06
Clamp Insulation Tester Detectors Earth Power Quality

Power consumption Battery PV Logger LAN Signal Lux Temperature Rotation Sound

AC/DC CLAMP METER CM4371, CM4372, CM4373, CM4374, CM4375, CM4376

CLAMP ON AC/DC HiTESTER 3284, 3285

CLAMP ON AC/DC HiTESTER 3287, 3288, 3288-20
### Measurement parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>AC Current</th>
<th>DC Current</th>
<th>AC + DC Current</th>
<th>AC Voltage</th>
<th>DC Voltage</th>
<th>AC + DC Voltage</th>
<th>DC Power</th>
<th>Resistance</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Alkaline battery</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LR03 ×2</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display refresh rate</td>
<td>5 times/s²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Operating temperature</td>
<td>-25°C to 65°C</td>
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<tr>
<td>Storage temperature</td>
<td>-30°C to 70°C</td>
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<td></td>
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</tr>
<tr>
<td>Dustproof and waterproof</td>
<td>Grip IP54</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous operating time</td>
<td>45 hours ±x</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</table>

### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Model Code</th>
<th>Width (W) mm</th>
<th>Length (H) mm</th>
<th>Height (D) mm</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM4371 - 72</td>
<td>3284</td>
<td>65</td>
<td>215</td>
<td>35</td>
<td>(2.56 × 8.46 × 1.38 in)</td>
</tr>
<tr>
<td>CM4372 - 74</td>
<td>3285</td>
<td>65</td>
<td>205</td>
<td>35</td>
<td>(2.56 × 8.18 × 1.38 in)</td>
</tr>
<tr>
<td>CM4373 - 75</td>
<td>3286</td>
<td>65</td>
<td>242</td>
<td>35</td>
<td>(2.56 × 9.53 × 1.38 in)</td>
</tr>
<tr>
<td>CM4374 - 76</td>
<td>3287</td>
<td>65</td>
<td>215</td>
<td>35</td>
<td>(2.56 × 8.46 × 1.38 in)</td>
</tr>
<tr>
<td>CM4375</td>
<td>3288</td>
<td>62</td>
<td>260</td>
<td>39</td>
<td>(2.44 × 10.24 × 1.54 in)</td>
</tr>
<tr>
<td>CM4376</td>
<td>3289</td>
<td>60</td>
<td>242</td>
<td>35</td>
<td>(2.56 × 9.53 × 1.38 in)</td>
</tr>
</tbody>
</table>

### Accessories

- TEST LEAD L9207-10 90 cm (2.95 ft) length
- CARRYING CASE 9203
- LR03 Alkaline battery × 2
- Instruction manual

### Basic accuracy

- AC Current: ±1.3% rdg ±5 dgt.
- DC Current: ±1.3% rdg ±5 dgt.
- AC + DC Current: ±1.3% rdg ±5 dgt.
- AC Voltage: ±1.3% rdg ±5 dgt.
- DC Voltage: ±1.3% rdg ±5 dgt.
- AC + DC Voltage: ±1.3% rdg ±5 dgt.
- DC Power: ±1.3% rdg ±5 dgt.
- Resistance: ±1.3% rdg ±5 dgt.
- Frequency: ±0.1% rdg ±0.003 Hz

*1 Excludes electrostatic capacity, frequency, and temperature • While in storage, or when measuring an insulated conductor. Do not use when wet. *2 With backlight and Bluetooth® communications turned OFF

---

### Model CM4371 - 72

| N/A | N/A | 20.00 A/200.0 A (guaranteed accuracy range: 1.00 A to 200.0 A) ±1.3% rdg ±5 dgt. |

---

### Model CM4372 - 74

| N/A | N/A | 100.0 A/100.0 A (Display range: 0 A to 100.0 A) ±1.5% rdg ±5 dgt. |

---

### Model CM4373 - 75

| N/A | N/A | 10.00 A/100.0 A ±1.5% rdg ±5 dgt. |

---

### Model CM4374 - 76

| N/A | N/A | 100.0 A/200.0 A ±1.3% rdg ±5 dgt. |

---

**Note:** The table above includes measurements for various electrical parameters such as AC current, DC current, AC + DC current, AC voltage, DC voltage, AC + DC voltage, DC power, resistance, and frequency. The instrument can be used under specific conditions for each measurement parameter, as detailed in the table.
AC CLAMP METER CM4141, CM4142

- Built-in Bluetooth® wireless technology
- Verify and record measured data with free GENNECT Cross mobile app
  *Available only with products displayed with the GENNECT Cross icon

Compatible with the CT6280 AC Flexible Current Sensor

AC CLAMP METER 3280-10F, CM3289, CM3281, CM3291

- Built-in Bluetooth® wireless technology
- Verify and record measured data with free GENNECT Cross mobile app
  *Available only with products displayed with the GENNECT Cross icon

AC LEAKAGE CLAMP METER CM4001

- Built-in Bluetooth® wireless technology
- Verify and record measured data with free GENNECT Cross mobile app
  *Requires Z3210

CLAMP ON LEAK HITESTER 3283, 3283-20

- Includes external output function
- Pair with a recorder to capture instantaneous or current waveforms
- Recording output (REC mode): 1 V DC / f.s.
- Monitor output (MON mode): 1 V AC / f.s.
  *3283 only, Requires optional L9094, L9095 or L9096 Output Cord

Please see www.hioki.com for list of supported regions.
## Order code 3280-10F

<table>
<thead>
<tr>
<th>Measurement item</th>
<th>CM3281, CM3291</th>
<th>CM3289</th>
<th>Basic accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Current</td>
<td>✓</td>
<td>✓</td>
<td>±0.5% rdg ±0.1 Hz</td>
</tr>
<tr>
<td>AC Voltage</td>
<td>✓</td>
<td>✓</td>
<td>±0.5% rdg ±0.1 Hz</td>
</tr>
<tr>
<td>DC Voltage</td>
<td>✓</td>
<td>✓</td>
<td>±0.5% rdg ±0.1 Hz</td>
</tr>
<tr>
<td>Resistance</td>
<td>✓</td>
<td>✓</td>
<td>±0.5% rdg ±0.1 Hz</td>
</tr>
<tr>
<td>Frequency</td>
<td>✓</td>
<td>✓</td>
<td>±0.1% rdg ±0.03 Hz</td>
</tr>
</tbody>
</table>

### Accessories
- TEST LEAD L9207-10 90 cm (2.95 ft) length
- CARRYING CASE C0205
- CARRYING CASE C0203
- Instrument manual

### Order code 3280-10F

<table>
<thead>
<tr>
<th>Measurement item</th>
<th>CM3280-70F</th>
<th>Accessory</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Current</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td>Excludes 3280F</td>
</tr>
<tr>
<td>AC Voltage</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td>Excludes 3280F</td>
</tr>
<tr>
<td>DC Voltage</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td>Excludes 3280F</td>
</tr>
<tr>
<td>Resistance</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td>Excludes 3280F</td>
</tr>
<tr>
<td>Frequency</td>
<td>100.0 Hz/1000 Hz</td>
<td></td>
</tr>
</tbody>
</table>

### Accessories
- TEST LEAD L9208 70 cm (2.30 ft) length
- CARRYING CASE C0205 (CM3289 only)
- CARRYING CASE C0203 (3280-70F only)
- CARRYING CASE (CM3281, CM3291 only)

### Order code CM3289, CM3291

<table>
<thead>
<tr>
<th>Measurement item</th>
<th>CM3289, CM3291</th>
<th>Basic accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Current</td>
<td>N/A</td>
<td>±1.0% rdg ±0.5 dgt</td>
</tr>
<tr>
<td>AC Voltage</td>
<td>N/A</td>
<td>±1.0% rdg ±0.5 dgt</td>
</tr>
<tr>
<td>DC Voltage</td>
<td>N/A</td>
<td>±1.0% rdg ±0.5 dgt</td>
</tr>
<tr>
<td>Resistance</td>
<td>N/A</td>
<td>±0.5% rdg ±1.0 Hz</td>
</tr>
<tr>
<td>Frequency</td>
<td>N/A</td>
<td>±0.3% rdg ±1.0 Hz</td>
</tr>
</tbody>
</table>

### Accessories
- TEST LEAD L9207-10 90 cm (2.95 ft) length
- CARRYING CASE C0205
- CARRYING CASE C0203
- Instrument manual

### Order code CM3281

<table>
<thead>
<tr>
<th>Measurement item</th>
<th>CM3281</th>
<th>Basic accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Current</td>
<td>100.0 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>AC Voltage</td>
<td>100.0 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>DC Voltage</td>
<td>100.0 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>Resistance</td>
<td>100.0 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>100.0 Hz/1000 Hz</td>
<td></td>
</tr>
</tbody>
</table>

### Accessories
- TEST LEAD L9208 70 cm (2.30 ft) length
- CARRYING CASE C0205 (3280-70F only)
- CARRYING CASE (CM3281, CM3291 only)

### Order code CM3280-70F

<table>
<thead>
<tr>
<th>Measurement item</th>
<th>CM3280-70F</th>
<th>Basic accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Current</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>AC Voltage</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>DC Voltage</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>Resistance</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>100.0 Hz/1000 Hz</td>
<td></td>
</tr>
</tbody>
</table>

### Accessories
- TEST LEAD L9208 70 cm (2.30 ft) length
- CARRYING CASE C0205 (3280-70F only)
- CARRYING CASE (CM3281, CM3291 only)

### Order code CM3280-10F

<table>
<thead>
<tr>
<th>Measurement item</th>
<th>CM3280-10F</th>
<th>Basic accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Current</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>AC Voltage</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>DC Voltage</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>Resistance</td>
<td>10.00 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>100.0 Hz/1000 Hz</td>
<td></td>
</tr>
</tbody>
</table>

### Accessories
- TEST LEAD L9208 70 cm (2.30 ft) length
- CARRYING CASE C0205 (CM3289 only)
- CARRYING CASE C0203 (3280-70F only)
- Instrument manual
- AC FLEXIBLE CURRENT SENSOR CT6280 (3280-70F only)

### Order code CM3291

<table>
<thead>
<tr>
<th>Measurement item</th>
<th>CM3291</th>
<th>Basic accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Current</td>
<td>100.0 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>AC Voltage</td>
<td>100.0 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>DC Voltage</td>
<td>100.0 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>Resistance</td>
<td>100.0 A/100.0 A/600.0 A/6.000 A/60.000 A (guaranteed accuracy: 1.0% to 6.0% A)</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>100.0 Hz/1000 Hz</td>
<td></td>
</tr>
</tbody>
</table>

### Accessories
- TEST LEAD L9208 70 cm (2.30 ft) length
- CARRYING CASE C0205 (CM3289 only)
- CARRYING CASE C0203 (3280-70F only)
- Instrument manual
- AC FLEXIBLE CURRENT SENSOR CT6280 (3280-70F only)

### Order code CM3289

<table>
<thead>
<tr>
<th>Measurement item</th>
<th>CM3289</th>
<th>Basic accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Current</td>
<td>N/A</td>
<td>±1.0% rdg ±0.5 dgt</td>
</tr>
<tr>
<td>AC Voltage</td>
<td>N/A</td>
<td>±1.0% rdg ±0.5 dgt</td>
</tr>
<tr>
<td>DC Voltage</td>
<td>N/A</td>
<td>±1.0% rdg ±0.5 dgt</td>
</tr>
<tr>
<td>Resistance</td>
<td>N/A</td>
<td>±0.5% rdg ±1.0 Hz</td>
</tr>
<tr>
<td>Frequency</td>
<td>N/A</td>
<td>±0.3% rdg ±1.0 Hz</td>
</tr>
</tbody>
</table>

### Accessories
- TEST LEAD L9208 70 cm (2.30 ft) length
- CARRYING CASE C0205 (CM3289 only)
- CARRYING CASE C0203 (3280-70F only)
- Instrument manual
- AC FLEXIBLE CURRENT SENSOR CT6280 (3280-70F only)

### Order code CM3281

<table>
<thead>
<tr>
<th>Measurement item</th>
<th>CM3281</th>
<th>Basic accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Current</td>
<td>N/A</td>
<td>±1.0% rdg ±0.5 dgt</td>
</tr>
<tr>
<td>AC Voltage</td>
<td>N/A</td>
<td>±1.0% rdg ±0.5 dgt</td>
</tr>
<tr>
<td>DC Voltage</td>
<td>N/A</td>
<td>±1.0% rdg ±0.5 dgt</td>
</tr>
<tr>
<td>Resistance</td>
<td>N/A</td>
<td>±0.5% rdg ±1.0 Hz</td>
</tr>
<tr>
<td>Frequency</td>
<td>N/A</td>
<td>±0.3% rdg ±1.0 Hz</td>
</tr>
</tbody>
</table>

### Accessories
- TEST LEAD L9208 70 cm (2.30 ft) length
- CARRYING CASE C0205 (CM3289 only)
- CARRYING CASE C0203 (3280-70F only)
- Instrument manual
- AC FLEXIBLE CURRENT SENSOR CT6280 (3280-70F only)
### AC CLAMP POWER METER CM3286, CM3286-01

- **Order code CM3286**
- **Order code CM3286-01**

#### Accessories
- Connection Cord L9257 (Includes L4930, L4935)
- CARRYING CASE C0203
- LR03 Alkaline battery × 2
- Instruction manual

#### Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Single-phase</th>
<th>Balanced three-phase 3-wire</th>
<th>Balanced three-phase 4-wire</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (Active/ reactive/apparent)</td>
<td>3.000 kW/30.0 kW/360.0 kW</td>
<td>7.200 kW/72.0 kW/720.0 kW</td>
<td>10.80 kW/108.0 kW/1080 kW</td>
</tr>
<tr>
<td>Guaranteed accuracy range</td>
<td>0.005 kW to 360.0 kW</td>
<td>0.020 kW to 623.5 kW</td>
<td>0.040 kW to 1080 kW</td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>±2.0% rdg ±7 dgt</td>
<td>±3.0% rdg ±10 dgt</td>
<td>±2.0% rdg ±3 dgt</td>
</tr>
<tr>
<td>AC Current</td>
<td>6.000 A/60.0 A/600.0 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC Voltage</td>
<td>600.0 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic accuracy</td>
<td>±0.7% rdg ±3 dgt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power factor</td>
<td>1.000 to -0.001, [Consumption] 0.000 to 1.000</td>
<td>0.001, [Consumption] 0.000 to 1.000</td>
<td></td>
</tr>
<tr>
<td>Phase angle</td>
<td>[lead] -180° to -0.1°, [lag] 0.0° to 179.9°</td>
<td>[lead] -90° to -0.1°, [lag] 0.0° to 90.0°</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>45.0 Hz to 999.9 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple Active Energy Consumption (Single-phase)</td>
<td>99.99 Wh/999.9 Wh/9999 Wh/99999 Wh/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harmonic^1</td>
<td>Voltage or current harmonic levels up to 30th order, content factor, total harmonic distortion ratio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display refresh rate</td>
<td>2 times/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>25°C to 65°C, 80% rh or less (non-condensing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-25°C to 60°C, 80% rh or less (non-condensing)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dustproof and waterproof</td>
<td>Grip IP64^2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>LR03 Alkaline battery × 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous operating time</td>
<td>25 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>82 x 241 x 37 mm (3.23 x 9.49 x 1.46 inch)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass</td>
<td>450 g (15.9 oz)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

^1 Harmonics can be displayed using dedicated application software (GENNECT Cross)

^2 While in storage, or when measuring current on an insulated conductor

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Please see [www.hioki.com](http://www.hioki.com) for list of supported regions.

