

Measure Everything from AC, DC and 3-Phase Power Sources to Standby Power

The optimal power meter lineup for all applications

POWER METER PW3337/PW3336



AC/DC POWER HITESTER 3334

POWER HITESTER 3333







Advancing the Standard for Power Measurement

The best performing instruments for power measurement on production lines, in laboratories, and in research facilities.

Hioki delivers the optimal power testing solutions based on use case conditions, practical application, and accuracy.

Three-phase Power Meter

The PW3337 and PW3336 are suitable for a wide variety of connections, such as measuring three-phase circuits and single-phase 2-wire multiple circuits.

There is little internal resistance for the current input, and large currents up to 65 A can be measured with great accuracy.





Single-phase Power Meter

The PW3335 provides highly accurate measurements for everything from standby power to operating power.

Compliant with the IEC62301 measurement standard for standby power, it is capable of measuring current as low as 10 µA.

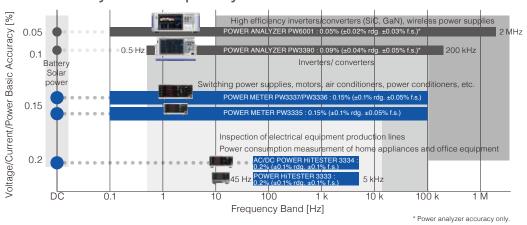
Designed for power consumption testing, the 3334 and 3333 are guaranteed for accuracy for up to 3 years.



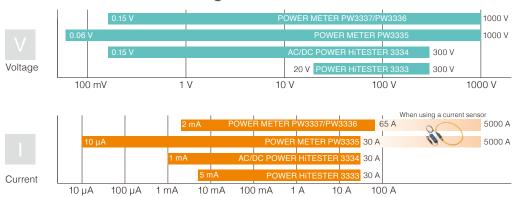




Basic Accuracy and Frequency Bands



Effective Measurement Range



Comparison Chart

		PW3337	PW3336	PW3335	3334	3333
No. of channels		3	2	1	1	1
Supported connections		Three-phase, three-phase + single-phase, single-phase x 3, DC x 3	Three-phase, single-phase x 2, DC x 2	Single-phase, DC	Single-phase, DC	Single-phase
Effective measu range, voltage	rement	0.15 V to 1000 V		0.06 V to 1000 V	0.15 V to 300 V	20 V to 300 V
Effective measu range, current	rement	2 mA to 65 A		10 μA to 30 A	1 mA to 30 A	5 mA to 30 A
Frequency band	ł		DC, 0.1 Hz to 100 k	DC, 45 Hz to 5 kHz	45 Hz to 5 kHz	
Basic accuracy, (Voltage, curren		±0.1% rdg. ±0.05% f.s.			±0.1% rdg. ±0.1% f.s.	±0.1% rdg. ±0.2% f.s.
Basic accuracy, (Voltage, curren		±0.1% rdg. ±0.1% f.s.			±0.1% rdg. ±0.2% f.s.	-
Integrated power measurement	er	Yes			Yes	-
Harmonic measurement		IEC61000-4-7 compliant			-	
Current sensor input		Ye	es	PW3335-03, -04	-	
	LAN		Yes		-	
Interface	RS-232C	Ye	es	PW3335, -02, -03, -04	Yes	
IIIGHAGG	GP-IB	PW3337-01, -03	PW3336-01, -03	PW3335-01, -04	3334-01	3333-01
	D/A output	PW3337-02, -03	PW3336-02, -03	PW3335-02, -04	Yes	

Features

POWER METER PW3337/PW3336

Accurate measurement of power for three-phase equipment, through direct input up to 1000 V AC/DC / 65 A.





PW3337-03 Front Panel

PW3337-03 Rear Panel



Maximum 65 A input. Cable terminals are fixed securely with large screws on the terminal block.

