HIOKI

PQ3198A

POWER QUALITY ANALYZER

The PQ3198A supports AC and DC power measurement and complies with the IEC 61000-4-30:2025 Ed.4 Class A standard. It measures voltage fluctuations, transients, harmonics, and inrush current. Ideal for renewable energy systems, electric vehicle charging stations, and power quality troubleshooting. This analyzer features three voltage input channels and an isolated fourth voltage channel, enabling power measurements on two separate circuits and efficiency calculations.



3 year Warranty

CE

Features

- Class A power quality analyzer compliant with IEC 61000-4-30:2025 Ed.4
- Two power measurement systems and efficiency calculation: (CH1, CH2, CH3) and CH4
- Fundamental frequency settings: DC, 50 Hz, 60 Hz, and 400 Hz
- Easy-to-understand measurement guidance
- Free power quality analysis software, PQ ONE, available for download
- Voltage measurement range: 600 V AC/DC, ±6000 V peak
- Current measurement range: up to 6000 A (with compatible sensor)
- Frequency range: DC, 0.1 Hz to 700 kHz
- Basic accuracy: Voltage - ±0.1% of nominal voltage
  Current - ±0.1% rdg ±0.1% f.s. + current sensor accuracy
  Power - ±0.2% rdg ±0.1% f.s. + current sensor accuracy
- Event measurements: transients, swells, dips, outages, frequency variations, inrush current, harmonics, interharmonics, rapid voltage changes (RVC), etc.
- Event waveform recording: up to 11 seconds (1 second before the event occurs and 10 seconds after it occurs)
- Internal memory: 8 GB
- Display: 6.5-inch TFT color display
- Power supply: AC adapter Z1017, battery pack Z1003 (operating time up to 2.5 hours)
- Dimensions: 300 mm (11.81 in.) (W) × 211 mm (8.31 in.) (H) × 68 mm (2.68 in.) (D)
- Weight: approximately 2.6 kg (91.7 oz.)

Applications

- Commissioning of data centers, UPS, and generators
- Power quality management in factories and commercial facilities
- Testing of renewable energy installations
- Evaluation of EV charger infrastructure
- Power quality troubleshooting
- Long-term power quality monitoring

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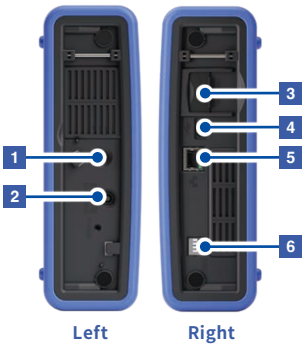
POWER QUALITY ANALYZER

Names and functions of parts

Side



Front



Top



1	Power switch	3	SD memory card slot	7	Display area	10	Voltage input terminals (CH 1, 2, 3)
2	AC adapter connection terminal	4	USB interface (Type-C)	8	Function keys	11	Voltage input terminal (CH 4)
		5	LAN interface	9	Operation keys	12	Current input terminals (for current sensors)
		6	External I/O terminals				

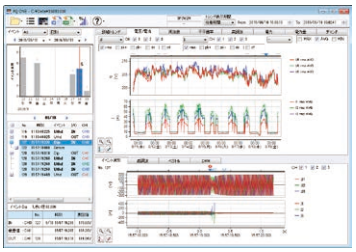
Software

Power Quality Analysis Software PQ ONE (Available for Download)

(free download software)

- Load multiple datasets
- Pass/fail judgment according to power quality standards
- Quick report generation
- List view of analyzed data

OS	Windows 11
Functions	Statistic analysis EN 50160 IEEE519 TDD GB Power Quality Statistics Report



https://www.hioki.com/global/support/download/software?keyword=PQ+ONE

Available for Download here

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Basic Specifications

Number of Channels	Voltage: 4 channels Current: 4 channels
Input Terminal Specifications	Voltage: Plug-in terminal (Safety terminal) Current: Special connector (Hioki PL14)
Wiring	Single-phase 2-wire/DC: 1P2W/DC Single-phase 3-wire: 1P3W Single-phase 3-wire 1-voltage measurement: 1P3W1U 3-phase 3-wire 2-wattmeter measurement: 3P3W2M 3-phase 3-wire 3-wattmeter measurement: 3P3W3M 3-phase 4-wire: 3P4W 3-phase 4-wire 2.5 element: 3P4W2.5E In addition to one of the above, input CH4
Input resistance	Voltage input section: 5 MΩ ± 20%, Current input section: 200 kΩ ± 20%
Maximum input voltage	1000 V AC/DC, 6000 V peak *Measurement range for RMS voltage is up to 600 V
Maximum ratedterminal to-groundvoltage	1000 V AC/DC (CAT III) or 600 V AC/DC (CAT IV) with an expected transient overvoltage of 8000 V
Sampling frequency	Voltage and current, active power, etc.: 200 kHz Transient voltage: 2 MHz
A/D converterresolution	RMS voltage and current: 16-bit Transient voltage measurement: 12-bit
TIME PLOT interval	150/180/1200 cycle, 200 ms, 600 ms, 1 s, 3 s, 15 s, 30 s, 1 m, 5 m, 10 m, 15 m, 30 m, 1 h, 2 h
Display range	Voltage: 0.5 V to 780 V Current: 0.5% to 130% of range Power: 0.0% to 130% of range Parameters other than above: 0% to 130% of range
Effective measurement ranges	Voltage: 10 V to 780 V AC, 1 V to 600 V DC Current: 1% to 120% of range Power: 0.15% to 130% of range (When voltage and current both fall within the effective measurement range) Harmonic measurement is specified separately
qEffective peak ranges	Voltage measurement: ±1200 V Transient voltage measurement: ±6.0000 kV Current measurement: ±400% of range

Accuracy specifications

Accuracy guarantee conditions	Accuracy guarantee period: 1 year Accuracy guarantee temperature and humidity range: 23°C ±5°C, 80% RH or less Warm-up time: 30 min. or greater
Temperature coefficient	Voltage, current, power: 0.03% f.s./ °C (DC measurement, add ±0.05% f.s./ °C)
Common-modevoltage effects	Within 0.2% f.s. (600 V rms AC, 50 Hz/60 Hz, between voltage input and enclosure) Within 2% f.s. (600 V rms AC, 400 Hz, between voltage input and enclosure)
External magneticfield effects	Voltage: Within ±3 V Current: Within 1.5% f.s. (400 A rms/m AC, in 50 Hz/60 Hz magnetic field)
Effects of radiated radio-frequency electromagnetic field	For current and active power measurement, 40% of full scale or less at 10 V (when use with CT7731 AC/DC Auto-Zero Current Sensor)

Measurement parameters

Measurement parameters	Transient voltage RMS voltage refreshed each half-cycle RMS current refreshed each half-cycle Swell Dip Interruption Rapid voltage change (RVC) Instantaneous flicker value Inrush current Frequency 1 wave Frequency 200 ms Frequency 10 s Voltage RMS Voltage waveform peak Voltage DC Voltage CF Current RMS Current waveform peak Current DC Current CF	Active power Apparent power Reactive power Power factor Displacement power factor Efficiency Active energy Apparent energy Reactive energy Energy cost Active power demand quantity(value) Apparent power demand quantity(value) Reactive power demand quantity(value) Power factor demand value Displacement power factor demand value	Harmonic voltage Harmonic current Harmonic power Harmonic voltage phase angle Harmonic current phase angle Harmonic voltage-current phase difference Inter-harmonic voltage Inter-harmonic current High-order harmonic voltage High-order harmonic current Voltage total harmonic distortion Current total harmonic distortion	K factor Mains communicating system voltage Voltage zero-sequence unbalance factor Voltage negative-sequence unbalance factor Voltage zero-sequence component Voltage positive-sequence component Voltage negative-sequence component Current zero-sequence unbalance factor Current negative-sequence unbalance factor Current zero-sequence component Current positive-sequence component Current negative-sequence component IEC flicker Δ V10 flicker

