

# HIOKI

## POWER ANALYZER PW4001

NEW



### Precision and Portability Perfectly Combined





Redesigned for modern EV testing

# Lab-grade precision Field-ready

Power Analyzer PW4001

## feature

Basic accuracy  $\pm 0.04\%$

Frequency bandwidth **600 kHz**

Data update rate **1 ms**



Engineered for the tasks you face—wherever you work



**16-bit, 2.5 MHz**

Wide dynamic range with high-resolution ADC



**-20°C to +50°C**

Wide operating temperature range enables installation right inside the chamber.



**External power source**

Available DC 10.5 V to 28 V battery



**Input & output**

Acquire voltage via OBD-II, integrate measured data with ECU signals



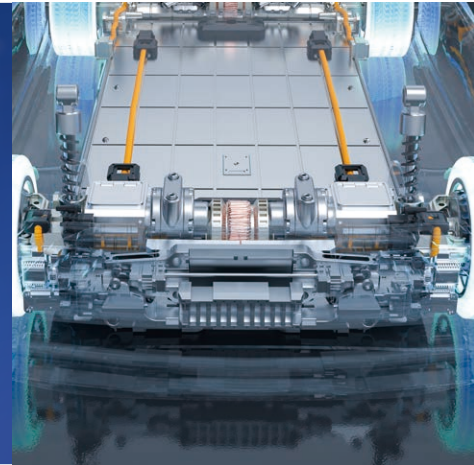
## Benefit

### Benefit 01

#### Capture transient power changes with high precision

Evaluate motor and inverter efficiency with 1 ms data updates and 600 kHz bandwidth. Even transient power losses are measured accurately.

- Capture motor power fluctuations with millisecond precision
- Evaluate efficiency for high-frequency inverters
- Automatically detect charge and regeneration to calculate efficiency



### Benefit 02

#### Reduce setup time in drive range testing

Ensure accurate measurements even at  $-7^{\circ}\text{C}$ . With direct CAN voltage input and flexible, vehicle-side installation, test setup is faster and safer.

- Accuracy maintained at  $-7^{\circ}\text{C}$ . Install directly in cold chambers
- Use a compact setup near the vehicle and expand channels with synced units
- Acquire battery voltage via CAN—safe and simple

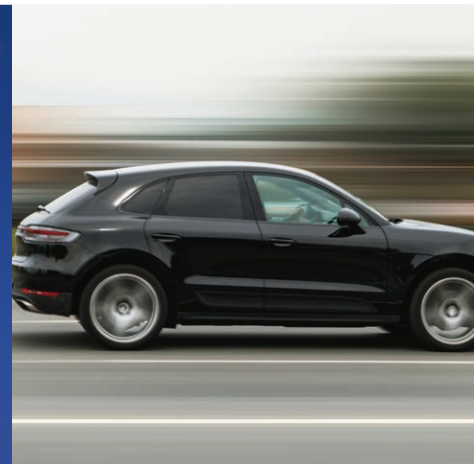


### Benefit 03

#### Use it on the road Designed for real-world driving tests

Measure power without vehicle modification. OBD-II input and 10.5 V to 28 V DC power supply make in-vehicle use easy.

- Operates from  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ —ready for harsh environments
- Run on DC power for easy in-vehicle installation
- Use OBD-II CAN bus for safe, real-time vehicle data acquisition



### Benefit 04

#### Ensure production quality with waveforms and numbers

Combining waveforms and numerical values ensures reliable, quantifiable quality in mass production.

- Verify efficiency with  $\pm 0.04\%$  accuracy at DC and 50 Hz/60 Hz
- Direct voltage input up to 1500 VDC
- 2.5 MHz sampling enables waveform evaluation of switching events



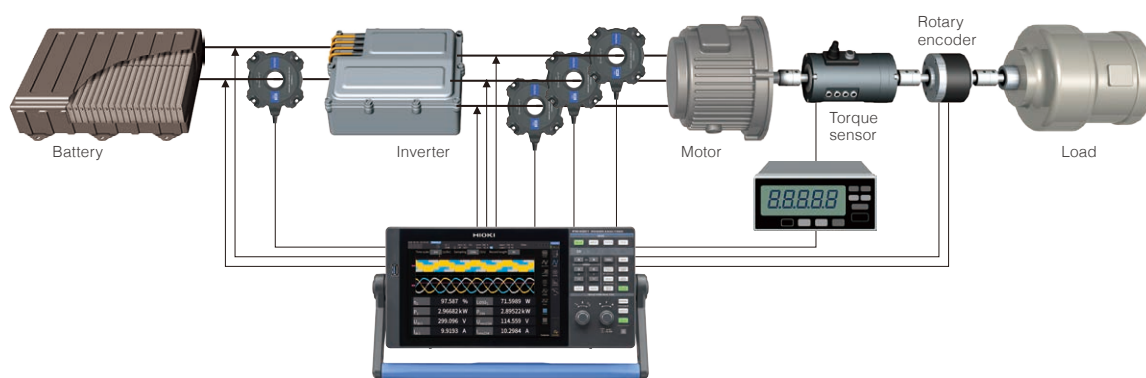
# Capture transient power changes with high precision

Obtain high-resolution, real-time data on powertrain dynamics



## Wideband performance that matches real-world motors

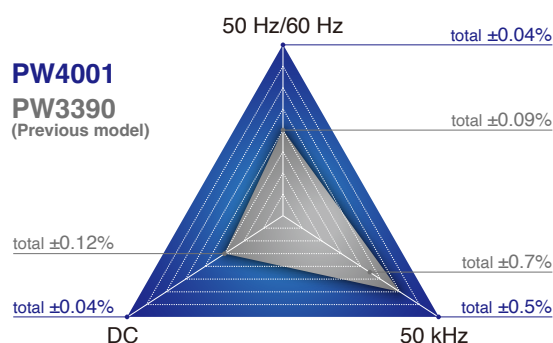
Today, most motor inverters operate at carrier frequencies around 10 kHz to 20 kHz. Accurate evaluation of power losses requires a power analyzer that can measure harmonic components far beyond the carrier frequency. Despite its compact size, the PW4001 offers a 600 kHz bandwidth, ensuring accurate measurement of high-frequency components. It enables reliable efficiency evaluation across various inverter-driven motors.



## Industry-leading precision

The PW4001 delivers Hioki's top-class accuracy of  $\pm 0.04\%$  at DC and 50/60 Hz. It also maintains excellent measurement accuracy across a wide frequency range, enabling precise evaluation of power conversion efficiency. When combined with Hioki's current sensors, total system basic accuracy is within  $\pm 0.1\%$  using through-type sensors\*, and within  $\pm 0.3\%$  using high-accuracy clamp sensors such as the CT683X\* and CT684X series.

\*Some exceptions apply. See data sheet for details.





## Dynamic powertrain behavior with millisecond precision

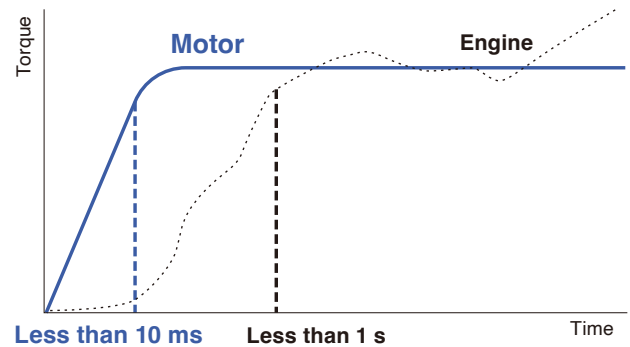
### 1 ms data update

The PW4001 provides measurement data with a 1 ms update rate, enabling precise acquisition of steep power transitions and high-speed control phenomena inherent in modern powertrain systems. This capability offers more than just high-speed data acquisition, it ensures measurement integrity with maintained accuracy, even under rapidly changing electrical conditions.

