

# Power Quality and Energy Management

The critical importance of electrical power in today's society necessitates daily maintenance and management to ensure that problems don't occur.

When they do, engineers face the need to analyze the cause, such as an equipment failure or abrupt surge in demand, as quickly as possible. From measurement to long-term recording and analysis, HIOKI's tools support reliable power analysis with superior operability for efficient power operation, troubleshooting and predictive maintenance.

### Efficient operation of electricity

Reduce costs through efficient operation of electricity

- Power saving activity, leakage current prevention, electricity operation improvement, etc.
- Energy cost calculation
- Check for discrepancies with an electricity meter

### Predictive maintenance & power survey

Reduce the impact of poor power quality on asset costs

- By monitoring the quality of the power supply on a long-term or regular basis, it is possible to detect signs of trouble and prevent it from happening in the first place.
- Check the system capacity before adding loads.

### Troubleshooting

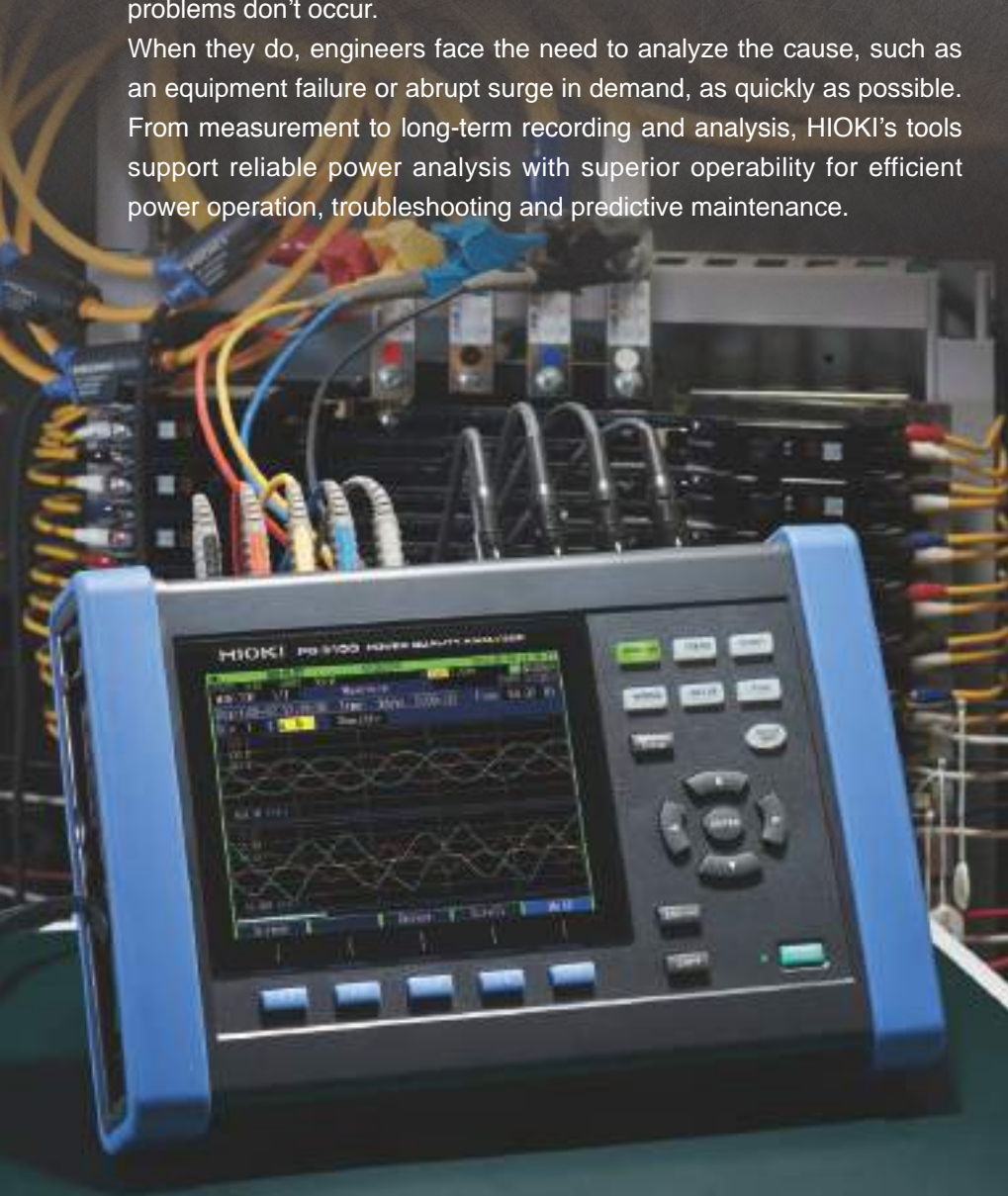
Find the cause of equipment problems, diagnose and take countermeasures.

