HIOKI

POWER ELECTRONICS

Power Analyzers
Power Meters
Power Quality Analyzers
Current Sensors

Improve Power Conversion Efficiency, the Next Generation POWER ANALYZER

POWER ANALYZER PW6001

USB 2.0 | LAN | GP-IB | RS-232C | True RMS | CE | 3 year Warranty

- Basic accuracy of ±0.02%*1 for power measurement
  1 PW6001 accuracy only. Instrument delivers accuracy of ±0.07% even after the current sensor accuracy has been added.
- High noise resistance and stability (80 dB/100 kHz CMRR, ±0.01%/°C temperature characteristics)
- Accurate measurement even when the load is characterized by large fluctuations; TrueHD 18-bit resolution
- 10 ms data refresh while maintaining maximum accuracy (using a specially designed IC to make all measurements independently while performing simultaneous calculations.)
- DC accuracy of ±0.07%, which is key for stable, accurate efficiency measurement
- Wide frequency bandwidth of DC, or 0.1 Hz to 2 MHz
- Achieve true frequency analysis with high-speed 5MS/s sampling (18 bit)
- Synchronize 2 units for up to 12 channels*2 in real time
  2 Two 6-channel models can be connected with an optical connection cable
- Special triggers to enable waveform analysis and motor analysis without the need for an oscilloscope
- Wideband harmonic analysis up to the 100th order with a 1.5 MHz band
- Send measured values to HIOKI data loggers using a Bluetooth® wireless technology compatible adapter (LR8410 Link-compatible products), Ver. 2.0 and later

Model No. (Order Code)				
	PW6001-01	(1ch)	**PW6001-11**	(1ch, motor analysis, D/A output)
	PW6001-02	(2ch)	**PW6001-12**	(2ch, motor analysis, D/A output)
	PW6001-03	(3ch)	**PW6001-13**	(3ch, motor analysis, D/A output)
	PW6001-04	(4ch)	**PW6001-14**	(4ch, motor analysis, D/A output)
	PW6001-05	(5ch)	**PW6001-15**	(5ch, motor analysis, D/A output)
	PW6001-06	(6ch)	**PW6001-16**	(6ch, motor analysis, D/A output)

*Note: Optional voltage cords and current sensor are required for taking measurements. *Specify the number of built-in channels and inclusion of Motor analysis & D/A output upon order for factory installation. These options cannot be changed or added at a later date.*

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

Measurement line type	Single-phase 2-wire, single-phase 3-wire, three-phase 3-wire, three-phase 4-wire
Number of input channels	Max. 6 channels; each input unit provides 1 channel for simultaneous voltage and current input (Voltage measurement unit: Photoisolated input, resistance voltage divider, Current measurement unit: Isolated input from current sensor)
Measurement items	Voltage (U), current (I), active power (P), apparent power (S), reactive power (Q), power factor (λ), phase angle (φ), frequency (f), efficiency (η), loss (Loss), voltage ripple factor (Urf), current ripple factor (Irf), current integration (Ih), power integration (WP), voltage peak (Upk), current peak (Ipk) Harmonic measurement: Harmonic active power, select calculation order from 2nd order to 100th order Waveform recording: Voltage and current waveforms/ Motor pulse: Always 5 MS/s Motor waveforms: Always 50 kS/s, 16 bits Recording capacity: 1 Mword × ((voltage + current) × number of channels + motor waveforms) Motor analysis (PW6001-11 to -16 only): Voltage, Torque, Rotation, Frequency, Slip, or Motor output
Measurement range	Voltage range: 6 to 1500 V, 8 ranges Current range (Probe 1) : 400 mA to 1 kA (depends on current sensor) Current range (Probe 2) : 100 mA to 50 kA (depends on current sensor) Power range: 2.40000W to 4.50000MW (depends on combination of voltage and current range) Frequency range: 0.1 Hz to 2 MHz
Basic accuracy	Voltage: ±0.02 % rdg ±0.02 % f.s. Current: ±0.02 % rdg ±0.02 % f.s. + current sensor accuracy Active power: ±0.02 % rdg ±0.03 % f.s. + current sensor accuracy
Synchronization frequency range	Power measurement: 0.1 Hz to 2 MHz Harmonic measurement: 45 Hz to 66 Hz (IEC standard mode), 0.1 Hz to 300 kHz (Wideband mode)
Frequency band	DC, 0.1 Hz to 2 MHz
Data update rate	Power measurement: 10 ms/ 50 ms/ 200 ms Harmonic measurement: 200 ms (IEC standard mode), 50 ms (Wideband mode)
Data save interval	OFF, 10 msec to 500 msec, 1 sec to 30 sec, 1 minute to 60 minutes, User-selected from all measured values, including harmonic measured values, Specified measured values can be saved in internal memory or USB flash drive.
External interfaces	USB (memory), LAN, GP-IB, RS-232C (for communication/LR8410 link), External control ,Synchronization control
Logger connectivity	Sends measured values wirelessly to logger by using a Bluetooth® wireless technology serial conversion adapter. (Supported devices: Hioki LR8410 Link-compatible loggers), Ver. 2.0 and later
Power supply	100 to 240 V AC, 50/60 Hz, 200 VA max.
Dimensions and mass	430 mm (16.93 in)W × 177 mm (6.97 in)H × 450 mm (17.72 in)D, 14 kg (49.4 oz) (PW6001-16)
Accessories	Instruction Manual ×1, Power cord ×1, D-sub connector × 1 (PW6001-1x only)

High-Precision Sensors

* To connect to the Probe1 input terminal (HIOKI ME15W terminal)

Up to 200 A (High precision)

AC/DC CURRENT SENSOR CT6862-05
High-precision pull-through type, DC to 1 MHz, 50 A input, ±0.05% amplitude accuracy, ±0.2° phase accuracy, ME15W terminal

AC/DC CURRENT SENSOR CT6863-05
High-precision pull-through type, DC to 500 kHz,200 A input, ±0.05% amplitude accuracy, ±0.2° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6841-05
DC to 1 MHz, 20 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6843-05
DC to 500 kHz, 200 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

Up to 500 A (High precision)

AC/DC CURRENT SENSOR CT6904
High-precision pull-through type, DC to 4 MHz, 500 A input, ±0.02% amplitude accuracy, ±0.08° phase accuracy, ME15W terminal

AC/DC CURRENT SENSOR CT6875
High-precision pull-through type, DC to 2 MHz, 500 A input, ±0.04% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6844-05
DC to 200 kHz, 500 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6845-05
DC to 100 kHz, 500 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

Up to 2000 A (High precision)

AC/DC CURRENT SENSOR CT6876
High-precision pull-through type, DC to 1.5 MHz, 1000 A input, ±0.04% amplitude accuracy, ±0.1° phase accuracy, ME15W terminall

AC/DC CURRENT PROBE CT6846-05
DC to 20 kHz, 1000 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT SENSOR CT6877
High-precision pull-through type, DC to 1 MHz band width, 2000 A input, ±0.04% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

Up to 4000 A (High precision)
Aggregate and measure large currents in multi-cable circuits

Use multiple AC/DC Current Sensor CT6865-05 or AC/DC Current Probe CT6846-05 units with the Sensor Unit CT9557 to measure currents of up to 4000 A in multi-cable circuits. Requires 1 connection cable to connect the PW6001/PW3390 to the CT9557.

SENSOR UNIT CT9557
Power supply for current sensors (4ch, with Waveform/ Total Waveform/Total RMS output)

CONNECTION CABLE CT9904
ME15W (12 pin) terminal to ME15W (12 pin) terminal, 1 m (3.28 ft) length (for connecting CT9557 total output to PW6001 or PW3390 only)

AC/DC CURRENT SENSOR CT6876
High-precision pull-through type, DC to 1.5 MHz, 1000 A input, ±0.04% amplitude accuracy, ±0.1° phase accuracy, ME15W terminall

AC/DC CURRENT PROBE CT6846-05
DC to 20 kHz, 1000 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

*When using a PL23 terminal sensor without "-05" in the model number, Conversion Cable CT9900 must be used to connect to ME15W terminal.
*When using the CT6865 and CT6846 (without "-05"), connection via the CT9900 and manual settings are required on the main device.

PL23 (10 pin) - ME15W (12 pin) conversion

CONVERSION CABLE CT9900
Convert PL23 (10-pin) terminal to ME15W (12-pin) terminal

Direct Current Input

* To connect to the HIOKI ME15W (12 pin) terminal

AC/DC CURRENT BOX PW9100-03
3 channels, DC to 3.5 MHz, CMRR 120dB, 50 A AC/DC input, ±0.02% amplitude accuracy, ±0.1° phase accuracy

AC/DC CURRENT BOX PW9100-04
4 channels, DC to 3.5 MHz, CMRR 120dB, 50 A AC/DC input, ±0.02% amplitude accuracy, ±0.1° phase accuracy

Wide-Band Current Probes

* To connect to the Probe2 input terminal

Up to 5 A (High speed)

CURRENT PROBE CT6700
Wide DC to 50 MHz bandwidth, 1 mA to 5 A rms

CURRENT PROBE CT6701
Wide DC to 120 MHz bandwidth, 1 mA to 5 A rms

Up to 30 A (High speed)

CLAMP ON PROBE 3273-50
Wide DC to 50 MHz bandwidth, 10 mA-class to 30 Arms

CLAMP ON PROBE 3276
Wide DC to 100 MHz bandwidth, 10 mA-class to 30 Arms

Up to 500 A (High speed)

CLAMP ON PROBE 3274
Wide DC to 10 MHz bandwidth, up to 150 A rms

CLAMP ON PROBE 3275
Wide DC to 2 MHz bandwidth, up to 500 A rms

Voltage measurement

VOLTAGE CORD L9438-50
Black/ Red, 3 m (9.84 ft) length, Alligator clip ×2

VOLTAGE CORD L1000
Red/ Yellow/ Blue/ Gray each 1, Black 4, Alligator clip ×8, 3m (9.84ft) length

GRABBER CLIP 9243
Attaches to the tip of the connection cable, 196 mm (7.72 in) length, CAT III 1000 V

PATCH CORD L1021-01
Banana branch-banana, Red: 1, Cable length: 0.5 m, For branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

PATCH CORD L1021-02
Banana branch-banana, Black: 1, Cable length: 0.5 m, For branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

Connection Options

*9444 for external control interface, L9217 for motor signal input

OPTICAL CONNECTION CABLE L6000
50/125 µm wavelength multimode fiber, 10 m (32.81 ft) length

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

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

CONNECTION CABLE 9444
For the Printer 9442, 9 pin - 9 pin, 1.5 m (4.92 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

CONNECTION CORD L9217
Cord has insulated BNC connectors at both ends, 1.6 m (5.25 ft) length

Other options

The following made-to-order items are also available. Please contact your Hioki distributor or subsidiary for more information

- Carrying case (hard trunk, with casters)
- D/A output cable, D-sub 25-pin-BNC (male), 20 ch conversion
- Bluetooth® serial converter adapter cable 1 m (3.28 ft)
- Rackmount fittings (EIA, JIS)
- Optical connection cable, Max. 500 m (1640.55 ft) length
- PW9100 5 A rating version
- 2000A pull-through type sensor

High-accuracy Power Analysis - Anywhere, Anytime

POWER ANALYZER PW3390

- ±0.04% basic power accuracy, among the best in its class
- 200 kHz measurement band with flat amplitude and phase accuracy that extend to high frequencies
- Remarkably small and light footprint, enabling high-accuracy measurement to be easily carried out even in the field
- High-accuracy, high-speed calculation of transient-state power in 50 ms; harmonic analysis; display of instantaneous waveforms; noise analysis; and simultaneous parallel calculation of all parameters, including efficiency loss
- Send measured values to HIOKI data loggers using a Bluetooth® wireless technology compatible adapter (LR8410 Link-compatible products)
- Simultaneous measurement of multiple circuits and ability to acquire synchronized data using up to 8 devices (for 32 channels)
- Simple power measurement using clamp-on current sensors
- Measurement of current and power inputs and outputs as part of the new international WLTP fuel efficiency standard

Model No. (Order Code) **PW3390-01**
PW3390-02 (D/A output)
PW3390-03 (D/A output, motor analysis)

Note: PW3390 by itself does not support current and power measurements. Optional current sensor and voltage cord are necessary to measure current or power parameters. Specify inclusion of Motor analysis & D/A output upon order for factory installation. These options cannot be changed or added after delivery.