---

**CM3286 CM3286-01**

Product warranty for 3 years

Accuracy guaranteed for 1 year

Order code CM3286 Order code CM3286-01

**Accessories**
- Connection Cord L9257 (Includes L4930, L4935)
- CARRYING CASE C0203
- LR03 Alkaline battery × 2
- Instruction manual

**Order code CM3286**

**Order code CM3286-01**
INSULATION TESTERS
DROP PROOF

Built tough to withstand a 1-meter drop onto a concrete floor

Convenient for inspections

5 ranges
Rated output voltage (DC)
Effective maximum indicated value

- 50 V / 100 MΩ
- 125 V / 250 MΩ
- 250 V / 500 MΩ
- 500 V / 2000 MΩ
- 1000 V / 4000 MΩ

Identify PASS / FAIL using light and sound

Easy-to-see LCD

Convenient for inspections

- Low resistance measurement¹
  Perform EV and HEV continuity checks as well as resistance measurement of protective conductors in facility electrical equipment as defined by IEC 60364.

- AC/DC voltage measurement
  Automatically detect AC or DC for testing. Use as a tester thanks to DC voltage measurement functionality.

- PV Ω dedicated function²
  Measurement is not affected even when the PV system is online.

  *¹ Excludes IR4053  *² IR4053 Only

One-touch Start and Stop

Prevent Accidental High Voltage Generation

Significantly improve testing speed using test lead with remote switch

Manage measurement data on tablets

Verify data as a list or map measured values right on a photo of the location under test. Easily make test reports using saved data.

*IR4058-20 Only

**MailCloud**

Bluetooth® communication

HOLD displayed data to automatically upload to your mobile device (5m line-of-sight)
## Lineup - Digital

<table>
<thead>
<tr>
<th>Measurement type</th>
<th>Standard</th>
<th>High-speed</th>
<th>PV</th>
<th>High-voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>IR4056-20 IR4056-21</td>
<td>IR4057-20</td>
<td>IR4058-20</td>
<td>IR4053-10 IR3455</td>
</tr>
<tr>
<td>Appearance</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>Number of ranges</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Testing voltage (DC) / Effective maximum indicated value</td>
<td>50 V / 100 MΩ</td>
<td>125 V / 250 MΩ</td>
<td>250 V / 500 MΩ</td>
<td>500 V / 2000 MΩ</td>
</tr>
<tr>
<td></td>
<td>500 V / 1000 MΩ</td>
<td>250 V / 500 GΩ</td>
<td>500 V / 1.00 TΩ</td>
<td>1.00 TΩ</td>
</tr>
<tr>
<td>1st effective measuring range</td>
<td>0.200 to 10.00 MΩ (50 V)</td>
<td>0.200 to 25.0 MΩ (125 V)</td>
<td>0.200 to 50.0 MΩ (250 V)</td>
<td>0.200 to 500 MΩ (500 V)</td>
</tr>
<tr>
<td></td>
<td>0.200 to 1000 MΩ (1000 V)</td>
<td>0.00 to 500 GΩ (250 V)</td>
<td>0.00 to 1.00 TΩ (500 V)</td>
<td>0.00 to 2.00 TΩ (1000 V)</td>
</tr>
<tr>
<td>PV Ω measurement</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>✓</td>
</tr>
<tr>
<td>Leakage current</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
<td>N / A</td>
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<tr>
<td>DC voltage</td>
<td>600 V</td>
<td>600 V</td>
<td>600 V</td>
<td>1000 V</td>
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<tr>
<td>AC voltage</td>
<td>600 V</td>
<td>600 V</td>
<td>600 V</td>
<td>600 V</td>
</tr>
<tr>
<td>Low resistance measurement</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>N / A</td>
</tr>
<tr>
<td>Displaying 1-min. values</td>
<td>N / A</td>
<td>✓</td>
<td>✓</td>
<td>N / A</td>
</tr>
<tr>
<td>Comparator decision response time</td>
<td>0.8 second</td>
<td>0.3 second</td>
<td>0.3 second</td>
<td>0.8 second (PV : 4 s)</td>
</tr>
<tr>
<td>AUTO power save</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>AUTO range</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Data hold</td>
<td>MANUAL</td>
<td>MANUAL</td>
<td>MANUAL</td>
<td>MANUAL</td>
</tr>
<tr>
<td>Bluetooth® communication</td>
<td>N / A</td>
<td>N / A</td>
<td>✓</td>
<td>N / A</td>
</tr>
<tr>
<td>Bar graph</td>
<td>N / A</td>
<td>✓</td>
<td>✓</td>
<td>N / A</td>
</tr>
<tr>
<td>Backlight</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Safety standard category</td>
<td>CAT III 600 V</td>
<td>CAT III 600 V</td>
<td>CAT III 600 V</td>
<td>CAT IV 600 V CAT III 1000 V</td>
</tr>
<tr>
<td>CE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dustproof and waterproof</td>
<td>IP40</td>
<td>IP40</td>
<td>IP40</td>
<td>IP40</td>
</tr>
<tr>
<td>Drop proof</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Power supply</td>
<td>LR03 x 4 alkaline</td>
<td>LR03 x 4 alkaline</td>
<td>LR03 x 4 alkaline</td>
<td>LR03 x 4 alkaline</td>
</tr>
<tr>
<td>Dimensions (W × H × D)</td>
<td>159 × 177 × 53 mm 6.26 × 6.97 × 2.09 in</td>
<td>159 × 177 × 53 mm 6.26 × 6.97 × 2.09 in</td>
<td>159 × 177 × 53 mm 6.26 × 6.97 × 2.09 in</td>
<td>159 × 177 × 53 mm 6.26 × 6.97 × 2.09 in</td>
</tr>
<tr>
<td>Mass</td>
<td>600 g (21.2 oz)</td>
<td>640 g (22.6 oz)</td>
<td>640 g (22.6 oz)</td>
<td>600 g (21.2 oz)</td>
</tr>
<tr>
<td>Measurement parameters</td>
<td>Testing voltage (DC)</td>
<td>Effective maximum indicated value</td>
<td>1st effective measuring range</td>
<td>2nd effective measuring range</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------------</td>
<td>----------------------------------</td>
<td>------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>IR4016 -20</td>
<td>500 V</td>
<td>100 MΩ</td>
<td>0.1 MΩ to 50 MΩ</td>
<td>0.01 MΩ to 0.1 MΩ or less 50 MΩ or more to 100 MΩ</td>
</tr>
<tr>
<td>IR4017 -20</td>
<td>500 V</td>
<td>1000 MΩ</td>
<td>1 MΩ to 500 MΩ</td>
<td>0.5 MΩ to 1 MΩ or less 500 MΩ or more to 1000 MΩ</td>
</tr>
<tr>
<td>IR4018 -20</td>
<td>1000 V</td>
<td>2000 MΩ</td>
<td>2 MΩ to 1000 MΩ</td>
<td>1 MΩ to 2 MΩ or less 1000 MΩ or more to 2000 MΩ</td>
</tr>
<tr>
<td>3490</td>
<td>250 V</td>
<td>100 MΩ</td>
<td>0.05 MΩ to 50 MΩ</td>
<td>0.01 MΩ to 0.05 MΩ or less 50 MΩ to 100 MΩ 0.5 MΩ to 2 MΩ 1000 MΩ to 4000 MΩ</td>
</tr>
</tbody>
</table>

Accuracy (Insulation) ±5% of indicated value (1st effective measuring range) ±10% of indicated value (2nd effective measuring range)

AC Voltage 0 to 600 V

Order code IR4016-20
Order code IR4017-20
Order code IR4018-20
Order code 3490

Accessories
• TEST LEAD L9787 (1.2 m)
• Neck strap
• LR6 alkaline battery x 4
• Instruction manual

TEST LEAD L9787
## INSULATION TESTER IR4056-20, IR4056-21

![Image](accessories.png)

**Accessories**
- TEST LEAD L9787 (1.2 m) (excludes IR4056-21)
- TEST LEAD SET WITH REMOTE SWITCH L9788-11

### Model Information

<table>
<thead>
<tr>
<th>Model</th>
<th>IR4056-20</th>
<th>IR4056-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation resistance</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Testing voltage (DC)</td>
<td>50 V</td>
<td>125 V</td>
</tr>
<tr>
<td>1st effective measuring range (Moh)</td>
<td>120</td>
<td>250</td>
</tr>
<tr>
<td>2nd effective measuring range (Moh)</td>
<td>15.1 to 100.0</td>
<td>25.1 to 250</td>
</tr>
<tr>
<td>Comparator decision response time</td>
<td>0.3 s</td>
<td></td>
</tr>
<tr>
<td>CAT III 600 V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## INSULATION TESTER IR4057-20, IR4058-20

![Image](accessories.png)

**Accessories**
- TEST LEAD L9787

### Model Information

<table>
<thead>
<tr>
<th>Model</th>
<th>IR4057-20</th>
<th>IR4058-20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation resistance</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Testing voltage (DC)</td>
<td>500 V</td>
<td>1000 V</td>
</tr>
<tr>
<td>1st effective measuring range (Moh)</td>
<td>2000</td>
<td>4000</td>
</tr>
<tr>
<td>2nd effective measuring range (Moh)</td>
<td>1001 to 4000</td>
<td>1010 to 4000</td>
</tr>
<tr>
<td>Comparator decision response time</td>
<td>0.8 s</td>
<td></td>
</tr>
<tr>
<td>CAT III 600 V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## INSULATION TESTER (For Photovoltaic Generation Systems) IR4053-10

![Image](accessories.png)

**Accessories**
- TEST LEAD SET WITH REMOTE SWITCH L9788-11

### Model Information

<table>
<thead>
<tr>
<th>Model</th>
<th>IR4053-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation resistance</td>
<td>✓</td>
</tr>
<tr>
<td>Testing voltage (DC)</td>
<td>50 V</td>
</tr>
<tr>
<td>1st effective measuring range (Moh)</td>
<td>120</td>
</tr>
<tr>
<td>2nd effective measuring range (Moh)</td>
<td>15.1 to 100.0</td>
</tr>
<tr>
<td>Comparator decision response time</td>
<td>0.3 s</td>
</tr>
<tr>
<td>CAT III 600 V</td>
<td></td>
</tr>
</tbody>
</table>

### Model Information

<table>
<thead>
<tr>
<th>Model</th>
<th>IR4053-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature</td>
<td>IR4053-10: 0°C to 50°C, 90% rh or less (non-condensating)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>IR4053-10: 0°C to 50°C, 90% rh or less (non-condensating)</td>
</tr>
<tr>
<td>Dustproof and waterproof</td>
<td>IP40</td>
</tr>
<tr>
<td>EN61326 (EMC)</td>
<td>EN61557-1/2/4-10</td>
</tr>
<tr>
<td>Power supply</td>
<td>LR6 alkaline battery x 4</td>
</tr>
<tr>
<td>Continuous operating time</td>
<td>20 hours</td>
</tr>
<tr>
<td>Dimensions [W x H x D]</td>
<td>159 x 177 x 53 mm (6.26 x 6.97 x 2.09 inch)</td>
</tr>
<tr>
<td>Mass</td>
<td>IR4056, 58: 600 g (21.2 oz) IR4057, 59: 640 g (22.6 oz)</td>
</tr>
</tbody>
</table>

### Accessories
- TEST LEAD L9787 (1.2 m) (excludes IR4056-21)
- TEST LEAD SET WITH REMOTE SWITCH L9788-11 (1.2 m) (IR4056-21 only)
- Neck strap
- LR6 alkaline battery x4
- Instruction manual

---

1. Ranges in excess of 600 V/1000 V are outside the accuracy guarantee
2. Minimum indicated value: 30.0 V
3. Subclause 4.3 of Part 4 (interchanging of test leads) is not applicable when L9788-10 is used
4. IR4056-20 only

---
HIGH VOLTAGE INSULATION TESTER IR3455

Order code  IR3455

Accessories
- TEST LEAD 9750 -01 (Red), -02 (Black), -03 (Blue) (3m) (x 1 ea.)
- ALLIGATOR CLIP 9751 -01 (Red), -02 (Black), -03 (Blue) (x 1 ea.)
- Instruction manual
- L54 alkaline battery x 6
- USB cable
- CD-R (Data Analysis Software)

* Up to [Test voltage (setting value)/Resistance measurable at 100 nA]
*1 When the USB terminal is covered with the shutte
*2 Options

**Options**

IR401X, IR405X, 3490
1 TEST LEAD SET WITH REMOTE SWITCH L9788-11
2 TEST LEAD L9787
3 TEST LEAD WITH REMOTE SWITCH (RED) L9788-10
4 TIP PIN L9788-90
5 BREAKER PIN L9788-92
6 MAGNETIC ADAPTER 9804-02
7 BREAKER PIN L9787-91

IR3455
1 TEST LEAD 9750 -01 RED, 3 m (9.84 ft)
2 TEST LEAD 9750 -02 BLACK, 3 m (9.84 ft)
3 TEST LEAD 9750 -03 BLUE, 3 m (9.84 ft)
4 TEST LEAD 9750 -11 RED, 10 m (32.81 ft)
5 TEST LEAD 9750 -12 BLACK, 10 m (32.81 ft)
6 TEST LEAD 9750 -13 BLUE, 10 m (32.81 ft)
7 ALLIGATOR CLIP 9751 -01 RED
8 ALLIGATOR CLIP 9751 -02 BLACK
9 ALLIGATOR CLIP 9751 -03 BLUE
10 TEMPERATURE SENSOR 9631-01 Molded plastic thermistor type (1 m (3.28 ft))
11 TEMPERATURE SENSOR 9631-05 Molded plastic thermistor type (5 cm (0.16 ft))
12 AC ADAPTER 9418-15
13 BATTERY PACK 9459

Measurement parameters
- Insulation resistance
- Testing voltage (DC) - measuring range
- 250 V: 0.00 MΩ to 500 GΩ
- 500 V: 0.00 MΩ to 1.00 TΩ
- 1 kV: 0.00 MΩ to 2.00 TΩ
- 2.5 kV: 0.00 MΩ to 5.00 TΩ
- 5 kV: 0.00 MΩ to 10.0 TΩ

- Measurement current
- 1 mA (Test voltage 250 V to 1.00 kV)
- 0.5 mA (Test voltage 1.10 kV to 2.50 kV)
- 0.25 mA (Test voltage 2.60 kV to 5.00 kV)

- Short-circuit current: 2 mA or less

- Accuracy: ±5% rdg ±5 dgt.

Leakage current
- 10 nA/100 nA/1000 nA/10 μA/100 μA/1 mA

- Guaranteed accuracy range: 1.00 nA to 1.20 mA

- Basic accuracy: ±2.5% rdg ± 5 dgt.