- Conduct power quality investigations at sites where problems such as equipment failure or malfunction are occurring.
- Check the condition of before and after the installment of an electrical equipment.

### Resolving disputes

Contracted dispute resolution

- Help to resolve disputes between the supplier and consumer





Choose the tools that meet your purpose.

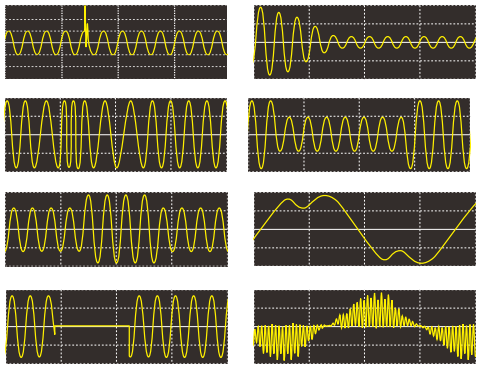


|       | Power Quality Logger and Analyzer<br>-Advanced  | Power Quality Logger and Analyzer<br>-Standard   | Power Logger  | AC Clamp Power Meter   |
|-------|---|--|---|--|
| What? | Used when precise measurements are necessary, for example, for contracted jobs that may require resolving disputes, verifying compliance with standards, etc.   | This is a tool for understanding power trends and consumption, constant monitoring, analyzing power quality, troubleshooting and analyzing other applications where can't comprehend.  | Power loggers are instruments for you to understand and constantly monitor power trends.  | The AC Clamp Power Meter is a tool for you to check the power at sites from manufacturing plants to households.  |
| When? | When you need to examine, diagnose, and countermeasure the power supply condition that causes issues in equipment<br>When two separate circuits need to be measured simultaneously  | When you need to conduct a power survey to understand the load size in a system or to understand the power quality in a system. It's also great for preventive maintenance.  | When you need to understand the power consumption of a facility or system<br>When you need to support power saving activities to achieve your SDGs goals.   | When you need to detect electricity theft and check the power condition at the power transmission and distribution side  |
| Who?  | Data center engineers, power utility engineers, power measurement consultants, power quality specialists, substation facilities manufacturers, and engineers who measure commercial line inverter efficiency.   | Facility managers, plant managers, industrial engineers and technicians, utility company engineers, and power consultants  | Facility managers and utility companies   | Utility company electricians and on-site technicians   |
| Why?  | The two line measurement feature is a dedicated function for measuring two different lines accurately and safely. High sampling rates for transient measurement and high-order harmonics (supraharmonics) measurement capability help to identify the causes of the power quality issues. The dedicated software, PQ One, with statistical data analysis will help you understand and analyze your power condition. | The Quick Set function will help you with the power survey settings and makes your power quality survey easier. The dedicated software, PQ One with statistical data analysis will help you understand and analyze your power condition. | Compact size for easier installation in distribution boards<br>Being able to use the power supply from measurement line will also help you with long-term power surveying.<br>Non-metallic contact for safe power measurement | The Bluetooth connected app, GENNECT Cross, will help you identify when there is electricity theft.<br>Easy to check the power condition from single-phase to 3-phase connection systems |



POWER QUALITY LOGGER & ANALYZERS  
PQ3100, PQ3198

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.