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

Measurement line type	Single-phase 2-wire, single-phase 3-wire, three-phase 3-wire, three-phase 4-wire, Voltage 4 channels, Current 4 channels, Isolated between each channel
Basic measurement parameters	Frequency, RMS voltage, voltage mean value rectification RMS equivalent, voltage AC component, voltage simple average, voltage fundamental wave component, voltage waveform peak +, voltage waveform peak -, voltage total harmonic distortion, voltage ripple factor, voltage unbalance factor, RMS current, current mean value rectification RMS equivalent, current AC component, current simple average, current fundamental wave component, current waveform peak +, current waveform peak -, current total harmonic distortion, current ripple factor, current unbalance factor, active power, apparent power, reactive power, power factor, voltage phase angle current phase angle, power phase angle, positive-direction current magnitude, negative-direction current magnitude, sum of positive- and negative-direction current magnitude, positive-direction power magnitude, negative-direction power magnitude, sum of positive- and negative-direction power magnitude, efficiency, loss Current integration, active power integration PW3390-03 only: Torque, Rotation, Frequency, Slip, or Motor power
Harmonic measurement	Input: 4 ch, Synchronization frequency range: 0.5 Hz to 5 kHz, Number of harmonic orders: Max. 100th order
Noise measurement	Number of channels: 1 ch (select one channel from CH1 to CH4), Maximum analysis frequency: 200 k/ 50 k/ 20 k/ 10 k/ 5 k/ 2 kHz
Motor Analysis (PW3390-03 only)	Input: 3 ch (CH A, CH B, CH Z), Measurement parameters: Voltage, torque, rotation rate, frequency, slip, and motor power
Measurement range	Voltage range: 15 to 1500 V, 7 ranges Current range: 0.1 A to 20 kA (depends on current sensor)
Effective measuring power range	0.0150 W to 39.600 MW (determined automatically by the combination of voltage range, current range, and measurement line)
Basic accuracy (45 to 66 Hz)	Voltage: ±0.04 % rdg ±0.05 % f.s. Current: ±0.04 % rdg ±0.05 % f.s. + current sensor accuracy Active power: ±0.04 % rdg ±0.05 % f.s. + current sensor accuracy
Synchronization frequency range	0.5 Hz to 5 kHz
Frequency band	DC, 0.5 Hz to 200 kHz
Data update rate	50 ms (For harmonic/frequency measurement, depends on the synchronization frequency when less than 45 Hz)
Display refresh rate	200 ms (Independent of internal data update rate; waveform and FFT depend on the screen)
Auto-Save Functions	Each value is stored to CF card during every measurement interval (not available for USB storage), OFF, 50 msec to 500 msec, 1 sec to 30 sec, 1 minute to 60 minutes, 15 settings
External interfaces	LAN, USB (for communication/ memory), RS-232C (for communication/LR8410 link), CF card, Synchronization control, External Control
Logger connectivity	Sends measured values wirelessly to logger by using a Bluetooth® wireless technology serial conversion adapter. (Supported devices: Hioki LR8410 Link-compatible loggers)
Power supply	100 to 240 V AC, 50/60 Hz, 140 VA max.
Dimensions and mass	340 mm (13.39 in)W × 170 mm (6.69 in)H × 156 mm (6.14 in)D, 4.6 kg (162.3 oz)
Accessories	Instruction Manual ×1, Power cord ×1, Measurement Guide ×1, USB cable ×1, Input cord label ×2, D-sub connector × 1 (PW3390-02, PW3390-03)

New Wideband High-Accuracy Current Measurement Option

AC/DC CURRENT BOX PW9100

- World-leading measurement bands and accuracy
- Wide-band DC to 3.5MHz, 50A AC/DC rated input
- ±0.04% power accuracy in combination with PW6001
- 120dB CMRR (100 kHz)
- Full-rack size suitable for test/evaluation benches
- Current measurement option for PW6001/ PW3390 POWER ANALYZERS

Model No. (Order Code) **PW9100-03** (For the PW6001/PW3390, 3 ch)
PW9100-04 (For the PW6001/PW3390, 4 ch)

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

Measurement line type	Isolated input, DCCT input
Rated primary current	50 A AC/DC
Number of input channels	PW9100-03: 3 channels PW9100-04: 4 channels
Maximum input current	60 A, within derating. However, up to ±200 A peak is allowable if within 20 ms (design value)
Amplitude and Phase accuracy	DC (±0.02 % rdg ±0.007 % f.s.) 45 Hz < f ≤ 65 Hz (±0.02 % rdg ±0.005 % f.s., Phase: ±0.1 deg.) Accuracy is defined to 1 MHz
Output voltage	2 V/50 A
Measurement terminals	Terminal block (with safety cover), M6 screws
Input resistance	1.5 mΩ or less (50 Hz/60 Hz)
Input capacitance	Between measurement terminals and case (secondary side), 40 pF or less, defined at 100 kHz
Operating temperature and humidity	Temperature: 0°C to 40°C (32°F to 104°F), Humidity: 80% RH or less (no condensation)
Power supply	Power supply from PW6001, PW3390
Dimensions and mass	430 mm (16.93 in) W × 88 mm (3.46 in) H × 260 mm (10.24 in) D, Cable length: 0.8 m (2.62 ft) PW9100-03: 3.7 kg (130.5 oz), PW9100-04: 4.3 kg (151.7 oz)
Accessories	Instruction Manual ×1

Option A

CONVERSION CABLE CT9901
ME15W (12 pin) to PL23 (10 pin) connector

Option B
Only 1 unit of CT9902 can be used at any one time.

EXTENSION CABLE CT9902
5 m (16.41 ft) length, ME15W (12 pin) - ME15W (12 pin) connector

Option C
Rack mount hardware
Made-to-order, for EIA/JIS
Contact your local Hioki distributor for more information

Power Analyzers

Options for PW3390

For other options, please see the product catalog.

High-Precision Sensors

* To connect to the HIOKI ME15W (12 pin) terminal

Up to 200 A (High precision)

AC/DC CURRENT SENSOR CT6862-05
High-precision pull-through type, DC to 1 MHz, 50 A input, ±0.05% amplitude accuracy, ±0.2° phase accuracy, ME15W terminal

AC/DC CURRENT SENSOR CT6863-05
High-precision pull-through type, DC to 500 kHz,200 A input, ±0.05% amplitude accuracy, ±0.2° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6841-05
DC to 1 MHz, 20 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6843-05
DC to 500 kHz, 200 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

Up to 500 A (High precision)

AC/DC CURRENT SENSOR CT6904
High-precision pull-through type, DC to 4 MHz, 500 A input, ±0.02% amplitude accuracy, ±0.08° phase accuracy, ME15W terminal

AC/DC CURRENT SENSOR CT6875
High-precision pull-through type, DC to 2 MHz, 500 A input, ±0.04% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6844-05
DC to 200 kHz, 500 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6845-05
DC to 100 kHz, 500 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

Up to 2000 A (High precision)

AC/DC CURRENT SENSOR CT6876
High-precision pull-through type, DC to 1.5 MHz, 1000 A input, ±0.04% amplitude accuracy, ±0.1° phase accuracy, ME15W terminall

AC/DC CURRENT PROBE CT6846-05
DC to 20 kHz, 1000 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT SENSOR CT6877
High-precision pull-through type, DC to 1 MHz band width, 2000 A input, ±0.04% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

Up to 4000 A (High precision)
Aggregate and measure large currents in multi-cable circuits

Use multiple AC/DC Current Sensor CT6865-05 or AC/DC Current Probe CT6846-05 units with the Sensor Unit CT9557 to measure currents of up to 4000 A in multi-cable circuits. Requires 1 connection cable to connect the PW6001/PW3390 to the CT9557.

SENSOR UNIT CT9557
Power supply for current sensors (4ch, with Waveform/ Total Waveform/Total RMS output)

CONNECTION CABLE CT9904
ME15W (12 pin) terminal to ME15W (12 pin) terminal, 1 m (3.28 ft) length (for connecting CT9557 total output to PW6001 or PW3390 only)

AC/DC CURRENT SENSOR CT6876
High-precision pull-through type, DC to 1.5 MHz, 1000 A input, ±0.04% amplitude accuracy, ±0.1° phase accuracy, ME15W terminall

AC/DC CURRENT PROBE CT6846-05
DC to 20 kHz, 1000 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

*When using a PL23 terminal sensor without "-05" in the model number, Conversion Cable CT9900 must be used to connect to ME15W terminal.
*When using the CT6865 and CT6846 (without "-05"), connection via the CT9900 and manual settings are required on the main device.

PL23 (10 pin) - ME15W (12 pin) conversion

CONVERSION CABLE CT9900
Convert PL23 (10-pin) terminal to ME15W (12-pin) terminal

Direct Current Input

* To connect to the HIOKI ME15W (12 pin) terminal

AC/DC CURRENT BOX PW9100-03
3 channels, DC to 3.5 MHz, CMRR 120dB, 50 A AC/DC input, ±0.02% amplitude accuracy, ±0.1° phase accuracy

AC/DC CURRENT BOX PW9100-04
4 channels, DC to 3.5 MHz, CMRR 120dB, 50 A AC/DC input, ±0.02% amplitude accuracy, ±0.1° phase accuracy

Current Input 2000A AC/DC

* The CT9920 is necessary for connecting a current sensor with a HIOKI PL14 connector to the PW3390

AC/DC CURRENT SENSOR CT7642
DC to 10kHz, 2000A AC/DC, φ 55 mm (2.17 in) , 2.5 m (8.20 ft) cord length, Output connector: PL14 terminal

AC/DC AUTO ZERO CURRENT SENSOR CT7742
DC to 5 kHz, 2000A AC/DC, φ 55 mm (2.17 in) , 2.5 m (8.20 ft) cord length, Output connector: PL14 terminal

CONVERSION CABLE CT9920
Required to connect the PW3390 or other instrument's ME15W terminal to a current sensor with a PL14 output connector.

Current Input 6000A

* The CT9920 is necessary for connecting a current sensor with a HIOKI PL14 connector to the PW3390

AC FLEXIBLE CURRENT SENSOR CT7044
6000 A AC, φ100 mm (3.94 in), 2.5 m (8.20 ft) cord length, PL14 terminal

AC FLEXIBLE CURRENT SENSOR CT7045
6000 A AC, φ180 mm (7.09 in), 2.5 m (8.20 ft) cord length, PL14 terminal

AC FLEXIBLE CURRENT SENSOR CT7046
6000 A AC, φ254 mm (10.00 in), 2.5 m (8.20 ft) cord length, PL14 terminal

CONVERSION CABLE CT9920
Required to connect the PW3390 or other instrument's ME15W terminal to a current sensor with a PL14 output connector.

