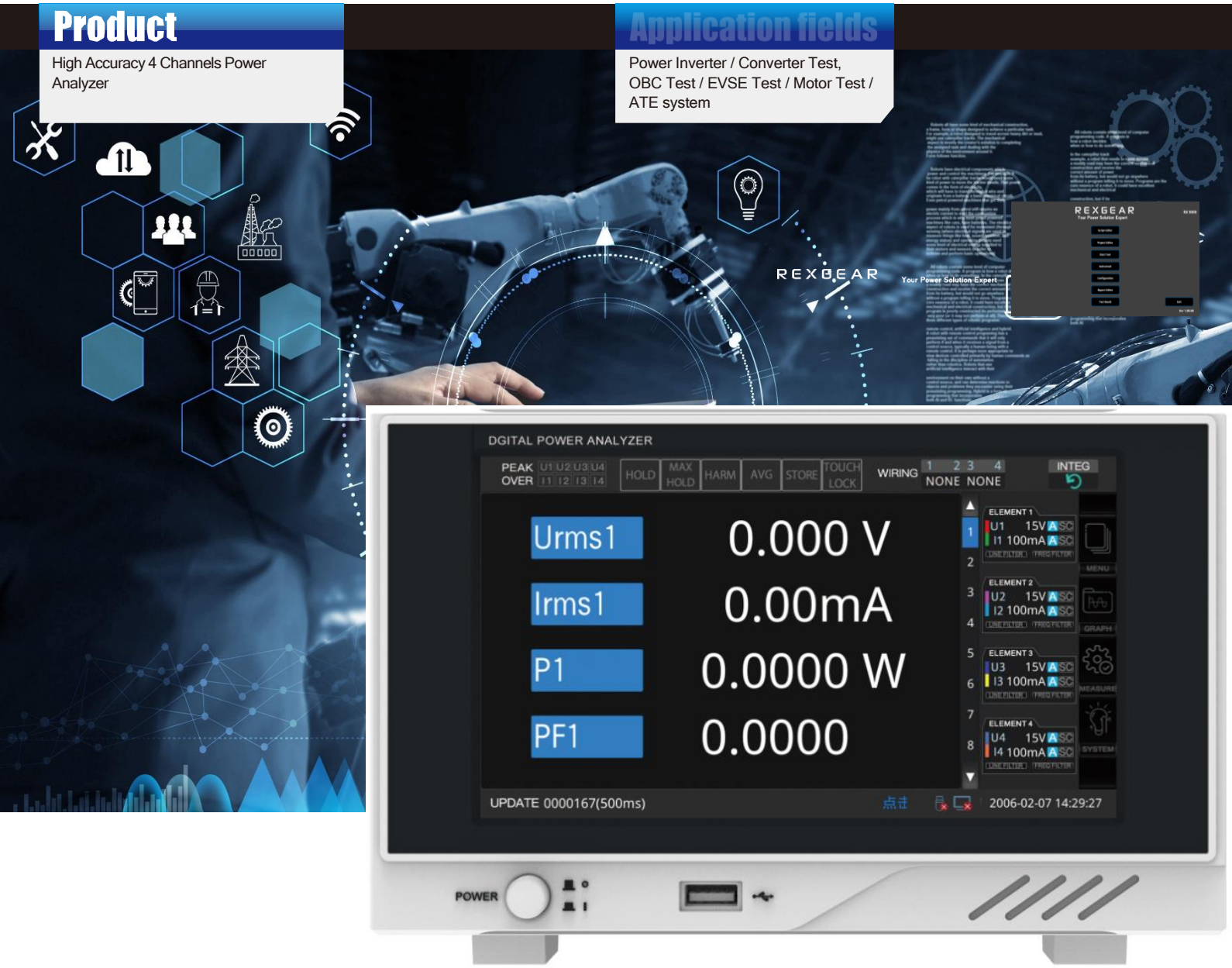
REXGEAR

Product

High Accuracy 4 Channels Power Analyzer

Application fields

Power Inverter / Converter Test,
OBC Test / EVSE Test / Motor Test /
ATE system

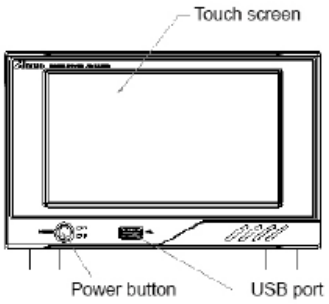


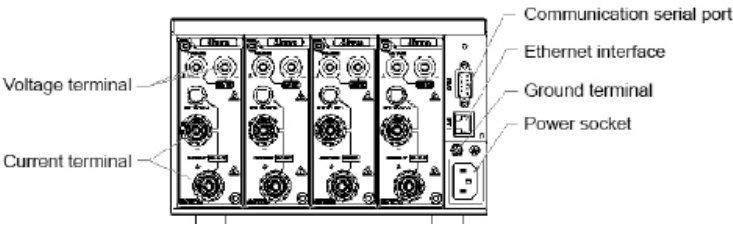
87400 High Precision Compact 4-Channel Power Analyzer

Your Power Solution Expert

- **Basic accuracy:** 0.05% × reading + 0.05% × range
- **Measurement bandwidth:** DC, 0.5Hz - 100kHz
- **Sampling rate:** 200kSps
- **Maximum voltage:** Conventional 1,000V, optional 1,500-VDC
- **Maximum current:** 20A(conventional)/5A/1A, supports mixed combinations, optional sensor configuration
- **Full LCD:** touch screen experience, customizable display interface items, and waveform display
- **Data storage:** customizable storage projects, CSV format export
- **Perfect size:** 3U half-width size, meeting system integration requirements

Panel Indication





Typical Application

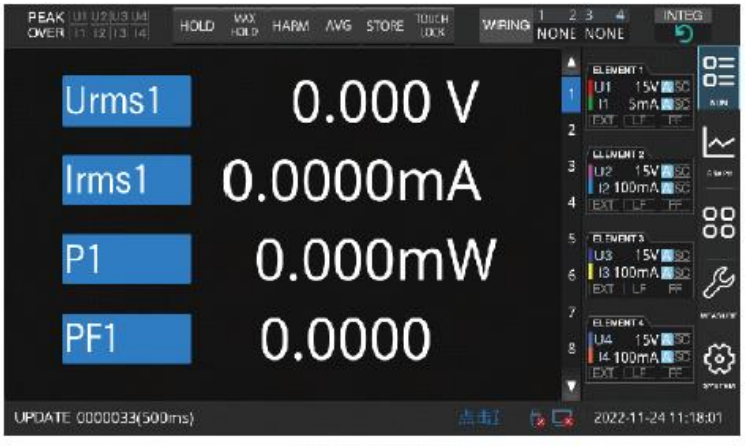
- Standby power consumption and power analysis of single-phase/three-phase household and commercial appliances
- Power, efficiency, and harmonic analysis of photovoltaic inverters
- Electrical performance measurement of electric vehicle and charging stations
- Power and harmonic analysis of power electronics, transformer and generator
- Power and harmonic analysis of inverter and inverter motor
- Power, harmonic, and surge current analysis of switching power supply
- Power analysis of lighting and LED

Major Characteristics

- **Multi-channel:** 1-4 channel synchronous measurement unit configuration, flexible configuration of wiring modes for each channel, meeting the measurement needs of various loads (air conditioners, inverters, variable frequency drives, motors);
- **High precision:** Using high-speed FPGA + ARM dual-core processing, 16-bit high-speed and high-precision AD converter, basic accuracy up to 0.05%, with fastest 100ms display data update cycle;

- **Wide power:** Single channel can measure current up to 20A (optional 5A, 1A specifications available, and supports mixed configuration), minimum power resolution of 0.1mW, meeting the requirements for the measurement of standby power consumption and rated power;
- **Broadband:** AC and DC signal compatible, power measurement bandwidth DC, 0.5Hz - 100kHz, suitable for various standard and non-standard sinusoidal waveform load power measurements;
- **Multi-channel harmonic analysis:** Four channels can simultaneously perform harmonic analysis, up to 100 times harmonic measurement, distortion analysis, and can visually display the content of each harmonic and total harmonic content;