AC Voltage
- ±50 V to ±1.00 kV

- Basic accuracy: ±5% rdg ±5 dgt.

DC Voltage
- ±50 V to ±1.00 kV

- Basic accuracy: ±5% rdg ±5 dgt.

Temperature
- -10.0℃ to 70.0℃

- Basic accuracy: ±1.0℃

Other
- Operating temperature: -10℃ to 40℃, 80% rh or less (non-condensing)
- Storage temperature: -10℃ to 50℃, 90% rh or less (non-condensing)
- Dustproof and waterproof: IP40 (EN60529)

- Standards
- EN61010 (safety)
- EN61326 (EMC)

- Power supply
- Continuous operating time
- LR6 (AA) alkaline battery ×6: 5 hours
- BATTERY PACK 9459: 9 hours
- AC ADAPTER 9418-15: 9 hours

- Dimensions ( W × H × D ) 260 × 250.6 × 119.5 mm (10.24 × 9.87 × 4.70 in)
- Mass 2.8 kg (98.8 oz)

Accessories
- TEST LEAD 9750 -01 (Red), -02 (Black), -03 (Blue) (3m) (x 1 ea.)
- ALLIGATOR CLIP 9751 -01 (Red), -02 (Black), -03 (Blue) (x 1 ea.)
- Instruction manual
- LR6 alkaline battery × 6
- USB cable
- CD-R (Data Analysis Software)
DMM
TESTERS
The international standard IEC61010-1 regarding the safety of electrical testing equipment classifies the usage locations of measuring instruments into CAT II, CAT III, and CAT IV. The larger the number, the larger the transient impulse voltage that can be allowed. To safely test, you will need instruments that are designed to be used in locations characterized by its category.

**Measurement Category**

**CAT II**: Measurement at a point from the power plug to the equipment’s power circuits, where equipment is directly connected to an outlet.

**CAT 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.

**CAT 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.

**Rated voltage to ground**

<table>
<thead>
<tr>
<th>Service wires</th>
<th>Line voltage 100 V</th>
<th>Line voltage 200 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric wires</td>
<td>Pole-mounted transformer</td>
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<table>
<thead>
<tr>
<th>Measurement Category</th>
<th>Rated voltage to ground</th>
<th>Transient overvoltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAT II</td>
<td>300 V</td>
<td>2500 V</td>
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<tr>
<td>CAT III</td>
<td>600 V</td>
<td>4000 V</td>
</tr>
<tr>
<td>CAT IV</td>
<td>1000 V</td>
<td>6000 V</td>
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</table>

**Marks**

- **An instrument labeled CAT IV 600V fully withstands impulse voltages of 8000V.**
- **High-end models**: CAT III 1000 V/CAT IV 600 V
- **Standard models**: CAT III 1000 V/CAT IV 600 V
- **Pocket models**: CAT III 600 V/CAT IV 300 V

**True RMS measurement correctly captures distorted current waveforms**

A measuring instrument uses one of two rectification methods, “True RMS” or “Mean”. Using mean rectification assumes that the signal is based on a sine wave without distortions in order to calculate the value. Distorted waveforms cannot be measured accurately using this method.

The secondary side of inverters include harmonic components. Waveforms containing harmonics are distorted and difficult to measure with accuracy. By using a low-pass filter to remove harmonic components, accurate measurement values can be obtained.
## Lineup

<table>
<thead>
<tr>
<th>Measurement type</th>
<th>Electrical work</th>
<th>General use</th>
<th>General use</th>
<th>Air conditioning/ instrumentation</th>
<th>PV</th>
<th>Electrical work</th>
<th>General use</th>
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<tbody>
<tr>
<td></td>
<td>High-end models</td>
<td>Standard models</td>
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<td>40 Hz to 1 kHz</td>
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<td>1500 V (1)</td>
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<td>10 A (0.1 mA)</td>
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<td>CAT IV 600 V</td>
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<td>IP42</td>
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<td>LR6 x4 alkaline battery</td>
<td>LR03 x4 alkaline battery</td>
<td>LR03 x4 alkaline battery</td>
<td>LR03 x4 alkaline battery</td>
<td>LR03 x4 alkaline battery</td>
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<tr>
<td>Dimensions (W × H × D)</td>
<td>93 × 173 × 53 mm 3.66 × 7.67 × 2.09 in</td>
<td>93 × 173 × 53 mm 3.66 × 7.67 × 2.09 in</td>
<td>84 × 174 × 52 mm 3.31 × 6.85 × 2.05 in</td>
<td>84 × 174 × 52 mm 3.31 × 6.85 × 2.05 in</td>
<td>84 × 174 × 52 mm 3.31 × 6.85 × 2.05 in</td>
<td>84 × 174 × 52 mm 3.31 × 6.85 × 2.05 in</td>
<td>84 × 174 × 52 mm 3.31 × 6.85 × 2.05 in</td>
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<tr>
<td>Mass</td>
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<td>650 g /22.9 oz</td>
<td>390 g /13.8 oz</td>
<td>390 g /13.8 oz</td>
<td>390 g /13.8 oz</td>
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<td>390 g /13.8 oz</td>
</tr>
</tbody>
</table>
Your instrument can be used to measure voltages in excess of 1000 V DC if and only if both of the following conditions are satisfied:
1. The circuit under measurement is isolated from the commercial power grid.
2. The circuit under measurement is isolated from ground.

*2 Requires optional DT4900-01 Communication Package

<table>
<thead>
<tr>
<th>Measurement type</th>
<th>Electrical work</th>
<th>General use</th>
<th>Electrical work</th>
<th>General use</th>
<th>Electrical work</th>
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<tbody>
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<td>DT4222</td>
<td>DT4223</td>
<td>DT4224</td>
<td>3030-10</td>
<td>3244-60</td>
<td>3246-60</td>
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<tr>
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<td>True RMS</td>
<td>True RMS</td>
<td>True RMS</td>
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<td>MEAN Value</td>
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<td>±0.5% rdg ±0.5% rdg</td>
<td>±0.5% rdg ±0.5% rdg</td>
<td>f.s. reading ±0.7% rdg ±1% rdg ±4.5% rdg</td>
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<td>CAT III 600 V</td>
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<td>N / A</td>
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<td>IP42</td>
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<td>Power supply</td>
<td>LR03 x 1 alkaline battery</td>
<td>LR03 x 1 alkaline battery</td>
<td>LR03 x 1 alkaline battery</td>
<td>LR03 x 1 alkaline battery</td>
<td>R6P x 2 manganese battery</td>
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<td>CR2032 x 1 coin type battery</td>
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<tr>
<td>Dimensions (W × H × D)</td>
<td>72 x 149 x 38 mm 2.83 x 5.87 x 1.50 in</td>
<td>72 x 149 x 38 mm 2.83 x 5.87 x 1.50 in</td>
<td>72 x 149 x 38 mm 2.83 x 5.87 x 1.50 in</td>
<td>72 x 149 x 38 mm 2.83 x 5.87 x 1.50 in</td>
<td>95 x 141 x 39 mm 3.74 x 5.55 x 1.54 in</td>
<td>55 x 106 x 35.5 mm 2.17 x 4.20 x 1.37 in</td>
<td>30 x 182 x 26.5 mm 1.18 x 7.17 x 1.04 in</td>
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<tr>
<td>Mass</td>
<td>190 g/6.7 oz</td>
<td>190 g/6.7 oz</td>
<td>190 g/6.7 oz</td>
<td>190 g/6.7 oz</td>
<td>280 g/9.9 oz</td>
<td>60 g/2.1 oz</td>
<td>80 g/2.8 oz</td>
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</tbody>
</table>
DIGITAL MULTIMETER DT421, DT422, DT423, DT424

Electrical work

• Measure low currents with 60 μA range
• Test temperature
• 4 to 20 mA % display

• Test open-circuit voltage up to 1700V DC
• Intentionally designed without current function to prevent short-circuits
• Prevent short-circuit accidents with a fast-blow fuse and current-limiting resistor

Pocket models

6000 Counts
DCV typical accuracy: ±0.5% rdg ±5 dgt.
CAT IV 300 V /CAT III 600 V

Circuit breaker false trip prevention (DT4223, DT4224 Only)

Eliminate accidents such as tripped earth leakage breakers or flash arcs even when mistakenly inputting voltage while in resistance measurement mode

DIGITAL MULTIMETER DT4252, DT4253, DT4254, DT4255, DT4256

Choose from 5 Models to Fit Your Application

Standard models

6000 Counts
DCV typical accuracy: ±0.3% rdg ±5 dgt.
CAT IV 600 V /CAT III 1000 V

Equipped with specialized functions catering to your needs

Air conditioning/instrumentation

• Measure low currents with 60 μA range
• Test temperature
• 4 to 20 mA % display

PV

• Test open-circuit voltage up to 1700V DC
• Intentionally designed without current function to prevent short-circuits
• Prevent short-circuit accidents with a fast-blow fuse and current-limiting resistor

Electrical work

High-end models

60000 Counts
DCV typical accuracy: ±0.025% rdg ±2 dgt.
CAT IV 600 V /CAT III 1000 V

Mis-insertion prevention shutters

A range

Only the A and COM terminal inlets open

V range

Only the V and COM terminal inlets open

High Precision and Full Array of Features

DIGITAL MULTIMETER DT4281, DT4282

Compact and Convenient

6000 Counts

Accuracy guaranteed for 1 year
### Model (DT42XX) 81 82 Basic accuracy

<table>
<thead>
<tr>
<th>Measurement parameters</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
<th>Value 5</th>
<th>Value 6</th>
<th>Value 7</th>
<th>Value 8</th>
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<tbody>
<tr>
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<td>✔ ✔ ✔ ✔</td>
<td>✔ ✔ ✔ ✔</td>
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### Additional Information

- **Order code DT4281**
- **Order code DT4282**

---

### Model (DT42XX) 52 53 54 55 56 Basic accuracy

<table>
<thead>
<tr>
<th>Measurement parameters</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
<th>Value 5</th>
<th>Value 6</th>
<th>Value 7</th>
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<td>✔ ✔ ✔ ✔</td>
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### Additional Information

- **Order code DT4252**
- **Order code DT4253**
- **Order code DT4254**
- **Order code DT4255**
- **Order code DT4256**

---

### Model (DT42XX) 21 22 23 24 Basic accuracy

<table>
<thead>
<tr>
<th>Measurement parameters</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Value 3</th>
<th>Value 4</th>
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<tbody>
<tr>
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<td>✔ ✔ ✔ ✔</td>
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<td>✔ ✔ ✔ ✔</td>
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</tr>
</tbody>
</table>

### Additional Information

- **Order code DT4221**
- **Order code DT4222**
- **Order code DT4223**
- **Order code DT4224**

---

### Additional Information

- **TEST LEAD L9207-10 90 cm (2.95 ft) length**
- **LR6 alkaline battery x 4**
- **Instruction manual**

---

### Accessories

- **TEST LEAD L9207-10 90 cm (2.95 ft) length**
- **LR6 alkaline battery x 4**
- **InSTRUCTION manual**
- **Holster**

---

### Operating temperature

- **DT4245 52, 53, 54, 55, 56**: -20°C to 65°C (non-condensing)
- **DT4252, 53, 54, 55, 56**: -10°C to 50°C (non-condensing)

---

### Dimensions (W x H x D)

- **DT4241 21, 22, 23, 24**: 93 x 197 x 53 mm (3.66 x 7.76 x 2.09 in)
- **DT4245 52, 53, 54, 55, 56**: 84 x 174 x 52 mm (3.31 x 6.85 x 2.05 in)

---

### Mass

- **DT4241 21, 22, 23, 24**: 650 g (22.9 oz)
- **DT4245 52, 53, 54, 55, 56**: 650 g (22.9 oz)

---

1. Your instrument can be used to measure voltages in excess of 1000 V DC if and only if both of the following conditions are satisfied:
   - The circuit under measurement is isolated from the commercial power grid.
   - The circuit under measurement is isolated from ground.
**HiTESTER 3030-10**

**Order code** 3030-10

**Accessories**
- TEST LEAD L9207-30 70 cm (2.30 ft) length
- CARRYING CASE 9390
- R6P manganese battery x2
- Spare fuse
- Instruction manual

**Measurement parameters**

- **DC Voltage**
  - 0.3 V/3 V/12 V/30 V/300 V/600 V
  - Accuracy: ±2.5% of f.s. reading

- **AC Voltage**
  - 12 V/30 V/120 V/300 V/600 V
  - Accuracy: ±2.5% of f.s. reading, (12V: ±4%)

- **DC Current**
  - 60μA/30 mA/300 mA
  - Accuracy: ±3% of f.s. reading

- **Resistance**
  - 0 to 3kΩ, R×1/ R×10/ R×100/ R×1k
  - Accuracy: ±3% of scale length

- **Battery check**
  - 0.9 to 1.8 V
  - Accuracy: ±0.5 of f.s. reading

**Other**

- Operating temperature: 0℃ to 40℃ (non-condensating)
- Storage temperature: -10℃ to 50℃ (non-condensating)
- Power supply: R6P manganese battery ×2
- Dimensions (W × H × D): 95 × 141 × 39 mm (3.74 × 5.55 × 1.54 in)
- Mass: 280 g (9.9 oz)

**Accessories**
- TEST LEAD L9207-30 70 cm (2.30 ft) length
- CARRYING CASE 9390
- R6P manganese battery x2
- Spare fuse
- Instruction manual

**CARD HiTESTER 3244-60**

**Order code** 3244-60

**Accessories**
- CARRYING CASE C0204
- Sleeves (Red, Black @ 1 each)
- CR2032 coin type battery ×1
- Instruction manual

**Measurement parameters**

- **DC Voltage**
  - 420.0 mV/4.200 V/42.00 V/420.0 V/500 V
  - Accuracy: ±0.7% rdg ±4 dgt.

- **AC Voltage**
  - 4.200 V/42.00 V/420.0 V/500 V
  - Accuracy: ±2.3% rdg ±8 dgt.

- **Resistance**
  - 420.0 Ω/4.200 kΩ/42.00 kΩ/420.0 kΩ/4.200 MΩ/42.00 MΩ
  - Accuracy: ±2.0% rdg ±4 dgt.

- **Continuity check**
  - Detection level: 50 Ω ±40 Ω or less

**Other**

- Operating temperature: 0℃ to 40℃ (non-condensating)
- Storage temperature: 20℃ to 60℃ (non-condensating)
- Power supply: CR2032 coin type battery ×1
- Dimensions (W × H × D): 55 × 109 × 9.5 mm (2.17 × 4.29 × 0.37 in)
- Mass: 60 g (2.1 oz)

**Accessories**
- CARRYING CASE C0204
- Sleeves (Red, Black @ 1 each)
- CR2032 coin type battery ×1
- Instruction manual

**PENCIL HiTESTER 3246-60**

**Order code** 3246-60

**Accessories**
- CARRYING CASE C0204
- Sleeves (Red, Black @ 1 each)
- CR2032 coin type battery ×1
- Instruction manual

**Measurement parameters**

- **DC Voltage**
  - 420.0 mV/4.200 V/42.00 V/420.0 V/600 V
  - Accuracy: ±1.3% rdg ±4 dgt.