Capture all of these power anomalies simultaneously

- Transient voltages
- Voltage swells
- Voltage dips
- Interruptions
- Frequency fluctuations
- Inrush current
- Harmonics
- High-order harmonics (Supraharmonics)

POWER LOGGER  
PW3365

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



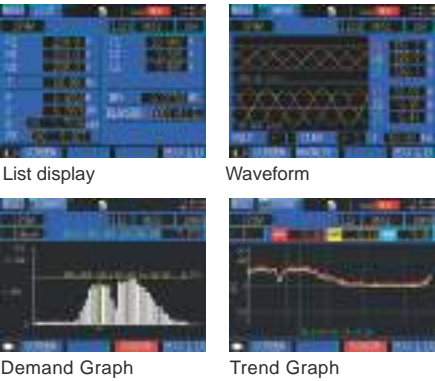
SAFETY VOLTAGE SENSOR  
PW9020  
(for PW3365 only)

- 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)

Toggle displays to easily verify data



Products comparison

Products comparison

|   |  | Application use          |  | <br>PQ3198 | <br>PQ3100 | <br>PW3360-21 | <br>PW3365 | <br>CM3286-50 |
|---|--|--------------------------|--|--|--|---|--|---|
| Energy audit and power survey                         |  | Advanced                 |  | Standard   |  |   |  |   |
| Measure V, I, P, kW, PF/DPF, kWh                      | Conduct power and energy surveys to understand the power consumption and validate energy saving  | ✓                        |  | ✓  |  | ✓   | ✓  | ✓   |
| Measure MIN/MAX and AVG values                        |  | ✓                        |  | ✓  |  | ✓   | ✓  | ✓   |
| Voltage, current and power trend recording            |  | ✓                        |  | ✓  |  | ✓   | ✓  | –   |
| Energy cost measurement                               |  | –                        |  | ✓  |  | ✓   | ✓  | –   |
| Basic harmonics measurement                           |  |                          |  |  |  |   |  |   |
| THD measurement (V & I)                               | This value can be monitored to assess waveform distortion for each item, providing a yardstick that indicates the extent to which the total harmonic components are distorting the fundamental waveform  | ✓                        |  | ✓  |  | ✓   | ✓  | ✓   |
| Harmonics 1 to 30 for V & I                           | When the level of the harmonic component is high, it may cause serious accidents such as overheating or noise in motors or transformers, and burn out reactors in phase compensation capacitors.   | ✓                        |  | ✓  |  | ✓ (1-40.PW3360-21)  | ✓ (1-13)   | ✓ (When Z3210 is installed)   |
| Advanced harmonics measurement                        |  |                          |  |  |  |   |  |   |
| Harmonics 0 to 50 for V & I                           | When the level of the harmonic component is high, it may cause serious accidents such as overheating or noise in motors or transformers, and burn out reactors in phase compensation capacitors. Detect the DC element on the AC circuit (0th order).  | ✓                        |  | ✓  |  | –   | –  | –   |
| High order harmonics (Supraharmonics) 2 kHz to 80 kHz | High-order harmonic (supraharmonic) components can damage equipment and power supplies, cause equipment operation to be reset, or result in abnormal sound from TVs and radios.  | ✓                        |  | –  |  | –   | –  | –   |
| Inter-harmonics                                       | Inter-harmonics are caused when the voltage or current waveform is distorted due to static frequency conversion equipment, cycloconverters, Scheribus drive, induction motors, welders, or arc furnaces. The term refers to frequency components that are not a whole multiple of the fundamental wave.  | ✓                        |  | ✓  |  | –   | –  | –   |
| Power harmonics                                       | Detect the harmonics direction   | ✓                        |  | ✓  |  | ✓ (PW3360-21)   | –  | –   |
| Standard power quality troubleshooting                |  |                          |  |  |  |   |  |   |
| Detailed trend recording for V and I                  | For conducting power surveys to understand the current power quality status  | ✓                        |  | ✓  |  | –   | –  | –   |
| Power quality event recording                         | Measurement according to the EN50160 standard includes transient, swell, dip, interruption, frequency (200 ms) and flicker.  | ✓                        |  | ✓  |  | –   | –  | –   |
| Advanced power quality troubleshooting                |  |                          |  |  |  |   |  |   |
| Detect multiple events simultaneously                 | Multiple events may occur for a single power quality problem. Detecting them simultaneously may help you pinpoint the cause.   | ✓                        |  | ✓  |  | –   | –  | –   |
| High speed sampling for transient measurement         | Measure the duration and peak voltage of the transient event to determine the power quality problem  | ✓                        |  | –  |  | –   | –  | –   |
| Advanced Features                                     |  |                          |  |  |  |   |  |   |
| Anti-theft detection                                  | Compare the measurement values with the electric meter measurement to detect the differences   | –                        |  | –  |  | –   | –  | ✓   |