- Voltage/current/power basic accuracy of ±0.1% *
- Direct input up to 1000 V AC/DC / 65 A
- Harmonic measurement as standard feature, IEC61000-4-7 compliant





- Measurement of multiple connections in the optimal range for each due to independent ranges for each channel
- Measure up to 5000 A AC with optional current sensor

POWER METER PW3335

Highly accurate AC/DC measurements from standby power to operating power







PW3335-04 Rear Panel



PW3336-03

Half-rack Size to Save Space



For development/production lines for electrical equipment

- Voltage/current/power basic accuracy ±0.1% *
- Highly accurate AC/DC measurements from standby power to operating power
- Accuracy guaranteed throughout a wide range, from 10 µA to 30 A and 60 mV to 1000 V AC/DC
- Harmonic measurement as standard feature, IEC61000-4-7 compliant
- Compliant with the IEC62301 and EN50564 measurement standards for standby power
- Power factor effect of ±0.1% f.s. delivers highly accurate measurements even for no-load testing of transformers with a low power factor
- Accurate measurement of fluctuating electric power thanks to auto range integration with guaranteed accuracy for measurements while range switching
- Measure up to 5000 A AC with optional current sensor (PW3335-03, -04)









External control terminal







AC/DC POWER HITESTER 3334

Measurement of power consumption and integrated power for battery-operated equipment, home appliances, and office equipment





- Accuracy guaranteed up to 3 years
- Compliant with the SPECpower® server power evaluation test

POWER HITESTER 3333

Low-price model for measurement of power consumption on production/inspection lines





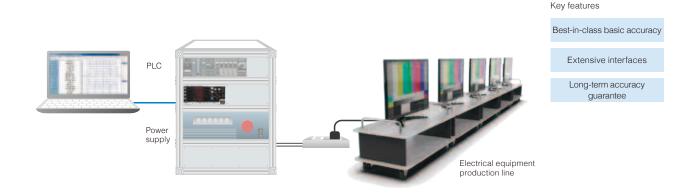
- Compact model for saving space, even when added to a system
- Accuracy guaranteed up to 3 years

Dimensional Drawings

Units: mm 32.5 M6×12L ÔÔ PW3337 127.75 PW3336 27.75 M6×12I 0 6 6 0 0: PW3335 M6×12L = O = O 3334 95.5 54 32.5 25 3333

Applications

Inspection of Electrical Equipment Production Lines



Best-in-class Accuracy ±0.1% * PW333 7 PW333 6 PW333 5

Our lineup provides reliable accuracy for a variety of measurement scenarios. Accurately measure the power consumption of a variety of household appliances, such as liquid crystal displays, refrigerators, and air conditioners.





Basic accuracy, AC

±0.1%

Accuracy Guaranteed Up to 3 Years (Longest in the Industry)



The 3333 and 3334 are guaranteed for accuracy for 3 years. Even after 3 years, they maintain an accuracy of $\pm 0.5\%$ rdg. as required for measurements. This 3-year accuracy guarantee, the longest in the industry, helps to save on calibration expenses.



Extensive Interfaces



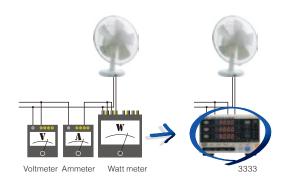
The built-in interfaces are convenient for transferring data to a PC and equipping the unit on automated machines. PC communication software can be downloaded free of charge from the HIOKI website. For details about the built-in interfaces, refer to the specifications for each model.



Replacement for Analog Meters



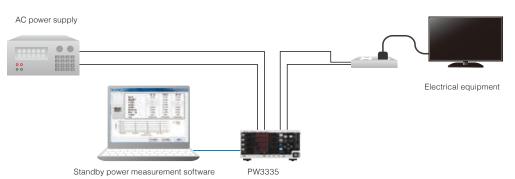
These models can be used as replacements for analog voltmeters, ammeters, and watt meters. Up to 4 parameters such as voltage, current, and power can be displayed at the same time, allowing 3 measuring devices to be covered with a single unit. The digital display avoids issues such as parallax due to viewing angle and zero shift of the indicator.