- **AC Voltage**
  - 4.200 V/42.00 V/420.0 V/600 V
  - Accuracy: ±2.3% rdg ±8 dgt.

- **Resistance**
  - 420.0 Ω/4.200 kΩ/42.00 kΩ/420.0 kΩ/4.200 MΩ/42.00 MΩ
  - Accuracy: ±2.0% rdg ±4 dgt.

- **Diode check**
  - Judges the right direction only,
  - Open terminal voltage 3.4 V or less

**Other**

- Operating temperature: 0℃ to 40℃ (non-condensating)
- Storage temperature: -20℃ to 60℃ (non-condensating)
- Power supply: CR2032 coin type battery ×1
- Dimensions (W × H × D): 30 × 182 × 26.5 mm (1.18 × 7.17 × 1.04 in)
- Mass: 80 g (2.8 oz)
Options

DT4220s

1. CARRYING CASE 3853 For DT4220 Series
2. CARRYING CASE C0201 For DT4250 Series, DT4280 Series
3. MAGNETIC STRAP Z5004 For DT4220 Series, DT4250 Series
4. MAGNETIC STRAP Z5020 Extra strength
5. CARRYING CASE C0202 For DT4250 Series, DT4280 Series
6. CARRYING CASE 3853 For DT4252, 53, 54, 55

**DT4220 Series, DT4250 Series, DT4280 Series**

1. TEST LEAD DT4911 For DT4220 Series
2. TEST LEAD L9207-10 For DT4250 Series, DT4280 Series
3. CONNECTION CABLE L4930 For DT4250 Series, DT4280 Series
4. EXTENSION CABLE SET L4931 For DT4250 Series, DT4280 Series
5. CONVERSION ADAPTER 9704 For DT4253, DT4280 Series
6. AC CLAMP ON PROBE 9010-50 For DT4252, 53, 54, 55
7. AC CLAMP ON PROBE 9018-50 500 A AC, φ46mm; Frequency characteristics: 40 Hz to 1 kHz
8. AC CLAMP ON PROBE 9018-50 500 A AC, φ46mm; Frequency characteristics: 40 Hz to 3 kHz
9. AC CLAMP ON PROBE 9132-50 For DT4253, DT4280 Series
10. SMALL ALLIGATOR CLIP SET L4939
11. ALLIGATOR CLIP SET L4935
12. GRABBER CLIP 9243 For DT4250 Series, DT4280 Series
13. BUS BAR CLIP SET L4936 For DT4250 Series, DT4280 Series
14. MAGNETIC ADAPTER SET L4937 For DT4250 Series, DT4280 Series
15. TEST PIN SET L4932 For DT4250 Series, DT4280 Series
16. TEST PIN SET L4938 For DT4250 Series, DT4280 Series
17. BREAKERS PIN L4939 For DT4250 Series, DT4280 Series
18. COMMUNICATION PACKAGE USB DT4900-01 For DT4250 Series, DT4280 Series
19. MAGNETIC STRAP Z5004 For DT4220 Series, DT4250 Series
20. MAGNETIC STRAP Z5020 Extra strength
21. CARRYING CASE C0200 For DT4220 Series
22. CARRYING CASE C0201 For DT4252, 53, 54, 55
23. CARRYING CASE C0202 For DT4250 Series, DT4280 Series
24. CARRYING CASE 3853 For DT4252, 53, 54, 55

*Adapter Model 9704 is required to connect AC CLAMP ON PROBES 9010-50, 9018-50 and 9132-50 to the DT4281, DT4253, DT4256, or DT4262.
Just clip the probes onto covered cables, and your 3-phase power line inspection is complete.

Positive phase sequence display

Negative phase sequence display

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**DIGITAL PHASE DETECTOR PD3259**

*Order code*  PD3259

**Accessories**
- CARRYING CASE C0203
- LR6 alkaline battery ×4
- Spiral tubes (black ×1, red ×2, blue ×2, yellow ×2)
- Instruction manual

**Options**
- MAGNETIC STRAP Z5020

*Shielded cables not supported*

**PHASE DETECTOR PD3129, PD3129-10**

*Order code*  PD3129
*Order code*  PD3129-10

**Accessories**
- CARRYING CASE
- Strap
- R6P manganese battery ×2
- Spiral tube
- Instruction manual

**PD3129**
- Operating voltage range: 70 to 600 V AC (continuous sine wave)
- Frequency range: 45 Hz to 66 Hz
- Measurement targets: 2.4 mm (0.09 in) to 17 mm (0.67 in) of insulated wiring
- Phase-detection indication: Positive 4 LEDs lit in clockwise order and the buzzer sounds intermittently, green arrow lights up

**PD3129-10**
- Operating voltage range: 70 to 1000 V AC (continuous sine wave)
- Frequency range: 45 Hz to 66 Hz
- Measurement targets: 7 mm (0.28 in) to 40 mm (1.57 in) of insulated wiring
- Phase-detection indication: Positive 4 LEDs lit in clockwise order and the buzzer sounds intermittently, green arrow lights up

**PD3129**
- Functions: Live line check, Battery check function
- Operating temperature: 0℃ to 40℃, 80% rh or less (non-condensating)
- Storage temperature: -20℃ to 60℃, 80% rh or less (non-condensating)
- Standards: EN61010 (Safety), EN61326 Class A (EMC)
- Power supply: R6P manganese battery ×2
- Continuous operating time: 5 hours
- Dimensions (W × H × D): 70 × 75 × 30 mm (2.76 × 2.95 × 1.18 in)
- Mass: PD3129: 200 g (7.1 oz), PD3129-10: 240 g (8.5 oz)

**PD3129-10**
- Functions: Live line check, Battery check function
- Operating temperature: 0℃ to 40℃, 80% rh or less (non-condensating)
- Storage temperature: -20℃ to 60℃, 80% rh or less (non-condensating)
- Standards: EN61010 (Safety), EN61326 (EMC)
- Power supply: R6P manganese battery ×2
- Continuous operating time: 5 hours
- Dimensions (W × H × D): 70 × 75 × 30 mm (2.76 × 2.95 × 1.18 in)
- Mass: PD3129-10: 240 g (8.5 oz)

**VOLTAGE DETECTOR 3481-20**

*Order code*  3481-20

**Accessories**
- LR44 button alkaline battery ×3
- Instruction manual

**Detectors**
- Operating voltage range: 40 to 600 V AC (50Hz/60Hz)
- Warning sensitivity audible range: 40 to 80 V AC (50Hz/60Hz)
- Pilot light: Red LED lights up and the buzzer sounds when the wire is live

**Standards**
- EN61010 (Safety), EN61326 (EMC)
- Power supply: LR44 button alkaline battery ×3
- Continuous operating time: 5 hours
- Dimensions (W × H × D): 20 × 126 × 15 mm (0.79 × 4.96 × 0.59 in)
- Mass: 30 g (1.1 oz)
<table>
<thead>
<tr>
<th>Type</th>
<th>Criterion</th>
<th>Locations used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class A</td>
<td>10 Ω or less</td>
<td>Special high voltage</td>
</tr>
<tr>
<td>Class B</td>
<td>As per calculations</td>
<td>Transformer neutral point</td>
</tr>
<tr>
<td>Class C</td>
<td>10 Ω or less*</td>
<td>Low voltages in excess of 300 V</td>
</tr>
<tr>
<td>Class D</td>
<td>10 Ω or less*</td>
<td>Low voltages of 300 V or less</td>
</tr>
</tbody>
</table>

*With ground-fault interrupter that trips within 0.5 sec.

Measurement is performed after inserting a auxiliary grounding rod into the soil. For accurate measurement, position E-S(P)-H(C) in a straight line at an interval of about 5 to 10 m.

EARTH TESTER FT6031
Remarkable waterproof and dustproof performance
One-touch testing for all 4 ground types

3 electrode method (classes A to D)

2 electrode method (classes D)

Class D ground installations can be measured by using the Class B ground of a pole-mounted transformer. The measured value will include the resistance value of the Class B ground. The distribution panel’s main ground terminal is typically connected to the power supply’s ground line.

Sturdy, thin rods drive easier into the ground
Cord winders make cleanup a snap
# EARTH TESTER FT6031

**Product warranty for 3 years**

**Accuracy guaranteed for 1 year**

<table>
<thead>
<tr>
<th>Measurement system</th>
<th>Two-electrode method (Class D)</th>
<th>Three-electrode method (Class A to D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range configuration</td>
<td>20 Ω (0 to 20.00 Ω): ±1.5% rdg. ±4 dgt.</td>
<td>200 Ω (0 to 20.00 Ω): ±1.5% rdg. ±4 dgt.</td>
</tr>
<tr>
<td>Accuracy</td>
<td>2000 Ω (0 to 2000 Ω): ±1.5% rdg. ±4 dgt.</td>
<td></td>
</tr>
</tbody>
</table>

**Operating temperature**
-25°C to 65°C (non-condensating)

**Storage temperature**
-25°C to 65°C, 80% rh or less (non-condensating)

## Accessories
- **CARRYING CASE C0106**
- **EARTHING ROD L9840** (2 piece set)
- **MEASUREMENT CABLE L9842-11** (Yellow 10 m (32.81 ft) length, equipped with winder)
- **MEASUREMENT CABLE L9842-22** (Red 20 m (65.62 ft) length, equipped with winder)
- **MEASUREMENT CABLE L9841** (black 4 m (13.12 ft) length)
- LR6 alkaline battery x 6
- Instruction manual

**Dimensions** (W x H x D)
185 x 111 x 44 mm (7.28 x 4.37 x 1.73 in)

**Mass**
570 g (20.1 oz)

*3-electrode method, auxiliary earthing electrode resistance 100 Ω, measuring 10 Ω in the instrument’s ×1 Ω range

---

# ANALOG EARTH TESTER FT3151

**Product warranty for 3 years**

**Accuracy guaranteed for 1 year**

<table>
<thead>
<tr>
<th>Measurement system</th>
<th>Two-electrode method (Class D)</th>
<th>Three-electrode method (Class A to D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range configuration</td>
<td>10 Ω (0 to 11.5 Ω): ±0.25 Ω</td>
<td>100 Ω (0 to 115 Ω): ±25 Ω</td>
</tr>
<tr>
<td>Accuracy</td>
<td>1000 Ω (0 to 1150 Ω): ±25 Ω</td>
<td></td>
</tr>
</tbody>
</table>

**Operating temperature**
-20°C to 60°C, 80% rh or less (non-condensating)

**Storage temperature**
-20°C to 60°C, 80% rh or less (non-condensating)

**Power supply**
LR6 alkaline battery × 4

**Number of uses**
1100 times

**Dimensions** (W x H x D)
164 x 119 x 88 mm (6.46 x 4.69 x 3.46 in)

**Mass**
760 g (26.8 oz)

*30 sec. measurement/30 sec. rest, 3-electrode method, 575 Hz, auxiliary grounding electrode resistance of 100 Ω, measuring 10 Ω in the instrument’s ×1 Ω range

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# CLAMP ON EARTH TESTER FT6380, FT6381

**Product warranty for 3 years**

**Accuracy guaranteed for 1 year**

**q32 mm**
**True RMS**
**For multi-grounded systems**
**CAT IV 600 V**

## Accessories
- **CARRYING CASE C0106**
- **EARTHING ROD L9840** (2 piece set)
- **MEASUREMENT CABLE L9843-51** (50 m (164.04 ft), red/yellow/black 3.94 ft each)
- **MEASUREMENT CABLE L9843-52** (50 m (164.04 ft), red/yellow/black 3.94 ft each)
- **MEASUREMENT CABLE L9844** (For earthing terminal board, red/yellow/black 1.2 m (3.94 ft) each)
- **TEST LEAD L9787**
- **EARTH NETS 9050** 2 sheets in set
- **SHOULDER STRAP Z5022**

**Order code**
- **FT6380**
- **FT6381**

**Options**
- **MEASUREMENT CABLE L9843-51**
- **MEASUREMENT CABLE L9843-52**
- **MEASUREMENT CABLE L9844**
- **TEST LEAD L9787**
- **EARTH NETS 9050**
- **SHOULDER STRAP Z5022**

**Measurement system**
Instrument has two cores for voltage injection and current measurement. Total circuit loop resistance is calculated from defined voltage and measured current.

**Earth resistance range**
Guaranteed accuracy range: 0.02 Ω to 1600 Ω

**Guaranteed accuracy range**
Accuracy: ±1.5% rdg. ±0.02 Ω D

**AC Current range**
20.00 mA/200.0 mA/2.000 A/20.00 A/60.0 A

**Accuracy**
Accuracy: ±2.0% rdg ±0.05 mA

**Operating temperature**
-10°C to 50°C, 80% rh or less (non-condensating)

**Storage temperature**
-10°C to 50°C, 80% rh or less (non-condensating)

**Dustproof and waterproof**
IP40 (EN60529)

**Power supply**
LR6 alkaline battery × 6

**Continuous operating time**
35 hours (backlight OFF)

**Dimensions** (W x H x D)
73 x 318 x 43 mm (2.87 x 12.56 x 1.69 in)

**Mass**
620 g (21.9 oz)

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*multi-grounded systems only. In a multi-grounded system, the larger the number of grounding poles, the more accurate the measured value.*
Power anomalies are a major cause of equipment malfunction and damage. The PQ3198 and PQ3100 detect power supply abnormalities without fail to help diagnose the cause of problems.