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Measurement specifications

Transient voltage (Tran)	
Measurement method	Detected from waveform obtained by eliminating the fundamental component (50 Hz/60 Hz/400 Hz) from the sampled waveform. Detection occurs once for each fundamental voltage waveform.
Measurement range	±6.0000 kV peak
Measurement bandwidth	5 kHz (-3 dB) to 700 kHz (-3 dB), specified at 20 V rms
Minimum detection width	0.5 µs
Measurement accuracy	±5.0% rdg ±1.0% f.s.
Saved waveform	Event waveforms Transient waveforms Waveforms are saved for 2 ms before and after the position at which the transient overvoltage waveform was detected for the first transient IN and 2 ms before and after the point at which the transient maximum voltage waveform was detected between the IN and OUT points.
Trend data	RMS value, DC value, peak values (+, -) — AVG, MAX, MIN values within each recording interval period
RMS voltage refreshed each half-cycle (Urms1/2)	
Measurement method	True RMS type, compliant with IEC 61000-4-30 When the measurement frequency is set to 50 Hz/60 Hz, RMS voltage values are calculated using sample data for 1 waveform derived by overlapping the voltage waveform every half-cycle. When the measurement frequency is set to 400 Hz, the RMS voltage value is calculated for each voltage waveform. Line voltage is used for 3-phase 3-wire (3P3W3M) wiring, while phase voltage is used for 3-phase 4-wire wiring.
Measurement range	600.00 V
Measurement accuracy	When the measurement frequency is set to 50 Hz/60 Hz: With 10 V to 660 V input: Specified as 0.2% of nominal voltage with a nominal input voltage (Udin) of at least 100 V. With input outside the range of 10 V to 660 V or a nominal input voltage (Udin) of less than 100 V: ±0.2% rdg ±0.08% f.s. When the measurement frequency is set to 400 Hz: ±0.4% rdg ±0.50% f.s.
Saved waveform	None
Trend data	MAX, MIN values within each recording interval period
Constraints	With a 400 Hz measurement frequency, measured values recorded on the event voltage fluctuation graph consist of RMS voltage values for each waveform.
RMS current refreshed each half-cycle (Irms1/2)	
Measurement method	RMS current is calculated using data obtained over a 1-cycle time, refreshed each half-cycle (synchronized with the voltage of the same channel).
Measurement range	Depends on the current sensor in use
Measurement accuracy	±0.2% rdg ±0.1% f.s. + current sensor accuracy
Saved waveform	None
Trend data	AVG, MAX, MIN values within each recording interval period of sliding voltage values
Swell (Swell)	
Measurement method	Compliant with IEC 61000-4-30 During 50 Hz/60 Hz measurement, a swell is detected when the RMS voltage refreshed each half cycle exceeds the threshold in the positive direction. During 400 Hz measurement, a swell is detected when the maximum of 4 RMS voltage values occurring within 10 ms (values calculated for one 400 Hz waveform) exceeds the threshold.
Measurement range	600.00 V
Measurement accuracy	Same as for RMS voltage refreshed each half-cycle Period: Within half a cycle of the start accuracy time, within half a cycle of the end accuracy time (not specified for 400 Hz measurement)
Saved waveform	Event waveform
Fluctuation data	Saved the data of RMS voltage refreshed each half-cycle and RMS current refreshed each half-cycle obtained in the period between 0.5 s prior to the event IN and 29.5 s after the event IN. When set to 400 Hz, it saves RMS voltage and RMS current, refreshed each half-cycle, obtained between 0.125 s before the event IN and 7.375 s after the event IN.
Trend data	AVG, MAX, MIN within each recording interval period
Dip (Dip)	
Measurement method	Compliant with IEC 61000-4-30 During 50 Hz/60 Hz measurement, a dip is detected when the RMS voltage refreshed each half-cycle falls below the threshold. During 400 Hz measurement, a dip is detected when the minimum of 4 RMS voltage values occurring within 10 ms (values calculated for one 400 Hz waveform) falls below the threshold.
Measurement range	600.00 V
Measurement accuracy	Same as for RMS voltage refreshed each half-cycle Period: Within half a cycle of the start accuracy time, within half a cycle of the end accuracy time (not specified for 400 Hz measurement)
Saved waveform	Event waveform
Fluctuation data	Saved the data of RMS voltage refreshed each half-cycle and RMS current refreshed each half-cycle obtained in the period between 0.5 s prior to the event IN and 29.5 s after the event IN. When set to 400 Hz, it saves RMS voltage and RMS current, refreshed each half-cycle, obtained between 0.125 s before the event IN and 7.375 s after the event IN.
Trend data	AVG, MAX, MIN within each recording interval period
Interruption (Intrpt)	
Measurement method	Compliant with IEC 61000-4-30 During 50 Hz/60 Hz measurement, an interruption is detected when the RMS voltage refreshed each half-cycle falls below the threshold. During 400 Hz measurement, an interruption is detected when the minimum of 4 RMS voltage values occurring within 10 ms (values calculated for one 400 Hz waveform) falls below the threshold.
Measurement range	600.00 V
Measurement accuracy	Same as for RMS voltage refreshed each half-cycle Period: Within half a cycle of the start accuracy time, within half a cycle of the end accuracy time (not specified for 400 Hz measurement)
Saved waveform	Event waveform
Fluctuation data	Saved the data of RMS voltage refreshed each half-cycle and RMS current refreshed each half-cycle obtained in the period between 0.5 s prior to the event IN and 29.5 s after the event IN. When set to 400 Hz, it saves RMS voltage and RMS current, refreshed each half-cycle, obtained between 0.125 s before the event IN and 7.375 s after the event IN.
Trend data	None