| Frequency fluctuation                                 | Frequency fluctuation occurs due to line separation caused by circuit issues, shutdown of a high-capacity generators, or changes in the supply/demand balance of active power.   | ✓                        |  | ✓  |  | –   | –  | –   |
| Transient voltage (impulse)                           | Transient voltage occurs due to phenomena such as lightning, breaker damage, or closure of the circuit breaker or relay. It often occurs when there is a radical change in voltage or when the peak voltage is high.   | ✓                        |  | ✓  |  | –   | –  | –   |
| Voltage dip (SAG)                                     | Most dips are caused by natural phenomena such as lightning. When an equipment fault is detected and taken offline due to the occurrence of a power system ground fault or short-circuit, a large inrush current caused by a motor startup or another load can occur, causing a temporary voltage dip.   | ✓                        |  | ✓  |  | –   | –  | –   |
| Voltage swell (SURGE)                                 | Swells occur when the voltage rises momentarily. Some examples of these are when a power line turns on or off due to lightning or a heavy load, when a high-capacity capacitor bank is switched, when a one-line ground occurs, and when a high-capacity load is cut off. This phenomenon also includes voltage surges due to grid-tied dispersed power supplies (e.g. solar power). | ✓                        |  | ✓  |  | –   | –  | –   |
| Flicker   | Flicker consists of voltage fluctuations resulting from causes such as blast furnaces, arc welding, and thyristor control loads. Manifestations include light bulb flickering.   | ✓                        |  | ✓  |  | –   | –  | –   |
| Interruption (momentary power outage)                 | Interruptions consist of momentary, short-term, or extended power supply outages as a result of factors such as circuit breakers being tripped due primarily to power company issues (interruption of power due to lightning strikes, etc.) or power supply short-circuits.  | ✓                        |  | ✓  |  | –   | –  | –   |
| Unbalance   | Unbalance is caused by increases or decreases in the load connected to each phase of a power line, distortions in voltage and current waveforms, voltage dips, or negative phase voltage caused by the operation of equipment or devices that run with uneven power supply to load.  | ✓                        |  | ✓  |  | –   | –  | –   |
| Inrush current  | Inrush current is a large current that flows momentarily, for example when electric equipment is turned on.  | ✓                        |  | ✓  |  | –   | –  | –   |
| DC measurement  | Measurement for DC loads or systems  | ✓                        |  | ✓  |  | –   | –  | –   |
| Mains signaling voltage                               | The control signal, one of the measurement parameters required by IEC 61000-4-30, is applied to the mains to control various industrial equipment remotely.  | ✓                        |  | –  |  | –   | –  | –   |
| 400 Hz measurement                                    | Power measurement for aviation systems and shipboard systems   | ✓                        |  | –  |  | –   | –  | –   |
| Power inverter/converter efficiency                   | Measure the primary side and secondary side of power of inverters or converters to evaluate the system efficiency.   | ✓                        |  | –  |  | –   | –  | –   |
| GPS time synchronization                              | GPS time synchronization eliminates any time difference between instruments. It allows analysis that preserves the simultaneity of phenomena measured with multiple instruments.   | ✓                        |  | –  |  | –   | –  | –   |
| Interface   |  |                          |  |  |  |   |  |   |
| USB   |  | ✓                        |  | ✓  |  | ✓   | ✓  | –   |
| Ethernet  |  | ✓                        |  | ✓  |  | ✓   | ✓  | –   |
| Bluetooth connectivity                                |  | –                        |  | –  |  | –   | –  | ✓   |
| SD card   |  | ✓                        |  | ✓  |  | ✓   | ✓  | –   |
| RS-232C   |  | ✓                        |  | ✓  |  | –   | –  | –   |
| Pulse   |  | ✓ (Event input function) |  | ✓ (Event input function)   |  | ✓ (Pulse I/O terminals)   | –  | –   |
| Safety  |  | 600 V (CAT IV)           |  | 600 V (CAT IV), 1000 V (CAT III)   |  | 600 V (CAT III)   |  | 600 V (CAT IV)  |
| Non-metallic contact power measurement                |  | –                        |  | –  |  | ✓   |  | –   |
| Power from measurement line                           |  | –                        |  | –  |  | ✓   |  | –   |



Which clamp sensors should I choose?