POWER QUALITY ANALYZER PQ3198, PQ3100
Monitor power quality and analyze the cause of equipment issues

Capture all of these power anomalies simultaneously
- Transient voltages
- Voltage swells
- Voltage dips
- Interruptions
- Frequency fluctuations
- Inrush current
- Harmonics
- High-order harmonics
POWER QUALITY ANALYZER PQ3198, PQ3100

Product warranty for 3 years
Accuracy guaranteed for 1 year

Shared features: Side

Order code PQ3198
Order code PQ3198-94 (VALUE KITS)
Order code PQ3100
Order code PQ3100-92 (VALUE KITS)
Order code PQ3100-91 (VALUE KITS)
Order code PQ3100-94 (VALUE KITS)

VALUE KITS
PQ3198-92: PQ3198, CT7136* (600A) × 4, L1021-02×3, CARRYING CASE C1009
PQ3198-94: PQ3198, CT7045* (600A) × 4, L1021-02×3, CARRYING CASE C1009
PQ3100-91: PQ3100, CT7136* (600A) × 2, SD MEMORY CARD 2GB Z4001, CARRYING CASE C1009
PQ3100-92: PQ3100, CT7045* (600A) × 4, SD MEMORY CARD 2GB Z4001, CARRYING CASE C1009

Measurement parameters

Model PQ3198 (High-end model) PQ3100 (Standard model)

### Measurement lines
- 1-phase/2-wire, 1-phase/3-wire, 3-phase/3-wire, 3-phase/4-wire + CH 4

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

### Voltage ranges Accuracy
- Voltage measurement: 600.00 V rms
- Transient measurement: 6.0000 kV peak ±0.1% of nominal voltage

### Current ranges Accuracy
- Current measurement: 50.00 mA to 5.0000 kA AC
- ±0.1% rdg ±0.1% f.s. + current sensor accuracy

### Mass
- 2.6 kg (91.7 oz) (including BATTERY PACK)

### Mass
- 2.5 kg (88.2 oz) (including BATTERY PACK)

### Accessories
- USB cable
- Color clips
- Spiral tubes
- Strap
- Measurement guide
- User manual

### Order code
- PQ3198
- PQ3198-94 (VALUE KITS)
- PQ3100
- PQ3100-92 (VALUE KITS)
- PQ3100-91 (VALUE KITS)
- PQ3100-94 (VALUE KITS)

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*1 Depends on current sensor in use
*2 Use only SD Cards sold by HIOKI. Compatibility and performance are not guaranteed for PC cards made by other manufacturers.
*3 For more detailed information on CT7136, CT7045, and options, please refer to p.44 and p.45.
CLAMP ON POWER LOGGER PW3365, PW3360

Accurately measure power consumption, also available with non-contact voltage sensor for added safety

SAFETY VOLTAGE SENSOR PW9020 (for PW3365 only)

- Clamp on top of cable insulation
- Quick setup
- Safely avoid contact with live parts

Compared with standard alligator clips that are hard to use and require metal-to-metal contact

POWER CONSUMPTION
**SAFETY VOLTAGE SENSOR PW9020**
Compatible with PW3365 only
Finished outer diameter
φ6 mm (0.24 in) to φ30 mm (1.18 in)

<table>
<thead>
<tr>
<th>Measurement line</th>
<th>PW3365 + PW9020</th>
<th>PW3360</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>50 Hz/60 Hz</td>
<td></td>
</tr>
<tr>
<td>Voltage ranges</td>
<td>90.0 V to 520.0 V</td>
<td>600 V AC</td>
</tr>
<tr>
<td>Current ranges</td>
<td>±1.0% rdg ±0.3% f.s.</td>
<td>±0.3% rdg ±0.1% f.s.</td>
</tr>
<tr>
<td>Power ranges</td>
<td>0.00 W to 6.0000 MW</td>
<td>300.00 W to 9.0000 MW</td>
</tr>
<tr>
<td>Harmonics</td>
<td>Harmonic voltage, harmonic current, voltage total harmonic distortion (THD-F or THD-R), current total harmonic distortion (THD-F or TDH-R), up to the 13th order</td>
<td>PW3360-21 Only: Harmonic voltage, current, power level, content, phase angle, total harmonic distortion factor (THD-F or THD-R), up to the 40th order</td>
</tr>
<tr>
<td>Pulse input</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Data save interval</td>
<td>1 sec to 30 sec, 1 minute to 60 minutes, 14 selections</td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0°C to 50°C, 80% rh or less (non-condensating)</td>
<td>-10°C to 50°C, 80% rh or less (non-condensating)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-10°C to 60°C, 80% rh or less (non-condensating)</td>
<td>-20°C to 60°C, 80% rh or less (non-condensating)</td>
</tr>
<tr>
<td>Standards</td>
<td>EN61010 (Safety), EN61326 (EMC)</td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>AC ADAPTER Z1006, BATTERY PACK 9459</td>
<td>AC ADAPTER Z1006, BATTERY PACK 9459</td>
</tr>
<tr>
<td>Battery operating time</td>
<td>5 hours</td>
<td>8 hours</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>180 x 100 x 68 mm (7.09 x 3.94 x 2.68 in) (with PW9002)</td>
<td>180 x 100 x 67.2 mm (7.09 x 3.94 x 2.65 in) (with PW9002)</td>
</tr>
<tr>
<td>Mass</td>
<td>820 g (28.9 oz) (with PW9002)</td>
<td>830 g (29.3 oz) (with PW9002)</td>
</tr>
</tbody>
</table>

**SAFETY VOLTAGE SENSOR PW9020 Specifications**
- **Compatible conductor types**: Insulated wires*3 (indoor PVC) or metal parts
- **Compatible conductor diameters**: φ6 mm to φ30 mm (0.24 in to 1.18 in)
- **Effective measurement range**: 90 V to 520 V
- **Safety standard category**: CAT IV 300 V, CAT III 600 V
- **Operating temperature**: 0°C to 50°C, 80% rh or less (non-condensating)
- **Storage temperature**: -10°C to 60°C, 80% rh or less (non-condensating)
- **Cable length**: 3 m (9.84 ft)
- **Mass**: 220 g (7.8 oz)

**Order code**
- **PW3365-20**
- **PW3360-20**
  - (with harmonic analysis function)

**Order code**
- **PW3365-21**
  - (with harmonic analysis function)

**Accessories (PW3365)**
- SAFETY VOLTAGE SENSOR PW9020 x4
- AC ADAPTER Z1008
- USB cable 0.9 m (2.95 ft)
- Instruction manual, Measurement guide
- Color clips (red, blue, yellow, white × 4 each)
- Spiral tubes × 10

**Accessories (PW3360)**
- VOLTAGE CORD L9438-53 (black, red, yellow, blue @ 1 each)
- AC ADAPTER Z1006
- USB cable 0.9 m (2.95 ft)
- Instruction manual, Measurement guide
- Color clips (red, blue, yellow, white @ 2 each)
- Spiral tubes × 5
### Options

#### CURRENT SENSOR (For PQ3198, PQ3100, CM7290, CM7291)

<table>
<thead>
<tr>
<th>Features</th>
<th>Make measurements over extended period of time without zero-adjustment, even in locations with temperature variations</th>
<th>AC/DC current sensors for observing instantaneous waveforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model name</td>
<td>AC/DC AUTO-ZERO CURRENT SENSOR</td>
<td>AC/DC CURRENT SENSOR</td>
</tr>
<tr>
<td>Appearance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Rated measurement current | 100 A AC/DC | 600 A AC/DC | 2000 A AC/DC | 100 A AC/DC | 600 A AC/DC | 2000 A AC/DC |
| Max. allowable peak input | 150 A peak | 900 A peak | 2840 A peak | 150 A peak | 900 A peak | 2840 A peak |
| Bandwidth | DC to 5 kHz (±3dB) | DC to 5 kHz (±3dB) | DC to 10 kHz (±3dB) | DC to 10 kHz (±3dB) | DC to 10 kHz (±3dB) | DC to 10 kHz (±3dB) |
| Impedance accuracy (±10% l.f.) | ±1.5% rdg ±0.5% f.s. | ±1.5% rdg ±0.5% f.s. | ±1.0% rdg ±0.5% f.s. | ±2.5% rdg ±0.5% f.s. | ±1.5% rdg ±0.5% f.s. | ±2.5% rdg ±0.5% f.s. |
| Output rate | 1 mV/A | 1 mV/A | 1 mV/A | 0.1 mV/A | 0.1 mV/A | 0.1 mV/A |
| Rated voltage to earth (AC/DC) | CAT IV 600 V | CAT IV 600 V | CAT III 1000 V | CAT IV 600 V | CAT III 1000 V | CAT III 1000 V |
| Operating temperature | -25°C to 65°C | -25°C to 65°C | -25°C to 65°C | -25°C to 65°C | -25°C to 65°C | -25°C to 65°C |
| Core jaw diameter | φ33 mm or less | φ33 mm or less | φ55 mm or less | φ33 mm or less | φ55 mm or less | φ55 mm or less |

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

| Rated measurement current | 6000 A AC | 6000 A AC | 6000 A AC | 6000 A AC | 6000 A AC |
| Max. allowable peak input | 15000 A peak | 15000 A peak | 15000 A peak | 15000 A peak | 15000 A peak |
| Bandwidth | 10 to 50 kHz (within ±3dB) | 10 to 50 kHz (within ±3dB) | 10 to 50 kHz (within ±3dB) | 10 to 50 kHz (within ±3dB) | 10 to 50 kHz (within ±3dB) |
| Impedance accuracy (±10% l.f.) | ±1.5% rdg ±0.25% f.s.* | ±1.5% rdg ±0.25% f.s.* | ±1.5% rdg ±0.25% f.s.* | ±1.5% rdg ±0.25% f.s.* | ±1.5% rdg ±0.25% f.s.* |
| Output rate | 1 mV/A (600 A) | 1 mV/A (600 A) | 1 mV/A (600 A) | 1 mV/A (600 A) | 1 mV/A (600 A) |
| Rated voltage to earth (AC) | CAT IV 600 V | CAT IV 600 V | CAT IV 600 V | CAT IV 600 V | CAT IV 600 V |
| Operating temperature | -25°C to 65°C | -25°C to 65°C | -10°C to 50°C | -10°C to 50°C | -10°C to 50°C |
| Core jaw diameter | φ100 mm or less | φ100 mm or less | φ15 mm or less | φ15 mm or less | φ15 mm or less |

#### CURRENT SENSOR (For PW3365, PW3360)

<table>
<thead>
<tr>
<th>Features</th>
<th>For load current levels: Voltage output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model name</td>
<td>CLAMP ON SENSOR</td>
</tr>
<tr>
<td>Appearance</td>
<td></td>
</tr>
</tbody>
</table>

| Rated measurement current | 5 A AC | 100 A AC | 500 A AC | 1000 A AC | 50 A AC | 100 A AC |
| Max. allowable peak input | 150 A peak | 1500 A peak | 15000 A peak | 1000 A peak | 1000 A peak | 1000 A peak |
| Bandwidth | 10 to 50 kHz (within ±3dB) | 10 to 50 kHz (within ±3dB) | 10 to 50 kHz (within ±3dB) | 10 to 50 kHz (within ±3dB) | 10 to 50 kHz (within ±3dB) | 10 to 50 kHz (within ±3dB) |
| Impedance accuracy (±10% l.f.) | ±0.3% rdg ±0.05% f.s. | ±0.3% rdg ±0.05% f.s. | ±0.3% rdg ±0.05% f.s. | ±0.3% rdg ±0.05% f.s. | ±0.3% rdg ±0.05% f.s. |
| Output rate | 1 mV/A (5000 A) | 1 mV/A (5000 A) | 1 mV/A (5000 A) | 1 mV/A (5000 A) | 1 mV/A (5000 A) | 1 mV/A (5000 A) |
| Rated voltage to earth (AC) | CAT III 1000 V | CAT III 1000 V | CAT III 1000 V | CAT III 1000 V | CAT III 1000 V | CAT III 1000 V |
| Operating temperature | 0°C to 50°C | 0°C to 50°C | 0°C to 50°C | 0°C to 50°C | 0°C to 50°C | 0°C to 50°C |
| Core jaw diameter | φ15 mm or less | φ15 mm or less | φ15 mm or less | φ15 mm or less | φ15 mm or less | φ15 mm or less |

#### Features | For load current levels: Voltage output | For leakage current: Voltage output |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Model name</td>
<td>CLAMP ON SENSOR</td>
<td>CLAMP ON LEAK SENSOR</td>
</tr>
<tr>
<td>Appearance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Rated measurement current | 5000 A AC/500 A AC | 5000 A AC/500 A AC | 5000 A AC/500 A AC | 10 A AC | 10 A AC |
| Max. allowable peak input | 100 mV/A (5000 A) | 100 mV/A (5000 A) | 100 mV/A (5000 A) | 100 mV/A | 100 mV/A |
| Bandwidth | 50 mV/A (5000 A) | 50 mV/A (5000 A) | 50 mV/A (5000 A) | 50 mV/A | 50 mV/A |
| Impedance accuracy (±10% l.f.) | ±2% rdg ±3.5% f.s. | ±2% rdg ±3.5% f.s. | ±2% rdg ±3.5% f.s. | ±2% rdg ±3.5% f.s. |
| Max. allowable peak input | (AC) CAT IV 800 V (AC) CAT IV 1000 V | (AC) CAT IV 800 V (AC) CAT IV 1000 V | Insulated conductor | Insulated conductor |
| Operating temperature | -35°C to 65°C | -35°C to 65°C | -10°C to 50°C | -10°C to 50°C | -10°C to 50°C |
| Core jaw diameter | φ100 mm or less | φ100 mm or less | φ100 mm or less | φ100 mm or less | φ100 mm or less |

*At center of flexible loop

---

### Options

2 EXTENSION CABLE L0220-04 30 m (98.4 ft), for PL14 connectors
3 EXTENSION CABLE L0220-05 50 m (164.0 ft), for PL14 connectors
7 EXTENSION CABLE L0220-07 100 m (328.1 ft), for PL14 connectors
9 CONNECTION CABLE 9219 For 9695, 3 m (9.8 ft)
AC CLAMP 9445-02 For CT9667
CONVERSION CABLE L9910 To convert output connector: BNC to PL 14

---

### Clamp Insulation Tester

- Detectors
- Earth
- Power Quality
- Power Consumption
- Battery
- PV Logger
- LAN Signal
- Lux
- Temperature
- Rotation
- Sound
### PQ3198, PQ3100

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power supply</th>
<th>Connection</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLTAGE CORD L1000</td>
<td>Red, White, Black</td>
<td>1 rack, 1.5 m (4.92 ft), Aligator clip x 8</td>
<td>CARRYING CASE C1008</td>
</tr>
<tr>
<td>VOLTAGE CORD L1000-05</td>
<td>Red, White, Black, Gray, Black</td>
<td>1 rack, 1.5 m (4.92 ft), Aligator clip x 3</td>
<td>AC ADAPTER Z1003</td>
</tr>
<tr>
<td>MAGNETIC ADAPTER 9804-2</td>
<td>Black, Alternative tip for the L1000-05</td>
<td>L9438-53</td>
<td>AC ADAPTER Z1008</td>
</tr>
<tr>
<td>GRABBER CLIP Z243</td>
<td>Alternative tip for the L1000-05</td>
<td>Red, banana branch x 1</td>
<td>MAGNETIC ADAPTER 9804-1</td>
</tr>
<tr>
<td>PATCH CORD L1021-01</td>
<td>0.5 m (1.64 ft), Red, banana branch</td>
<td>Banana, banana branch</td>
<td>MAGNETIC ADAPTER 9804-02</td>
</tr>
<tr>
<td>PATCH CORD L1021-02</td>
<td>0.5 m (1.64 ft), Black, banana branch</td>
<td>Banana, banana branch</td>
<td>Z1002</td>
</tr>
<tr>
<td>SD MEMORY CARD 2GB, Z4002</td>
<td>Use any SD Cards sold by HIOKI. For PQ3198, pin 9 pin, cross</td>
<td>1.8 m (5.91 ft)</td>
<td>Z1003</td>
</tr>
<tr>
<td>SD MEMORY CARD 8GB</td>
<td>Use any SD Cards sold by HIOKI. For PQ3198, pin 9 pin, cross</td>
<td>1.8 m (5.91 ft)</td>
<td>PW9000</td>
</tr>
</tbody>
</table>