Display Interface



4-item display

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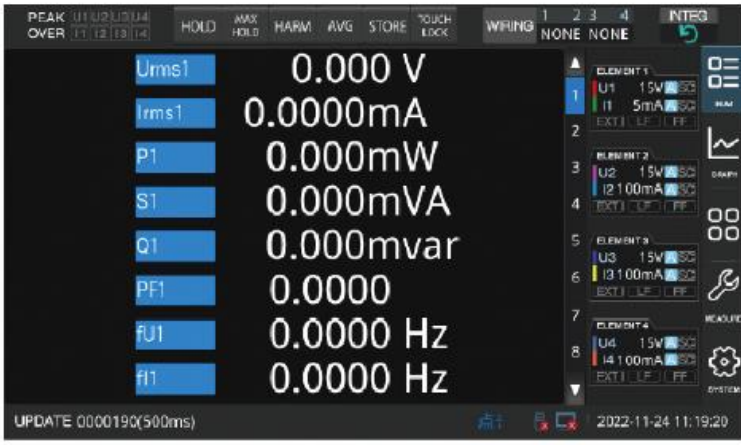
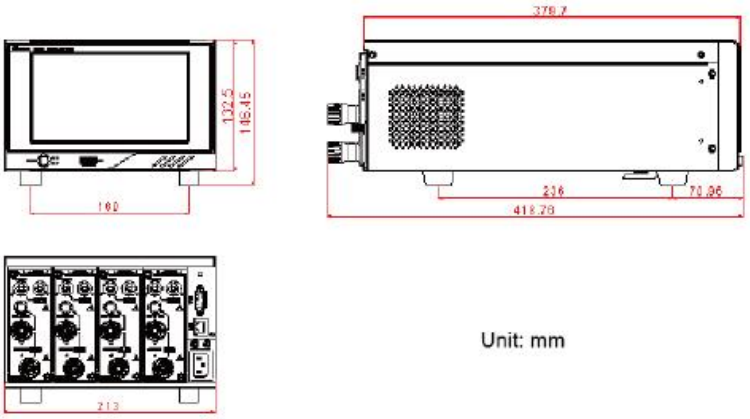
- **Multi-channel frequency measurement:** Four channels can simultaneously measure frequency;
- **Line filtering:** Using low-pass filters with cutoff frequencies of 500Hz and 5.5kHz, capable of measuring the fundamental value of PWM waveforms and filtering out high-frequency interference from switching power supply current;
- **Sensor:** Providing transformation ratio functionality, supporting conventional I-I, V-V type voltage/current transformers; supporting BNC interface for I-V type current sensors, with a maximum input voltage of 10V, and optional large current sensors available;
- **Efficiency calculation:** Capable of simultaneously measuring the input and output energy consumption of equipment and calculating its efficiency;
- **Electrical energy accumulation:** Capable of separately accumulating forward energy, reverse energy, and comprehensive energy, facilitating measurements for buying and selling energy.