Voltage Input

VOLTAGE CORD L9438-50
Black/ Red, 3 m (9.84 ft) length, Alligator clip ×2

VOLTAGE CORD L1000
1000 V specifications, Red/ Yellow/ Blue/ Gray each 1, Black 4, Alligator clip ×8, 3m (9.84ft) length

EXTENSION CABLE SET L4931
Expands the length of the cable with banana plug, 1.5 m (4.92 ft) length

WIRING ADAPTER PW9000
When making a 3-phase 3-wire (3P3W3M) connection, this product allows you to reduce the number of voltage cords from 6 to 3.

WIRING ADAPTER PW9001
When making a 3-phase 4-wire (3P4W) connection, this product allows you to reduce the number of voltage cords from 6 to 4.

GRABBER CLIP 9243
Attaches to the tip of the banana plug cable, Red/ Black: 1 each, 196 mm (7.72 in) length, CAT III 1000 V

PATCH CORD L1021-01
Banana branch-banana, Red: 1, Cable length: 0.5 m, For branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

PATCH CORD L1021-02
Banana branch-banana, Black: 1, Cable length: 0.5 m, For branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

Connection Options

* L9217: for motor analysis input

CONNECTION CORD L9217
Cord has insulated BNC connectors at both ends, signal output use, 1.6 m (5.25 ft) length

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

CONNECTION CABLE 9683
For synchronization, cable length 1.5 m (4.92 ft)

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

Storage media

PC CARD 2G 9830
2 GB capacity

PC CARD 1G 9729
1 GB capacity

PC CARD 512M 9728
512 MB capacity

*PC Card Precaution
Use only PC Cards sold by HIOKI. Compatibility and performance are not guaranteed for PC cards made by other manufacturers. You may be unable to read from or save data to such cards.

Case

CARRYING CASE 9794
Hard trunk to protect your PW3390 during transportation, with casters.

Other options

Please contact your Hioki distributor or subsidiary for more information.

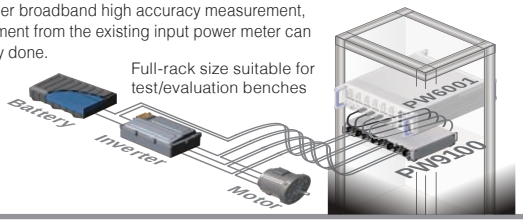
- D/A output cable D-sub 25-pin - BNC (male)
- Rackmount fittings (For EIA or JIS)
- PW9100 5A-rated model
- 9709-05 high-accuracy model
- CT6862-05 high-accuracy model
- CT6863-05 high-accuracy model
- 2000A AC/DC high accuracy sensor, pass-through type

The newly developed DCCT method provides world-leading measurement bands and accuracy at a 50 A rating.

Wiring connection example 1 – To replace existing power measuring equipment

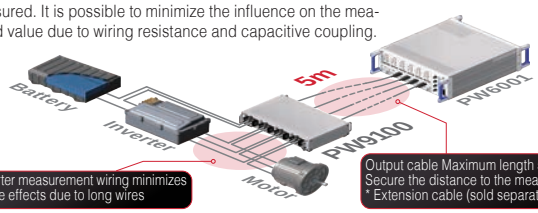
For further broadband high accuracy measurement, replacement from the existing input power meter can be easily done.

Full-rack size suitable for test/evaluation benches



Wiring connection example 2 – Proposal of new measuring method

Wiring for current measurement can be shortened by installing the PW9100 near the object to be measured. It is possible to minimize the influence on the measured value due to wiring resistance and capacitive coupling.



Accurately Measure Devices Up to 1000 V/65 A AC/DC with Direct Input

POWER METER PW3337

LAN
RS-232C
GP-IB
-01/-03 Model
True RMS
CE
3 year Warranty

- Compatible with the SPECpower® benchmark for server power consumption
  SPECpower® is a registered trademark of Standard Performance Evaluation Corporation
- Measure DC, and single-phase 2-wire to 3-phase 4-wire with 3-channel input
- For development and production of motors, inverters, power conditioners, power supplies, and other devices
- High-precision basic accuracy of ±0.1 % (*1)
  *(*1) For complete details, please refer to the specifications*
- Wide frequency bandwidth of 0.1 Hz to 100 kHz or DC
- High-current measurement up to 65 A of direct input
- Harmonic measurement up to the 50th order according to IEC 61000-4-7
- High-accuracy measurement, even with a low power factor for no-load testing of transformers and motors
- Built-in external sensor input terminals to measure up to 5000 A AC
- Synchronize up to 8 units for multi-unit measurement
- Create a 6-channel power meter by synchronizing two PW3337 units and using the free PC application

Model No. (Order Code)		
	PW3337	(3ch)
	PW3337-01	(3ch, built-in GP-IB)
	PW3337-02	(3ch, built-in D/A output)
	PW3337-03	(3ch, built-in GP-IB, D/A output)

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

Measurement lines	Single-phase 2-wires, single-phase 3-wires, 3-phase 3-wires, 3-phase 4-wires (voltage / current measurement range set for each wiring mode)
Measurement items	Voltage, Current, Active power, Apparent power, Reactive power, Power factor, Phase angle, Frequency, Efficiency, Current integration, Active power integration, Integrated time, Voltage waveform peak value, Current waveform peak value, Voltage crest factor, Current crest factor, Time average current, Time average active power, Voltage ripple factor, Current ripple factor
Harmonic parameters	Synchronization frequency range: 10 Hz to 640 Hz, Analysis order up to 50th Harmonic voltage RMS value, Harmonic current RMS value, Harmonic active power, Total harmonic voltage distortion, Total harmonic current distortion, Voltage fundamental waveform, Current fundamental waveform, Active power fundamental waveform, Apparent power fundamental waveform, Reactive power fundamental waveform, Power factor fundamental waveform (displacement power factor), Voltage current phase difference fundamental waveform, Interchannel voltage fundamental wave phase difference, Interchannel current fundamental wave phase difference, Harmonic voltage content % , Harmonic current content % , Harmonic active power content % (The following parameters can be downloaded as data during PC communication but not displayed: Harmonic voltage phase angle, Harmonic current phase angle, Harmonic voltage current phase difference)
Measurement range	Voltage : AC/DC 15 V to 1000 V, 7 ranges Current : AC/DC 200 mA to 50 A, 8 ranges Power : 3.0000 W to 150.00 kW (Depends on combination of voltage and current range)
Integration measurement (Integration time up to 10,000 hours)	[Current] No.of displayed digits: 6 digits (from 0.00000 mAh, Polarity-independent integration and Sum value) [Active power] No.of displayed digits: 6 digits (from 0.00000 mWh, Polarity-independent integration and Sum value)
Input resistance (50/60 Hz)	[Voltage] 2 MΩ, [Current] 1 mΩ or less (direct input)
Basic accuracy (Active power)	±0.1% rdg ±0.1% f.s. (DC) ±0.1% rdg ±0.05% f.s. (45 Hz to 66 Hz, at Input < 50% f.s.) ±0.15% rdg (45 Hz to 66 Hz, at 50% f.s. ≤ Input)
Display refresh rate	5 times/s to 20 seconds (depends on average times settings)
Frequency characteristics	DC, 0.1 Hz to 100 kHz
D/A output (-02/-03 model only)	16 channels (selectable from following items): Level output DC ±2 V, Waveform output 1 V f.s. Level output, instantaneous waveform output (voltage, current, active power), Level output (apparent power, reactive power, power factor, or other), High-speed active power level output
Functions	[Rectification method] AC+DC, AC+DC Umn, AC, DC, FND, Auto-range, Average, VT or CT ratio settings, Synchronized control, MAX/MIN, or other functions
Interfaces	RS-232C / LAN standard, (-01/-03 model also includes GP-IB)
Power supply	100 to 240 V AC, 50/60 Hz, 40 VA max.
Dimensions and mass	305 mm (12.01 in)W × 132 mm (5.20 in)H × 256 mm (10.08 in)D, 5.6 kg (197.5 oz)
Accessories	Instruction manual ×1, Measurement guide ×1, Power cord ×1

Shared options for the POWER METER PW3337, PW3336, and PW3335 series

Accurately Measure Devices Up to 1000 V/65 A AC/DC with Direct Input

POWER METER PW3336

LAN
RS-232C
GP-IB
-01/-03 Model
True RMS
CE
3 year Warranty

- Compatible with the SPECpower® benchmark for server power consumption
  SPECpower® is a registered trademark of Standard Performance Evaluation Corporation
- Measure DC and single-phase 2-wire to 3-phase 3-wire with 2-channel input
- For development and production of motors, inverters, power conditioners, power supplies, and other devices
- High-precision basic accuracy of ±0.1 % (*1)
  *(*1) For complete details, please refer to the specifications*
- Wide frequency bandwidth of 0.1 Hz to 100 kHz or DC
- High-current measurement up to 65 A of direct input
- Harmonic measurement up to the 50th order according to IEC 61000-4-7
- High-accuracy measurement, even with a low power factor for no-load testing of transformers and motors
- Built-in external sensor input terminals to measure up to 5000 A AC
- Synchronize up to 8 units for multi-unit measurement

Model No. (Order Code)		
	PW3336	(2ch)
	PW3336-01	(2ch, built-in GP-IB)
	PW3336-02	(2ch, built-in D/A output)
	PW3336-03	(2ch, built-in GP-IB, D/A output)

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

Measurement lines	Single-phase 2-wires, single-phase 3-wires, 3-phase 3-wires, (voltage / current measurement range set for each wiring mode)
Measurement items	Voltage, Current, Active power, Apparent power, Reactive power, Power factor, Phase angle, Frequency, Efficiency, Current integration, Active power integration, Integrated time, Voltage waveform peak value, Current waveform peak value, Voltage crest factor, Current crest factor, Time average current, Time average active power, Voltage ripple factor, Current ripple factor
Harmonic parameters	Synchronization frequency range: 10 Hz to 640 Hz, Analysis order up to 50th Harmonic voltage RMS value, Harmonic current RMS value, Harmonic active power, Total harmonic voltage distortion, Total harmonic current distortion, Voltage fundamental waveform, Current fundamental waveform, Active power fundamental waveform, Apparent power fundamental waveform, Reactive power fundamental waveform, Power factor fundamental waveform (displacement power factor), Voltage current phase difference fundamental waveform, Interchannel voltage fundamental wave phase difference, Interchannel current fundamental wave phase difference, Harmonic voltage content % , Harmonic current content % , Harmonic active power content % (The following parameters can be downloaded as data during PC communication but not displayed: Harmonic voltage phase angle, Harmonic current phase angle, Harmonic voltage current phase difference)
Measurement range	Voltage : AC/DC 15 V to 1000 V, 7 ranges Current : AC/DC 200 mA to 50 A, 8 ranges Power : 3.0000 W to 100.00 kW (Depends on combination of voltage and current range)
Integration measurement (Integration time up to 10,000 hours)	[Current] No.of displayed digits: 6 digits (from 0.00000 mAh, Polarity-independent integration and Sum value) [Active power] No.of displayed digits: 6 digits (from 0.00000 mWh, Polarity-independent integration and Sum value)
Input resistance (50/60 Hz)	[Voltage] 2 MΩ, [Current] 1 mΩ or less (direct input)
Basic accuracy (Active power)	±0.1% rdg ±0.1% f.s. (DC) ±0.1% rdg ±0.05% f.s. (45 Hz to 66 Hz, at Input < 50% f.s.) ±0.15% rdg (45 Hz to 66 Hz, at 50% f.s. ≤ Input)
Display refresh rate	5 times/s to 20 seconds (depend on average times settings)
Frequency characteristics	DC, 0.1 Hz to 100 kHz
D/A output (-02/-03 model only)	16 channels (selectable from following items), Level output DC ±2 V, Waveform output 1 V f.s. Level output, instantaneous waveform output (voltage, current, active power) Level output (apparent power, reactive power, power factor, or other) High-speed active power level output
Functions	[Rectification method] AC+DC, AC+DC Umn, AC, DC, FND, Auto-range, Average, VT or CT ratio settings, Synchronized control, MAX/MIN, or other functions
Interfaces	RS-232C / LAN standard, (-01/-03 model also includes GP-IB)
Power supply	100 to 240 V AC, 50/60 Hz, 40 VA max.
Dimensions and mass	305 mm (12.01 in)W × 132 mm (5.20 in)H × 256 mm (10.08 in)D, 5.2 kg (183.4 oz)
Accessories	Instruction manual ×1, Measurement guide ×1, Power cord ×1