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Rapid voltage change (RVC)	
Measurement method	Compliant with IEC 61000-4-30 During 50 Hz/60 Hz measurement, an RVC is detected when the RMS voltage refreshed each half-cycle falls below the threshold. However, detected as a dip when the value falls below the threshold value of a dip, and detected as a swell when the value exceeds the threshold value of a swell. During 400 Hz measurement, RVC detection is not supported.
Measurement range	600.00 V
Measurement accuracy	Same as for RMS voltage refreshed each half-cycle Period: Within half a cycle of the start accuracy time, within half a cycle of the end accuracy time
Saved waveform	Event waveform
Fluctuation data	Saved the data of RMS voltage refreshed each half-cycle and RMS current refreshed each half-cycle obtained in the period between 0.5 s prior to the event IN and 29.5 s after the event IN.When set to 400 Hz, it saves RMS voltage and RMS current, refreshed each half-cycle, obtained between 0.125 s before the event IN and 7.375 s after the event IN.
Trend data	None
Instantaneous flicker value (Pinst)	
Measurement method	As per IEC 61000-4-15 User-selectable from 230 V lamp/120 V lamp (when Pst and Plt are selected for flicker measurement)
Measurement range	99.999, 0.001
Measurement accuracy	N/A
Saved waveform	N/A
Fluctuation data	N/A
Trend data	MAX, MIN values within each recording interval period
Inrush current (Inrush)	
Measurement method	When the measurement frequency is set to 50 Hz or 60 Hz, the current RMS value is calculated from data sampled from a current waveform at intervals of half cycle (in synchronization with voltage waveform acquired across the same channel) and the inrush current is detected. When the measurement frequency is set to 400 Hz, the current RMS value is calculated for each current waveform, and the inrush current is detected if the greatest of four current RMS values (400 Hz single-waveform calculated values) in a 10 ms interval exceeds the threshold.
Measurement range	Depends on the current sensor in use
Measurement accuracy	When the measurement frequency is set to 50 Hz or 60 Hz : ±0.3% rdg±0.5% f.s. + current sensor accuracy When the measurement frequency is set to 400 Hz : ±0.4% rdg±1.0% f.s. +current sensor accuracy
Saved waveform	Event waveforms
Fluctuation data	Saved the data of RMS voltage refreshed each half-cycle and RMS current refreshed each half-cycle obtained in the period between 0.5 s prior to the event IN and 29.5 s after the event IN. When set to 400 Hz, it saves RMS voltage and RMS current, refreshed each half-cycle, obtained between 0.125 s before the event IN and 7.375 s after the event IN.
Trend data	MAX, MIN values of RMS current (Inrush) refreshed each half-cycle within each recording interval period
Frequency 1 wave (Freq_wav)	
Measurement method	Reciprocal method Frequency calculated from the reciprocal of the accumulated time of integer cycles within 1-cycle waveform period on U1 (reference channel). When the measurement frequency is set to 400 Hz, it is the average frequency of 8 waveforms calculated from the reciprocal of the accumulated time of integer cycles within 8 waveform periods.
Measurement range	When the measurement frequency is set to 50 Hz or 60 Hz: 70.00 Hz When the measurement frequency is set to 400 Hz: 440.00 Hz
Measurement accuracy	When the measurement frequency is set to 50 Hz or 60 Hz : ±0.200 Hz or less (at an input of between 10% f.s. and 110% f.s.) When the measurement frequency is set to 400 Hz : ±2.00 Hz or less (at an input of between 10% f.s. and 110% f.s.)
Saved waveform	Event waveforms
Fluctuation data	N/A
Trend data	MAX, MIN values within each recording interval period
Frequency 200 ms (Freq)	
Measurement method	Reciprocal method Calculated as the reciprocal of the accumulated whole-cycle time during approx. 200 ms period of 10, 12, or 80 U1 (reference channel) cycles.
Measurement range	When the measurement frequency is set to 50 Hz or 60 Hz: 70.00 Hz When the measurement frequency is set to 400 Hz: 440.00 Hz
Measurement accuracy	When the measurement frequency is set to 50 Hz or 60 Hz : ±0.200 Hz or less When the measurement frequency is set to 400 Hz : ±2.00 Hz or less (at an input of between 4% f.s. and 110% f.s.)
Saved waveform	Event waveforms
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period
Frequency 10 s (Freq10s)	
Measurement method	Reciprocal method Calculated as the reciprocal of the accumulated whole-cycle time during the specified 10 s period for U1 (reference channel) as per IEC 61000-4-30.
Measurement range	When the measurement frequency is set to 50 Hz or 60 Hz: 70.00 Hz When the measurement frequency is set to 400 Hz: 440.00 Hz
Measurement accuracy	When a signal with a frequency of less than 45.000 Hz is inputted with the measurement frequency setting of 50 Hz: 0.01 Hz or less When a signal with a frequency of 45.000 Hz or more is inputted with the measurement frequency setting of 50 Hz; With the measurement frequency setting of 60 Hz: 0.003 Hz or less With the measurement frequency setting of 400 Hz: 0.10 Hz or less (with input voltage of 10 V to 660 V)
Saved waveform	N/A
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period

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Voltage RMS (Urms)	
Measurement method	True RMS measurement (AC+DC) IEC 61000-4-30 compliant: 10 cycles (50 Hz) or 12 cycles (60 Hz) (approx. 200 ms) During 400 Hz measurement, calculated from 80 cycles (approx. 200 ms) When set to 3P3W3M/3P4W/3P4W2.5E, the phase voltage/line voltage setting is applied to the RMS voltage U rms. Includes Zero-display range.
Measurement range	600.00 V
Measurement accuracy	When the measurement frequency is set to 50 Hz/60 Hz With input of 10 V to 660 V: ±0.1% of the nominal voltage; defined for a nominal input voltage (Udin) of 100 V or greater. With input outside the range of 10 V to 660 V or a nominal input voltage (Udin) of less than 100 V: ±0.2% rdg ±0.08% f.s. When the measurement frequency is set to 400 Hz: ±0.2% rdg ±0.16% f.s.
Saved waveform	Event waveform
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period When wiring 3P3W3M, 3P4W, 3P4W2.5E, save both the line-to-line RMS voltage and the line-to-neutral RMS voltage values with vector calculation applied.
Voltage waveform peak (Upk)	
Measurement method	Measured every 10 cycles (50 Hz) or 12 cycles (60 Hz); maximum and minimum points sampled during approx. 200 ms aggregation. During 400 Hz measurement, measured every 80 cycles;maximum and minimum points sampled during approx. 200 ms aggregation.
Measurement range	±1200.00 V peak
Measurement accuracy	With input of 10% to 150% of the nominal voltage: 5% of the nominal voltage Other than the above: 2% f.s.
Saved waveform	Event waveform
Fluctuation data	N/A
Trend data	+ waveform peak value and – waveform peak value: AVG, MAX, and MIN values within the recording interval period
Voltage DC (Udc)	
Measurement method	Average value during approx. 200 ms aggregation synchronized with the reference channel. Includes Zero-display range.
Measurement range	600.00 V
Measurement accuracy	±0.3% rdg±0.08% f.s.
Saved waveform	Event waveform
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period
Voltage CF (Ucf)	
Measurement method	Calculated according to the RMS voltage and the peak value of the voltage waveform
Measurement range	122.00
Measurement accuracy	N/A
Saved waveform	N/A
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period
Current RMS (Irms)	
Measurement method	True RMS measurement (AC+DC) IEC 61000-4-30 compliant: 10 cycles (50 Hz) or 12 cycles (60 Hz) (approx. 200 ms) Includes Zero-display range.
Measurement range	Depends on current sensor in use
Measurement accuracy	When the measurement frequency is set to 50 Hz/60 Hz: ±0.1% rdg±0.1% f.s. + current sensor accuracy When the measurement frequency is set to 400 Hz: ±0.2% rdg±0.6% f.s. + current sensor accuracy
Saved waveform	Event waveform
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period
Current waveform peak (Ipk)	
Measurement method	Measured every 10 cycles (50 Hz) or 12 cycles (60 Hz); maximum and minimum points sampled during approx. 200 ms aggregation. At 400 Hz, the maximum and minimum waveform values are determined over each 80-cycle aggregation interval (approximately 200 ms).
Measurement range	400% of the current range
Measurement accuracy	With input greater than or equal to 50% f.s.: 5% rdg + current sensor accuracy Other than above: 2% f.s. + current sensor accuracy
Saved waveform	Event waveform
Fluctuation data	N/A
Trend data	+ waveform peak value and – waveform peak value: AVG, MAX, and MIN values within the recording interval period
Current DC (Idc)	
Measurement method	Average value during approx. 200 ms aggregation synchronized with the reference channel. Includes Zero-display range.
Measurement range	Depends on current sensor in use
Measurement accuracy	±0.5% rdg±0.5% f.s. + current sensor specifications accuracy Not specified when using AC dedicated current sensor.
Saved waveform	Event waveform
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period