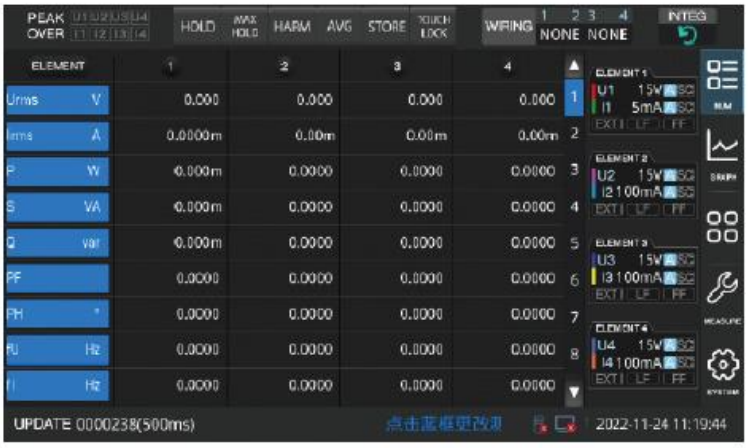
8-item display

16-item display

Appearance Size



Unit: mm



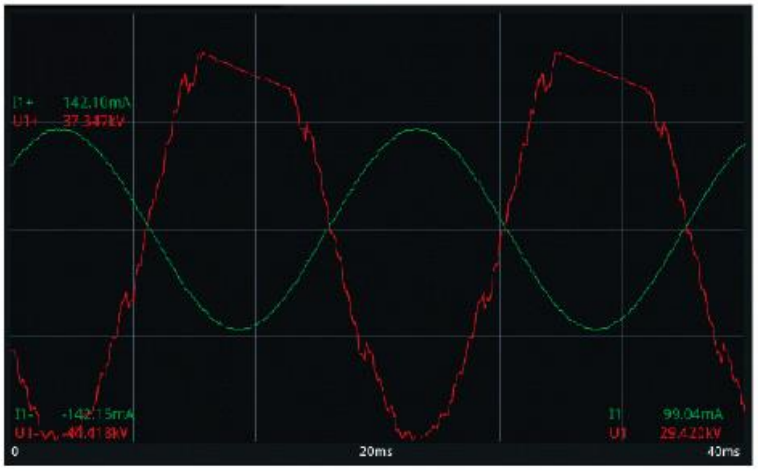
Full display

List display

Appearance Size

The compact Multi-channel power analyzer supports various wiring methods, including 1P2W, 1P3W, 3P3W, 3V3A, 3P4W, etc. Adjacent 2 or 3 input units with a larger number than the selected unit are set as a wiring group.

Channel 1	Channel 2	Channel 3	Channel 4
1P2W	1P2W	1P2W	1P2W
1P3W	1P3W	1P3W	-
3P3W	3P3W	3P3W	-
3V3A	3V3A	-	-
3P4W	3P4W	-	-



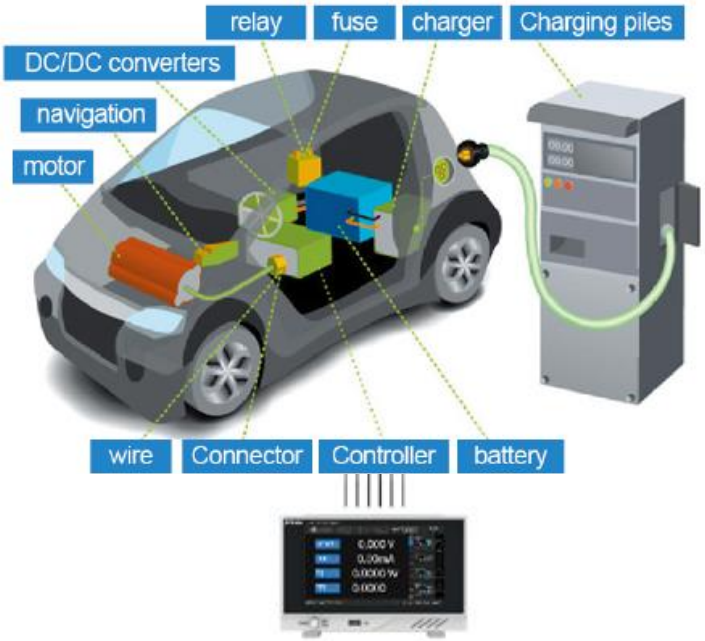
Waveform display

Product Application

Photovoltaic inverter power measurement

- Complying with Testing Specification for Photovoltaic Grid-connected Inverter
- Voltage range: 0-1,500V
- Current range: 0-20A/current sensor
- Capable of simultaneous measuring input, output (single-phase and three-phase) power, and power factor
- Automatic efficiency calculation
- Analysis of 100 times harmonics and distortion.
- Bidirectional power measurement for buying and selling electricity

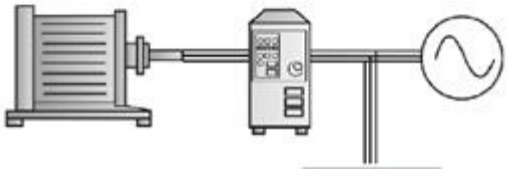
- High precision, with basic precision 0.05% and minimum power resolution 0.1mW.
- Capable of measuring instantaneous effective value, average value, peak value of AC/DC signals, energy consumption, etc.



Wiring method	Channel 1	Channel 2	Channel 3	Channel 4
Electric vehicles	1P2W	1P2W	1P2W	1P2W

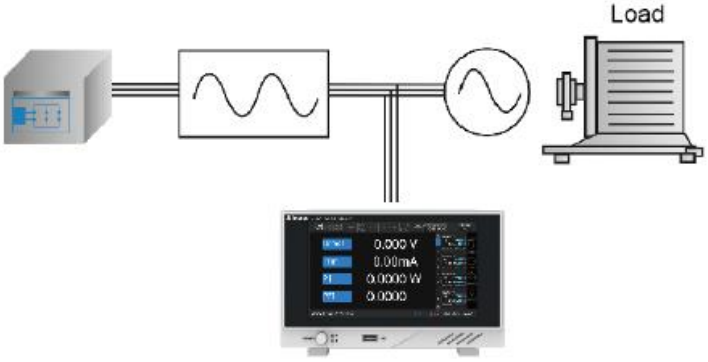
Power measurement of inverter and inverter motor

- Power bandwidth: DC, 0.5Hz - 100mHz.
- Current range: 0 - 20A/current sensor.
- Capable of simultaneously measuring input and output power.
- Analysis of 100 times harmonics and distortion.