Shared options for the POWER METER PW3337, PW3336, and PW3335 series

Measure AC/DC Standby Power Up to Large Power Loads

POWER METER PW3335

LAN
RS-232C
PW3335, -02/-03/-04
GP-IB
PW3335-01, -04
True RMS
CE
3 year Warranty

- Compatible with the SPECpower® benchmark for server power consumption
  SPECpower® is a registered trademark of Standard Performance Evaluation Corporation
- High-precision ±0.1% basic accuracy (For complete details, please refer to the specifications)
- Wide 1mA to 20A measurement range, max. continuous input of 30 A
- Wide frequency bandwidth of 0.1 Hz to 100 kHz or DC
- Measure harmonic and standby power consumption according to IEC62301
- Achieve superior accuracy even with a low power factor for no-load testing of transformers and motors
- Synchronized control using up to 8 instruments
- Built-in external sensor input terminals to measure up to 5000 A AC (PW3335-03, PW3335-04 only)
- Send measured values to HIOKI data loggers using a Bluetooth® wireless technology compatible adapter (LR8410 Link-compatible products, Ver. 1.1 and later, the PW3335-01 is not supported)

Model No. (Order Code)		
	PW3335	(Buit-in LAN, RS-232C)
	PW3335-01	(Buit-in LAN, GP-IB)
	PW3335-02	(Buit-in LAN, RS-232C, D/A output)
	PW3335-03	(Buit-in LAN, RS-232C, external sensor terminal)
	PW3335-04	(Buit-in LAN, RS-232C, GP-IB, D/A output, external sensor terminal)

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

Measurement lines	Single-phase/ two-wires
Measurement items	Voltage, current, active power, apparent power, reactive power, power factor, phase angle, frequency, maximum current ratio, current integration, active power integration, integration time, voltage waveform peak value, current waveform peak value, voltage crest factor, current crest factor, time average current, time average active power, voltage ripple rate, current ripple rate
Harmonic parameters	Synchronization frequency range : 10 Hz to 640 Hz Maximum analysis order : 50th Harmonic voltage RMS value, harmonic current RMS value, harmonic active power, total harmonic voltage distortion, total harmonic current distortion, fundamental wave voltage, fundamental wave current, fundamental wave active power, fundamental wave apparent power, fundamental wave reactive power, fundamental wave power factor (displacement power factor), fundamental wave voltage current phase difference, harmonic voltage content percentage, harmonic current content percentage, harmonic active power content percentage (The following parameters can be downloaded as data with only PC communications : Harmonic voltage phase angle, harmonic current phase angle, harmonic voltage current phase difference)
Measurement ranges	[Voltage] AC/DC 6 V to 1000 V, 8 ranges [Current] AC/DC 1 mA to 20 A, 14 ranges [Power] 6.0000 mW to 20.000 kW (Depends on combination of voltage and current range) Effect of power factor : ±0.1% f.s. or less (45 to 66 Hz, at power factor = 0)
Integration measurement (Integration time up to 10,000 hours)	Switchable between fixed-range integration and auto-range integration. [Current] No. of displayed digits: 6 digits (from 0.00000 mAh, polarity-independent integration and sum value) [Active power] No. of displayed digits: 6 digits (from 0.00000 mWh, polarity-independent integration and sum value)
Input resistance (50/60 Hz)	[Voltage input terminal] 2 MΩ [Current input terminal] 520 mΩ or less (at 1 mA to 100 mA range), 15 mΩ or less (at 200 mA to 20 A range)
Basic accuracy (Active power)	±0.1% rdg ±0.1% f.s. (DC) ±0.1% rdg ±0.05% f.s. (45 Hz to 66 Hz, at input < 50% f.s.) ±0.15% rdg (45 Hz to 66 Hz, at 50% f.s. ≤ input)
Display refresh rate	5 times/s to 20 seconds (depend on average times settings)
Frequency characteristics	DC, 0.1 Hz to 100 kHz
D/A output (-02/-04 models only)	7 channels (selectable from the following items): level output DC ±2 V f.s. or 5 V f.s., waveform output 1 V f.s., level output, instantaneous waveform output (voltage, current, active power), level output (apparent power, reactive power, power factor, or other), high-speed level output (voltage, current, active power)
Functions	[Rectification method] AC+DC, AC+DC Umn, AC, DC, FND, Auto-range, Average, VT or CT ratio settings, Synchronized control, MAX/MIN, and more
Logger connectivity	Sends measured values wirelessly to logger by using a Bluetooth® wireless technology serial conversion adapter. (Supported devices: Hioki LR8410 Link-compatible loggers), Ver. 1.1 and later, the PW3335-01 is not supported
Interfaces	LAN (all models), RS-232C (except -01 model, for communication/LR8410 link), GP-IB (-01, -04 models only)
Power supply	100 V to 240 V AC, 50/60 Hz, 30 VA max.
Dimensions and mass	210 mm (8.27 in)W × 100 mm (3.94 in)H × 245 mm (9.65 in)D, 3 kg (105.8oz)
Accessories	Instruction manual ×1, power cord ×1, voltage and current input terminal safety cover ×2, safety cover installation screws (M3 × 6 mm) ×4

Shared options for the POWER METER PW3337, PW3336, and PW3335 series ...(*PW3335 is available only for models with external current sensor input terminals, current sensor can be used)

Current measurement

Current sensors are compatible only with versions of Model PW3335 that include the external current sensor terminal.
Can be connected to the current sensor input terminals (1 sensor necessary for single-phase measurement, and 2 or 3 sensors required for 3-phase measurements)

CLAMP ON SENSOR 9660
100A AC rated current, φ 15 mm (0.59 in) core dia., 3 m (9.84 ft) length

CLAMP ON SENSOR 9661
500A AC rated current, φ 46 mm (1.81 in) core dia., 3 m (9.84 ft) length

FLEXIBLE CLAMP ON SENSOR CT9667-01/-02/-03
5000/500 A AC rated current, φ 100 mm (3.94 in) to 254 mm (10.0 in) core dia., Cable length: Between sensor - box 2 m (6.56 ft), Output cable 1 m (3.28 ft)

CLAMP ON SENSOR 9669
1000A AC rated current, φ 55 mm (2.17 in) core dia., 3 m (9.84 ft) length

High-Precision Current Sensors

*Current sensors are compatible only with versions of Model PW3335 that include the external current sensor terminal.
*To use a high precision current sensor (-05 model), requires Sensor Unit CT9555 and Connection Cord L9217.
*To use a high precision current sensor (without "-05" model), requires Conversion Cable CT9900 for PL23 (10pin) to ME15W (12 pin) conversion, Sensor Unit CT9555 and Connection Cord L9217.
*1 sensor necessary for single-phase measurement, 2 or 3 sensors required for 3-phase measurements. The same number of power supply and connection cord as the sensor is necessary.

Up to 200 A (High precision)

AC/DC CURRENT SENSOR CT6862-05
High-precision pull-through type, DC to 1 MHz, 50 A input, ±0.05% amplitude accuracy, ±0.2° phase accuracy, ME15W terminal

AC/DC CURRENT SENSOR CT6863-05
High-precision pull-through type, DC to 500 kHz,200 A input, ±0.05% amplitude accuracy, ±0.2° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6841-05
DC to 1 MHz, 20 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6843-05
DC to 500 kHz, 200 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

CLAMP ON SENSOR 9272-05
1 Hz to 100 kHz, 20/200 A switching input, ±0.3% amplitude accuracy, ±0.2° phase accuracy, ME15W terminal

Up to 500 A (High precision)

AC/DC CURRENT SENSOR CT6904
High-precision pull-through type, DC to 4 MHz, 500 A input, ±0.02% amplitude accuracy, ±0.08° phase accuracy, ME15W terminal

AC/DC CURRENT SENSOR CT6875
High-precision pull-through type, DC to 2 MHz, 500 A input, ±0.04% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6844-05
DC to 200 kHz, 500 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

AC/DC CURRENT PROBE CT6845-05
DC to 100 kHz, 500 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

*When using a PL23 terminal sensor without "-05" in the model number, Conversion Cable CT9900 must be used to connect to ME15W terminal.
*When using the CT6865 and CT6846 (without "-05"), connection via the CT9900 and manual settings are required on the main device.

PL23 (10 pin) - ME15W (12 pin) conversion

CONVERSION CABLE CT9900
Convert PL23 (10 pin) to ME15W (12 pin) terminal

Up to 1000 A (High precision)

AC/DC CURRENT SENSOR CT6876
High-precision pull-through type, DC to 1.5 MHz, 1000 A input, ±0.04% amplitude accuracy, ±0.1° phase accuracy, ME15W terminall

AC/DC CURRENT PROBE CT6846-05
DC to 20 kHz, 1000 A input, ±0.3% amplitude accuracy, ±0.1° phase accuracy, ME15W terminal

Power supply for sensors

SENSOR UNIT
CT9555 1ch, with Waveform output

CONNECTION CORD L9217
Cord has insulated BNC connectors at both ends, 1.6 m (5.25 ft) length

PC communication

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

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2m (6.56 ft) length

Other options

Synchronize Multiple Units

CONNECTION CORD 9165
Cord has metallic BNC connectors at both ends, use at metallic terminal, 1.5 m (4.92 ft) length

Single Phase Power Meter Compatible with DC Measurement and Current/Power Integration Measurement

AC/DC POWER HiTESTER 3334

RS-232C
GP-IB
-01 Model
True RMS
CE
3 year Warranty

- Compatible with the SPECpower® benchmarking for server power consumption
  ® SPECpower is a registered trademark of Standard Performance Evaluation Corporation
- DC measurement mode, AC, and AC+DC measurement
- Integration function for current and power
- ±0.1% high basic accuracy (For complete details, please refer to the specifications)
- Extended period of guaranteed accuracy of 3 years
- Complete accuracy over a wide input range

Model No. (Order Code) **3334**
3334-01 (Buit-in GP-IB)