Our recommendation








Do you measure both AC and DC load?

| Type                          | Yes   |                                   | AC only measurement               |              |
|-------------------------------|---|-----------------------------------|-----------------------------------|--------------|
|                               | AC and DC simultaneously                        | Sometimes AC, sometimes DC        |                                   |              |
|                               | Power Quality Logger and Analyzer (PQ3198 only) | Power Quality Logger and Analyzer | Power Quality Logger and Analyzer | Power Logger |
| Best choice                   | CT7045x3, CT7731x1                              | CT7731                            | CT7045x4                          | 9661x3       |
| CT secondary side measurement | CT7126x3, CT7731x1                              | –                                 | CT7126x4                          | 9694x3       |
| Other choices                 | CT7136x3, CT7742x1                              | CT7742                            | CT7136x4                          | CT9667-02x3  |







CURRENT SENSOR






PQ3198, PQ3100

|                             |  |   |   |
|-----------------------------|--|---|---|
| Features                    | Make measurements over extended periods of time without zero-adjustment, even in locations with temperature variations |   |   |
| Model name                  | AC/DC AUTO-ZERO CURRENT SENSOR   |   |   |
| Model                       | CT7731   | CT7736  | CT7742  |
| Appearance                  |                                       |  |  |
| Rated measurement current   | 100 A AC/DC  | 600 A AC/DC   | 2000 A AC/DC  |
| Max. rated voltage to earth | (AC/DC) CAT IV 600 V   | (AC/DC) CAT IV 600 V, CAT III 1,000 V   | (AC/DC) CAT IV 600 V, CAT III 1,000 V   |
| Core jaw diameter           | φ33 mm   | φ33 mm  | φ55 mm  |

|                             |   |   |   |   |   |   |   |
|-----------------------------|---|---|---|---|---|---|---|
| Features                    | Attaches easily to thick cables, even in confined spaces                          |   |   | Accurately measuring load current   |   |   | Measuring leakage current   |
| Model name                  | AC FLEXIBLE CURRENT SENSOR  |   |   | AC CURRENT SENSOR   |   |   | AC LEAKAGE CURRENT SENSOR   |
| Model                       | CT7044  | CT7045  | CT7046  | CT7126  | CT7131  | CT7136  | CT7116  |
| Appearance                  |  |  |  |  |  |  |  |
| Rated measurement current   | 6,000 A AC  | 6,000 A AC  | 6,000 A AC  | 60 A AC   | 100 A AC  | 600 A AC  | 6 A AC  |
| Max. rated voltage to earth | (AC) CAT IV 600 V, CAT III 1,000 V  | (AC) CAT IV 600 V, CAT III 1,000 V  | (AC) CAT IV 600 V, CAT III 1,000 V  | (AC) CAT III 300 V  | (AC) CAT III 300 V  | (AC) CAT IV 600 V, CAT III 1,000 V  | Insulated conductor   |
| Core jaw diameter           | φ100 mm   | φ180 mm   | φ254 mm   | φ15 mm  |   | φ46 mm  | φ40 mm  |

PW3365, PW3360

|                             |   |   |   |   |  |   |
|-----------------------------|---|---|---|---|--|---|
| Features                    | Load current levels: voltage output   |   |   |   |  |   |
| Model name                  | CLAMP ON SENSOR   |   |   |   |  |   |
| Model                       | 9694  | 9660  | 9661  | 9669  | 9695-02  | 9695-03   |
| Appearance                  |  |  |  |  |  |  |
| Rated measurement current   | 5 A AC  | 100 A AC  | 500 A AC  | 1,000 A AC  | 50 A AC  | 100 A AC  |
| Max. rated voltage to earth | (AC) CAT III 300 V  | (AC) CAT III 300 V  | (AC) CAT III 600 V  | (AC) CAT III 600 V  | (AC) CAT III 300 V   | (AC) CAT III 300 V  |
| Core jaw diameter           | φ15 mm  | φ15 mm  | φ46 mm  | φ55 mm<br>80 × 20 mm busbar   | φ15 mm   | φ15 mm  |