Various power supply and UPS power measurement

- Current range: 0-1A/5A/20A
- Power bandwidth: DC, 0.5Hz - 1MHz
- Capable of simultaneously measuring input and output (single-phase and three-phase) power, and monitoring battery charge and discharge.
- Automatic efficiency calculation.



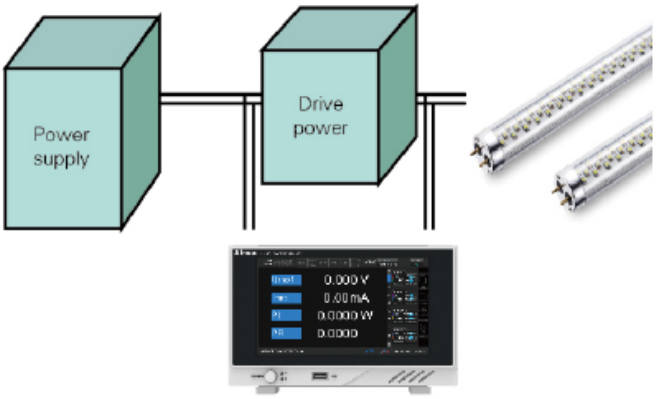
Wiring method	Channel 1	Channel 2	Channel 3	Channel 4
UPS	1P2W	1P2W	3P3W	
	Mains power input	Battery	Power supply output	

Home appliance performance evaluation, and standby power consumption

- Complying with IEC 62301-2011 standard.
- Current range: 0-1A/5A/20A, capable of measuring rated power and standby power.
- Minimum power resolution: 0.1mW
- Analysis of 100 times harmonics and distortion.

Power measurement of lighting and LED

- Current range: 0-1A/5A/20A
- Minimum power resolution: 0.1mW
- Capable of measuring input and output power, power factor, and efficiency of the driving power supply.
- Analysis of 100 times harmonics and distortion.



Wiring method	Channel 1	Channel 2	Channel 3	Channel 4
Lighting	1P2W	1P2W	1P2W	1P2W

Technical Specifications

Model	87400	
Measurement Channels - x	1～4	
Wiring Method	1P2W (single-phase 2-wire), 1P3W (single-phase 3-wire), 3P3W (three-phase 3-wire, 2 voltage 2 current), 3P3W (3V3A) (three-phase 3-wire, 3 voltage 3 current), 3P4W (three-phase 4-wire)	
Measurement Parameters	Voltage (U), current (I), active power (P), reactive power (Q), apparent power (S), power factor (λ), voltage frequency (fU), current frequency (fI), phase angle (Φ), efficiency (η), total energy (Wh), forward energy (Wh+), reverse energy (Wh-), current integration (Ah), 100 times harmonic distortion factor (HDF), total harmonic distortion (THD) of voltage and current, peak voltage (Vpk), peak current (Ipk), voltage peak factor (CfU), current peak factor (CfI) ...	
Input Impedance	Voltage: approximately 2MΩ, Current direct input: approximately 10mΩ Current sensor input: approximately 100kΩ	
AD Sampling Rate	Approximate 200kS/s	
Full range peak factor	3 or 6	
Voltage rated ranges (direct input)	When the peak factor is 3: 15/30/60/100/150/300/600/1000 * [V] When the peak factor is 6: 7.5/15/30/50/75/150/300/500 * [V] * Full range peak factor is 1.5	
Current rated ranges (direct input)	When the peak factor is 3: 20A current specifications: 500m/1/2/5/10/20 * [A] 5A current specifications: 100m/200m/500m/1/2/5 * [A] 1A current specifications: 20m/50m/100m/200m/500m/1 * [A] When the peak factor is 6: 20A current specifications: 250m/0.5/1/2.5/5/10 * [A] 5A current specifications: 50m/100m/250m/0.5/1/2.5 * [A] 1A current specifications: 10m/25 m/50m/100m/250m/0.5 * [A] * Full range peak factor of above specifications is 1.5	
Current rated ranges (BNC sensor)	When the peak factor is 3: 200m/500m/1/2/5/10 [V] When the peak factor is 6: 100m/250m/0.5/1/2.5/5 [V]	
Voltage and current range accuracy range	(1% - 110%) * × range * The accuracy range for voltage of 1,000V and current of 20A is (1% - 100%) × range.	
Power factor range	± (0.001 - 1.000)	
Voltage measurement accuracy	DC	± (0.05% × display value + 0.1% × range)
	0.1Hz ≤ f ≤ 45Hz	± (0.1% × display value + 0.1% × range)
	45Hz ≤ f ≤ 66Hz	± (0.05% × display value + 0.05% × range)
	66Hz < f ≤ 1kHz	± (0.1% × display value + 0.1% × range)
	1kHz < f ≤ 10kHz	± ({0.1 + 0.05 × (f-1)}% × display value + 0.2% × range)
	10kHz < f ≤ 100kHz	± ({0.5 + 0.04 × (f-10)}% × display value + 0.3% × range)