### PW3365, PW3360

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Power supply</th>
<th>Connection</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLTAGE CORD L9438-53</td>
<td>Red, White, Black</td>
<td>1 rack, 1.5 m (4.92 ft), Aligator clip x 3</td>
<td>CARRYING CASE C1008</td>
</tr>
<tr>
<td>VOLTAGE CORD L9438-53</td>
<td>Red, White, Black</td>
<td>1 rack, 1.5 m (4.92 ft), Aligator clip x 3</td>
<td>AC ADAPTER Z1003</td>
</tr>
<tr>
<td>MAGNETIC ADAPTER 9804-2</td>
<td>Black, Alternative tip for the L9438-53</td>
<td>L9438-53</td>
<td>AC ADAPTER Z1003</td>
</tr>
<tr>
<td>PATCH CORD L1021-01</td>
<td>0.5 m (1.64 ft), Red, banana branch</td>
<td>Banana, banana branch</td>
<td>MAGNETIC ADAPTER 9804-1</td>
</tr>
<tr>
<td>PATCH CORD L1021-02</td>
<td>0.5 m (1.64 ft), Black, banana branch</td>
<td>Banana, banana branch</td>
<td>MAGNETIC ADAPTER 9804-02</td>
</tr>
<tr>
<td>SD MEMORY CARD 2GB, Z4002</td>
<td>Use any SD Cards sold by HIOKI. For PW3365, 100V AC to 240V</td>
<td>1.8 m (5.91 ft)</td>
<td>PW9002</td>
</tr>
<tr>
<td>SD MEMORY CARD 8GB</td>
<td>Use any SD Cards sold by HIOKI. For PW3365, 100V AC to 240V</td>
<td>1.8 m (5.91 ft)</td>
<td>L9094</td>
</tr>
</tbody>
</table>

### CM7290, CM7291

<table>
<thead>
<tr>
<th>Output</th>
<th>Power supply</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUTPUT CORD L9094</td>
<td>Connect to Banana terminal</td>
<td>AC ADAPTER Z1003</td>
</tr>
<tr>
<td>OUTPUT CORD L9095</td>
<td>Connect to BNC terminal</td>
<td>CARRYING CASE C1010</td>
</tr>
<tr>
<td>OUTPUT CORD L9096</td>
<td>Connect to terminal block</td>
<td>MAGNETIC STRAP Z5004</td>
</tr>
<tr>
<td>AC ADAPTER 9445-02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CARRYING CASE C0202</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CARRYING CASE C0221</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### DISPLAY UNIT CM7290, CM7291

- Measurement sensors sold separately
- Built-in Bluetooth® wireless technology
- Verify and record measured data with free GENNECT Cross mobile app

Order code CM7290

Order code CM7291

Order code CM7290

**Accessories**
- Alkaline battery LR6 × 2
- Instruction manual
- Protector

**Order code CM7291**

**Product warranty for 3 years**

**Accuracy guaranteed for 3 years**

Measurement parameters:
- DC, AC, DC+AC, Hz

**Measurement method**
- WAVE
- RMS
- PEAK: 0.025% (FAST)/0.2% (NORMAL)/0.5% (SLOW)
- FREQ: 0.2% (FAST)/0.5% (NORMAL)/1% (SLOW)
- WAVE, RMS: analog output

**Operating temperature**
- -25°C to 65°C, 80% or less (non-condensing)

**Storage temperature**
- -25°C to 65°C, 80% or less (non-condensing)

**Dimensions**
- W x H x D: 52 x 163 x 37 mm (2.05 x 6.42 x 1.46 in)

**Mass**
- 220 g (7.8 oz)
BATTERY TESTER BT3554
Properly diagnose deterioration of UPS lead-acid batteries even under noisy environments

Tough against inverter noise during UPS startup

New test lead design for better contact

Analyze data on mobile devices

Easily identify PASS/FAIL/WARNING with full color graphs

BATTERY TESTERS
BATTERY TESTER BT3554

Order code BT3554 (Standard leads 9465-10)
Order code BT3554-10 (Standard leads L2020)
Order code BT3554-01 (Standard leads 9465-10)
Order code BT3554-11 (Standard leads L2020)

Accessories
- PIN TYPE LEAD 9465-10 (Bundled with BT3554, BT3554-01)
- PIN TYPE LEAD L2020 (Bundled with BT3554-10, BT3554-11)
- ZERO ADJUSTMENT BOARD
- PC Software Application CD
- Power-on option stickler
- Neck strap
- Alkaline battery LR6 x 8
- Spare fuse
- USB cable
- Carrying case
- Protector
- Instruction manual
- Cautions for using radio waves (BT3554-01, BT3554-11)
- Instruction manual
- Protector
- USB cable

Options
1. PIN TYPE LEAD L2020
2. PIN TYPE LEAD 9465-10
3. PIN TYPE LEAD 9772
4. CLIP TYPE LEAD WITH TEMPERATURE SENSOR 9460
5. LARGE CLIP TYPE LEAD 9467
6. TIP PIN 9465 (For L2020, 9465-90)
7. TIP PIN 9772-90 For 9772
8. REMOTE CONTROL SWITCH 9466 2 m (6.56 ft)
9. TIP PIN 9465-90 For L2020
10. TIP PIN 9467 1.27 mm (0.05 in)
11. LARGE CLIP TYPE LEAD 9467
12. TIP PIN 9465-10 For L2020
13. FUSE SET Z5050

The thresholds for determining the pass/fail condition of a battery depend on the specifications and standards of the battery manufacturer, battery type, capacity, etc. It is important and necessary to always conduct battery testing against the internal resistance and terminal voltage of a new or reference battery. In some cases, it may be difficult to determine the deterioration state of traditional open type (liquid) lead-acid or alkaline batteries, which demonstrate smaller changes in internal resistance than sealed lead acid batteries.

Measurement
- Internal resistance measurement for batteries (AC four-terminal method)
- Terminal voltage measurement for batteries (DC voltage)
- Temperature measurement (when using the 9460)

<table>
<thead>
<tr>
<th>Measurement parameters</th>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance</td>
<td>3 mΩ (Max. display: 3.100 mΩ, Resolution: 1 μΩ)</td>
<td>±0.08% rdg ±6 dgt.</td>
</tr>
<tr>
<td>Resistance</td>
<td>30 mΩ (31.00 mΩ,1 μΩ)</td>
<td>±0.08% rdg ±6 dgt.</td>
</tr>
<tr>
<td>Resistance</td>
<td>3 Ω (3.100 Ω,1 Ω)</td>
<td>±0.08% rdg ±6 dgt.</td>
</tr>
</tbody>
</table>

Data storage
- Saving, loading, and deleting measured values
- Saved items: Date, resistance, voltage, temperature, comparator threshold, judgment
- Storable data: 5000 sets (500 data sets per unit)
- Memory structure: 500 data sets per unit (12 units)

Interface
- USB2.0

Other
- Operating temperature: 0°C to 40°C, 80% rh or less (non-condensating)
- Storage temperature: -10°C to 50°C, 80% rh or less (non-condensating)
- Standards: EN61010 (Safety), EN61326 (EMC)
- Power supply: LR6 alkaline battery x 8
- Continuous operating time: 8.5 hours
- Dimensions (W x H x D): 199 x 132 x 60.6 mm (7.83 x 5.20 x 2.39 in)
- Mass: 937 g (33.1 oz) (BT3554, BT3554-10)
- 947 g (33.4 oz) (BT3554-01, BT3554-11)

Accuracy: ±0.8% rdg ±6 dgt.
Temperature: -10.0°C to 60.0°C
Accuracy guaranteed for 1 year
Product warranty for 3 years

Please see www.hioki.com for list of supported regions.
PV Maintenance

Inspect solar panel bypass diodes for opens and shorts

Improve testing efficiency by first inspecting the PV string, then testing individual modules for issues.

Options

1. TEST LEAD SET WITH REMOTE SWITCH L9788-11
2. CARRYING CASE C0206
3. Instruction manual
4. Alkaline battery LR6 x 6

A FAIL decision will be output even if only one module within the string has malfunctioned. After identifying the problematic string, pinpoint the exact location by further inspecting at the module level.

BYPASS DIODE TESTER FT4310

Order code

FT4310

Accessories

• TEST LEAD SET WITH REMOTE SWITCH L9788-11
• CARRYING CASE C0206
• Instruction manual
• Alkaline battery LR6 x 6

Operating temperature

-10 to 65°C, 80% Rh or less (non-condensing)

Storage temperature

-20 to 65°C, 80% Rh or less (non-condensing)

Dimensions

(W x H x D) 152 x 92 x 69 mm (5.98 x 3.62 x 2.72 in), Cable length 0.5m (1.64 ft)

Mass

650 g (22.9 oz)

Product warranty for 3 years

Accuracy guaranteed for 1 year

BPD TEST mode (Bypass diode)

Measurement items

Bypass diode comparator judgment
Bypass route resistance
Open-circuit voltage
Short-circuit current
Measurement (applied) current

Measurement object

Crystal system string
Open-circuit voltage: 1000 V DC or less
Rated current: 2 A to 12 A DC

Measurement method

Short-circuit and pulse voltage application

Output pulse

Voltage: 100 V DC or less, Pulse width: 5 ms or less
Limited current: Measured short-circuit current + 1 A or less, Maximum: 13 A

Voc mode (Open-circuit voltage)

Measurement range

0 V to 1000 V DC (displayed up to 1200 V DC)

Response time

Within 1 sec.

Functions

Displays the number of bypass diode measurements
Auto polarity judgment function
Comparator display
Live circuit indicator
Comparator
Auto hold
Backlight
Auto power off
Buzzer sounds
Battery indicator

Maxima

1000 V DC

Power supply

LR6 alkaline battery x 6
45 hours (Bluetooth® OFF)

Standards

EN61010 (Safety), EN61326 Class A (EMC)

Maximum input voltage

1000 V DC

Power supply

LR6 alkaline battery x 6
45 hours (Bluetooth® OFF)

Dimensions

(W x H x D) 152 x 92 x 69 mm (5.98 x 3.62 x 2.72 in), Cable length 0.5m (1.64 ft)

Mass

650 g (22.9 oz)

*For detailed information about L9788, please refer to p.27.
LOGGERS

Measure with remote modules and collect data with central logging station
Send data to the LR8410 via Bluetooth® wireless communication

Measurement units

<table>
<thead>
<tr>
<th>Model</th>
<th>LR8510</th>
<th>LR8511</th>
<th>LR8512</th>
<th>LR8513</th>
<th>LR8514</th>
<th>LR8515</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of input channels</td>
<td>15</td>
<td>15</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Input type

- Voltage ✔
- Temperature ✔
- Humidity ✔
- Resistance ✔
- Pulse ✔
- Current ✔

Main unit

- Connect up to 7 units wirelessly*1
- Communication range 30 m, line of sight

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

WIRELESS LOGGING STATION LR8410-20

For more details about the LR85XX Series, please refer to p.51.

LR8410-20

Order code LR8410-20
Order code LR8510
Order code LR8511

LR8410-20 Accessories

- SD MEMORY CARD 2GB Z4001
- USB cable
- AC ADAPTER Z1008 (also bundled with the LR8510, LR831)
- CD-R (data collection software “Logger Utility”) *4
- Instruction manual
- Measurement guide

Options

1. AC ADAPTER Z1008 100 V to 240 V AC
2. SD MEMORY CARD 2GB Z4001
3. SD MEMORY CARD 8GB Z4003
4. BATTERY PACK Z1007
5. CARRYING CASE C1007
6. FIXED STAND Z1009
7. LAN CABLE Z4542 5 m (16.4 ft), with straight-to-cross converter adapter

LR8510

Log, Measurement range Voltage: -10 mV to 100 V, Thermocouple: -200°C to 1800°C*
Accuracy Voltage: ±10 μV, Thermocouple: ±0.6°C

LR8511

Log, Measurement range Voltage: -10 mV to 100 V, Thermocouple: -200°C to 1800°C*
RTDs: -100 to 500°C, Resistance: 0 to 200 Ω, Humidity: 5.0 to 95.0% rh
Accuracy Voltage: ±10 μV, Thermocouple: ±0.6°C
RTDs: ±0.6°C, Resistance: ±10 mΩ, Humidity: ±5% rh

* Using Bluetooth® wireless technology
*1 Setting not available when the thermocouple burnout detection setting is ON
*2 Only data recorded to a genuine HIOKI SD memory card is guaranteed
*3 Connect up to seven units wirelessly
*4 Connect up to seven units wirelessly
*5 Connect up to seven units wirelessly
*6 Connect up to seven units wirelessly
*7 Connect up to seven units wirelessly

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.

The main unit and input modules are not bundled with the Battery Pack Z1007 (Li-ion).

These products emit radio waves. Use of radio waves is subject to licensing requirements in certain countries.

Use in countries or regions other than those listed above may constitute a violation of law, exposing the operator to legal penalties.
Collect data with portable transfer devices

Use the LR5091 or LR5092 to capture data and upload to the PC for analysis

<table>
<thead>
<tr>
<th>Model</th>
<th>HUMIDITY LOGGER LR5001</th>
<th>TEMPERATURE LOGGER LR5011</th>
<th>INSTRUMENTATION LOGGER LR5031</th>
<th>CLAMP LOGGER LR5051</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log</td>
<td>Temperature, Humidity</td>
<td>Temperature</td>
<td>4-20 mA Instrumentation Signals</td>
<td>Load Current, Leak Current</td>
</tr>
</tbody>
</table>

**Appearance**

<table>
<thead>
<tr>
<th>Channels</th>
<th>1ch (temperature), 1ch (humidity)</th>
<th>1ch</th>
<th>1ch</th>
<th>2ch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
<td>-40.0°C to 85.0°C (temperature) 0% rh to 100% rh (humidity)</td>
<td>-40.0°C to 180.0°C</td>
<td>-30.0 mA to 30.0 mA</td>
<td>0.00 A to 1000 A AC*1</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.5°C (temperature) ±5% rh (humidity)</td>
<td>±0.5°C</td>
<td>±0.5% rdg ±5 dgt.</td>
<td>±0.5% rdg ±5 dgt.</td>
</tr>
<tr>
<td>Bundled sensor</td>
<td>HUMIDITY SENSOR LR9504</td>
<td>Sensor sold separately</td>
<td>CONNECTION CABLE LR9801</td>
<td>Sensor sold separately</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>VOLTAGE LOGGER LR5041</th>
<th>VOLTAGE LOGGER LR5042</th>
<th>VOLTAGE LOGGER LR5043</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log</td>
<td>Instrumentation signals, Analog outputs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Appearance**

<table>
<thead>
<tr>
<th>Channels</th>
<th>1ch</th>
<th>1ch</th>
<th>1ch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
<td>-50.00 mV to 50.00 mV</td>
<td>-5.000 V to 5.000 V</td>
<td>-50.00 V to 50.00 V</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.5% rdg ±5 dgt.</td>
<td>±0.5% rdg ±5 dgt.</td>
<td>±0.5% rdg ±5 dgt.</td>
</tr>
<tr>
<td>Bundled sensor</td>
<td>CONNECTION CABLE LR9802</td>
<td>CONNECTION CABLE LR9802</td>
<td>CONNECTION CABLE LR9802</td>
</tr>
</tbody>
</table>

*Attach display side
*SD MEMORY CARD is available as an option

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**LR50XX Series Shared Specifications**

- **Recording intervals**: 1/2/3/5/10/15/20/30 sec., 1/2/3/5/10/15/20/30/60 min.
- **Recording modes**: Instantaneous value, MAX/MIN/AVG
- **Storage capacity**: 50,000 data sets per channel (instantaneous value)
- **Operating temperature**: LR5001, LR5011, LR5031, LR5041, 42, 43: -20°C to 70°C, 80% rh or less LR5051: 0°C to 50°C, 80% rh or less
- **Power supply**: LR6 alkaline battery x1 LR5051: LR6 alkaline battery x2
- **Continuous operating time**: LR5001: 3 months (1min. recording interval), 20 days (1sec.) LR5011: 2 years (1min. recording interval), 2 months (1sec.) LR5031, LR5041: 1 years (1min. recording interval), 1 month (1sec.) LR5051, LR504X: 2 years (1min. recording interval), 2 months (1sec.)
- **Dimensions**: 79 x 57 x 28 mm (3.11 x 2.24 x 1.10 in)
- **Mass**: 105 g (3.7 oz), LR5051: 165 g (5.8 oz)

[Utility for LR5000]

**Order code**  **Additional Accessories**

LR5001 - HUMIDITY SENSOR LR9504, Kickstand
LR5011 - Kickstand
LR5031 - CONNECTION CABLE LR9801, Kickstand
LR5041 - CONNECTION CABLE LR9802, Kickstand
LR5042 - CONNECTION CABLE LR9802, Kickstand
LR5043 - CONNECTION CABLE LR9802, Kickstand
LR5051 - -

---

*Depending on current sensor in use*
## Make logger settings and transfer data via Bluetooth® wireless communication

Use your tablet or PC to download data and configure measurement conditions.