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Current CF (Icf)		
Measurement method	Calculated according to the RMS current and the peak value of the current waveform	
Measurement range	408.00	
Measurement accuracy	N/A	
Saved waveform	N/A	
Fluctuation data	N/A	
Trend data	AVG, MAX, MIN values within each recording interval period	
Active power (P)		
Measurement method	Measured every 10 cycles (50 Hz) or 12 cycles (60 Hz) (approx. 200 ms). During 400 Hz measurement, measured every 80 cycles using the 8-cycle waveform (approx. 200 ms).	
Measurement range	Combination of voltage x current range	
Measurement accuracy	DC: ±0.5% rdg ±0.5% f.s. + current sensor accuracy AC: When the measurement frequency is set to 50 Hz/60 Hz: ±0.2% rdg±0.1% f.s. + current sensor accuracy (The sum value is the total value for channels being used.) When the measurement frequency is set to 400 Hz: ±0.4% rdg±0.6% f.s. +current sensor accuracy (The sum value is the total value for channels being used.)	
Saved waveform	Event waveforms	
Fluctuation data	N/A	
Trend data	AVG, MAX, MIN values within each recording interval period	
Apparent power (S)		
Measurement method	RMS value calculation: Calculated from RMS voltage value, U rms and RMS current, I rms. Unsigned	
Measurement range	Depends on the voltage × current range combination	
Measurement accuracy	±1 dgt. for calculations derived from the various measured values. (sum is ±3 dgt.)	
Saved waveform	Event waveforms	
Fluctuation data	N/A	
Trend data	RMS value calculation and fundamental wave calculation: AVG, MAX, MIN values within each recording interval period	
Reactive power (Q)		
Measurement method	Calculated using apparent power S and active power P. Lagging (LAG: current lags voltage): Unsigned Leading (LEAD: current leads voltage): Negative	
Measurement range	Depends on the voltage × current range combination	
Measurement accuracy	±1 dgt. for calculations derived from the various measured values. (sum is ±3 dgt.)	
Saved waveform	Event waveforms	
Fluctuation data	N/A	
Trend data	RMS value calculation and fundamental wave calculation: AVG, MAX, MIN values within each recording interval period	
Power factor and Displacement power factor (PF, DPF)		
Measurement method	Power factor : Calculated from RMS voltage U, RMS current I, and active power P. Displacement power factor : Calculated from the phase difference between the fundamental voltage wave and the fundamental current wave.	
	Type1	Conforms to the two-quadrant method. Compatible with conventional products. For lagging phase (LAG: current lags voltage) : Unsigned For leading phase (LEAD: current leads voltage) : Negative
	Type2	Conforms to IEEE1459. When active power is unsigned (inflow, consumption) : Unsigned When active power is signed (consumption, regeneration) : Negative
Measurement range	-1.0000 (lead) to 0.0000 to 1.0000 (lag)	
Displacement power factor measurement accuracy	For voltage of 100 V or greater and current input greater than or equal to 10% of the range: When displacement power factor = 1: ±0.05% rdg When 0.8≤displacement power factor<1: ±1.50% rdg When 0<displacement power factor<0.8: ±[1 - cos(ϕ +0.2865)/cos(ϕ)]×100% rdg + 50 dgt. (reference value) ϕ: Display value for 1st order harmonic voltage/current phase difference In all cases, add current sensor's phase accuracy.	
Saved waveform	Event waveforms	
Fluctuation data	N/A	
Trend data	PF and DPF: AVG, MAX, MIN values within each recording interval period	
Efficiency (Eff)		
Measurement method	Calculated based on the ratio of active power between channels	
Measurement range	0.00 to 200.00 [%]	
Measurement accuracy	±1 dgt. for calculations based on each measured value.	
Saved waveform	N/A	
Fluctuation data	N/A	
Trend data	For both Eff1 and Eff2, the AVG, MAX, and MIN values within the recording interval.	

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Active energy, Apparent energy, Reactive energy (WP+, WP–; WS; WQ_LAG, WQ_LEAD)	
Measurement method	Measured every 10 cycles (50 Hz) or 12 cycles (60 Hz) (approx. 200 ms). During 400 Hz measurement, measured every 80 cycles using the 8-cycle waveform (approx. 200 ms). Active energy is integrated separately for power consumption and regeneration. Integration from apparent power Integrated from reactive power separately by lag and lead Recorded at the specified TIME PLOT interval. Data is updated every 10 cycles (50 Hz), 12 cycles (60 Hz), or 80 cycles (400 Hz) (approx. 200 ms). Integration starts when recording begins and continues until the last TIME PLOT update before recording ends.
Measurement range	Combination of voltage × current range Value display: 6 digits
Measurement accuracy	Active energy: Active power measurement accuracy ±10 dgt. Apparent energy: Apparent power measurement accuracy ±10 dgt. Reactive energy: Reactive power measurement accuracy ±10 dgt. Cumulative time accuracy : ±10 ppm ±1 s (23°C [73°F])
Saved waveform	N/A
Fluctuation data	N/A
Trend data	Integration value (apparent electric energy and reactive electric energy store the RMS computed values and the fundamental-wave computed values for each)
Energy cost (Ecost)	
Measurement method	Calculated by multiplying active energy (consumption) WP+ by the unit energy cost (per kilowatt-hour).
Measurement accuracy	±1 dgt. relative to calculations from measured values
Saved waveform	N/A
Fluctuation data	N/A
Trend data	Integration value
Active power demand quantity (value), reactive power demand quantity (value), apparent power demand quantity (value) **Dem_WP+ (Dem_P+), Dem_WP-(Dem_P-),** **Dem_WS (Dem_S),** **Dem_WQ_LAG (Dem_Q_LAG), Dem_WQ_LEAD (Dem_ Q_LEAD)**	
Measurement method	Active power demand quantity (value): Integrated from active power separately by consumption and regeneration Apparent power demand quantity (value): Integration from apparent power Reactive power demand quantity (value): Integrated from reactive power separately by lag and lead Demand quantity: Energy accumulated over the specified demand interval Demand value: Average power calculated over the specified demand interval
Measurement range	Depends on the voltage range × current range × interval time combination
Demand quantity measurement accuracy	Active energy: Active power measurement accuracy ±10 dgt. Reactive energy: Reactive power measurement accuracy ±10 dgt. Apparent energy: Apparent power measurement accuracy ±10 dgt. Cumulative time accuracy: ±10 ppm±1 s (23°C)
Demand value measurement accuracy	Accuracy of each measured value±1 dgt.
Saved waveform	N/A
Fluctuation data	N/A
Trend data	Demand quantity and demand value within each recording interval period (Apparent power demand and reactive power demand values store both the RMS-calculated values and the fundamental-wave-calculated values) Start and end timestamps of the demand interval in which the maximum active power demand (consumption) occurred.
Power factor demand value and Displacement power factor demand value (Dem_PF·Dem_DPF)	
Measurement method	Power factor demand value Calculated using the active power demand value (consumption) Dem_P+ and the reactive power demand value (lag) Dem_Q_LAG Displacement power factor demand value Calculated using the active power demand value (consumption) Dem_P+ and the fundamental wave reactive power demand value (lag) Dem_Q_LAG
Measurement accuracy	±1 dgt. relative to calculations from measured values
Saved waveform	N/A
Fluctuation data	N/A
Trend data	Power factor and displacement power factor: demand quantity and demand value within each recording interval period
Harmonic voltage and harmonic current (including fundamental component) (Uharm/Iharm)	
Measurement method	Compliant with IEC 61000-4-7:2009 Indicated harmonic voltage and harmonic current values incorporate interharmonic components adjacent to the next whole-number harmonic component after harmonic analysis. Measurement accuracy is specified for input that is 10% to 200% of IEC 61000-2-4 Class 3.
Measurement range	Harmonic voltage: 600.00 V Harmonic current: Varies with the current sensor used (see input specifications).
Measurement accuracy	See measurement accuracy with a fundamental wave of 50 Hz/60 Hz and measurement accuracy with a fundamental wave of 400 Hz.
Saved waveform	Event waveform
Fluctuation data	N/A
Trend data	RMS and content percentage: AVG, MAX, MIN values within each recording interval period
Constraints	When using an AC-only current sensor, the 0th order is not specified for current and power
Harmonic power (including fundamental component) (Pharm)	
Measurement method	Compliant with IEC 61000-4-7:2009 Indicates harmonic power values consisting of harmonic power for each channel and the sum of multiple channels.
Measurement range	See power ranges.
Measurement accuracy	See measurement accuracy with a fundamental wave of 50 Hz/60 Hz and measurement accuracy with a fundamental wave of 400 Hz.
Saved waveform	Event waveforms
Fluctuation data	N/A
Trend data	RMS value calculation and fundamental wave calculation: AVG, MAX, MIN values within each recording interval period
Constraints	When using an AC-only current sensor, the 0th order is not specified for current and power