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

Measurement lines	Single-phase/ two-wires
Measurement items	Voltage, Current, Active power, Apparent power, Power factor, Frequency, Integration (current, active power), Waveform peak (voltage and current)
Measurement ranges	[Voltage] AC/DC 15.000/ 30.00/ 150.00/ 300.0 V [Current] AC/DC 100.00/ 300.0 mA, 1.0000/ 3.000/ 10.000/ 30.00 A [Power] 1.5000 W to 9.000 kW (combination of voltage and current ranges)
Integration measurement Integration time up to 10,000 hours	[Current] No. of displayed digits: 6 digits (from 0.00000 mAh, Polarity-independent integration and Sum value) [Active power] No. of displayed digits: 6 digits (from 0.00000 mWh, Polarity-independent integration and Sum value)
Input resistance (50/60 Hz)	[Voltage] 2.4 MΩ, [Current] 10 mΩ or less (direct input)
Basic accuracy	±0.1% rdg ±0.2% f.s. (DC), ±0.1% rdg ±0.1% f.s. (45 Hz to 66 Hz) *Note: Provided accuracy of 1 Year, typical value*
Display refresh rate	5 times/s
Frequency characteristics	DC, 45 Hz to 5 kHz
Waveform output	Parameter output representation: voltage, current and power (3 simultaneous channels), Output voltage: 1 V DC f.s.
Analog output (D/A output)	Parameter output representation: voltage, current active power and selected 1 item (4 simultaneous channels), Selected 1 item from apparent power, power factor, current integration, active power integration, Output voltage: ±2 V DC f.s.
Functions	Rectification method switchable between AC+DC (True RMS), DC (simple average), AC (True RMS), Wave peak measurement, VT or CT ratio settings, Average function
Interfaces	RS-232C included as standard, GP-IB (Model 3334-01 only)
Power supply	100 V to 240 V AC, 50/60 Hz, 20 VA max.
Dimensions and mass	210 mm (8.27 in)W × 100 mm (3.94 in)H × 245 mm (9.65 in)D, 2.5 kg (88.2 oz)
Accessories	Instruction manual ×1, Power cord ×1

PC communication

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

Single Phase Power Meter for Production and Inspection Lines

POWER HiTESTER 3333

RS-232C
GP-IB
-01 Model
True RMS
CE
3 year Warranty

- Ideal for replacing portable instruments, ±0.1% basic accuracy
- Extended period of guaranteed accuracy of 3 years
- 50mA to 20A AC current range (300 V Max., Accuracy guaranteed up to 30 A)
- Print out with the 9442 and RS-232C interface

Model No. (Order Code) **3333**
3333-01 (Buit-in GP-IB)

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

Measurement lines	Single-phase 2-wires
Measurement items	Voltage, Current, Active power, Apparent power, Power factor
Measurement range	[Voltage] 200 V AC (300 V Max.) [Current] 50/ 200/ 500 mA, 2/ 5/ 20 A AC (30 A Max.) [Power] 10.000 W to 4.000 kW (combination of voltage and current ranges)
Input resistance (50/60 Hz)	[Voltage] 2.4 MΩ, [Current] 7 mΩ or less (direct input)
Basic accuracy	[Guaranteed for 1 year, Voltage, Current, Active power] ±0.1 % rdg ±0.1 % f.s. (45 Hz to 66 Hz, input current 20 A or less) [Guaranteed for 3 years, Voltage, Current, Active power] ±0.1 % rdg ±0.2 % f.s. (45 Hz to 66 Hz, input current 20 A or less)
Display refresh rate	5 times/s
Frequency characteristics	45 Hz to 5 kHz
D/A output	3 channels outputs simultaneously for voltage, current, active power +2 V DC f.s.
Functions	Scaling (VT, CT ratio settings), Average function
Interfaces	RS-232C standard, GP-IB (Model 3333-01 only)
Power supply	100 to 240 V AC, 50/60 Hz, 20 VA max.
Dimensions and mass	160 mm (6.30 in)W × 100 mm (3.94 in)H × 227 mm (8.94 in)D, 1.9 kg (67.0 oz)
Accessories	Instruction manual ×1, Power cord ×1

PC communication

RS-232C CABLE 9637
For the PC, 9pin - 9pin, cross, 1.8m (5.91 ft) length

GP-IB CONNECTOR CABLE 9151-02
2 m (6.56 ft) length

Printer options

PRINTER 9442
For printing numerical values 112 mm (4.41 in) paper width

AC ADAPTER 9443-02
For the Printer 9442, EU type

CONNECTION CABLE 9444
For the Printer 9442, 9 pin - 9 pin, 1.5 m (4.92 ft) length

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) × 25 m (82.03 ft), 10 rolls/set

Investigate Power Characteristics and Analyze the Causes of Problems

POWER QUALITY ANALYZER PQ3198

Current sensors : Sold separately

- Verify power problems in accordance with the IEC61000-4-30 Class A standard
- High accuracy and continuous gapless recording
  (V: ±0.1% of nominal voltage, A: ±0.1% rdg ±0.1% f.s., W: ±0.2% rdg ±0.1% f.s.)
- Broadband voltage range lets you measure even high-order harmonic components of up to 80 kHz
- Maximum 6000 V peak transient voltage up to 700 kHz
- Measure up to 6000 A AC
- Two systems of power measurement and efficiency calculation for (ch 1, ch 2, ch 3) and ch 4
- Make simple measurements of inverters with 40 to 70 Hz fundamental frequency and max. 20 kHz carrier frequency
- Easily create reports with bundled PQ ONE application software
- Optional GPS BOX for synchronizing multiple devices

Model No. (Order Code) **PQ3198** (Main unit, current sensor is sold separately)

Note: An optional current sensor is necessary to measure current or power parameters. Select from Value Kits for added savings.

POWER QUALITY ANALYZER PQ3198 VALUE KITS :

Model No. (Order Code) (Note)

PQ3198-92 (Kit includes 600 A sensor × 4 and other options)

Kit contents: Main unit, AC Current sensor CT7136 (600 A) ×4, Patch Cord L1021-02 × 3, Carrying Case C1009

PQ3198-94 (Kit includes 6000 A sensor × 4 and other options)

Kit contents: Main unit, AC Current sensor CT7045 (6000 A) ×4, Patch Cord L1021-02 × 3, Carrying Case C1009

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

Measurement line type	Single-phase 2-wire, Single-phase 3-wire, Three-phase 3-wire or Three-phase 4-wire plus one extra input channel for voltage, current, power measurement (AC or DC measurement)
Voltage ranges	Voltage measurement: 600.00 V rms Transient measurement 6.0000 kV peak
Current ranges	500.00 mA to 5.0000 kA AC (depends on current sensor in use)
Power ranges	300.00 W to 3.0000 MW (determined automatically based on voltage and current range in use)
Basic accuracy	Voltage: ±0.1% of nominal voltage Current: ±0.1 % rdg ±0.1 % f.s. + current sensor accuracy Active power: ±0.2 % rdg ±0.1 % f.s. + current sensor accuracy
Measurement items	1. Transient voltage : 2 MHz sampling 2. Frequency cycle : Calculated as one cycle, 40 to 70 Hz 3. Voltage (1/2) RMS: one cycle calculation refreshed every half cycle Current (1/2) RMS: half-cycle calculation 4. Voltage swell, Voltage dips, Voltage interruption 5. Inrush current 6. Voltage waveform comparison 7. Instantaneous flicker value: As per IEC61000-4-15 8. 200 ms frequency: Calculated as 10 or 12 cycles,40 to 70 Hz 9. 10 sec frequency: Calculated as the whole-cycle time during the specified 10 s period, 40 to 70 Hz 10. Voltage waveform peak, Current waveform peak 11. Voltage, Current, Active power, Apparent power, Reactive power, Active energy, Reactive energy, Power factor, Displacement power factor, Voltage unbalance factor, Current unbalance factor, and efficiency 12. High-order harmonic component (voltage/ current): 2 kHz to 80 kHz 13. Harmonic/ Harmonic phase angle (voltage/ current), Harmonic power: 0th to 50 th orders 14. Harmonic voltage-current phase angle: 1th to 50 th orders 15. Total harmonic distortion factor (voltage/ current) 16. Inter harmonic (voltage/ current): 0.5 th to 49.5 th order 17. K Factor (multiplication factor) 18. IEC Flicker, Δ V10 Flicker
Record	Repeated ON: 1 year, Maximum recording event: 9999 × 366 days (up to 9999 events per day) Repeated off: 35 days, maximum recording event: 9999 events
Interfaces	SD/SDHC memory card, LAN (HTTP server function / FTP function), USB2.0 (for communication)
Display	6.5-inch TFT color LCD (640 × 480 dots)
Power supply	AC adapter Z1002 (100 V to 240 V AC, 50/60 Hz, rated current 1.7 A), Battery Pack Z1003 (Continuous use: 180 minutes, Charging time: Max. 5 hr 30 m with AC adapter)
Dimensions and mass	300 mm (11.81 in)W × 211 mm (8.31 in)H × 68 mm (2.68 in)D, 2.6 kg (91.7 oz) (including Battery Pack Z1003)
Accessories	Instruction manual ×1, Measurement guide ×1, Voltage Cord L1000 ×1 set (Red/ Yellow/ Blue/ Gray each 1, Black 4, 3m (9.84ft) length, Alligator clip ×8), Color clip, AC Adapter Z1002 ×1, Strap ×1, USB cable (1 m 3.28 ft length) ×1, Battery pack Z1003 ×1, SD Memory Card 2GB Z4001 ×1, Application software (PQ ONE) ×1

Quick and Simple Power Quality Testing, Record and Analyze Power Supply Issues with a Single Instrument

POWER QUALITY ANALYZER PQ3100

Current sensors : Sold separately

- Record data including voltage, current, power, harmonics, and flicker simultaneously along a single time axis
- Measure up to 6000 A AC
- Capture all power anomalies, including instantaneous outages, voltage drops, and frequency fluctuations, while simultaneously recording trend data
- Quick Set: Easy-to-understand on-screen guide for measurement procedures
- Bundled PQ ONE application software makes it easy to create reports
- Record waveforms for up to 1 second before and 10 seconds after an anomaly occurs
- Accurately measure DC currents over extended periods of time (with an AC/DC auto-zero current sensor)
- Directly supply power to connected current sensors
- Send measured values to HIOKI data loggers using a Bluetooth® wireless technology compatible adapter (LR8410 Link-compatible products), Ver. 2.0 and later

Model No. (Order Code) **PQ3100** (Main unit, clamp sensor is sold separately)

Note: An optional current sensor is necessary to measure current or power parameters. Select from Value Kits for added savings.