Data update rate: 1 ms, 10 ms, 50 ms, 200 ms

Averaging and user-defined operations are unavailable when the data update interval is set to 1 ms.

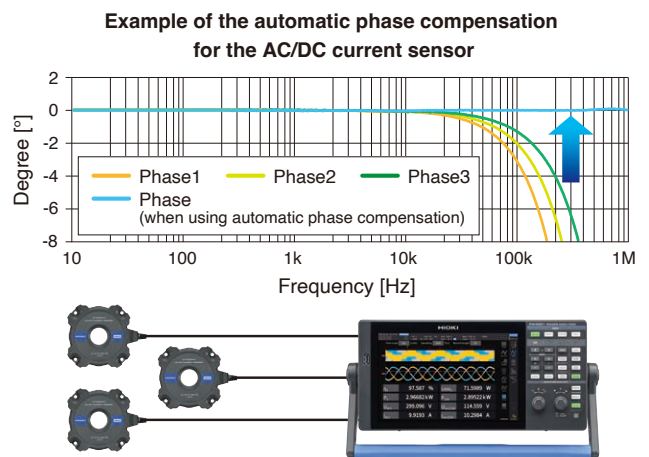
When the data update interval is 1 ms, add  $\pm 0.1\%$  of the range to the voltage, current, and active power accuracy.



## Never lose accuracy due to current sensor phase delay

### Automatic phase compensation with sensor-specific calibration

The PW4001 features automatic phase compensation using factory-calibrated sensor profiles, ensuring accurate power measurement across a wide frequency range. Unlike conventional analyzers that use a uniform correction curve, Hioki individually characterizes each current sensor during production. These unique phase characteristics are stored and utilized in real time, ensuring compensation reflects the actual behavior of each sensor.

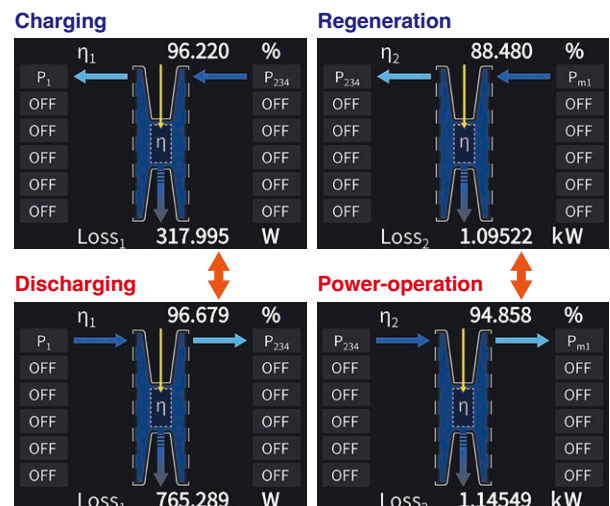
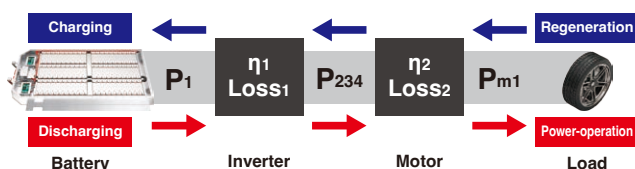


## Automatically detects charge and regeneration for accurate efficiency calculation

### Automatic switching of efficiency calculation based on power flow

The PW4001 detects charging/discharging and power-operation/regeneration states, automatically switching energy flow direction. This prevents efficiency readings from exceeding 100% during regenerative operation.

$\eta$ : power efficiency    Loss: power loss



# Reduce setup time in drive range testing

–20°C ready. More flexible at the test site.



## Low-temperature compliance with certified accuracy

WLTP regulations require low-temperature testing at –7°C.

With an operating range of –20°C to +50°C, the PW4001 maintains certified accuracy even when installed directly in cold test chambers — ensuring full compliance without compromise.

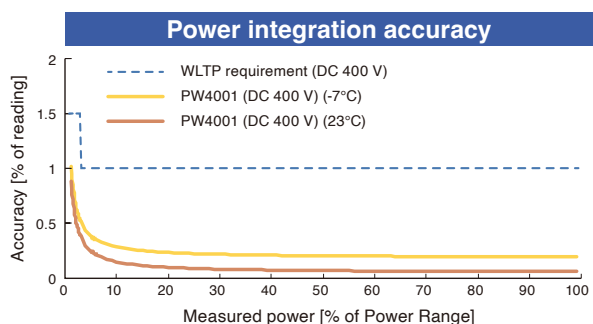
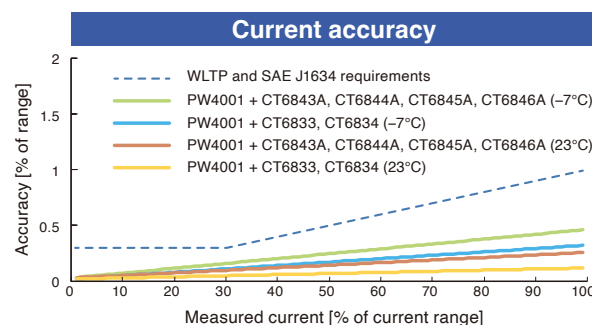
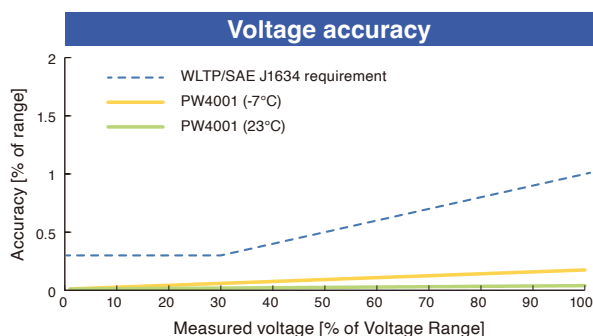


Simplifying WLTP and SAE J1634 measurements for engineers



Achieving accurate EV range and energy consumption testing under WLTP standards

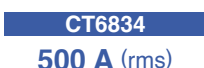
## PW4001 meets WLTP/SAE J1634 requirement



WLTP requirement is equivalent to IEC 62053-21 class 1.



**CT6833**  
200 A (rms)



**CT6834**  
500 A (rms)

Measurement accuracy  
**±0.07% of reading**  
Frequency range  
**DC to 50 kHz**