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Measurement accuracy with a fundamental wave of 50 Hz/60 Hz

	Harmonic input	Measurement accuracy	Notes
Voltage	1% or greater of nominal voltage	The 0th order : ±0.3% rdg ±0.08% f.s. 1st or higher : ±5.00% rdg	Defined for a nominal voltage of 100 V or greater.
	<1% of nominal voltage	The 0th order : ±0.3% rdg ±0.08% f.s. 1st or higher : ±0.05% of nominal voltage	Defined for a nominal voltage of 100 V or greater.
Current	—	The 0th order : ±0.5% rdg ±0.5% f.s. 1st to 20th : ±0.5% rdg ±0.2% f.s. 21st to 50th : ±1.0% rdg ±0.3% f.s.	Add current sensor accuracy.
Power	—	The 0th order : ±0.5% rdg ±0.5% f.s. 1st to 20th : ±0.5% rdg ±0.2% f.s. 21st to 30th : ±1.0% rdg ±0.3% f.s. 31st to 40th : ±2.0% rdg ±0.3% f.s. 41st to 50th : ±3.0% rdg ±0.3% f.s.	Add current sensor accuracy.

Measurement accuracy with a fundamental wave of 400 Hz

	Hamonic input	Measurement accuracy	Notes
Voltage	1% or greater of nominal voltage	The 0th order : ±0.5% rdg ±0.08% f.s. 1st to 2nd : ±0.5% rdg ±0.20% f.s. 3rd to 6th : ±1.0% rdg ±0.30% f.s. 7th to 10th : ±5.0% rdg ±0.30% f.s.	—
Current	—	The 0th order : ±0.5% rdg ±0.5% f.s. 1st to 2nd : ±0.5% rdg ±0.2% f.s. 3rd to 6th : ±1.0% rdg ±0.3% f.s. 7th to 10th : ±5.0% rdg ±0.3% f.s.	Add current sensor accuracy.
Power	—	The 0th order : ±0.5% rdg ±0.5% f.s. 1st to 2nd : ±0.5% rdg ±0.2% f.s. 3rd to 6th : ±1.0% rdg ±0.3% f.s. 7th to 10th : ±7.0% rdg ±0.3% f.s.	Add current sensor accuracy.

Harmonic voltage phase angle and Harmonic current phase angle (including fundamentalcomponent) (Uphase/Iphase)	
Measurement method	Compliant with IEC 61000-4-7:2009
Measurement range	0.00 to ±180.00°
Measurement accuracy	N/A
Saved waveform	Event waveform
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period
Harmonic voltage-current phase angle (including fundamental component) (Pphase)	
Measurement method	Compliant with IEC 61000-4-7:2009 After harmonic analysis, harmonic voltage and harmonic current are displayed by adding as interharmonic contents with the harmonic contents according to harmonic order Measurement accuracy is defined for input from 10% to 200% of IEC 61000-2-4 Class 3.
Measurement range	Inter-harmonic voltage: U1 to U4, 600.00 V Inter-harmonic current: I1 to I4, Varies with used current sensor
Measurement accuracy	At 50 Hz/60 Hz: 1st order : ± 1° 2nd, 3rd order: ± 2° 4th order to 50th order: ±(0.05°× k+2°) (k: harmonic orders) At 400 Hz: 1st order to 10th order: ±(0.16°× k+2°) (k: harmonic orders) However, current sensor accuracy is added. Harmonic voltage of every order is specified as 1% of thedeclared voltage, and current level is specified as 1% f.s. or more.
Saved waveform	N/A
Fluctuation data	N/A
Trend data	RMS and content percentage: AVG, MAX, MIN values within each recording interval period
Inter-harmonic voltage and Inter-harmonic current (Uiharm · Iiharm)	
Measurement method	Compliant with IEC 61000-4-7:2009 Harmonic voltages and harmonic currents are displayed by adding intermediate harmonic components between integer-order harmonic components following harmonic analysis. Measurement accuracy is specified for input that is 10% to 200% of IEC 61000-2-4 Class 3.
Measurement range	Middle-harmonic voltage: U1 to U4, 600.00 V Middle-harmonic current: I1 to I4, Varies with used current sensor
Measurement accuracy	Inter-harmonic voltage (Defined for a nominal voltage of at least 100 V.) 1% or greater of harmonic input nominal voltage: ±5.00% rdg <1% of harmonic input nominal voltage: ±0.05% of nominal voltage Inter-harmonic current: Unspecified
Saved waveform	N/A
Fluctuation data	N/A
Trend data	RMS and content percentage: AVG, MAX, MIN values within each recording interval period
Constraints	Do not display during 400 Hz measurements