![Bluetooth Communication Diagram]

### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>WIRELESS PULSE LOGGER LR8512</th>
<th>WIRELESS CLAMP LOGGER LR8513</th>
<th>WIRELESS HUMIDITY LOGGER LR8514</th>
<th>WIRELESS VOLTAGE/TEMP LOGGER LR8515</th>
<th>WIRELESS FUNGAL LOGGER LR8520</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log</td>
<td>Pulse</td>
<td>Load Current, Leak Current</td>
<td>Temperature, Humidity</td>
<td>DCV, Temperature</td>
<td>Fungal Growth</td>
</tr>
<tr>
<td>Appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channels</td>
<td>2ch</td>
<td>2ch</td>
<td>2ch [temperature], 2ch [humidity]</td>
<td>2ch</td>
<td>1ch [temperature], 1ch [humidity]</td>
</tr>
<tr>
<td>Measurement range</td>
<td>Pulse: 0 to 1000M pulse No. of revolutions: 0 to 5000M [ml]</td>
<td>500.0 mA to 5000 A AC*2</td>
<td>-40.0°C to 80.0°C (temperature) 0.0% rh to 100% rh (humidity)</td>
<td>Voltage: -50 V to 50 V Thermocouple: -20°C to 186°C Biological growth: 0°C to 80°C</td>
<td>Temperature: -40°C to 80°C Humidity: 0% rh to 100% rh Calculates fungal index from temperature and humidity</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.5 % rdg ±5 dgt.</td>
<td>Temperature: ±0.5°C Humidity: ±3% rh*3</td>
<td>Voltage: ±0.05 mV Thermocouple: ±0.6°C</td>
<td>Biological growth: ±3% rh*3</td>
<td>Biological growth: ±3% rh*3</td>
</tr>
<tr>
<td>Bundled sensor</td>
<td>CONNECTION CABLE L1010</td>
<td>Sensor sold separately</td>
<td>Sensor sold separately</td>
<td>Sensor sold separately</td>
<td>Sensor sold separately</td>
</tr>
</tbody>
</table>

### LR85XX Series Shared Specifications

- **Recording intervals**: 0.1/0.2/0.5/1/2/5/10/30 sec./1 min./2/5/10/30/1 h
- **Recording modes**: Instantaneous value, MAX/MIN/AVG (LR8513 only)
- **Communication ranges**: 30 m, line of sight
- **Storage capacity**: 500,000 data sets per channel
- **Operating temperature**: 20°C to 60°C, 80% rh or less
- **Power supply**: LR6 alkaline battery x 2 AC ADAPTER Z2003 (option, DC12V)
- **Continuous operating time**: 2 months (1min. recording interval), 2 months (1sec.)
- **Dimensions (W × H × D)**: LR8512, 14, 20: 85 x 61 x 31 mm (3.35 x 2.40 x 1.22 in) LR8513, 15, 20: 85 x 75 x 38 mm (3.35 x 2.95 x 1.50 in)
- **Mass**: LR8512, 20: 38 g (1.3 oz), LR8513, 15, 20: 37 g (1.3 oz), LR8514: 108 g (3.8 oz), LR8515: 126 g (4.4 oz)

* *n is the number of pulses, 1 to 1000, per revolution. *2 Depends on current sensor in use. *3 Hysteresis: ±1% rh (added to the humidity measurement accuracy).

*4 This index, which predicts how easy it is for fungi to grow, was proposed by the late Keiko Abe, Doctor of Agriculture. Because fungal growth has a direct correlation with temperature and relative humidity, expected occurrence can be predicted.

### LR85XX Series Shared Accessories
- LR6 alkaline battery x 2
  (CD-R: Instruction Manual PDF, Logger Utility, Wireless Logger Collector)

### Order code and Additional Accessories

<table>
<thead>
<tr>
<th>Order code</th>
<th>Additional Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>LR8512</td>
<td>CONNECTION CABLE L1010 x 2</td>
</tr>
<tr>
<td>LR8513</td>
<td>-</td>
</tr>
<tr>
<td>LR8514</td>
<td>-</td>
</tr>
<tr>
<td>LR8515</td>
<td>-</td>
</tr>
<tr>
<td>LR8520</td>
<td>CONNECTION CABLE L1010 x 1</td>
</tr>
</tbody>
</table>

**Wireless Logger Collector (for collecting measurement data)**

- **Supported devices**: Android tablet/Android smartphone Windows PC/Windows tablet
- **OS**: Android OS 4.0.3 or later Windows 10/8/7 (32/64bit)
- **Number of available registrations**: Max. 100 units
- **Output format**: Logger Utility format LR5000 format Smart Site compatible format CSV format Text format

**How to obtain software**

For Windows PC: Supplied CD-R/Download from the HIOKI website
For Android tablet: Google Play™

**Use Logger Utility to view data acquired by the Wireless Logger Collector**

- **Logger Utility**
  - Display waveform
  - Analyze measurement data

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*CE* Product warranty for 3 years Accuracy guaranteed for 1 year
## Options

**HUMIDITY LOGGER LR5001**
1. HUMIDITY SENSOR LR9501 1 m (3.28 ft)
2. HUMIDITY SENSOR LR9502 5 m (16.4 ft)
3. HUMIDITY SENSOR LR9503 10 m (32.81 ft)
4. HUMIDITY SENSOR LR9504 4 cm (1.57 in)

**TEMPERATURE LOGGER LR5011**
1. TEMPERATURE SENSOR LR9601 Molded plastic type, 1 m (3.28 ft)
2. TEMPERATURE SENSOR LR9602 Molded plastic type, 5 m (16.4 ft)
3. TEMPERATURE SENSOR LR9603 Molded plastic type, 10 m (32.81 ft)
4. TEMPERATURE SENSOR LR9604 Molded plastic type, 4.5 cm (1.77 in)
5. TEMPERATURE SENSOR LR9611 Lug type, 1 m (3.28 ft)
6. TEMPERATURE SENSOR LR9612 Lug type, 5 m (16.4 ft)
7. TEMPERATURE SENSOR LR9613 Lug type, 10 m (32.81 ft)
8. TEMPERATURE SENSOR LR9621 Sheathed type, 1 m (3.28 ft)
9. TEMPERATURE SENSOR LR9631 Needle type, 1 m (3.28 ft)

**INSTRUMENTATION LOGGER LR5031**
10. CONNECTION CABLE LR9801 1 m (3.28 ft), 2 wires
11. CONNECTION CABLE LR9802 1 m (3.28 ft), 4 wires

**VOLTAGE LOGGER LR5041, LR5042, LR5043, PULSE LOGGER LR5061**
12. ClampInsulationTesterDetectorsEarthPower
13. BatteryPVLoggerLANSignalLuxTemperatureRotationSound

### WIRELESS PULSE LOGGER LR8512, WIRELESS FUNGAL LOGGER LR8520
1. CONNECTION CABLE L1010 1.5 m (4.92 ft)
2. WIRELESS HUMIDITY LOGGER LR8514, WIRELESS FUNGAL LOGGER LR8520
3. HUMIDITY SENSOR LR9501, 02, 03
4. HUMIDITY SENSOR LR9601, 02, 03
5. HUMIDITY SENSOR LR9801 LR9802 LR9901
6. TEMPERATURE SENSOR LR9611, 12, 13
7. TEMPERATURE SENSOR LR9604 Molded plastic type, 4.5 cm (1.77 in)
8. TEMPERATURE SENSOR LR9603 Molded plastic type, 10 m (32.81 ft)
9. TEMPERATURE SENSOR LR9602 Molded plastic type, 5 m (16.4 ft)
10. TEMPERATURE SENSOR LR9601 Molded plastic type, 1 m (3.28 ft)
11. TEMPERATURE SENSOR LR9621 Sheathed type, 1 m (3.28 ft)
12. TEMPERATURE SENSOR LR9631 Needle type, 1 m (3.28 ft)

### Options

**DATA COLLECTOR LR5092**
- Clamps: Insulated conductor
- Insulated conductor

**CONNECTION CABLE LR9801**
- 1 m (3.28 ft), 2 wires
- 1 m (3.28 ft), 4 wires

**LR50XX Series**
- VOLTAGE LOGGER LR5041, LR5042, LR5043, PULSE LOGGER LR5061
- INSTRUMENTATION LOGGER LR5031
- DATA COLLECTOR LR5092
- HUMIDITY LOGGER LR5001
- TEMPERATURE LOGGER LR5011
- TEMPERATURE LOGGER LR5021
- TEMPERATURE LOGGER LR5031
- CONNECTION CABLE LR9801

### CURRENT SENSORS (For LR5813, LR5051)

<table>
<thead>
<tr>
<th>Model</th>
<th>CLAMP ON SENSOR</th>
<th>AC FLEXIBLE CURRENT SENSOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>9669</td>
<td>BNC</td>
<td>BNC</td>
</tr>
<tr>
<td>9669-02</td>
<td>BNC</td>
<td>BNC</td>
</tr>
<tr>
<td>CT6500</td>
<td>BNC</td>
<td>BNC</td>
</tr>
<tr>
<td>CT9667-01</td>
<td>BNC</td>
<td>BNC</td>
</tr>
<tr>
<td>CT9667-02</td>
<td>BNC</td>
<td>BNC</td>
</tr>
<tr>
<td>CT9667-03</td>
<td>BNC</td>
<td>BNC</td>
</tr>
</tbody>
</table>

### Measurement application
- For load current levels: Voltage output
- For leak current: Voltage output

**CURRENT SENSORS (For LR5813, LR5051)**

<table>
<thead>
<tr>
<th>Model</th>
<th>Appearance</th>
<th>Measurement application</th>
</tr>
</thead>
<tbody>
<tr>
<td>9657-10</td>
<td>General purpose 2CT</td>
<td>For leak current: Voltage output</td>
</tr>
<tr>
<td>9675</td>
<td>Branch circuit 2CT</td>
<td>For load current levels: Voltage output</td>
</tr>
</tbody>
</table>

**For CLAMP ON SENSOR 9695-02**
- CONNECTION CABLE 9219 For 9695, 3 m (9.84 ft)

**For CLAMP ON SENSOR 9695-02**
- CONNECTION CABLE 9219 For 9695, 3 m (9.84 ft)

**For CLAMP ON SENSOR 9695-02**
- CONNECTION CABLE 9219 For 9695, 3 m (9.84 ft)

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1. **MAGNETIC STRAP Z5004**
2. **MAGNETIC STRAP Z5020 Extra strength**
3. **AC ADAPTER Z2003 100 V to 240 V AC**
4. **HUMIDITY SENSOR Z2011 1.5 m (4.92 ft)**
5. **HUMIDITY SENSOR Z2010 50 mm (1.97 in)**
6. **CONNECTION CABLE L1010 1.5 m (4.92 ft)**

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**Model name**
- **LR8513 CM7290**
- **OUTPUT CORD L9095**

**For more detailed information about sensors and output cords, please refer to p.44 & p.45.**
LAN Cable Testers

LAN CABLE HiTESTER 3665

Order code 3665

**Accessories**
- TERMINATOR 9690 (ID 0)
- Carrying case
- LR6 alkaline battery × 2
- Instruction manual

1 Using the supplied Terminator 9690 and optional Models 9690-01 to 9690-04

**Options**
- TERMINATOR 9690-01 (ID to 5)
- 9690-02 (ID 6 to 10)
- 9690-03 (ID 11 to 15)
- 9690-04 (ID 16 to 20)
- CARRYING CASE 9249

**Signal Generators**

DC SIGNAL SOURCE SS7012

Order code SS7012

**Accessories**
- INPUT CORD 9168
- TEST LEAD L9170-10
- Spare fuse
- LR6 alkaline battery × 4
- Instruction manual

**Options**
- INPUT CORD 9168
- TEST LEAD L9170-10
- TEMPERATURE PROBE 9184
- COMMUNICATION PACKAGE SS9000
- CARRYING CASE 9782
- CARRYING CASE 9380
- AC ADAPTER 9445-02/03

**Measurement**

- Measurable cable: Twisted-pair cable, characteristic impedance: 100 Ω, shielded and unshielded, CAT 3, 4, 5, 5e and 6
- Compatible connectors: RJ-45 plugs
- Measurement parameters:
  - Wire Map test: Detectable errors
    - Open, short, reversed, transposed, split pairs and other incorrect wiring
  - Cable length: 2.0 to 300.0 m
    - Accuracy: ±4% rdg ± 1 m
- Direction: Up to 21 cables can be identified

**Display**

- Pins 3 and 6 have been incorrectly paired with Pins 4 and 5

**Other**

- Functions: Backlight, auto power off
- Operation temperature: 0℃ to 40℃, 80% rh or less (non-condensating)
- Storage temperature: -10℃ to 50℃, 80% rh or less (non-condensating)
- Standards: EN61010 (Safety), EN61326 (EMC)
- Power supply: LR6 alkaline battery × 2
- Continuous operating time: 60 hours
- Dimensions (W × H × D): 85 × 130 × 33 mm (3.35 × 5.12 × 1.30 in)
- Mass: 160 g (5.6 oz)
- Power supply:
  - Continuous operating time: 50 hours
  - LR6 alkaline battery × 2

**Memory Sourcing**

- One type for each function:
  - CV 2.5, CV 25, CC, TC (0°C and RJ)

**Standard Resistance (Rs)**

- 100 Ω

**Constant Voltage (CV)**

- 0 to ±2.5000 V
- Accuracy: ±0.03% of setting ±300 μV
- 0 to ±25.000 V
- Accuracy: ±0.03% of setting ±3 mV