POWER QUALITY ANALYZER PQ3100 VALUE KITS :

Model No. (Order Code) (Note)

PQ3100-91 (Kit includes 600 A sensor × 2 and other options)

Kit contents: AC Current sensor CT7136 (600 A) ×2, PQ3100 main unit, SD Memory card 2GB Z4001, Carrying case C1009

PQ3100-92 (Kit includes 600 A sensor × 4 and other options)

Kit contents: AC Current sensor CT7136 (600 A) ×4, PQ3100 main unit, SD Memory card 2GB Z4001, Carrying case C1009

PQ3100-94 (Kit includes 6000 A sensor × 4 and other options)

Kit contents: AC Flexible current sensor CT7045 (6000 A) ×4, PQ3100 main unit, SD Memory card 2GB Z4001, Carrying case C1009

PQ3100-91 Value Kit

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

Measurement line type	Single-phase 2-wire, Single-phase 3-wire, Three-phase 3-wire or Three-phase 4-wire plus one extra input channel CH4 for voltage/current, (all channels AC/DC measurement)
Voltage ranges	Voltage measurement: 1000.0 V rms or DC, Transient measurement 2.200 kV peak
Current ranges	50.000 mA AC to 5.0000 kA AC, 10.000 A DC to 2.0000 kA DC (depends on current sensor in use)
Power ranges	50.000 W to 6.0000 MW (determined automatically based on current range in use)
Basic accuracy	Voltage: ±0.2% of nominal voltage, Current: ±0.1 % rdg ±0.1 % f.s. + current sensor accuracy, Active power: DC ±0.5 % rdg ±0.5 % f.s. + current sensor accuracy, AC ±0.2 % rdg ±0.1 % f.s. + current sensor accuracy
Measurement items	1. Transient over voltage : 200 kHz sampling 2. Frequency cycle : Calculated as one cycle 3. Voltage (1/2) RMS, Current (1/2) RMS: one cycle calculation refreshed every half cycle 4. Voltage swell, Voltage dips, Voltage interruption, RVC (Ver. up) : Voltage (1/2) RMS calculation 5. Inrush current : half-cycle calculation: Calculated as the current RMS value for current waveform data sampled every half-cycle. 6. Frequency 200 ms: Calculated as 10 or 12 cycles 7. 10-sec frequency: Calculated as the whole-cycle time during the specified 10 s period 8. Voltage waveform peak, Current waveform peak 9. Voltage, Current, Active power, Apparent power, Reactive power, Active energy, Apparent energy, Reactive energy, Energy cost, Power factor, Displacement power factor, Voltage unbalance factor, Current unbalance factor 10. Voltage crest factor, Current crest factor 11. Harmonic/ Harmonic phase angle (voltage/ current), Harmonic power: 0 th to 50 th orders 12. Harmonic voltage-current phase angle: 1 th to 50 th orders 13. Total harmonic distortion factor (voltage/ current) 14. Inter harmonic (voltage/ current): 0.5 th to 49.5 th orders 15. K Factor (multiplication factor) 16. IEC Flicker, Δ V10 Flicker
Record	Maximum recording interval: 1 year, Maximum number of recordable events: 9999 × 365 days
Interfaces	SD/SDHC memory card, RS-232C (for communication/ LR8410 link), LAN (HTTP server/ FTP / Send e-mail), USB 2.0 (for communication)
Logger connectivity	Sends measured values wirelessly to logger by using a Bluetooth® wireless technology serial conversion adapter. (Supported devices: Hioki LR8410 Link-compatible loggers), Ver. 2.0 and later
Display	6.5-inch TFT color LCD (640 × 480 dots)
Power supply	AC adapter Z1002 (100 V to 240 V AC, 50/60 Hz, rated current 1.7 A), Battery pack Z1003 (Continuous use: 8 hr, Charging time: Max. 5 hr 30 m with AC adapter)
Dimensions and mass	300 mm (11.81 in)W × 211 mm (8.31 in)H × 68 mm (2.68 in)D, 2.5 kg (88.2 oz) (including battery pack)
Accessories	Instruction manual ×1, Measurement guide ×1, Voltage cord L1000-05 ×1 set (Red/ Yellow/Blue/Gray/Black, Alligator clip ×5, Spiral tube ×5), Color clip (for identifying clamp sensor color) ×1 set, Spiral tube ×5, AC adapter Z1002 ×1, Strap ×1, USB cable (1 m 3.28 ft length) ×1, Battery pack Z1003 ×1, PQ ONE (software, CD) ×1

Power Quality Analyzers

Shared options for the PQ3198 / PQ3100

Current input

For power or load current measurement (1 sensor necessary for single-phase measurements, and 2 or 3 sensors required for 3-phase measurements)

AC CURRENT SENSOR CT7126
60 A AC, φ15 mm (0.59 in), 2.5 m (8.20 ft) cord length

AC CURRENT SENSOR CT7131
100 A AC, φ15 mm (0.59 in), 2.5 m (8.20 ft) cord length

AC CURRENT SENSOR CT7136
600 A AC, φ46 mm (1.81 in), 2.5 m (8.20 ft) cord length

AC FLEXIBLE CURRENT SENSOR CT7044
6000 A AC, φ100 mm (3.94 in), 2.5 m (8.20 ft) cord length

AC FLEXIBLE CURRENT SENSOR CT7045
6000 A AC, φ180 mm (7.09 in), 2.5 m (8.20 ft) cord length

AC FLEXIBLE CURRENT SENSOR CT7046
6000 A AC, φ254 mm (10.00 in), 2.5 m (8.20 ft) cord length

Leak current input

*For leak current measurement (not capable of power measurement)

AC LEAKAGE CURRENT SENSOR CT7116
6 A AC, φ40 mm (1.57 in), 2.5 m (8.20 ft) cord length

AC/DC current input

AC/DC AUTO-ZERO CURRENT SENSOR CT7731
100 A AC/DC, φ33 mm (1.30 in), 2.5 m (8.20 ft) cord length

AC/DC AUTO-ZERO CURRENT SENSOR CT7736
600 A AC/DC, φ33 mm (1.30 in), 2.5 m (8.20 ft) cord length

AC/DC AUTO-ZERO CURRENT SENSOR CT7742
2000 A AC/DC, φ55 mm (2.17 in), 2.5 m (8.20 ft) cord length

EXTENSION CABLE L0220-01
2 m (6.56 ft) length

EXTENSION CABLE L0220-02
5 m (16.41 ft) length

EXTENSION CABLE L0220-03
10 m (32.81 ft) length

PQ3100 Voltage input

For PQ3100 only *The L1000-05 is bundled with PQ3100
*Please inquire about voltage cord extension

VOLTAGE CORD L1000-05
Red/ Yellow/ Blue/ Gray/ Black each 1, 3 m (9.84 ft) length, Alligator clip ×5

PQ3198 Voltage input

For PQ3198 only *The L1000 is bundled with PQ3198
*Please inquire about voltage cord extension

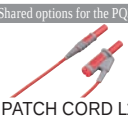
VOLTAGE CORD L1000
Red/ Yellow/ Blue/ Gray each 1, Black 4, 3m (9.84ft) length, Alligator clip ×8

WIRING ADAPTER PW9000
When three-phase 3-wire connection, the voltage cord to be connected can be reduced from 6 to 3

WIRING ADAPTER PW9001
When three-phase 4-wire connection, the voltage cord to be connected can be reduced from 6 to 4

Voltage input

Shared options for the PQ3100 / PQ3198



PATCH CORD L1021-01
Banana branch-banana, Red: 1, Cable length: 0.5 m, For branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

PATCH CORD L1021-02
Banana branch-banana, Black: 1, Cable length: 0.5 m, For branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

GRABBER CLIP 9243
Attaches to the tip of the banana plug cable, Red/ Black: 1 each, 196 mm (7.72 in) length, CAT III 1000 V

MAGNETIC ADAPTER 9804-01
Attaches to the tip of cord, red ×1, φ11 mm (0.43 in)

MAGNETIC ADAPTER 9804-02
Attaches to the tip of cord, black ×1, φ11 mm (0.43 in)

Storage media

*The Z4001 is bundled to PQ3198 only

SD MEMORY CARD 2GB Z4001
2 GB capacity

SD MEMORY CARD Z4003
8 GB capacity

SD Card Precaution
Use only the SD Card sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. You may be unable to read from or save data to such cards.

PC peripherals

Shared options for the PQ3100 / PQ3198

GENNECT ONE SF4000
Application for Windows

PC peripherals

For PQ3100 only

RS-232C CABLE 9637
For the PC, 9 pin - 9 pin, cross, 1.8 m (5.91 ft) length

Other options

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

CONVERSION CABLE L9910
Used to connect the current sensors with BNC terminal to PL14 terminal (example the PQ3100)

Power supply

*The Z1002, Z1003 are bundled

AC ADAPTER Z1002
For main unit, 100 to 240 V AC

BATTERY PACK Z1003
NiMH, Charges while installed in the main unit

Time synchronization

For PQ3198 only

GPS BOX PW9005
To synchronize the PQ3198 / PW3198 clock to UTC

Hands-free options

When using with PQ3100 / PQ3198, suspend the main body on the metal surface using two Z5020 powerful type. Z5004 hang the cords on the metal surface.

MAGNETIC STRAP Z5020
Heavy-duty

MAGNETIC STRAP Z5004

Cases

CARRYING CASE C1001
Soft type, Includes compartment for options

CARRYING CASE C1002
Hard trunk type, Includes compartment for options

CARRYING CASE C1009
Bag type, Includes compartment for options

Waterproof Box
For outdoor installation; IP65 compliant, Contact Hioki for a quotation.

Eliminate the Risk of Short-Circuits and Electrical Accidents

CLAMP ON POWER LOGGER PW3365

True RMS

* Current sensors : sold separately
* Voltage sensors : bundled

- Voltage measurement from the top of the cable, zero risk of short circuit
- Supports single to three-phase, 4-wire circuits
- Measure between 90V to 520V
- Display harmonics up to the 13th order
- Slim, compact design that can be placed anywhere
- Store months of data on SD cards
- The QUICK SET function guides you in making the right connections

LAN USB2.0 SD SDHC CE 3 year Warranty

GERMAN DESIGN AWARD SPECIAL 2016
*For Voltage Sensor

2015 The Nikkan Kogyo Shimbun MACHINE DESIGN AWARD Distinctive Merit Award
* For PW3365

Model No. (Order Code) **PW3365-20** (English model, main unit only)

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

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

Measurement line & number of circuits	50/60 Hz, Single phase 2 wires (1/2/3 circuits), Single phase 3 wires (1 circuit), Three phases 3 wires (1 circuit), Three phases 4 wires (1 circuit), Current only: 1 to 3 channels
Measurement items	Voltage RMS, current RMS, voltage fundamental wave value, current fundamental wave value, voltage fundamental wave phase angle, current fundamental wave phase angle, frequency (U1), voltage waveform peak (absolute value), current waveform peak (absolute value), active power, reactive power, apparent power, power factor (with lag/lead display) or displacement power factor (with lag/lead display), active energy (consumption, regeneration), reactive energy (lag, lead), energy cost display, active power demand quantity (consumption, regeneration), reactive power demand quantity (lag, lead), active power demand value (consumption, regeneration), reactive power demand value (lag, lead), power factor demand
Harmonic	Harmonic voltage, harmonic current, voltage total harmonic distortion (THD-F or THD-R), current total harmonic distortion (THD-F or TDH-R), up to 13th order
Voltage ranges	400 V AC (Effective measurement range: 90.0 V to 520.0 V)
Current ranges	500.00 mA to 5.0000 kA AC (depends on current sensor in use), 50.000 mA to 5.0000 A AC (Leak clamp on sensor only)
Power ranges	200.00 W to 6.0000 MW (depends on voltage/current combination and measured line type)
Basic accuracy	Voltage : ±1.5% rdg ±0.2% f.s(combined accuracy with PW3365-20 + PW9020) Current : ±0.3% rdg ±0.1% f.s. + clamp sensor accuracy Active power : ±2.0% rdg ±0.3% f.s. + clamp sensor accuracy (at power factor = 1)
Display update rate	0.5 sec (except when accessing SD card or internal memory, or during LAN/USB communication)
Save destination	SD/SDHC Memory card, or internal memory at real time
Data save interval	1 sec to 30 sec, 1 minute to 60 minutes, 14 selections
Save items	Measurement value save: Average only / Average, Maximum, Minimum value Screen copy: BMP form (saved every 5 min. at minimum interval time) Waveform save: Binary waveform data
Interfaces	SD/SDHC memory card, LAN 100BASE-TX: HTTP server function, remote settings via communication program, data download, USB 2.0: When connected to a PC, the SD Card and internal memory are recognized as removable storage devices, remote settings via communication program, data download
Functions	Connection check, Quick Set navigation guide, clock
Power supply	AC adapter Z1008: (100 to 240 V AC, 50/60 Hz), 45 VA (including AC adapter) Battery pack 9459: (DC 7.2 V, 3 VA, charging time 6 hr 10 m), 5 hours of continuous use (with back light off)
Dimensions and mass	180 mm (7.09 in)W × 100 mm (3.94 in)H × 48 mm (1.89 in)D, 540 g (19 oz) without PW9002 180 mm (7.09 in)W × 100 mm (3.94 in)H × 68 mm (2.68 in)D, 820 g (28.9 oz) with PW9002
Accessories	Safety Voltage Sensor PW9020 ×1 set, AC adapter Z1008 ×1, USB cable ×1, Instruction manual ×1, Measurement guide ×1, Color clip (red, yellow, blue and white each 4), Spiral tubes in black (cord bundling for current sensors and voltage sensors) ×10