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High-order harmonic voltage component and high-order harmonic current component (UharmH, IharmH)	
Measurement method	The waveform obtained by eliminating the fundamental component is calculated using the true RMS method during 10cycles (50 Hz), 12 cycles (60 Hz), or 80 cycles (400 Hz) (approx. 200 ms) of the fundamental wave.
Measurement range	High-order harmonic voltage component: 600.00 V High-order harmonic current component: Varies with the current sensor used.
Measurement bandwidth	2 kHz (-3 dB) to 80 kHz (-3 dB)
Measurement accuracy	High-order harmonic voltage component: ±10% rdg±0.1% f.s. (specified for 10 V sine wave at 5 kHz, 10 kHz, and 20 kHz) High-order harmonic current component: ±10% rdg±0.2% f.s. + current sensor accuracy (specified as 1% f.s. sine wave at 5 kHz, 10 kHz, and 20 kHz)
Saved waveform	Event waveforms High-order harmonic waveform 40 ms from the end of the first approx. 200 ms aggregation interval in which the reading was great er than the threshold (8000 data points)
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period
Voltage total harmonic distortion and Current total harmonic distortion (Uthd, Ithd)	
Measurement method	IEC 61000-4-7:2009 compliant. Max. order: 50th The string "-----" will appear for the voltage distortion factor when the RMS voltage is zero; for the current distortion factor when the RMS current is zero. When the input frequency is set to 400 Hz, harmonic measurement is limited to the 10th order.
Measurement range	0.00% to 100.00% (Voltage), 0.00% to 500.00% (Current)
Measurement accuracy	0.5% Defined for the following input with a nominal input voltage of 100 V to 440 V: Voltage, 1st order: 100% of the nominal input voltage; 5th and 7th orders: 1% of the nominal input voltage Current, 1st order: 100% of current range; 5th and 7th orders: 1% of current range
Saved waveform	Event waveforms
Fluctuation data	N/A
Trend data	THD-F and THDR: AVG, MAX, MIN values within each recording interval period
K Factor (multiplication factor) (KF)	
Measurement method	Calculated using the harmonic RMS current of the 1st to 50th orders. When the input frequency is set to 400 Hz, harmonic measurement is limited to the 10th order.
Measurement range	0.00 to 500.00
Measurement accuracy	N/A
Saved waveform	Event waveforms
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period
Mains communicating system voltage (Mcsv, Mcsv%)	
Measurement method	Compliant with IEC 61000-4-30 The signal level (MCSV) or its percentage relative to the nominal voltage (MCSV%) is calculated using the 10/12-cycle RMS values of the interharmonic bin corresponding to each of up to two specified signaling frequencies, or the four nearest interharmonic bins.
Measurement range	600.00 V
Measurement accuracy	Within the range of 3% to 15% of nominal voltage: ±5% rdg Within the range of 1% to 3% of nominal voltage: ±0.15% of nominal voltage
Saved waveform	Event waveforms
Fluctuation data	N/A
Trend data	Mcsv1, Mcsv%1, Mcsv, and Mcsv%2: AVG, MAX, MIN values within each recording interval period
Constraints	Not displayed for 400 Hz measurement.
Voltage unbalance factor (negative-sequence unbalance factor, zero-sequence unbalance factor) (Uunb, Uunb0)	
Measurement method	Calculated using various components of the 3-phase fundamental voltage wave for 3-phase 3-wire (3P3W2M, 3P3W3M) and 3-phase 4-wire connections. The string "-----" will appear when the RMS voltage values ofall three phases are zero.
Measurement range	Component is V and Unbalance factor is 0.0% to 100.0%
Measurement accuracy	When the measurement frequency is set to 50 Hz/60 Hz, ±0.15% (0.0% to 5.0% range specified for IEC 61000-4-30 performance testing)
Saved waveform	Event waveforms
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period
Voltage zero-sequence component, Voltage positive-sequence component, Voltage negative-sequence component (Uzero, Upos, Uneg)	
Measurement method	Calculated using various components of the 3-phase fundamental voltage wave for 3-phase 3-wire (3P3W2M, 3P3W3M) and 3-phase 4-wire connections.
Measurement range	600.00 V
Measurement accuracy	When the measurement frequency is set to 50 Hz/60 Hz,±0.15% (0.0% to 5.0% range specified for IEC 61000-4-30 performance testing)
Saved waveform	N/A
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period
Current unbalance factor (negative-sequence unbalance factor, zero-sequence unbalance factor) (Iunb0, Iunb)	
Measurement method	Calculated using various components of the 3-phase fundamental current wave for 3-phase 3-wire (3P3W2M, 3P3W3M) and 3-phase 4-wire connections. The string "-----" will appear when the RMS current values ofall three phases are zero.
Measurement range	Component is A and Unbalance factor is 0.0% to 100.0%
Measurement accuracy	N/A
Saved waveform	Event waveforms
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period

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Current zero-sequence component, Current positive-sequence component, Current negative-sequence component (Izero, Ipos, Ineg)	
Measurement method	Calculated using various components of the 3-phase fundamental current wave for 3-phase 3-wire (3P3W2M, 3P3W3M) and 3-phase 4-wire connections.
Measurement range	Depends on the current sensor in use
Measurement accuracy	N/A
Saved waveform	N/A
Fluctuation data	N/A
Trend data	AVG, MAX, MIN values within each recording interval period
IEC Flicker (Pst, Plt)	
Measurement method	IEC 61000-4-15:2010 compliant Pst is calculated after 10 minutes of continuous measurement and Plt after 2 hours of continuous measurement.
Measurement range	0.0001 to 10000 PU broken into 1024 segments with a logarithm
Measurement accuracy	Pst: ±5% rdg. (specified for the IEC 61000-4-15 Class F1 performance test) Pst (k value) range: 0.1 to 10 (7 CPM to 1620 CPM) 0.1 to 5 (less than 7 CPM or more than 1620 CPM) (CPM: Cycle per Minute)
Saved waveform	N/A
Flicker data	Pst, Plt
Constraint	Not displayed for 400 Hz measurement.
ΔV10 Flicker (ΔV10)	
Measurement method	Values are calculated based on the perceived flicker curve, using continuous measurements at one-minute intervals and conversion to a 100 V reference voltage.
Measurement range	0.000 V to 99.999 V
Measurement accuracy	±2% rdg±0.01 V (with a fundamental wave of 100 V rms [50 Hz/60 Hz], a fluctuation voltage of 1 V rms [99.5 V rms to 100.5 V rms], and a fluctuation frequency of 10 Hz)
Saved waveform	N/A
Flicker data	ΔV10 values measured at one-minute intervals; hourly average, hourly maximum, and fourth-highest hourly value; and the overall maximum value during the measurement period.
Constraint	Not displayed for 400 Hz measurement.

RMS frequency characteristics

Frequency	Voltage	Current	Power
40 Hz to 70Hz	Specified as RMS value	Specified as RMS value	Specified as RMS value
70 Hz to 360Hz	±1% rdg±0.2% f.s.	±1% rdg±0.5% f.s.	±1% rdg±0.5% f.s.
360 Hz to 440Hz	Specified as RMS value	Specified as RMS value	Specified as RMS value
440 Hz to 5 kHz	±5% rdg±0.2% f.s.	±5% rdg±0.5% f.s.	±5% rdg±1% f.s.
5 kHz to 20 kHz	±5% rdg±0.2% f.s.	±5% rdg±0.5% f.s.	±5% rdg±1% f.s.
20 kHz to 50 kHz	±20% rdg±0.4% f.s.	±20% rdg±0.5% f.s.	
80 kHz	-3 dB	-3 dB	

Specified for RMS voltage U rms and I rms. Current and power values incorporate current sensor accuracy.

Measurement settings

Current sensor and current range	See current sensor specifications.
Power range	Determined automatically based on the current range being used.
VT ratio	1, 60, 100, 200, 300, 600, 700, 1000, 2000, 2500, 5000, custom (0.01 to 9999.99)
CT ratio	1, 40, 60, 80, 120, 160, 200, 240, 300, 400, 600, 800, 1200, custom (0.01 to 9999.99)
Nominal input voltage	100, 101, 110, 115, 120, 127, 200, 202, 208, 220, 230, 240, 277, 347, 380, 400, 415, 440, 480, 600, custom (in 1 V increments from 50 V to 600 V)
Frequency	50 Hz / 60 Hz / 400 Hz
Selection of calculation method	If there is a discrepancy between the voltage input and the set frequency, an error message will be displayed, and the setting will be changed to the closest frequency. Urms: Phase-to-phase voltage, line-to-line voltage PF/Q/S: RMS calculation, fundamental wave calculation Power factor sign: Type 1, Type 2 THD: THD-F, THD-R Harmonics: U, I, P (all levels), U, I, P (all content), U, P (content), I (level)
Energy cost	Unit cost: 0.00000 to 99999.9 per kWh; Currency unit: 3 alphanumeric characters.
Flicker	OFF/Pst, Plt/ΔV10: When the measurement frequency is 400 Hz, this is fixed to OFF.
Filter	230 V lamp, 120 V lamp This setting is available only when “Pst” or "Plt" is selected in the “Flicker” menu.