**CT6843A**  
200 A (rms)

0.2% of reading  
DC to 700 kHz



**CT6844A**  
500 A (rms)

0.2% of reading  
DC to 500 kHz



**CT6845A**  
500 A (rms)

0.2% of reading  
DC to 200 kHz



**CT6846A**  
1000 A (rms)

0.2% of reading  
DC to 100 kHz



**CT6847A**  
2000 A DC  
1400 A AC (rms)

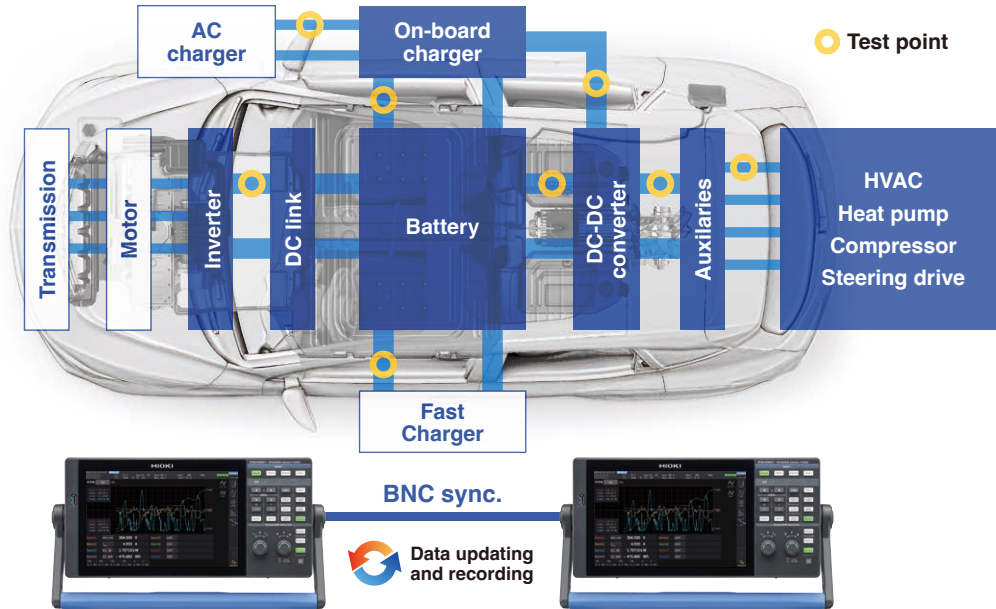
0.15% of reading  
DC to 70 kHz



## Scalable to match the growing complexity of power systems

### Synchronized power measurement across 32 points

Understanding vehicle power consumption in detail requires increasing the number of measurement points. With BNC synchronization, up to eight PW4001 units can align both integration start and sampling timing—enabling simultaneous measurement at up to 32 points. This allows engineers to evaluate the entire power network of complex EV systems with high accuracy and time alignment.



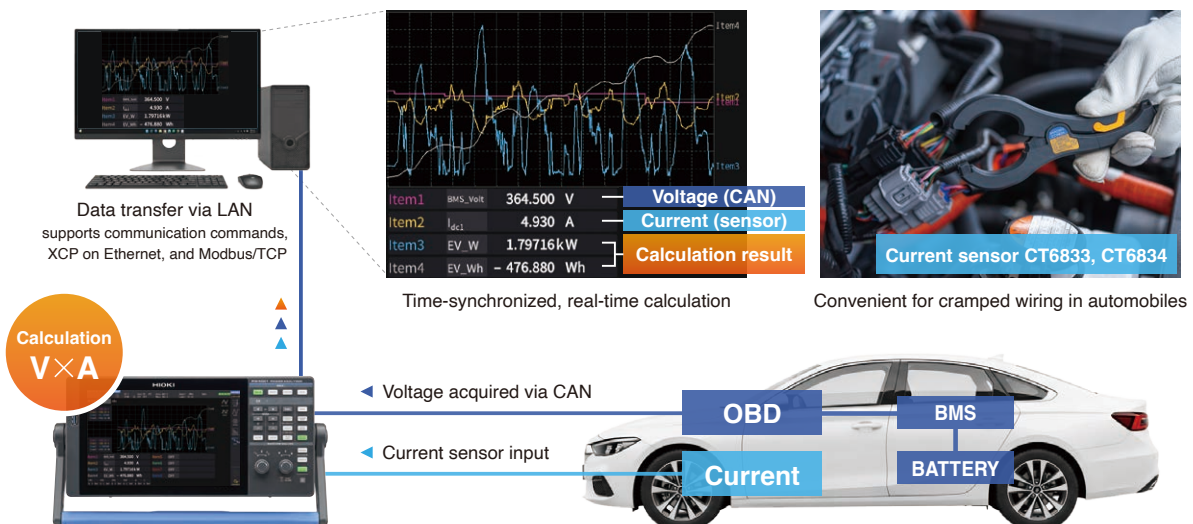
## Faster, safer testing—no high-voltage probing required

### Faster testing with vehicle voltage via CAN

In final vehicle testing, connecting voltage probes to high-voltage lines is both complex and risky. Traditionally, engineers retrieved voltage values via CAN from the BMS and manually merged them with current measurements after testing. With the PW4001, direct CAN voltage acquisition and current measurement occur simultaneously. Power calculations are performed in real time using time-synchronized data—eliminating the need for manual merging and reducing setup and test times significantly.



Utilizing Vehicle On-Board CAN Data to Simplify WLTP Energy Consumption Evaluations



# Use it on the road Designed for real-world driving tests

Trusted lab accuracy — now in real road conditions.



## Power consumption testing in real driving conditions

WLTP and EPA tests are conducted on chassis dynamometers using standardized driving cycles. However, real roads are unpredictable—gradient, stop-and-go traffic, rapid acceleration, and ambient temperature changes all affect vehicle performance. Real Driving Emissions (RDE) testing captures these real-world variations, making it essential for evaluating true energy consumption and ensuring compliance under actual usage conditions.



Simplify RDE Testing  
with Seamless Energy  
Consumption Analysis

## Reliable accuracy in harsh test environments

Driving tests in real conditions expose measurement systems to vibration, temperature fluctuations, and load changes. In such environments, sensor noise immunity and environmental durability are essential.

Without high-precision instruments, subtle changes in current or power may go undetected—leading to inaccurate evaluations and missed issues in performance.



Vibration resistance  
vibration acceleration: 45 m/s<sup>2</sup> (4.6 G)

## External DC powered 10.5 V - 28 V (PW4001-04, PW4001-05)

No portable AC power supply needed—the PW4001 runs directly on 12 V or 24 V DC power, making it easy to install in vehicles for road testing.





## Test real-world power consumption without risky modifications

### Power consumption measurement via CAN

The PW4001 offers a safer, smarter solution: Using Diagnostic ID (DID)-based CAN communication, it retrieves battery voltage directly via the OBD-II port, calculating real-time power without touching high-voltage lines. You can also log custom CAN signals—such as vehicle speed, distance traveled, or gear status—alongside power data for deeper analysis of driving behavior and electrical load.

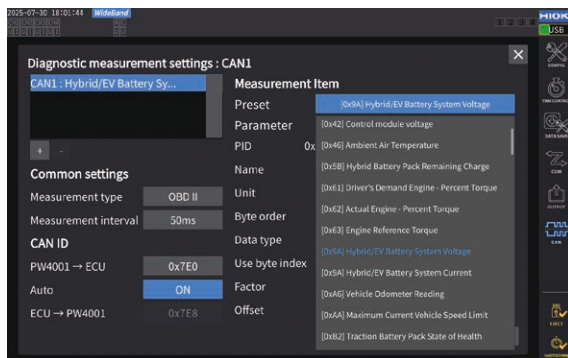


OBD-II

PW4001

Communication: Supports ISO 15765-2 DoCAN

\*DoCAN: Diagnostic Communication over CAN



OBD standard:  
select SAE J1979, SAE J1979-2 parameters

| No. | Name               | ID    | Data type | Value        |
|-----|--------------------|-------|-----------|--------------|
| 1   | Hybrid/EV Batte... | 0x7E9 | Unsigned  | 350.18 V     |
| 2   | Hybrid/EV Batte... | 0x7E9 | Signed    | 10.349 A     |
| 3   | HVSS Temperatu...  | 0x7E9 | Unsigned  | 20.8 celsius |
| 4   | HVSS State of ...  | 0x7E9 | Unsigned  | 74.35 %      |
| 5   | Vehicle Speed S... | 0x7E8 | Unsigned  | 41.69 km/h   |
| 6   | Vehicle Odomete... | 0x7E8 | Unsigned  | 1000.5 km    |
| 7   |                    | 0x0   | Signed    | -----        |
| 8   |                    | 0x0   | Signed    | -----        |

Each parameter can be checked at a glance  
Diagnostic measurement supports logging of up to 6 IDs