|                             |   |   |   |   |  |
|-----------------------------|---|---|---|---|--|
| Features                    | Load current levels: voltage output   |   |   | Leak current: voltage output  |  |
| Model name                  | AC FLEXIBLE CURRENT SENSOR  |   |   | CLAMP ON LEAK SENSOR  |  |
| Model                       | CT9667-01   | CT9667-02   | CT9667-03   | 9657-10   | 9675   |
| Appearance                  |  |  |  |  |  |
| Rated measurement current   | 5,000 A AC, 500 A AC  | 5,000 A AC, 500 A AC  | 5,000 A AC, 500 A AC  | 10 A AC   | 10 A AC  |
| Max. rated voltage to earth | (AC) CAT IV 600 V<br>(AC) CAT III 1,000 V   | (AC) CAT IV 600 V<br>(AC) CAT III 1,000 V   | (AC) CAT IV 600 V<br>(AC) CAT III 1,000 V   | Insulated conductor   | Insulated conductor  |
| Core jaw diameter           | φ100 mm   | φ180 mm   | φ254 mm   | φ40 mm  | φ30 mm   |

\*At center of flexible loop

Software/application

| Software name         | Type                                   | Products                            | Data transfer        | Trend graph | Import raw data (CSV/original format) | Export data (CSV) | Waveform viewing/analyzing | Saving images and GPS information | Real-time monitoring and remote control | Automatic reporting | Customized reporting | Export report to MS Word | Price                       | Where to get  |
|-----------------------|--|-------------------------------------|----------------------|-------------|---------------------------------------|-------------------|----------------------------|-----------------------------------|---|---------------------|----------------------|--------------------------|-----------------------------|---|
| GENNECT Cross         | For data saving and extra applications | CM3286-50 (When Z3210 is installed) | Bluetooth®           | ✓           | ✓                                     | ✓                 | ✓                          | ✓                                 | –                                       | ✓                   | ✓                    | ✓                        | Free                        | <a href="https://gennect.net/en/cross/index">https://gennect.net/en/cross/index</a>   |
| GENNECT One           | For communications and data management | PW3360, PW3365, PQ3100, PQ3198      | LAN                  | ✓           | ✓                                     | ✓                 | –                          | –                                 | ✓                                       | ✓                   | ✓                    | ✓                        | Free                        | <a href="https://gennect.net/en/one/index">https://gennect.net/en/one/index</a>   |
| Power Logger Viewer   | For data analysis                      | PW3360, PW3365                      | –                    | ✓           | ✓                                     | ✓                 | ✓                          | –                                 | –                                       | ✓                   | ✓                    | ✓                        | Paid software               | Contact your nearest distributor  |
| PQ One                | For advanced data analysis             | PQ3100, PQ3198                      | –                    | ✓           | ✓                                     | ✓                 | ✓                          | –                                 | –                                       | ✓                   | ✓                    | ✓                        | Free (sample data included) | <a href="https://www.hioki.com/global/support/download/software">https://www.hioki.com/global/support/download/software</a> |
| Mass Storage Function | Raw file data download                 | PW3360, PW3365, PQ3100, PQ3198      | USB cable or SD card | –           | ✓                                     | –                 | –                          | –                                 | –                                       | –                   | –                    | –                        | –                           | –   |



- PQ3198 Included accessories**
- VOLTAGE CORD L1000
  - AC ADAPTER Z1002
  - BATTERY PACK Z1003
  - PQ ONE (software CD)
  - SD MEMORY CARD Z4001
  - USB cable
  - Color clips
  - Spiral tubes
  - Strap
  - Measurement guide
  - User manual

- PQ3100 Included accessories**
- VOLTAGE CORD L1000-05
  - AC ADAPTER Z1002
  - BATTERY PACK Z1003
  - PQ ONE (software CD)
  - USB cable
  - Color clips
  - Spiral tubes
  - Strap
  - Measurement guide
  - User manual



- PW3360 Included accessories**
- 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

- PW3365 Included accessories**
- SAFETY VOLTAGE SENSOR PW9020 × 4
  - 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