Recording settings

Recording interval	200 ms, 600 ms; 1, 2, 5, 10, 15, 30 s; 1, 2, 5, 10, 15, 30 min; 1 h, 2 h; 150/180 cycles *When set to 200/600 ms, harmonic data saving (except total harmonic distortion and K factor), event recording, and copy key operation during recording are not available.
Saving of screenshots	Off/On The display screen is saved as a BMP file for each recording interval. Min. interval: 5 min.
Folder / file names	Set to either automatic or user-specified (5 single-byte characters).

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Event specifications

Event detection method	The detection method for measured values for each event is noted in the measurement specifications. External events: An event is detected when a signal is received at the EVENT IN terminal. Manual events: An event is detected when the MANUAL EVENT key is pressed. Detected by the OR of each valid measurement item event. Event detection based on MAX, MIN, or AVG is not possible.
Synchronized saving of events	Event waveforms: Approx. 200 ms instantaneous waveform is recorded when an event occurs. (20 KS/s) Transient waveform: Instantaneous waveforms are recorded for 2 ms before the transient voltage waveform detection point and for 2 ms after the detection point. Fluctuation data: RMS value fluctuation data is recorded every half-wave for the equivalent of 0.5 s before the event occurs and 29.5 s after the event occurs. High-order harmonic* waveform: A 40 ms instantaneous waveform is recorded when a high-order harmonic* event occurs. * Supraharmonic

Event settings

Event hysteresis	0% to 100%
Timer event count	Off, 1/5/10/30 min., 1/2 hr. Events are generated at the selected interval.
Event waveform recording time before an event	Off (0 s) / 200 ms / 1 s The time for which to record instantaneous waveforms before events occur can be set.
Event waveform recording time after an event	Off (0 sec.)/200 ms/400 ms/1 s/5 s/10 s The time for which to record instantaneous waveforms after events occur can be set.

Other functionality

Copying of screenshots	Copy using the COPY key; results are saved to the SD card. Data format: Compressed BMP
Removal of SD card while recording data	A message is displayed when the user presses the F key on the FILE screen while recording with an interval of 2 s or longer. The SD card can be removed after the message has been reviewed.
Automatic detection of current sensors	When selected on the settings screen, connected sensors that support the HIOKI PL 14 connector are automatically detected.
Operation during a power outage	If the instrument is equipped with a BATTERY PACK Z1003 with a remaining charge, the instrument will switch automatically to battery power and continue recording. If no charged BATTERY PACK Z1003 is installed, measurement will stop (settings will be preserved), and the instrument will start recording again when power is restored. However, integrated values and other data will be reset.

Interfaces

SD memory card	Compatible cards: Z4001, Z4003
LAN	100BASE-TX, TCP/IP Remote operation via a WEB browser Manual downloading of data via the FTP server function Automatic transmission of data via the FTP client function Time synchronization via the NTP client function
USB	USB 2.0 Type-C (Full Speed, High Speed), Mass Storage Class
External control	4 screwless terminals, external event input, external start/stop, external event output (non isolated), ΔV10 alarm

General specifications

Operating location	Indoor use, pollution degree 2, elevations of up to 3000 m (Measurement category is reduced to CAT II [1000 V] or CAT III [600 V] at elevations in excess of 2000 m [6561.68 ft].)
Operating temperature and humidity range	-20°C to 50°C (-4°F to 122°F), 80% RH or less (non-condensing) When using LAN, USB communication or externalcontrol: 0°C to 50°C (32°F to 122°F) During battery operation: 0°C to 50°C (32°F to 122°F) When charging battery: 10°C to 35°C (50°F to 95°F)
Storage temperature and humidity range	-30°C to 60°C (-22°F to 140°F), 80% RH or less (non-condensing) (If the instrument will not be used for an extendedperiod of time, remove the battery pack and store in a cool location [from -20°C to 30°C (-4°F to 86°F)].
Dust and water resistance	IP30(EN 60529)
Standards	Safety EN 61010 EMC EN 61326 Class A
Power supply quality measurement method	Harmonics: IEC 61000-4-7:2009, IEC 61000-2-4Class 3 Power quality: IEC 61000-4-30:2025, EN 50160, IEEE1159 Flicker: IEC 61000-4-15:2010
Power supply	AC adapter Z1017 100 V to 240 V AC, 50 Hz/60 Hz; anticipated transient overvoltage: 2500 V; maximum rated power: 90 VA (including AC adapter) BATTERY PACK Z1003 charging time: Max. 5 hr. 30 min. Continuous battery operating time: About 2 hr. 30 min.
Internal memory	8 GB
Maximum recording time	1 year
Maximum number of recordable events	9999
Time functions	Auto-calendar, automatic leap year detection, 24-hour clock
Real time accuracy	Within ±0.3 s/day (with instrument powered on at 23°C ±5°C)
Display	6.5-inch TFT color LCD
Display languages	English / Japanese / Chinese / Korean
External dimensions	300 mm (11.81 in.) (W) × 211 mm (8.31 in.) (H) × 68 mm (2.68 in.) (D) (not including protruding parts)
Weight	Approx. 2.6 kg (91.7 oz.) (including BATTERY PACK Z1003)

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Options

Model	AC CURRENT SENSOR CT7126	AC CURRENT SENSOR CT7131	AC CURRENT SENSOR CT7136
Appearance			
Rated measured current	60 A AC	100 A AC	600 A AC
Measurable wire diameter	15 mm (0.59 in.) or less		46 mm (1.81 in.) or less
Current range and combined amplitude accuracy (45 to 66 Hz) *Accuracy guaranteed up to 120% of range.	Current range Combined accuracy 50.000 A 0.4% rdg + 0.112% f.s. 5.0000 A 0.4% rdg + 0.22% f.s. 500.00 mA 0.4% rdg + 1.3% f.s.	Current range Combined accuracy 100.00 A 0.4% rdg + 0.12% f.s. 50.000 A 0.4% rdg + 0.14% f.s. 5.0000 A 0.4% rdg + 0.50% f.s.	Current range Combined accuracy 500.00 A 0.4% rdg + 0.112% f.s. 50.000 A 0.4% rdg + 0.22% f.s. 5.0000 A 0.4% rdg + 1.3% f.s.
Phase accuracy (45 to 66 Hz)	Within ±2°	Within ±1°	Within ±0.5°
Maximum allowable input (45 to 66 Hz)	60 A continuous	130 A continuous	600 A continuous
Maximum rated terminal-to-ground voltage	CAT III (300 V)		CAT III (1000 V), CAT IV (600 V)
Frequency band	Accuracy defined up to 20 kHz		
Dimensions / weight / cord length	46 mm (1.81 in.) (W) × 135 mm (5.31 in.) (H) × 21 mm (0.83 in.) (D) / 190 g (6.7 oz.) / 2.5 m (8.20 ft.)		78 mm (3.07 in.) (W) × 152 mm (5.98 in.) (H) × 42 mm (1.65 in.) (D) / 350 g (12.3 oz.) / 2.5 m (8.20 ft.)