## ECU data acquisition—no cable modification required

### Non-contact CAN sensor SP7001

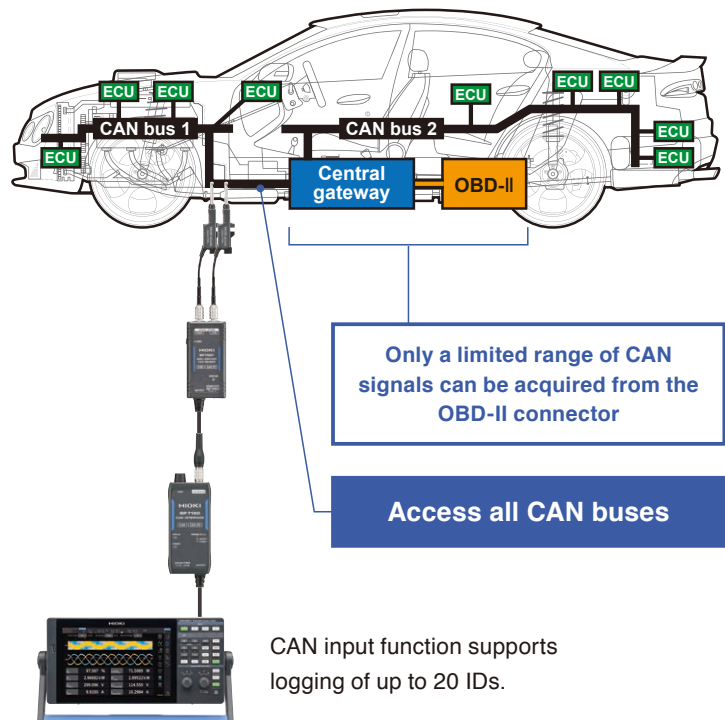
Capture CAN bus signals without modifying vehicle wiring.  
Enables integration of real-time power data with ECU signals not accessible via OBD-II.



One-handed operation to open the probe tip

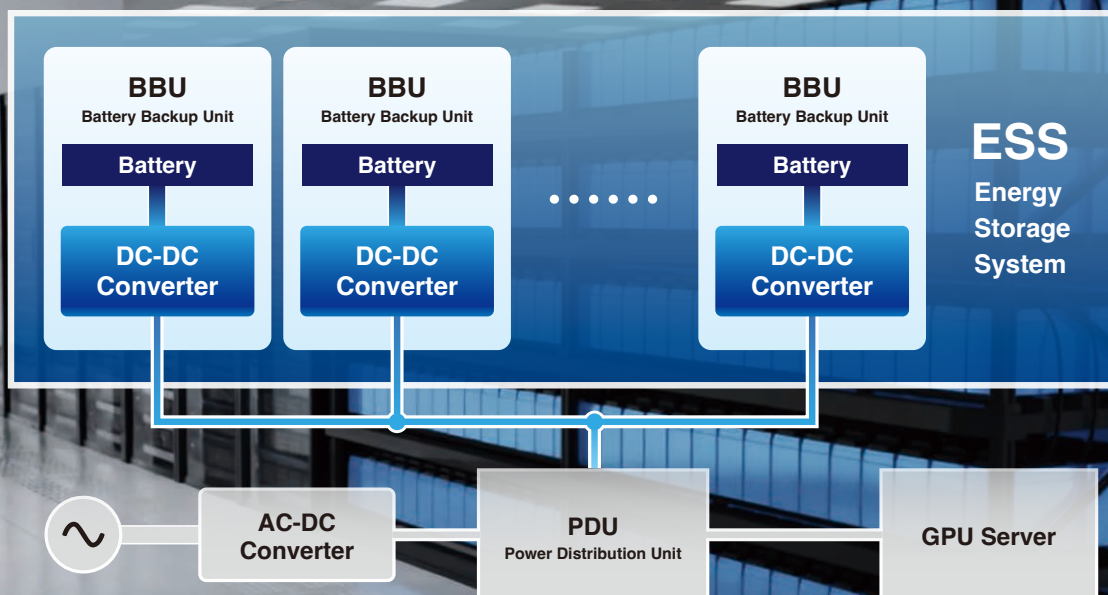


Hook the open end to the CAN bus



# Ensure production quality with waveforms and numbers

Just the precision you need—no more, no less



## High-efficiency power conversion for data center ESSs

The growth of AI is increasing the power consumption of data centers, creating a demand for highly energy-efficient equipment and components. Among these, the DC-DC converters used in ESSs are critical components that determine the charging and discharging efficiency of ESSs and directly impact a data center's energy cost. ESS system with multiple DC-DC converters — where even a 0.1% efficiency gain makes a critical difference.



How Do You Measure a 0.1% Efficiency Improvement in ESS DC-DC Converters?

### ±0.04% DC accuracy for development testing. Compact and cost-effective for production testing.

In development testing, the PW4001 delivers world-class DC accuracy, enabling precise measurement of power conversion efficiency and losses in DC-DC converters.

In production testing, measurement accuracy is more than a spec—it proves product quality. In addition, the PW4001 is more compact and cost-effective than conventional power analyzers.



Efficiency testing in development and production



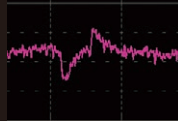
## Capture not just values—but the input and output waveforms

### Waveform trigger & cursor

During power outages, multiple battery units must begin supplying power within a defined time. To ensure DC-DC converters switch correctly between charge and discharge modes, it's essential to record current waveforms, not just numerical results. A high-precision, high-speed power analyzer enables accurate waveform capture, enhancing the reliability and quality of testing.

#### Capture waveforms

Sampling up to 2.5 MS/s  
Level and Event trigger for waveform capture



#### Principal test parameters

- Input/output voltage
- Input/output current
- Input/output active power
- Charge/discharge energy
- Conversion efficiency
- etc.

|           |           |
|-----------|-----------|
| $U_{dc2}$ | 53.0351 V |
| $I_{dc2}$ | 23.689 A  |
| $P_2$     | 1.2563 kW |
| $\eta_1$  | 80.237 %  |

Ripple measurement with cursor function

### High-precision DC ripple observation with 16-bit resolution

The PW4001's 16-bit resolution makes it possible to observe fine ripple components on DC signals with exceptional clarity. This capability is essential for evaluating converter stability and efficiency with high precision.



## Direct voltage input up to 1500 VDC

The PW4001 supports 1500 VDC CATII and 1000 VDC CATIII for safe measurement with direct input of high voltages. For development/production testing of DC-DC converters for next generation data centers with 800 VDC architecture (HVDC architecture), no additional equipment such as differential probes is required.



## IEC standard-compliant evaluation of grid interconnections

### PW9006 IEC Harmonic/Flicker Measurement

PW9006 is a license option that extends the functionality of the PW4001 to support IEC harmonic analysis and flicker measurement. It can be used by activating the license on the PW4001.

#### Compliant with IEC 61000-4-7: Harmonic Measurement

Supports measurement of harmonics and inter-harmonics up to the 200th order. It can be used for grid interconnection tests in various countries, including compliance with regulations such as Germany's VDE-AR-N 4105.

#### Compliant with IEC 61000-4-15: Flicker Measurement

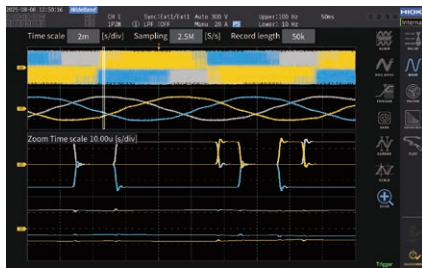
The voltage fluctuation/flicker measurement function measures power supply voltage fluctuations caused by changes in the current consumption of electrical equipment, in accordance with the standard. All parameters required for pass/fail evaluation can be obtained in a single measurement.



Note: Requires PW4001 firmware version V1.10 or later.

## Waveform observation

### All-in-one oscilloscope versatility, engineered for power



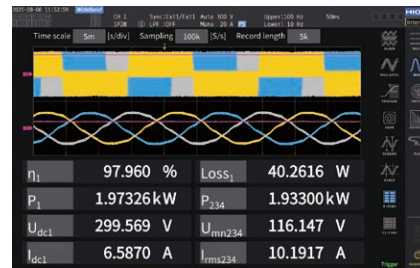
#### Zoom & Cursor measurement

Analyze fine details of transients and switching behavior.