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Current measurement accuracy	DC	± (0.05% × display value + 0.1% × range)
	0.1Hz ≤ f ≤ 45Hz	± (0.1% × display value + 0.1% × range)
	45Hz ≤ f ≤ 66Hz	± (0.05% × display value + 0.05% × range)
	66Hz < f ≤ 1kHz	± (0.1% × display value + 0.1% × range)
	1kHz < f ≤ 10kHz	± ((0.1 × f)% × display value + 0.2% × range)
	10kHz < f ≤ 100kHz	± ({1 + 0.08 × (f-10)}% × display value + 0.3% × range)
Power measurement accuracy	DC	± (0.05% × display value + 0.1% × range)
	0.1Hz ≤ f < 45Hz	± (0.1% × display value + 0.1% × range)
	45Hz ≤ f ≤ 66Hz	± (0.05% × display value + 0.05% × range)
	66Hz < f ≤ 1kHz	± (0.2% × display value + 0.1% × range)
	1kHz < f ≤ 10kHz	± ({0.2 + 0.1 × (f-1)}% × display value + 0.2% × range)
	10kHz < f ≤ 50kHz	± ({0.2 + 0.1 × (f-1)}% × display value + 0.3% × range)
	50kHz < f ≤ 100kHz	± ({5.1 + 0.18 × (f-50)}% × display value + 0.3% × range)
Active power resolution	0.1mW	
Frequency measurement range	DC, 0.5Hz - 100kHz	
Frequency measurement accuracy	± 0.1% × display value	
Harmonic measurement	11Hz - 600Hz, with maximum 100 times harmonic content and total distortion	
Energy measurement range	0 - 99,999MWh (Resolution: 1mWh/0.01mAh)	
Energy measurement accuracy	± (0.1% × display value + 0.1% × range)	
Filter function	500Hz and 5.5kHz voltage and current line filters, as well as frequency filtering	
Transformation ratio functionality	1 - 50,000	
Data update cycle	100m/200m/500m/1/2/5/10 [s]	
Control interface	Standard: RS-232, network interface; optional: RS-485, GPIB	
Communication protocol	MODBUS protocol and SCPI protocol	
Displayer	7-inch LCD touch screen	
Appearance size	215 (W) × 133 (H) × 374 (D) mm	
Opening size	215 (W) × 133 (H) mm	
Foot height	15mm	
Machine weight	Approximate 4kg	

Any changes to the above parameter specifications will not be notified separately.

[Conditions]

- Temperature: 23 ± 5℃, humidity: 30%-75%RH, input waveform: sine wave, common mode voltage: 0V, line filter: OFF, frequency filter: ON for frequencies below 440Hz, power factor λ: 1, peak factor: 3. After warming up. Under wiring conditions, after zero adjustment or range change.
- In the accuracy formula, f represents frequency in kHz.
- When the data update rate is 100ms, add 0.03% of the reading to all accuracies.
- Due to the effect of temperature changes after zero adjustment or range change:
  add 0.02%/℃ to voltage DC accuracy and range, add 500μA/℃ to current DC accuracy, add 50μV/℃ to external sensor DC accuracy, and for power DC accuracy, add the product of the voltage and current effects.

Accessories

- Voltage test clamp
- Power cord
- Communication line

REXGEAR

YOUR POWER TESTING TURNKEY SOLUTION

This information is subject to change without notice. For more information, please contact REXGEAR.

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