Included accessories/Options

PQ3198, PQ3100

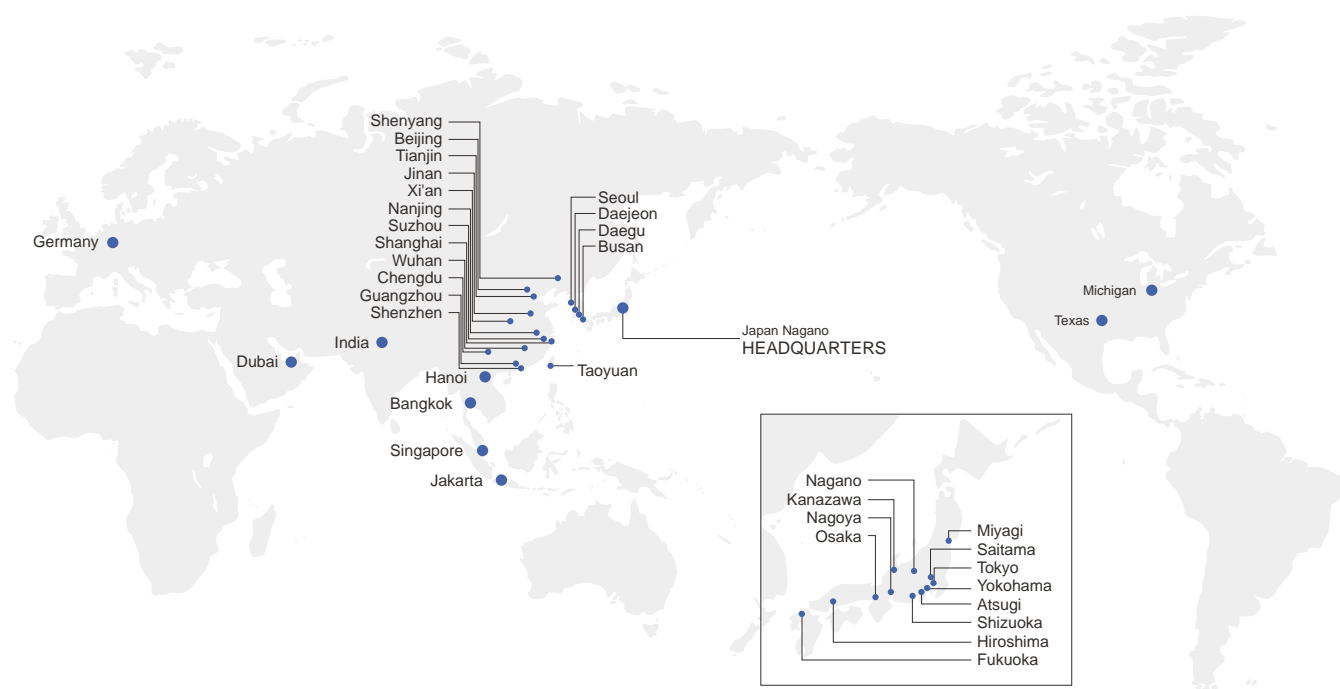
|               |    |                          |   |
|---------------|----|--------------------------|---|
| Voltage       | 1  | VOLTAGE CORD L1000       | Red/yellow/blue/gray: 1 each, black x 4, 3 m (9.84 ft.) , alligator clip x 8  |
|               | 2  | VOLTAGE CORD L1000-05    | Red/yellow/blue/gray/black: 1 each, 3 m (9.84 ft.) , alligator clip x 5   |
|               | 3  | MAGNETIC ADAPTER 9804-01 | Red, alternative tip for the L1000-05   |
|               | 4  | MAGNETIC ADAPTER 9804-02 | Black, alternative tip for the L1000-05   |
|               | 5  | GRABBER CLIP L9243       | Alternative tip for the L1000-05  |
|               | 6  | PATCH CORD L1021-01      | For PQ3198, 0.5 m (1.64 ft.) , red, banana branch-banana  |
| Memory        | 7  | PATCH CORD L1021-02      | For PQ3198, 0.5 m (1.64 ft.) , black, banana branch-banana  |
|               | 8  | SD MEMORY CARD 2GB Z4001 | Use only SD Cards sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. |
|               | 9  | SD MEMORY CARD 8GB Z4003 |   |
| Communication | 10 | RS-232C CABLE 9637       | For PQ3100, 9 pin - 9 pin, cross, 1.8 m (5.91 ft.)  |
|               | 11 | LAN CABLE 9642           | 5 m (16.4 ft.) , straight, cross conversion adapter   |
|               | 12 | AC ADAPTER Z1002         | 100 V AC to 240 V AC  |
| Power supply  | 13 | BATTERY PACK Z1003       | 7.2 V, Ni-MH  |
|               | 14 | WIRING ADAPTER PW9000    | For PQ3198, for 3-phase/3-wire connection (3P3W3M)  |
| Connection    | 15 | WIRING ADAPTER PW9001    | For PQ3198, for 3-phase/4-wire connection (3P4W)  |
|               | 16 | GPS BOX PW9005           | For PQ3198  |
| Other         | 17 | CARRYING CASE C1009      | Bag type  |
|               | 18 | CARRYING CASE C1001      | Soft type   |
|               | 19 | CARRYING CASE C1002      | Hard trunk type   |
|               | 20 | MAGNETIC STRAP Z5004     |   |
|               | 21 | MAGNETIC STRAP Z5020     | Extra strength  |
|               |    |                          |   |