#### Level & Event trigger

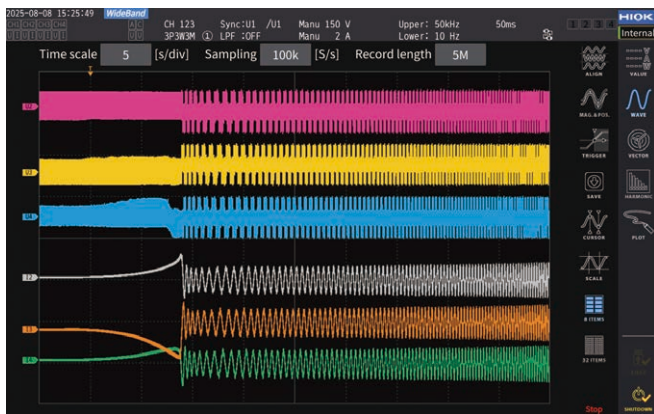
Capture only the events you care about, without noise.



#### Waveform + Value display

See numerical trends and waveforms in sync.

### Record waveforms and parameters



#### High-capacity waveform storage

Record long events without missing key transitions.

|                  |             |
|------------------|-------------|
| Recording length | 5 megawords |
| 2.5 MS/s         | 2 s         |
| 100 kS/s         | 50 s        |



#### Long-term trend graphs

Track behavior across drive cycles or endurance tests.

- Plot up to 8 items simultaneously in the trend graph
- 16-channel output available with the optional D/A output
- Output waveforms at up to 1 MHz sampling

### 8-CH oscilloscope-like visibility with true power accuracy

The PW4001 is the ideal entry model for engineers who want to go beyond viewing waveform and start accurate power efficiency testing.



Oscilloscope or  
Power Analyzer?  
Make the Right Call



■ Features 4 voltage and 4 current channels—like an 8-channel scope—but purpose-built for power.

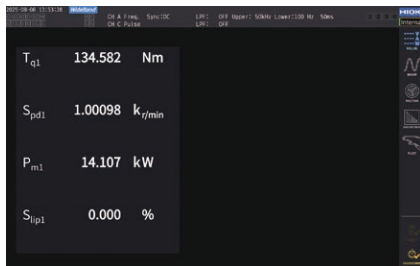
■ Eliminates the need for differential probes, reducing cost compared to most 8-CH oscilloscopes.

■ Comes with a setup guide screen to ensure correct power measurement from the start.



## Analysis & Calculation

### Insights for faster design improvement



#### Motor analysis

View torque, RPM, and power in real time for motor tuning.



#### Harmonic analysis up to 500th order

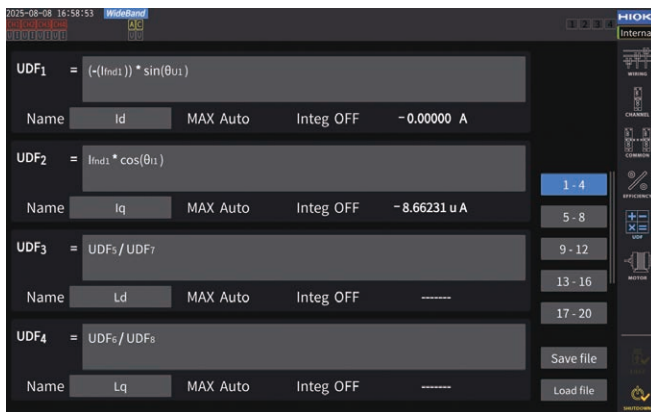
Deep insight into power quality, visualized in both graph and list view.



#### Four-circuit vector analysis

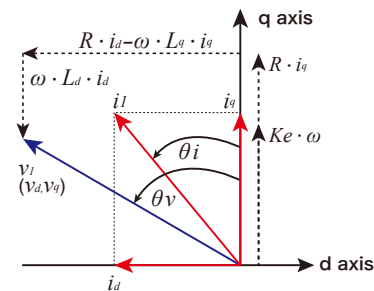
Instantly see power flow and phase angles across complex wiring.

### id/iq & electrical angle calculation for real-time motor control validation



#### User-defined formula (UDF)

Run up to 20 custom calculations in real time. Convert 3-phase motor current to id/iq for control validation.

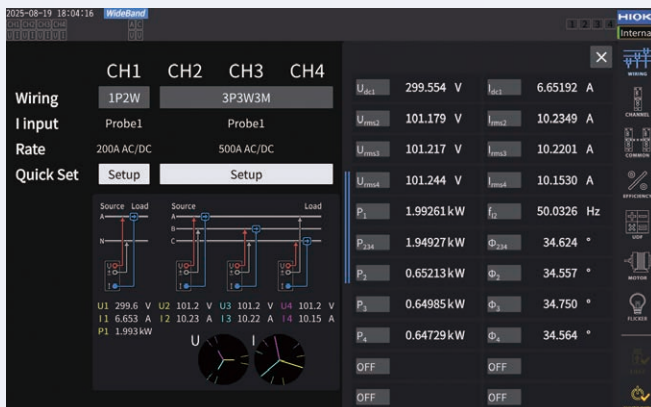


$$L_d = \frac{v_q - K_e \cdot \omega - R \cdot i_q}{\omega \cdot i_d} \quad L_q = \frac{R \cdot i_d - v_d}{\omega \cdot i_q}$$

#### Motor parameter calculation

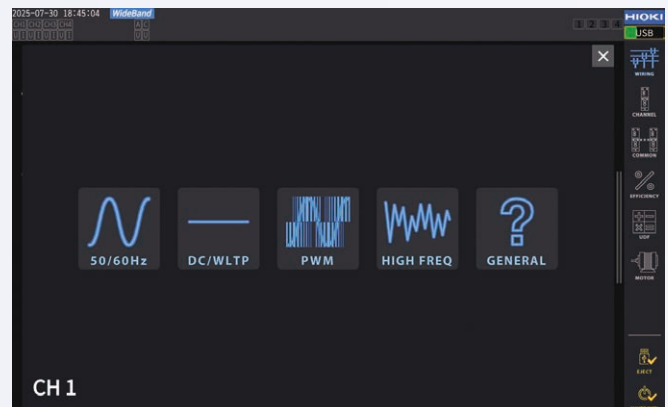
Accurately measure operating  $L_d$  and  $L_q$  values, essential for synchronous motor control, even under varying current conditions.

### Prevent setup errors, start power measurements with confidence



#### Wiring guide

A visual check prevents wiring mistakes, even in complex 3-phase setups.



#### Easy signal settings

Just click the signal type (e.g., DC, AC, PWM) to automatically set zero-crossing detection and filtering

# Interface

## Flexible and easy system integration

| Model     | Standard function                                | D/A output | Motor analysis | External power source |
|-----------|--------------------------------------------------|------------|----------------|-----------------------|
| PW4001-01 | 4 ch,<br>15 GB internal memory,<br>CAN interface | -          | -              | -                     |
| PW4001-02 |                                                  | ✓          | -              | -                     |
| PW4001-03 |                                                  | -          | ✓              | -                     |
| PW4001-04 |                                                  | -          | -              | ✓                     |
| PW4001-05 |                                                  | ✓          | ✓              | ✓                     |

| Model     | Description                                                                                                                                                                                                                                                                                                                 |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PW9006-01 | IEC Harmonic/Flicker Measurement license<br>The downloadable version can be purchased from "Drivers, Firmware & Software" on the PW4001 website.<br><a href="https://www.hioki.com/global/products/power-meters/power-analyzer/id_1268629">https://www.hioki.com/global/products/power-meters/power-analyzer/id_1268629</a> |