**Constant Current (CC)**

- 0 to ±25.000 mA
- Accuracy: ±0.03% of setting ±3 μA

**Thermoelectromotive Force**

- (TC: 0℃)
- (TC: RJ)
- (K) -174.0℃ to 1372.0℃
- (E) -220.0℃ to 839.0℃
- (J) -208.0℃ to 1108.0℃
- (T) -169.0℃ to 400.0℃
- (R) -50℃ to 1768℃
- (S) -50℃ to 1768℃
- (B) 300℃ to 1820℃
- (N) -113.0℃ to 1300.0℃
- Accuracy: ±0.05% of setting ±0.5℃

**Memory Sourcing (RECALL, SCAN)**

- One type for each function:
  - CV 2.5, CV 25, CC, TC (0°C and RJ)

**Other**

- Interfaces: USB Communication
- Operating temperature: 0℃ to 40℃, 80% rh or less (non-condensating)
- Storage temperature: -20℃ to 50℃, 80% rh or less (non-condensating)
- Standards: EN61010 (Safety), EN61326 (EMC)
- Power supply:
  - LR6 alkaline battery × 4
  - HR6 Ni-MH batteries Z0101
  - AC ADAPTER 9445-02
- Dimensions (W × H × D): 104 × 180 × 58 mm (4.09 × 7.09 × 2.28 in)
- Mass: 570 g (20.1 oz) without batteries

**Order code**

- 3665

**Sourcing**

- Constant Voltage (CV)
  - 0 to ±2.5000 V
  - Accuracy: ±0.03% of setting ±300 μV
  - 0 to ±25.000 V
  - Accuracy: ±0.03% of setting ±3 mV

- Constant Current (CC)
  - 0 to ±25.000 mA
  - Accuracy: ±0.03% of setting ±3 μA

- Thermoelectromotive Force
  - (TC: 0℃)
  - (TC: RJ)
  - (K) -174.0℃ to 1372.0℃
  - (E) -220.0℃ to 839.0℃
  - (J) -208.0℃ to 1108.0℃
  - (T) -169.0℃ to 400.0℃
  - (R) -50℃ to 1768℃
  - (S) -50℃ to 1768℃
  - (B) 300℃ to 1820℃
  - (N) -113.0℃ to 1300.0℃
  - Accuracy: ±0.05% of setting ±0.5℃

**Memory Sourcing (RECALL, SCAN)**

- One type for each function:
  - CV 2.5, CV 25, CC, TC (0°C and RJ)
Lux Testers

LUX METER FT3424, FT3425

Order code FT3424
Order code FT3425

Temperature Testers

INFRARED THERMOMETER FT3700-20, FT3701-20

Order code FT3700-20
Order code FT3701-20

Accessories

• CARRYING CASE
• LR96 alkaline battery × 2
• Sensor cap (with strap)
• Strap
• USB cable (0.9 m)
• Strap
• Sensor cap (with strap)

Accessories

• CARRYING CASE
• LR6 alkaline battery × 2
• CARRYING CASE

Options

1 EXTENSION CART Z5023
2 CONNECTION CABLE L9820
3 CARRYING CASE C0202 Soft case
4 CARRYING CASE C0201 Semi-hard case
5 OUTPUT CORD L9094 Mini plug to banana 1.5 m (4.92 ft)
6 OUTPUT CORD L9093 Connect to BNC terminal 1.5 m (4.92 ft)
7 OUTPUT CORD L9095 Connect to terminal block 1.5 m (4.92 ft)
8 CARRYING CASE C0201 Semi-hard case

FT3700: φ83 mm at 1000 mm
FT3701: φ100 mm at 3000 mm

FT3700: −60.0 to 550.0°C (-76 to 1022˚F)
FT3701: −60.0 to 550.0°C (-76 to 1022˚F)

Guaranteed accuracy range is -35 to 500°C.

-60.0 to -35.1˚C (-76.0 to -31.1˚F) : Accuracy not specified

FT3700: ±1% rdg ±5 mV (at output rate)
FT3701: ±2% rdg ±5 mV (at output rate)

Accuracy guaranteed for 2 years, Post-adjustment accuracy guaranteed for 2 years

Measurement ranges

20.00 ± 250.0 lx/2000 lx/20000 lx/200000 lx

Accuracy guarantee

D/A output: 0 to 5.0 V range f.s.

Functions

Timer hold function, memory function (up to 99 measured data can be saved.), hold, auto power off, buzzer sound, backlight, zero adjustment

Interfaces

USB2.0 (FT3705 only: Bluetooth® 4.0 LE)

Power supply

LR6 alkaline battery × 2, or USB bus power (5 V DC)

Continuous operating time

300 hours (Bluetooth® communication OFF)

Dimensions (W × H × D)

78 × 170 × 39 mm (3.07 × 6.69 × 1.54 in)

Mass

FT3700: 310 g (10.9 oz), FT3702: 320 g (11.3 oz)

Temperature Testers

INFRARED THERMOMETER FT3700-20, FT3701-20

Order code FT3700
Order code FT3701

Accessories

• CARRYING CASE
• LR96 alkaline battery × 2
• Instruction manual

Accessories

• CARRYING CASE
• LR6 alkaline battery × 2
• Instruction manual

Options

1 EXTENSION CART Z5023
2 CONNECTION CABLE L9820
3 CARRYING CASE C0202 Soft case
4 CARRYING CASE C0201 Semi-hard case
5 OUTPUT CORD L9094 Mini plug to banana 1.5 m (4.92 ft)
6 OUTPUT CORD L9093 Connect to BNC terminal 1.5 m (4.92 ft)
7 OUTPUT CORD L9095 Connect to terminal block 1.5 m (4.92 ft)
8 CARRYING CASE C0201 Semi-hard case

FT3700: φ52 mm
FT3701: φ100 mm

FT3700: ±10% rdg ±2℃
FT3701: ±2% rdg ±2℃

Measurement ranges

20.00 lx

Accuracy guarantee

D/A output Output level: 2 V / range f.s.

Functions

MAX/MIN/DIF (MAX-MIN)/AVG measurement, alarm, backlight, continuous measurement mode, auto power off

Other

Operating temperature

0°C to 50°C, 80% rh or less (non-condensating)

Storage temperature

-40°C to 50°C, 80% rh or less (non-condensating)

Accuracy guarantee for temperature and humidity

20°C to 27°C, 75% rh or less (non-condensating)

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

D : S = 12 : 1

FT3700

FT3701
Rotation Testers
TACHO HITESTER FT3405, FT3406

Order code FT3405
Order code FT3406

Accessories
- REFLECTIVE TAPE 9211
  (30 pieces/12 mm (0.47 in) x 12 mm per piece)
- CARRYING CASE C0202
- LR6 (AA) alkaline battery × 2
- Instruction manual
- OUTPUT CORD L9094 (FT3406 only)

Options
- CONTACT ADAPTER Z5003 includes 9212 x 1, 9033 x 2, 9032 x 1
- METAL CONTACT TIP 9032
- RUBBER CONTACT TIP 9033
- OUTPUT CORD L9094 for FT3406
- AC ADAPTER Z1004 for FT3406
- REFLECTIVE TAPE 9211 30 pieces/sheet, 10 sheets/1 set, 12 mm (0.47 in) x 12 mm per piece

Sound Testers
SOUND LEVEL METER FT3432

Order code FT3432

Accessories
- Wind screen WS-14
- Hand strap VM-63-017
- Silicone cover NL-27-089
- Windscreen fall out prevention rubber NL-27-014
- LR03 alkaline batteries × 2
- CARRYING CASE 9757
- Instruction manual
- OUTPUT CORD L9094 (FT3406 only)
- Instruction manual
- LR6 (AA) alkaline battery × 2
- CARRYING CASE C0202
- REFLECTIVE TAPE 9211
- AC ADAPTER Z1004 (FT3406 only)

Options
- AC MONITOR OUTPUT CABLE CC-98A
- DC OUTPUT CABLE CC-98D
- SOUND LEVEL METER TRIPOD ST-80
- TRIPOD EXTENSION ROD ST-80-100
- CARRYING CASE 9757
- AC output corrector: DC output: 3 V (full scale), 25 mV/dB
- AC monitor output connector: V/m/s + 600 mVrms, -400 mVrms
- Operating temperature 10°C to 50°C, 10 to 90% rh or less (non-condensating)
- Storage temperature 10°C to 50°C, 10 to 90% rh or less (non-condensating)
- Power supply Continuous operating time 100 to 500 hours (at wide range)
- Dimensions (W × H × D) 55 x 186 x 38 mm (2.17 x 7.32 x 1.50 in)
- Mass 105 g (3.7 oz)

Other
- Measurement method Using red visible-spectrum light and reflective tape or a reflective plate (Contact Adapter Z5003)
- Measurement functions Tacho Testing, Count Testing, Cycle Speed
- Measuring range (1/2-scale) Tacho Testing (contact) 15.00 to 19999 r/min, 0.2500 to 333.0 r/s
  Count Testing 0 to 999999
  Cycle speed (contact) 1.500 to 99999.9 mm, 0.0250 to 33.30 r/s
- Detection range 50 to 500 mm
- Accuracy ±1 dgt. (Up to 9999)
  ±2 dgt. (10000 or more)
  ±20 dgt. (20000 or more) ¹
- Functions MAX/MIN display, display hold, average, auto power save, buzzer sound, drop proof (1 m distance onto concrete surface)
- Output (FT3406 only) 0 to 1 Vrms, (analog output), 0 to 3.3 V (pulse)
- Operating temperature 0°C to 50°C
- Storage temperature -10°C to 50°C, 80% rh or less (non-condensating)
- Dustproof and waterproof IP50 (EN60529)
- Power supply 6 V (9 LR03 alkaline batteries)
- Continuous operating time 30 hours (FT3405), 25 hours (FT3406)
- Dimensions (W × H × D) 71 x 186 x 38 mm (2.80 x 7.32 x 1.50 in)
- Mass 110 g (3.9 oz)

¹Measurement possible only when peak range is selected
²Output voltage upper limit: 1.8 V rms

Footnotes:
1 Input conditions: Up to rotational speed measurement upper limit
2 Input conditions: Up to rotational speed measurement upper limit
3 Input conditions: Up to rotational speed measurement upper limit
4 Up to 40°C (104°F) 80% rh or less
5 1/2-scale A weighting, or C weighting
6 Frequency weighting characteristics
7 ±20 dgt. (20000 or more) ¹
8 Accuracy guaranteed for 1 year
9 Post-adjustment accuracy guaranteed for 1 year
10 Measurement possible only when peak range is selected
11 Output voltage upper limit: 1.8 Vrms
Product warranties

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

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.)

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.

Calibration, adjustment, and repair service

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.

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 fall 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.

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 have 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.

Quality of HIOKI's calibration, adjustment, and repair service

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.

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.

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.

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.

Traceability Chart
Calibration, Adjustment and Repair Service

(1) Service content

- General calibration with adjustment
- General calibration
- 17025 calibration (JCSS)
- Repair

Adjustment

- General calibration
- General calibration
- Adjustment
- Repair

17025 calibration (JCSS)

- General calibration

• Calibration results
• Inaccuracies
• Calibration results

- General calibration

- General calibration
- Confirmation of issue
- Repair

- General 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.

(2) Documents we can issue and their content

- Inspection report
  - Calibration results
  - Judgment

- General calibration certificate
  - Calibration certificate declaration
  - Information about equipment used in calibration
  - Calibration results
  - JCSS calibration certificate
  - Traceability certificate (special-order)
  - Calibration certificate declaration
  - Information about equipment used in calibration
  - Calibration results
  - JCSS calibration certificate
  - Traceability certificate (model-specific)

- 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

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

From the distributor who purchased the product

Download the "Repair/Calibration Request 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 Form" to the distributor. (For distributor information, please contact your nearest Hioki subsidiary.)

Repair/Calibration Request Form

Available from the HIOKI website:
  > Technical Support > Repair and Calibration
  > Requesting Repair and Calibration Service

Calibration, Adjustment and Repair Service

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.

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.

HIOKI products are designed so that they will not fall out of tolerance before the calibration interval is up as long as calibration with adjustment is performed at the recommended calibration interval and the instrument is used and stored under the specified environmental conditions. If an instrument falls out of tolerance, it may be due to an issue that needs to be repaired.

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: No (*JCSS and other logos certify traceability)

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.

<table>
<thead>
<tr>
<th>Available of repair and calibration service</th>
<th>Recommended Calibration interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-adjustment accuracy guarantee period</td>
<td>Product warranty period</td>
</tr>
<tr>
<td>Date production discontinued</td>
<td></td>
</tr>
</tbody>
</table>

Internationally recognized calibration certificate

This is the mark of the calibration service provider registration program based on the Measurement Act. JCSS-registered service providers are registered under the ISO/IEC 17025 standard (HIOKI E.E. CORPORATION is an international, MRA-capable JCSS-accredited service provider. HIOKI’s accreditation number is JCSS 0156.

Comparison of general calibration and 17025 calibration

JCSS calibration

- General calibration
- 17025 calibration (JCSS)

> Dated production discontinued
Global sales network

Japan Bases
HEADQUARTERS: HIOKI E. E. CORPORATION (Nagano)
 - Tohoku Sales Branch (Miyagi)
 - Nagano Sales Branch
 - Kanazawa Office
 - Kita-Kanto Sales Branch (Saitama)
 - Greater Tokyo Sales Branch (Tokyo)
 - Yokohama Office
 - Atsugi Office
 - Shizuoka Sales Branch
 - Nagoya Sales Branch
 - Osaka Sales Branch
 - Hiroshima Office
 - Fukuoka Sales Branch
Japan
Representative Offices
China
 - Tianjin Representative Office (CHINA)
UAE
 - MEA Representative Office (DUBAI)
Overseas Bases
America
 - HIOKI USA CORPORATION (Plano, TX)
 - HIOKI USA CORPORATION Western Regional Office (Gardena, CA)
 - HIOKI USA CORPORATION Michigan Office (Novi, MI)
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. (Shanghai)
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. Beijing Representative Office
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. Guangzhou Representative Office
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. Shenzhen Representative Office
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. Chengdu Representative Office
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. Suzhou Representative Office
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. Shenyang Representative Office
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. Xi’an Representative Office
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. Wuhan Representative Office
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. Jinan Representative Office
 - HIOKI (Shanghai) SALES & TRADING CO., LTD. Nanjing Representative Office
China
Singapore
 - HIOKI SINGAPORE PTE. LTD.
Indonesia
 - PT. HIOKI ELECTRIC INSTRUMENT (Jakarta)
Korea
 - HIOKI KOREA CO., LTD. (Seoul)
 - HIOKI KOREA CO., LTD. Daegwon Office (Daegwon)
India
 - HIOKI KOREA CO., LTD. Busan Office (Busan)
Germany
 - HIOKI EUROPE GmbH
Taiwan
 - HIOKI TAIWAN CO., LTD. (Taoyuan)
 - HIOKI TAIWAN CO., LTD. Taipei Office (Taipei)

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