Model	AC FLEXIBLE CURRENT SENSOR CT7044	AC FLEXIBLE CURRENT SENSOR CT7045	AC FLEXIBLE CURRENT SENSOR CT7046
Appearance			
Rated measured current	6000 A AC		
Measurable wire diameter	100 mm (3.94 in.) or less	180 mm (7.09 in.) or less	254 mm (10.00 in.) or less
Current range and combined amplitude accuracy (45 to 66 Hz) *Accuracy guaranteed up to 120% of range.	Current range 5000.0 A/500.00 A 50.000 A	Combined amplitude accuracy 1.6% rdg + 0.4% f.s. 1.6% rdg + 3.1% f.s.	
Phase accuracy (45 to 66 Hz)	Within ±1.0°		
Maximum allowable input (45 to 66 Hz)	10,000 A continuous		
Maximum rated terminal-to-ground voltage	1000 V AC (CAT III), 600 V AC (CAT IV)		
Frequency band	10 Hz to 50 kHz (within ±3 dB)		
Dimensions / cord length	Flexible loop cross-sectional diameter: 7.4 mm (0.29 in.) / 2.5 m (8.20 ft.)		
Weight	160 g (5.6 oz.)	174 g (6.1 oz.)	186 g (6.6 oz.)

Model		AC/DC AUTO-ZERO CURRENT SENSOR CT7731	AC/DC AUTO-ZERO CURRENT SENSOR CT7736	AC/DC AUTO-ZERO CURRENT SENSOR CT7742
Appearance				
Rated measured current		100 A AC/DC	600 A AC/DC	2000 A AC/DC
Measurable wire diameter		33 mm (1.30 in.) or less		55 mm (2.17 in.) or less
Current range and combined amplitude accuracy *Accuracy guaranteed up to 120% of range.	DC	Current range Combined accuracy 100.00 A 1.5% rdg + 1.0% f.s. 50.000 A 1.5% rdg + 1.5% f.s. 10.000 A 1.5% rdg + 5.5% f.s.	Current range Combined accuracy 500.00 A 2.5% rdg + 1.1% f.s. 50.000 A 2.5% rdg + 6.5% f.s.	Current range Combined accuracy 5000.0 A 2.0% rdg + 0.7% f.s. 2000.0 A 2.0% rdg + 1.75% f.s. 1000.0 A 2.0% rdg + 1.5% f.s. 500.00 A 2.0% rdg + 2.5% f.s.
	45 to 66 Hz	100.00 A 1.1% rdg + 0.6% f.s. 50.000 A 1.1% rdg + 1.1% f.s. 10.000 A 1.1% rdg + 5.1% f.s.	500.00 A 2.1% rdg + 0.7% f.s. 50.000 A 2.1% rdg + 6.1% f.s.	5000.0 A [*1] I > 1800 A: 2.1% rdg + 0.3% f.s. I ≤ 1800 A: 1.6% rdg + 0.3% f.s. 2000.0 A 1.6% rdg + 0.75% f.s. 1000.0 A 1.6% rdg + 1.1% f.s. 500.00 A 1.6% rdg + 2.1% f.s.
Phase accuracy (45 to 66 Hz)		Within ±1.8°		Within ±2.3°
Offset drift		Within ±0.5% f.s.	Within ±0.1% f.s.	Within ±0.1% f.s.
Maximum allowable input (45 to 66 Hz)		100 A continuous	600 A continuous	2000 A continuous
Maximum rated terminal-to-ground voltage		600 V AC/DC (CAT IV)	1000 V AC/DC (CAT III), 600 V AC/DC (CAT IV)	
Frequency band		DC to 5 kHz (-3 dB)		
Dimensions / weight / cord length		58 mm (2.28 in.) (W) × 132 mm (5.20 in.) (H) × 18 mm (0.51 in.) (D) / 250 g (8.8 oz.) / 2.5 m (8.20 ft.)	64 mm (2.52 in.) (W) × 160 mm (6.30 in.) (H) × 34 mm (1.34 in.) (D) / 320 g (11.3 oz.) / 2.5 m (8.20 ft.)	64 mm (2.52 in.) (W) × 195 mm (7.68 in.) (H) × 34 mm (1.34 in.) (D) / 510 g (18.0 oz.) / 2.5 m (8.20 ft.)

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Model	AC LEAK CURRENT SENSOR CT7116
Appearance	Designed specifically for leak current measurement  For use with insulated conductors
Rated measured current	6 A AC
Measurable conductor diameter	40 mm or less (insulated conductor)
Current range and combined amplitude accuracy (45 to 66 Hz)	Current range / Combined accuracy 5.0000 A / 1.1% rdg + 0.16% f.s. 500.00 mA / 1.1% rdg + 0.7% f.s. 50.000 mA / 1.1% rdg + 6.1% f.s. [*2]
Phase accuracy (45 to 66 Hz)	Within ±3°
Frequency band	40 Hz to 5 kHz (±3.0% rdg ±0.1% f.s.)
Residual current characteristics	5 mA or less (for a pair of round-trip wires carrying 100 A)
External magnetic field effects	5 mA equivalent, max. 7.5 mA (400 A/m, 50/60 Hz)
Dimensions / weight / cord length	74 mm (2.91 in.) (W) × 145 mm (5.71 in.) (H) × 42 mm (1.65 in.) (D) / 340 g (12.0 oz.) / 2.5 m (8.20 ft.)

Voltage measurement options

HIOKI provides quotations for voltage cord extensions, terminal connector conversions, and other options on a case-by-case basis. Please contact your HIOKI distributor for details.



MAGNETIC ADAPTER 9804-01
Alternative tip for the L1000 series voltage cords, red ×1, φ11 mm (0.43 in)

MAGNETIC ADAPTER 9804-02
Alternative tip for the L1000 series voltage cords, black ×1, φ11 mm (0.43 in)



GRABBER CLIP L9243
Alternative tips for the L1000 series voltage cords



OUTLET TEST LEAD L1020
For Japan (3-prong, P/N/E), 2 m (6.56 ft) length,
*Please contact Hioki for cords for use in countries other than Japan.

Magnetic straps



MAGNETIC STRAP Z5004

MAGNETIC STRAP Z5020
Extra strength

PQ3198 options



WIRING ADAPTER PW9000
When three-phase 3-wire (3P3W3M) connection, the voltage cord to be connected can be reduced from 6 to 3



WIRING ADAPTER PW9001
When three-phase 4-wire connection (3P4W), the voltage cord to be connected can be reduced from 6 to 4



PATCH CORD L1021-01
Banana branch-banana, Red: 1, 0.5 m (1.64 ft) length, for branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V



PATCH CORD L1021-02
Banana branch-banana, Black: 1, 0.5 m (1.64 ft) length, for branching from the L9438s or L1000s, CAT IV 600 V, CAT III 1000 V

Current sensor options



EXTENSION CABLE L0220-01
2 m (6.56 ft.)
EXTENSION CABLE L0220-02
5 m (16.50 ft.)
EXTENSION CABLE L0220-03
10 m (32.81 ft.)

Interfaces



SD MEMORY CARD
2 GB Z4001



SD MEMORY CARD
8 GB Z4003



USB CABLE L 9520
1 m (3.28 ft)
Type-C to Type-C

About SD memory cards

Be sure to use genuine Hioki SD memory cards with Hioki instruments. Use of other SD memory cards may prevent data from being properly saved or loaded as proper operation is not guaranteed.

Carrying cases and waterproof boxes



CARRYING CASE
C1009
Soft carrying case with a compartment for accessories



CARRYING CASE
C1002
Hard carrying case with a compartment for accessories



Waterproof box
For outdoor installation, IP65

Included accessories (also available for separate purchase)



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



AC ADAPTER Z1017
For main unit, 100 to 240 V AC



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

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