Identify Your Power Condition to Reveal Energy Saving Ideas

CLAMP ON POWER LOGGER PW3360

Current sensors : Sold separately

- Supports single to three-phase, 4-wire circuits
- Measure between 90V to 780V
- Simultaneously measure up to three single-phase, 2-wire circuits (in the same power system)
- Slim, compact design that can be placed anywhere
- Store months of data on SD cards
- The QUICK SET function guides you in making the right connections
- Choose PW3360-21 for harmonic measurements up to the 40th order

Model No. (Order Code) **PW3360-20** (English model, main unit only)
PW3360-21 (English model, with harmonic analysis function)

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

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

Measurement line & number of circuits	50/60 Hz, Single phase 2 wires (1/2/3 circuits), Single phase 3 wires (1 circuit), Three phases 3 wires (1 circuit), Three phases 4 wires (1 circuit), Current only: 1 to 3 channels
Measurement items	Voltage RMS, current RMS, voltage fundamental wave value, current fundamental wave value, voltage fundamental wave phase angle, current fundamental wave phase angle, frequency (U1), voltage waveform peak (absolute value), current waveform peak (absolute value), active power, reactive power (with lag/lead display), apparent power, power factor (with lag/lead display) or displacement power factor (with lag/lead display), active energy (consumption, regeneration), reactive energy (lag, lead), energy cost display, active power demand quantity (consumption, regeneration), reactive power demand quantity (lag, lead), active power demand value (consumption, regeneration), reactive power demand value (lag, lead), power factor demand, pulse input [PW3360-21 only]: Harmonic voltage level, harmonic current level, harmonic power level, content percentage, phase angle, total harmonic distortion (THD-F or THD-R), up to 40th order
Voltage ranges	600 V AC (Effective measurement range: 90.00 V to 780.00 V)
Current ranges	500.00 mA to 5.0000 kA AC (depends on current sensor in use), 50.000 mA to 5.0000 A AC (Leak clamp on sensor only)
Power ranges	300.00 W to 9.0000 MW (depends on voltage/current combination and measured line type)
Basic accuracy	Voltage : ±0.3% rdg ±0.1% f.s Current : ±0.3% rdg ±0.1% f.s. + clamp sensor accuracy Active power : ±0.3% rdg ±0.1% f.s. + clamp sensor accuracy (at power factor = 1)
Display update rate	0.5 sec (except when accessing SD card or internal memory, or during LAN/USB communication)
Save destination	SD Memory card, or internal memory at real time
Data save interval	1 sec to 30 sec, 1 minute to 60 minutes, 14 selections
Save items	Measurement value save: Average only / Average, Max./Min. value, [PW3360-21 only]: Harmonic data save: Average only / average, max./min. value in binary format, Screen copy: BMP form (saved every 5 min. at minimum interval time), Waveform save: Binary waveform data
Interfaces	SD/SDHC memory card, LAN 100BASE-TX: HTTP server function, USB 2.0: When connected to a PC, the SD Card and internal memory are recognized as removable storage devices, remote settings via communication program, data download, Pulse output: proportional to active power consumption when measuring integral power consumption, Isolated open-collector signal
Functions	Connection check, Quick Set navigation guide, clock, pulse input
Power supply	AC adapter Z1006: (100 to 240 V AC, 50/60 Hz), 40 VA (including AC adapter), Battery pack 9459: (DC 7.2 V, 3 VA, charging time 6 hr 10 m), 8 hours of continuous use (with back light off)
Dimensions and mass	180 mm (7.09 in)W × 100 mm (3.94 in)H × 48 mm (1.89 in)D, 550 g (19.4 oz) without PW9002 180 mm (7.09 in)W × 100 mm (3.94 in)H × 67.2 mm (2.65 in)D, 830 g (29.3 oz) with PW9002
Accessories	Voltage cord L9438-53 ×1 set, AC adapter Z1006 ×1, USB cable ×1, Instruction manual ×1, Measurement guide ×1, Color clip ×1 set: red, yellow, blue, white/two each, for color-coding clamp sensors, Spiral tubes for grouping clamp sensor cords ×5

Shared options for PW3360, PW3365

Voltage input for PW3360 — *L9438-53 is bundled with the PW3360-20/-21

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

MAGNETIC ADAPTER 9804-01
Attaches to the tip of cord, red ×1, φ11 mm

MAGNETIC ADAPTER 9804-02
Attaches to the tip of cord, black ×1, φ11 mm

PATCH CORD L1021-01
Banana branch-banana, Red: 1, Cable length: 0.5 m, For branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

PATCH CORD L1021-02
Banana branch-banana, Black: 1, Cable length: 0.5 m, For branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

Storage media

SD MEMORY CARD 2GB Z4001
2 GB capacity

SD MEMORY CARD Z4003
8 GB capacity

SD Card Precaution
Use only the SD Card sold by HIOKI. Compatibility and performance are not guaranteed for SD cards made by other manufacturers. You may be unable to read from or save data to such cards.

Voltage input for PW3365 — *PW9020 ×4 pieces are bundled, additional single sensors also available

SAFETY VOLTAGE SENSOR PW9020
For PW3365, 3 m (9.84 ft) length

PW3360 / PW3365 shared power supply — *The 9459 is a replacement battery pack included with the Battery Set PW9002.

BATTERY SET PW9002
Battery case and Battery Pack 9459 Set

BATTERY PACK 9459
NiMH, Charges while installed in the main unit

Power supply for PW3360 — *Z1006 is bundled with the PW3360

AC ADAPTER Z1006
100 to 240 V AC

VOLTAGE LINE POWER ADAPTER PW9003
For PW3360s, supplies power from measurement lines, up to 240V AC

Power supply for PW3365 — *Z1008 is bundled with the PW3365

AC ADAPTER Z1008
100 to 240 V AC

PW3360 / PW3365 shared case, Other

CARRYING CASE C1005
For PW3360/3365 series, for storing options

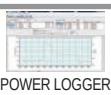
Z5004 hang the cords on the metal surface. C1005 store Current sensor ×2, Voltage sensor ×3 pieces

MAGNETIC STRAP Z5004

PW3365 Case

CARRYING CASE C1008
For PW3365 series, for storing Current sensor ×3, Voltage sensor ×4 pieces

PC peripherals



POWER LOGGER VIEWER SF1001
Easy graphical processing of measurement data saved with the PW3360/3365 series, 3169 series on a PC

GENNECT CROSS SF4000
Application for Windows

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

Shared optional current sensors for PW3360, PW3365, and the 3169 (also available for old products the 3197, and the 3196)

For power or load current measurement (1 sensor necessary for single-phase measurements, and 2 or 3 sensors required for 3-phase measurements)

CLAMP ON SENSOR 9694
5A AC rated current, φ 15 mm (0.59 in) core dia., 3 m (9.84 ft) length

CLAMP ON SENSOR 9660
100A AC rated current, φ 15 mm (0.59 in) core dia., 3 m (9.84 ft) length

CLAMP ON SENSOR 9661
500A AC rated current, φ 46 mm (1.81 in) core dia., 3 m (9.84 ft) length

FLEXIBLE CLAMP ON SENSOR CT9667-01/-02/-03
5000/500 A AC rated current, φ 100 mm (3.94 in) to 254 mm (10.0 in) core dia., Cable length: Between sensor - box 2 m (6.56 ft), Output cable 1 m (3.28 ft)

CLAMP ON SENSOR 9669
1000A AC rated current, φ 55 mm (2.17 in) core dia., 3 m (9.84 ft) length

Not CE marked
CLAMP ON SENSOR 9695-02
50A AC rated current, φ 15 mm (0.59 in) core dia., Requires the Connection cord 9219

Not CE marked
CLAMP ON SENSOR 9695-03
100A AC rated current, φ 15 mm (0.59 in) core dia, Requires the Connection cord 9219

CONNECTION CORD 9219
Connect with the 9695-02/ -03, Output BNC terminal

Shared options for PW3360, PW3365, and the 3197

For leak current measurement (not capable of power measurement)
*Up to 5 A when using with power meters

CLAMP ON LEAK SENSOR 9675
10A AC rated current, φ 30 mm (1.18 in) core dia., 3 m (9.84 ft) length

CLAMP ON LEAK SENSOR 9657-10
10A AC rated current, φ 40 mm (1.57 in) core dia., 3 m (9.84 ft) length

Clamp sensor adapter

CLAMP ON ADAPTER 9290-10
CT for 1000A AC, secondary current 1/10 of primary

Clamp-on Power Meters

Demand Measurement up to 4 Circuits and Simultaneous Harmonics Analysis

CLAMP ON POWER HiTESTER 3169

RS-232C
True RMS
CE
3 year Warranty

Clamp sensors : Sold separately

- Simultaneously measure demand and harmonic waveforms that share the same voltage line over 4-circuits
- Data can be saved onto a PC card
- High-speed and continuous processing to measure individual waveforms
- High-speed D/A output for analog graph recording (Model 3169-21)

Model No. (Order Code)		
	3169-20	(Main unit, clamp sensor is sold separately)
	3169-21	(With D/A output function model)

Note: Optional current sensor is necessary to measure current or power parameters. To store measurement data, use only the guaranteed PC cards sold by Hioki.