### Isolated voltage input

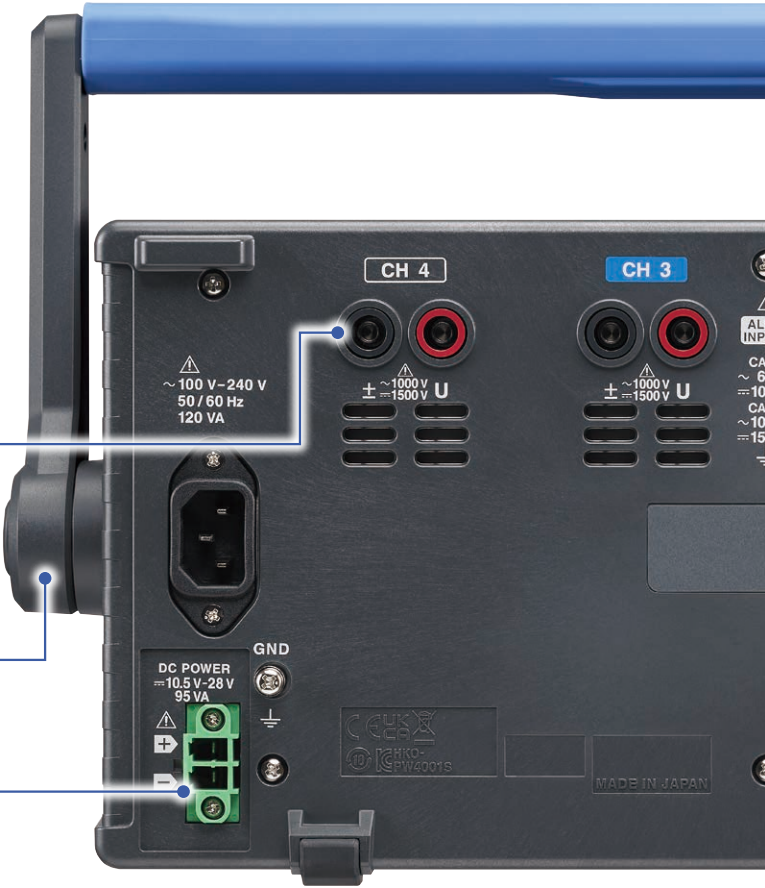
- Direct input AC 1000 V, DC 1500 V
- Available 5000 V AC/DC High voltage divider VT1005

### Portable and compact design

- 4.6 kg ■ 360° handle

### External power source

- (PW4001-04, PW4001-05)
- DC 10.5 V to 28 V



### Control key

### 10.1-inch WXGA

- Color TFT LCD touchscreen

### USB flash drive

### Internal storage, 15 GB

- Real-time data recording







### Motor analysis

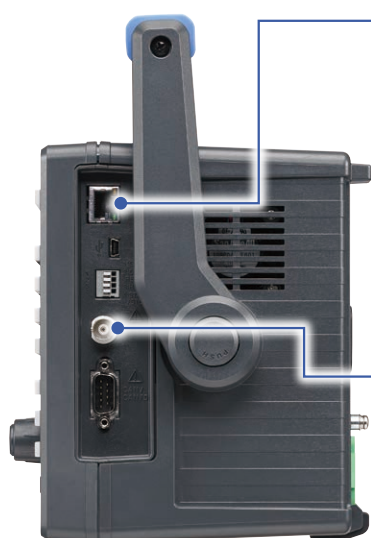
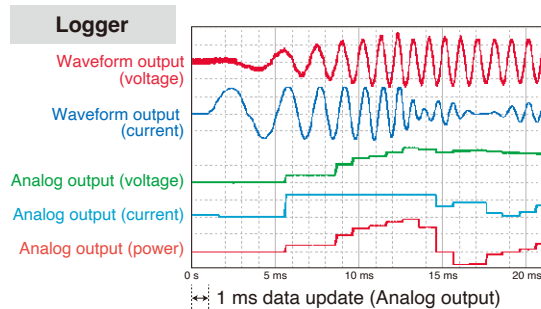
(PW4001-03, PW4001-05)

- Supports up to 2 motors
- Torque sensor: voltage or frequency input
- Rotary encoder: pulse or frequency input

### Waveform & D/A output

(PW4001-02, PW4001-05)

- Real-time waveform output, 1 MHz
- Converts measurement data to analog voltage
- Integrates with external loggers



### Interface

- LAN
- USB 2.0 (communication)
- EXT. control
- BNC sync.
- CAN, CAN FD

### Up to 32-channel sync via BNC

Synchronize integration and sampling across up to 8 PW4001 units via BNC, enabling simultaneous measurement and recording on 32 channels.

### LAN integration for test systems

- 100BASE-TX/1000BASE-T
- SCPI, Modbus/TCP, XCP-on-Ethernet
- Seamless integration with automated test environments



Data updating and recording

## Software

### GENNECT Space

Observe data and phenomena  
on a unified time axis

1 ms  
interval

3000 ch

30  
instruments

LAN  
connection

CAN  
supported

Free  
software

Video captured with a standard USB camera or thermal camera can be synchronized with recorded measurement data. By viewing numerical changes alongside what physically occurred at that moment, you can understand the situation intuitively and in context.

↓ Available for download

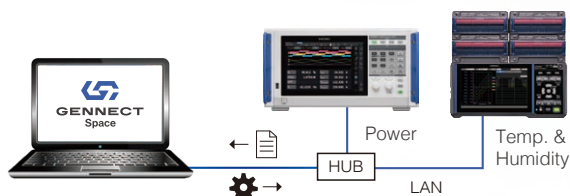
Explore your measurement space  
with practical example data.

[https://www.hioki.com/global/support/download/software/versionup/detail/vid\\_n1387783](https://www.hioki.com/global/support/download/software/versionup/detail/vid_n1387783)



## Data logging and real-time display

Real-time measurement and monitoring on a PC



### Integrate multiple instruments without coding

Gennect Space is dedicated PC software for integrating data from multiple Hioki instruments. It enables high-speed data logging without programming skills.



- Simultaneous logging as quickly as 1 ms when combined with loggers, power analyzers, and other instruments



- Real-time graphical display of logging data



- Synchronized recording with video and map data\*\* using standard USB cameras, thermal cameras, and GPS antenna

\*1: In Version 1.0, map data may not be available in certain regions (China).



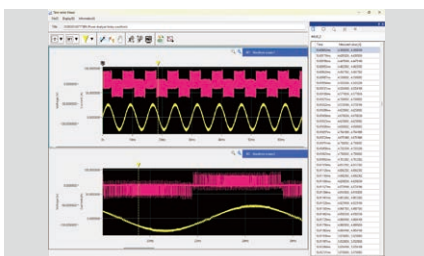
- Save logged data in binary (.grcd) or text (.csv, .txt) formats



- Change instrument settings remotely

### Gennect One

Display raw voltage and current waveforms from the power analyzer on your PC and easily export them as CSV files.



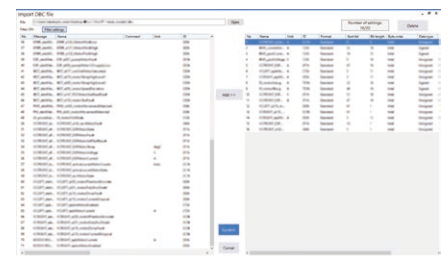
### LabVIEW®, MATLAB driver

Seamless integration into automation and data analysis workflows.



### CAN Editor

Load DBC files and select CAN signals easily for synchronized logging.