PW3365, PW3360

|               |    |                              |   |
|---------------|----|------------------------------|---|
| Voltage       | 1  | SAFETY VOLTAGE SENSOR PW9020 | For PW3365, 3 m (9.84 ft.)  |
|               | 2  | VOLTAGE CORD L9438-53        | For PW3360, black/red/yellow/blue, 3 m (9.84 ft.) length, alligator clip x 4  |
|               | 3  | MAGNETIC ADAPTER 9804-01     | For PW3360, red, Φ11 mm (0.43 in.)  |
|               | 4  | MAGNETIC ADAPTER 9804-02     | For PW3360, black, Φ11 mm (0.43 in.)  |
|               | 5  | PATCH CORD L1021-01          | For PW3360, 0.5 m (1.64 ft.) , red, banana branch-banana  |
|               | 6  | PATCH CORD L1021-02          | For PW3360, 0.5 m (1.64 ft.) , black, banana branch-banana  |
| Memory        | 7  | SD MEMORY CARD 2GB Z4001     | Use only SD Cards sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. |
|               | 8  | SD MEMORY CARD 8GB Z4003     |   |
|               | 9  | LAN CABLE 9642               | 5 m (16.4 ft.) , straight, cross conversion adapter   |
| Communication | 10 | POWER LOGGER VIEWER SF1001   | Software to analyze measurement data  |
|               | 11 | AC ADAPTER Z1008             | For PW3365, 100 V AC to 240 V   |
|               | 12 | AC ADAPTER Z1006             | For PW3360, 100 V AC to 240 V   |
|               | 13 | BATTERY SET PW9002           | Battery case and 9459 Set   |
| Power supply  | 14 | BATTERY PACK 9459            |   |
|               | 15 | CARRYING CASE C1005          |   |
|               | 16 | CARRYING CASE C1008          | For PW3365  |
|               | 17 | MAGNETIC STRAP Z5004         |   |





# Global sales network

| Japan Bases            |   |
|------------------------|---|
| Japan                  | HEADQUARTERS : HIOKI E. E. CORPORATION (Nagano)                                     |
|                        | Tohoku Sales Branch (Miyagi)  |
|                        | Nagano Sales Branch   |
|                        | Kanazawa Branch   |
|                        | 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  |
|                        |   |
| Representative Offices |   |
| China                  | Tianjin Representative Office (CHINA)   |
| UAE                    | MEA Representative Office (DUBAI)   |
| Overseas Bases         |   |
| America                | HIOKI USA CORPORATION (Plano, TX)   |
|                        | HIOKI USA CORPORATION Michigan Office (Novi, MI)                                    |
|                        | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. (Shanghai)                      |
| China                  | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. Beijing Representative Office   |
|                        | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. Guangzhou Representative Office |
|                        | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. Shenzhen Representative Office  |
|                        | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. Chengdu Representative Office   |
|                        | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. Suzhou Representative Office    |
|                        | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. Shenyang Representative Office  |
|                        | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. Xi'an Representative Office     |
|                        | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. Wuhan Representative Office     |
|                        | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. Jinan Representative Office     |
|                        | HIOKI (Shanghai) MEASUREMENT TECHNOLOGIES CO., LTD. Nanjing Representative Office   |
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