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

Measurement line & number of circuits	Single-phase 2-wires (4 circuits), Single-phase 3-wires (2 circuits), Three-phases 3-wires (2 or 1 circuit), and Three-phases 4-wires (1 circuit) *Note: 50 or 60 Hz, and that share the same voltage line*
Measurement items	Voltage, Current, Active/ reactive/ apparent power, Active/ reactive power integration, Power factor, Frequency, Harmonic waveform value (up to 40th order)
Measurement range	[Voltage] 150.00 V to 600.00 V AC, 3 ranges, [Current] 500.00 mA to 5.0000 kA AC (depends on current sensor in use), [Power] 75.000 W to 900.00 kW (depends on combination of voltage, current range, and measurement line)
Basic accuracy	AC Voltage: ±0.2 % rdg ±0.1 % f.s. AC Current: ±0.2 % rdg ±0.1 % f.s. + current sensor accuracy Active power: ±0.2 % rdg ±0.1 % f.s. + current sensor accuracy (at power factor = 1) Clamp on sensor 9661: ±0.3 % rdg ±0.01 % f.s. (different from each sensor models)
Measurement method	Digital sampling, PLL synchronization or 50/60 Hz fixed clock
Display refresh rate	2 times /sec (except when a PC card accessing, or RS-232C communications)
Data save interval	Standard interval: 1 sec to 30 sec, 1 minute to 60 minutes, 13 selects Fast interval: A single waveform, or 0.1, 0.2, or 0.5 sec (at instant value only)
Frequency characteristics	Fundamental waveforms up to the 50th order ±3% f.s. + measurement accuracy (of a 45 to 66 Hz fundamental waveform)
Other functions	Error connect check, language selection, display hold, setting backup, power shut off management, key lock, [3169-21 only] D/A output 4 channels, (±5 V DC f.s.)
Power supply	100 to 240 V AC, 50/60 Hz, 30 VA max.
Dimensions and mass	210 mm (8.27 in)W × 160 mm (6.30 in)H × 60 mm (2.36 in)D, 1.2 kg (42.3 oz)
Accessories	Voltage cord L9438-53 ×1 (Black/ Red/ Yellow/ Blue, 3 m (9.84 ft) length, Alligator clip ×4), Power cord ×1, Instruction manual ×1, Quick start manual ×1, CD-R ×1 (RS-232C interface operating manual) ×1, Input cord label ×1, Connection cable 9441 ×1 (for the 3169-21 only)

Current measurement

*Clamp current sensor see the PW3360 common option

Voltage measurement *The L9438-53 is bundled

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

MAGNETIC ADAPTER 9804-01
Attaches to the tip of cord, red ×1, φ11 mm

MAGNETIC ADAPTER 9804-02
Attaches to the tip of cord, black ×1, φ11 mm

PATCH CORD L1021-01
Banana branch-banana, Red: 1, Cable length: 0.5 m, For branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

PATCH CORD L1021-02
Banana branch-banana, Black: 1, Cable length: 0.5 m, For branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

Storage media

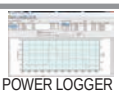
PC CARD 512M 9728
512 MB capacity

* PC CARD 2G 9830, PC CARD 1G 9729 : cannot use with the 3169-20, 3169-21
* Supplied with PC Card adapter

PC Card Precaution

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

PC software



POWER LOGGER VIEWER SF1001
Easy graphical processing of measurement data saved with the PW3360/3365 series, 3169 series on a PC

Printer options

PRINTER 9442
For printing numerical values 112 mm (4.41 in) paper width

AC ADAPTER 9443-02
For the Printer 9442, EU type

RS-232C CABLE 9721
Mini DIN 9pin to D-sub 9pin, straight, 1.5 m (4.92 ft) length

RECORDING PAPER 1196
For the Printer 9442, 112 mm (4.41 in) × 25 m (82.03 ft), 10 rolls/set

Other options *The 9441 is bundled with the 3169-21

RS-232C CABLE 9612
For the PC, Mini DIN 9pin to D-sub 9pin, cross, 1.5 m (4.92ft) length

CARRYING CASE 9720-01
Soft type, Includes compartment for options, for the 3169 series

CONNECTION CABLE 9440
For external I/O, 2 m (6.56 ft) length

CONNECTION CABLE 9441
For D/A output, 2 m (6.56 ft) length

Quickly Check Current, Voltage, Power, and Power Factor

AC CLAMP POWER METER CM3286

n Data can be downloaded to tablets and smartphones using Hioki's dedicated apps available from the Google Play or App Store. (CM3286-01 only) Search for "HIOKI" and download the "GENNECT Cross" app.

GET IT ON Google Play
Download on the App Store

CE
CAT Ⅳ 600 V
CAT Ⅲ 1000 V
True RMS
Bluetooth
CM3286-01
3 year Warranty

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

Model No. (Order Code)		
	CM3286	
	CM3286-01	(Built in Bluetooth(R) wireless technology)

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

**1) Phase angle obtained from zero cross of current / voltage.*
**2) Harmonics levels can be displayed with application software (GENNECT Cross)*

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

Measurement line	Single-phase, Three-phase (balanced with no distortion)
Measurement items	Voltage, Current, Voltage/ current peak, Active/ reactive/ apparent power, Power factor, Phase angle *1, Frequency, Simple Active Energy Consumption (Single-phase) [CM3286-01 only*2] Voltage/ current harmonic levels
Measurement range	[AC voltage range] 80.0 V to 600.0 V, Single range, Basic accuracy 45 - 66 Hz: ±0.7% rdg ±3 dgt (Frequency characteristics: 45 - 1 kHz, True RMS) [AC current range] 0.060 A to 600.0 A, 3 range, Basic accuracy: ±1.3% rdg ±3dgt (Frequency characteristics: 45 - 1 kHz, True RMS) [Power range] [Single phase] 0.005 kW to 360.0 kW Basic accuracy: ±2.0% rdg ±7 dgt (50/ 60 Hz, Power factor=1) [Balanced three-phase 3-wire] 0.020 kW to 623.5 kW Basic accuracy: ±3.0% rdg ±10 dgt (50/ 60 Hz, Power factor=1) [Balanced three-phase 4-wire] 0.040 kW to 1080 kW Basic accuracy: ±2.0% rdg ±3 dgt (50/ 60 Hz, Power factor=1)
Harmonic levels (CM3286-01only *2)	Voltage/ current harmonic levels up to 30th, Content factor, Total harmonic distortion ratio
Other functions	[Phase angle *1] lead -180.0° to lag 179.9°, [Power factor] -1.000 to 1.000 [Frequency] 45.0 Hz to 999.9 Hz, PEAK, Phase detection, Max / Min / Avg value display, Auto hold, electric meter comparison, unbalanced 3-phase power estimate display, etc.
Dustproof and waterproof	IP54 (EN60529) Grip, excluding lever, Risk of electric shock from measured conductors increases when wet
Interface	Bluetooth® 4.0LE, display measured values on an iOS or Android device
Power supply	LR03 Alkaline battery ×2, Continuous use: 25 hr (Backlight OFF)
Core jaw dia.	φ 46 mm (1.81 in)
Dimensions and mass	82 mm (3.23in) W × 241 mm (9.49in) H × 37 mm (1.46in) D, 450 g (15.9 oz)
Accessories	Connection cord L9257 ×1, LR03 Alkaline battery ×2, Carrying case C0203 ×1, Instruction manual ×1 [CM3286-01 only] Notice Regarding Equipment That Emits Radio Waves ×1

Bundled Accessories

CONNECTION CORD L9257
Bundled with Line/Earth lead, alligator clip, 1.2 m (3.94 ft) length

CARRYING CASE C0203

Test lead

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

PC peripherals For the CM3286-01 only

GENNECT Cross SF4071, SF4072
Mobile app for iOS, Android

Clamp adapter

CLAMP ON ADAPTER 9290-10
CT for 1000A AC, secondary current 1/10 of primary

Options for Test leads Options for the L4930, Test Pin Set L4932 is required when using the Small Alligator Clip Set L4934

CONNECTION CABLE SET L4930
1.2 m (3.94 ft) length, CAT IV 600V, CAT III 1000V

EXTENSION CABLE SET L4931
Expands the length of the L4930/4940, 1.5 m (4.92 ft) length

TEST PIN SET L4932
Attaches to the tip of the L4930/4940, CAT IV 600V, CAT III 1000V

SMALL ALLIGATOR CLIP SET L4934
Attaches to the tip of the L4932, L9207-10/DT4911, L9206, CAT III 300V, CAT II 600V

ALLIGATOR CLIP SET L4935
Attaches to the tip of the L4930/4940, CAT IV 600V, CAT III 1000V

BUS BAR CLIP SET L4936
Attaches to the tip of the L4930/4940, CAT III 600V

MAGNETIC ADAPTER SET L4937
Attaches to the tip of the L4930/4940, CAT III 1000V

MAGNETIC ADAPTER 9804
Attaches to the tip of voltage cord, φ11 mm (0.43 in), compatible M6 pan screws

TEST PIN SET L4938
Attaches to the tip of the L4930/4940, CAT III 600V

BREAKER PIN SET L4939
Attaches to the L4930/4940, CAT III 600V

GRABBER CLIP 9243
Attaches to the tip of the banana plug cable, CAT III 1000 V, 196 mm (7.72 in) length

Current Sensors

Current Sensor Types	External appearance	Model	Rating	Frequency characteristics	Basic accuracy (Amplitude)	Basic accuracy (Phase)	Operating temperature range	Measurable conductor diameter
Ultra-High Accuracy Pass-Through		CT6904	500 A	DC to 4 MHz	±0.02%rdg. ±0.007%f.s.	Within ±0.08°	-10°C to 50°C (14°F to 122°F)	32 mm (1.26 in)
		CT6904-60	800 A	DC to 4 MHz	±0.025%rdg. ±0.009%f.s.	Within ±0.08°	-10°C to 50°C (14°F to 122°F)	32 mm (1.26 in)
High Accuracy Pass-Through		CT6862-05	50 A	DC to 1 MHz	±0.05% rdg. ±0.01% f.s.	Within ±0.2°	-30°C to 85°C (-22°F to 185°F)	24 mm (0.94 in)
		CT6863-05	200 A	DC to 500 kHz	±0.05% rdg. ±0.01% f.s.	Within ±0.2°	-30°C to 85°C (-22°F to 185°F)	24 mm (0.94 in)
		CT6875	500 A	DC to 2 MHz	±0.04 %rdg. ±0.008 %f.s.	Within ±0.1°	-40°C to 85°C (-40°F to 185°F)	36 mm (1.42 in)
		CT6876	1000 A	DC to 1.5 MHz	±0.04 %rdg. ±0.008 %f.s.	Within ±0.1°	-40°C to 85°C (-40°F to 185°F)	36 mm (1.42 in)
		CT6877	2000 A	DC to 1 MHz	±0.04% rdg. ±0.008% f.s.	Within ±0.1°	-40°C to 85°C (-40°F to 185°F)	80 mm (3.15 in)
High Accuracy Clamp		CT6841-05	20 A	DC to 1 MHz	±0.3% rdg. ±0.01% f.s.	Within ±0.1°	-40°C to 85°C (-40°F to 185°F)	20 mm (0.79 in)
		CT6843-05	200 A	DC to 500 kHz	±0.3% rdg. ±0.01% f.s.	Within ±0.1°	-40°C to 85°C (-40°F to 185°F)	20 mm (0.79 in)
		CT6844-05	500 A	DC to 200 kHz	±0.3% rdg. ±0.01% f.s.	Within ±0.1°	-40°C to 85°C (-40°F to 185°F)	20 mm (0.79 in)
		CT6845-05	500 A	DC to 100 kHz	±0.3% rdg. ±0.01% f.s.	Within ±0.1°	-40°C to 85°C (-40°F to 185°F)	50 mm (1.97 in)
		CT6846-05	1000 A	DC to 20 kHz	±0.3% rdg. ±0.01% f.s.	Within ±0.1°	-40°C to 85°C (-40°F to 185°F)	50 mm (1.97 in)
High Accuracy Direct Connection		PW9100-03 PW9100-04	50 A	DC to 3.5 MHz	±0.02% rdg. ±0.005% f.s.	Within ±0.1°	0°C to 40°C (32°F to 104°F)	Measurement terminals M6 screws
High Accuracy Clamp		9272-05	20 A, 200 A	1 Hz to 100 kHz	±0.3% rdg. ±0.01% f.s.	Within ±0.2°	0°C to 50°C (32°F to 122°F)	46 mm (1.81 in)

Note: Company names and Product names appearing in this catalog are trademarks or registered trademarks of various companies.

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