## Specifications

### Basic Specifications

#### Power Analyzer PW4001

| Model<br>(order code) | Standard<br>functions                               | D/A output                       | Motor<br>analysis | External<br>power source |
|-----------------------|-----------------------------------------------------|----------------------------------|-------------------|--------------------------|
| PW4001-01             | 4 ch,<br>15 GB internal<br>memory,<br>CAN interface | -                                | -                 | -                        |
| PW4001-02             |                                                     | ✓                                | -                 | -                        |
| PW4001-03             |                                                     | -                                | ✓                 | -                        |
| PW4001-04             |                                                     | -                                | -                 | ✓                        |
| PW4001-05             |                                                     | ✓                                | ✓                 | ✓                        |
| PW9006-01             | Option                                              | IEC Harmonic/Flicker Measurement |                   |                          |



|                                 |                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement lines               | Single-phase 2-wire, single-phase 3-wire, three-phase 3-wire, three-phase 4-wire                                                                                                                                                                                                                                                                                               |
| Number of channels              | 4 (4 voltage, 4 current, isolated between each channel)                                                                                                                                                                                                                                                                                                                        |
| Measurement frequency bandwidth | DC, 0.1 Hz to 600 kHz                                                                                                                                                                                                                                                                                                                                                          |
| Sampling                        | 16 bit, 2.5 MHz                                                                                                                                                                                                                                                                                                                                                                |
| Data update rate                | 1 ms, 10 ms, 50 ms, 200 ms                                                                                                                                                                                                                                                                                                                                                     |
| Accuracy for power              | DC, 50/60 Hz: $\pm 0.03\%$ reading $\pm 0.01\%$ range<br>50 kHz: $\pm 0.40\%$ reading $\pm 0.10\%$ range                                                                                                                                                                                                                                                                       |
| Voltage measurement range       | Voltage: 6 V, 15 V, 30 V, 60 V, 150 V, 300 V, 600 V, 1500 V                                                                                                                                                                                                                                                                                                                    |
| Current measurement range       | Current: 40 mA to 2000 A (depends on current sensor)                                                                                                                                                                                                                                                                                                                           |
| Measurement parameters          | Voltage (U), current (I), active power (P), apparent power (S), reactive power (Q), power factor ( $\lambda$ ), phase angle ( $\phi$ ), voltage frequency (fU), current frequency (fI), efficiency ( $\eta$ ), loss (Loss), voltage ripple factor (Urf), current ripple factor (Irf), current integration (Ih), power integration (WP), voltage peak (Upk), current peak (Ipk) |
| Harmonic measurement            | Wideband mode: (max. analysis order of 500th)                                                                                                                                                                                                                                                                                                                                  |
| Waveform recording              | Recording capacity: up to 5 mega-words for any waveform (current, voltage, motor)                                                                                                                                                                                                                                                                                              |
| Motor analysis (option)         | Voltage, torque, RPM, frequency, slip                                                                                                                                                                                                                                                                                                                                          |
| Calculation function            | Efficiency-loss calculations, user-defined formula, delta conversion, current sensor automatic phase shift compensation                                                                                                                                                                                                                                                        |
| External interface              | USB flash drive, LAN, USB (function), external control, BNC sync., CAN or CAN FD                                                                                                                                                                                                                                                                                               |
| Power supplies                  | 100 V to 240 V AC, 50/60 Hz, 230 VA<br>10.5 V to 28 V DC                                                                                                                                                                                                                                                                                                                       |
| Dimensions and weight           | 361 (W) × 176 (H) × 135 (D) mm (14.21 (W) × 6.93 (H) × 5.31 (D) in.),<br>4.6 kg (162.3 oz.)                                                                                                                                                                                                                                                                                    |
| Included accessories            | Startup guide × 1, power cord × 1, USB cable × 1, D-sub connector × 1 (PW4001-02, PW4001-05), DC power supply connector (PW4001-04, PW4001-05)                                                                                                                                                                                                                                 |

**Data sheet**  
Specifications details here



## Options

## Current sensor lineup

| Model                                                                               |             | Rated current              | Max. peak current          | Frequency range | Amplitude accuracy 50/60 Hz | Diameter of measurable conductors | Cable length                       | Automatic phase correction | Operating temperature           |
|-------------------------------------------------------------------------------------|-------------|----------------------------|----------------------------|-----------------|-----------------------------|-----------------------------------|------------------------------------|----------------------------|---------------------------------|
| Pass-through types                                                                  |             |                            |                            |                 |                             |                                   |                                    |                            |                                 |
|    | CT6862-05   | 50 A rms                   | ±141 A peak                | DC to 1 MHz     | ±0.05% rdg.<br>±0.01% f.s.  | φ24 mm (0.94 in.)                 | 3 m (9.84 ft.)                     | -                          | −30°C to 85°C<br>−22°F to 185°F |
|    | CT6872      | 50 A rms                   | ±200 A peak                | DC to 10 MHz    | ±0.03% rdg.<br>±0.007% f.s. | φ24 mm (0.94 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|                                                                                     | CT6872-01   |                            |                            |                 |                             |                                   | 10 m (32.81 ft.)                   |                            |                                 |
|    | CT6863-05   | 200 A rms                  | ±565 A peak                | DC to 500 kHz   | ±0.05% rdg.<br>±0.01% f.s.  | φ24 mm (0.94 in.)                 | 3 m (9.84 ft.)                     | -                          | −30°C to 85°C<br>−22°F to 185°F |
|    | CT6873      | 200 A rms                  | ±350 A peak*1              | DC to 10 MHz    | ±0.03% rdg.<br>±0.007% f.s. | φ24 mm (0.94 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|                                                                                     | CT6873-01   |                            |                            |                 |                             |                                   | 10 m (32.81 ft.)                   |                            |                                 |
|    | CT6875A     | 500 A rms                  | ±1500 A peak*1             | DC to 2 MHz     | 0.04% rdg.                  | φ36 mm (1.42 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|                                                                                     | CT6875A-1   |                            |                            | DC to 1.5 MHz   | ±0.008% f.s.                |                                   | 10 m (32.81 ft.)                   |                            |                                 |
|    | CT6904A     | 500 A rms                  | ±1000 A peak*1             | DC to 4 MHz     | ±0.02% rdg.                 | φ32 mm (1.26 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −10°C to 50°C<br>14°F to 122°F  |
|                                                                                     | CT6904A-1*4 |                            |                            | DC to 2 MHz     | ±0.007% f.s.                |                                   | 10 m (32.81 ft.)                   |                            |                                 |
|    | CT6904A-2*4 | 800 A rms                  | ±1200 A peak*1             | DC to 4 MHz     | ±0.025% rdg.                | φ32 mm (1.26 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −10°C to 50°C<br>14°F to 122°F  |
|                                                                                     | CT6904A-3*4 |                            |                            | DC to 2 MHz     | ±0.009% f.s.                |                                   | 10 m (32.81 ft.)                   |                            |                                 |
|    | CT6876A     | 1000 A rms                 | ±1800 A peak*1             | DC to 1.5 MHz   | 0.04% rdg.                  | φ36 mm (1.42 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|                                                                                     | CT6876A-1   |                            |                            | DC to 1.2 MHz   | ±0.008% f.s.                |                                   | 10 m (32.81 ft.)                   |                            |                                 |
|  | CT6877A     | 2000 A rms                 | ±3200 A peak*1             | DC to 1 MHz     | 0.04% rdg.<br>±0.008% f.s.  | φ80 mm (3.15 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|                                                                                     | CT6877A-1   |                            |                            |                 |                             |                                   | 10 m (32.81 ft.)                   |                            |                                 |
| Clamp types                                                                         |             |                            |                            |                 |                             |                                   |                                    |                            |                                 |
|  | CT6830      | 2 A rms                    | ±4.3 A peak                | DC to 100 kHz   | ±0.3% rdg.<br>±0.05% f.s.   | φ5 mm (0.20 in.)                  | 4 m, 20 cm*3 (13.12 ft., 7.87 in.) | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|  | CT6831      | 20 A rms                   | ±43 A peak                 | DC to 100 kHz   | ±0.3% rdg.<br>±0.01% f.s.   | φ5 mm (0.20 in.)                  | 4 m, 20 cm*3 (13.12 ft., 7.87 in.) | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|  | CT6833      | 200 A rms                  | ±600 A peak                | DC to 50 kHz    | ±0.07% rdg.<br>±0.007% f.s. | φ20 mm (0.79 in.)                 | 5 m (16.4 ft.)                     | Yes                        | −45°C to 85°C<br>−49°F to 185°F |
|                                                                                     | CT6833-01   |                            |                            |                 |                             |                                   | 10 m (32.8 ft.)                    |                            |                                 |
|  | CT6834      | 500 A rms                  | ±800 A peak                | DC to 50 kHz    | ±0.07% rdg.<br>±0.007% f.s. | φ20 mm (0.79 in.)                 | 5 m (16.4 ft.)                     | Yes                        | −45°C to 85°C<br>−49°F to 185°F |
|                                                                                     | CT6834-01   |                            |                            |                 |                             |                                   | 10 m (32.8 ft.)                    |                            |                                 |
|  | 9272-05     | 20 A rms,<br>200 A rms     | ±71 A peak,<br>±430 A peak | 1 Hz to 100 kHz | ±0.3% rdg.<br>±0.01% f.s.   | φ46 mm (1.81 in.)                 | 3 m (9.84 ft.)                     | -                          | 0°C to 50°C<br>32°F to 122°F    |
|  | CT6841A     | 20 A rms                   | ±60 A peak*1               | DC to 2 MHz     | ±0.2% rdg.<br>±0.01% f.s.   | φ20 mm (0.79 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|  | CT6843A     | 200 A rms                  | ±600 A peak*1              | DC to 700 kHz   | ±0.2% rdg.<br>±0.01% f.s.   | φ20 mm (0.79 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|  | CT6844A     | 500 A rms                  | ±800 A peak*1              | DC to 500 kHz   | ±0.2% rdg.<br>±0.01% f.s.   | φ20 mm (0.79 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|  | CT6845A     | 500 A rms                  | ±1500 A peak*1             | DC to 200 kHz   | ±0.2% rdg.<br>±0.01% f.s.   | φ50 mm (1.97 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|  | CT6846A     | 1000 A rms                 | ±1900 A peak*1             | DC to 100 kHz   | ±0.2% rdg.<br>±0.01% f.s.   | φ50 mm (1.97 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
|  | CT6847A     | 2000 A DC<br>1400 A AC rms | ±2400 A peak*5             | DC to 70 kHz    | ±0.15% rdg.<br>±0.01% f.s.  | φ50 mm (1.97 in.)                 | 3 m (9.84 ft.)                     | Yes                        | −40°C to 85°C<br>−40°F to 185°F |
| Direct-wired types                                                                  |             |                            |                            |                 |                             |                                   |                                    |                            |                                 |
|  | PW9100A-3*2 | 50 A rms                   | ±200 A peak*1              | DC to 3.5 MHz   | ±0.02% rdg.<br>±0.005% f.s. | M6 screw terminals                | 3 ch                               | Yes                        | 0°C to 40°C<br>32°F to 104°F    |
|  | PW9100A-4*2 | 50 A rms                   | ±200 A peak*1              | DC to 3.5 MHz   | ±0.02% rdg.<br>±0.005% f.s. | M6 screw terminals                | 4 ch                               | Yes                        | 0°C to 40°C<br>32°F to 104°F    |

\*1: Within 20 ms and 40°C (104°F) or less \*2: Special specification PW9100A with a rated current of 5 A can also be ordered.

\*3: Between sensor to multiplexer, between multiplexer to output connector \*4: Build-to-order

\*5: Within 1 cycle at 40°C (104°F) or less, for waveforms with a period of 10 ms or more



## Voltage measurement options

| Model                                                                                        | Product                    | Note                                                                                                                                                      |
|----------------------------------------------------------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|  L1025      | VOLTAGE CORD               | 1500 V DC CATII, 1000 V CATIII, rated current 1 A, banana-banana (red, black, 1 each), alligator clip, approx. 3 m (9.84 ft.) length                      |
|  L9438-50   | VOLTAGE CORD               | 1000 V CATIII, 600 V CATIV, rated current 10 A, banana-banana (red, black, 1 each), alligator clip, spiral tube, approx. 3 m (9.84 ft.) length            |
|  L1000      | VOLTAGE CORD               | 1000 V CATIII, 600 V CATIV, rated current 10 A, banana-banana (red, yellow, blue, gray, 1 each, black × 4), alligator clip, approx. 3 m (9.84 ft.) length |
|  L9257      | CONNECTION CORD            | 1000 V CATIII, 600 V CATIV, rated current 10 A, banana-banana (red, yellow, blue, gray, 1 each, black × 4), alligator clip, approx. 3 m (9.84 ft.) length |
|  L1021-01   | PATCH CORD                 | 1000 V CATIII, 600 V CATIV, rated current 10 A, for branching voltage input, banana branch to banana (red × 1), 0.5 m (1.64 ft.) length                   |
|  L1021-02   | PATCH CORD                 | 1000 V CATIII, 600 V CATIV, rated current 10 A, for branching voltage input, banana branch to banana (black × 1), 0.5 m (1.64 ft.) length                 |
|  L9243      | GRABBER CLIP               | 1000 V CATII, rated current 1 A, (red, black, 1 each)                                                                                                     |
|  L4940      | CONNECTION CORD            | 1000 V CATIII, 600 V CATIV, rated current 10 A, banana-banana (red, black, 1 each), approx. 1.5 m (4.92 ft.) length                                       |
|  L4935      | ALLIGATOR CLIP SET         | 1000 V CATIII, 600 V CATIV, rated current 10 A, (red, black, 1 each)                                                                                      |
|  VT1005     | AC/DC HIGH VOLTAGE DIVIDER | Voltage divider up to 5000 V and output to a Hioki power analyzer.                                                                                        |
|  L1050-03  | VOLTAGE CORD               | For VT1005, 1.6 m (L1050-01), 3.0 m (L1050-03)                                                                                                            |
|  L9217-01 | CONNECTION CORD            | For VT1005 connection, insulated BNC, 600 V CATII, 300 V CATIII, rated current 0.2 A, 3.0 m (9.84 ft.)                                                    |
|  L9217-02 | CONNECTION CORD            | For VT1005 connection, insulated BNC, 600 V CATII, 300 V CATIII, rated current 0.2 A, 10 m (32.80 ft.)                                                    |

## Connection options

| Model                                                                                       | Product          | Note                                                                                                                 |
|---------------------------------------------------------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------|
|  L9217   | CONNECTION CORD  | For VT1005 connection, insulated BNC, 600 V CATII, 300 V CATIII, rated current 0.2 A, 10 m (32.80 ft.)               |
|  9165    | CONNECTION CABLE | For BNC synchronization, metal BNC to metal BNC, 1.5 m (4.92 ft.) length                                             |
|  9713-01 | CAN CABLE        | One end terminating in bare wires, 2 m (6.56 ft.) length                                                             |
|  CT9902  | EXTENSION CABLE  | For extension of current sensor cable, ME15W-ME15W, 5 m (16.40 ft.) length                                           |
|  CT9557  | SENSOR UNIT      | Adds output waveforms from up to 4 current sensors to 1 channel and outputs it to a Hioki power analyzer.            |
|  CT9904  | CONNECTION CABLE | Cable length 1m; required in order to connect the CT9557's added waveform output terminal to a Hioki power analyzer. |

## Others

| Model                                                                                         | Product                | Note                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  SP7001-95 | NON-CONTACT CAN SENSOR | Acquires CAN or CAN FD signals, simply by pinching probes over wire insulation. It connects to the CAN connector of the PW4001, supports CAN or CAN FD communication, and can be powered via a USB connector. |
|  L3000     | D/A OUTPUT CABLE       | D-sub 25-pin to BNC (male) 20-channel conversion cable                                                                                                                                                        |
|  Z5200     | BNC TERMINAL BOX       | D-sub 25-pin to BNC (female) 20-channel conversion box                                                                                                                                                        |
|  C4001     | CARRYING CASE          | Hard trunk type, with casters                                                                                                                                                                                 |
|  Z5302     | RACKMOUNT FITTINGS     | For EIA standard rack                                                                                                                                                                                         |
|  Z5303     | RACKMOUNT FITTINGS     | For JIS standard rack                                                                                                                                                                                         |

# HIOKI

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