^{*} For complete details, please refer to the specifications

Standby Power Measurement





Compliant with standby power standards

Wide dynamic range

Standby power measurement software

Key features



AC adapter standby power measurement, for primary AC and secondary DC

Compliant with IEC62301 and EN50564 Standards

The PW3335 is compliant with measurement standards for standby power, as well as other measurement standards including the ErP Directive and Energy Star. Special parameters required by such standards including THD, CF, and MCR can also be checked with this unit.

Requirements for Measurement Instruments for Standby Power Measurements (excerpt)

Requirement	PW3335 Performance		
Power resolution of 1 mW or better	Minimum resolution of 0.01 mW (in the 300 V/1 mA range)		
Crest factor 3 support	Crest factor 6 support		
Harmonic component measurement of up to at least 50th order	Harmonic measurement as standard feature		
Data acquisition via interface	LAN (standard feature), RS-232C, GP-IB		

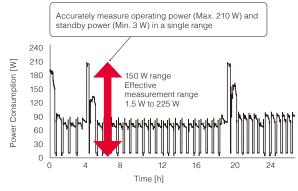
THD (Total Harmonic Distortion): Indicates to what extent harmonic components are present in an AC waveform

CF (Crest Factor): Ratio of the peak value to the effective (RMS) value of an AC waveform

MCR (Maximum Current Ratio): Current evaluation index, calculated from the crest factor and power factor

Wide Range of Effective Measurement

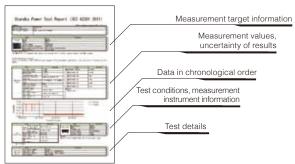
The PW3335 has an effective measurement range of 1% to 150%. Due to this wide range of effective measurement, even equipment with large load fluctuations, such as refrigerators, heaters, and pumps, can be measured accurately under all conditions from noload to full operation.



Long-term Measurement of Refrigerator Power

Create Reports with Free Software

Standby power measurement software can be downloaded free of charge from the HIOKI website. Enter the required information to perform standby power measurements according to standards. Use this software to create reports of measurement results and save test data in CSV format.

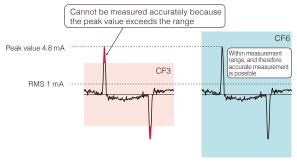


Example of Report Output

Support for CF6 (Crest Factor 6)

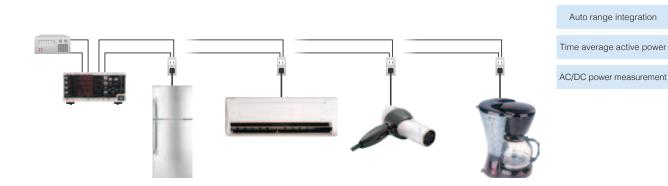
When an AC adapter or switching power supply operates with no load, the crest factor of the current waveform increases. The PW3335 can measure waveforms that exceed the range of watt meters that support crest factor 3.

In addition, although the power factor is low during no-load operation, the PW3335 is affected very little by power factor and can therefore achieve accurate measurements.



Example of Standby Current Waveform (CF = Peak Value, RMS = 4.8)

Measurement of Fluctuating Loads and Power Supply Control

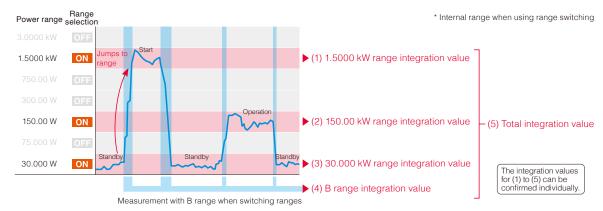


Auto Range Integration with Guaranteed Accuracy when Switching Ranges



Key features

These models automatically jump to the optimal power range according to current consumption when performing integration measurements. When switching ranges, power is integrated using the B range*, and therefore there is no loss of integration data. Achieve seamless power integration with guaranteed accuracy, even with loads that experience frequent and repeated fluctuations. In addition, since power integration can be performed for individual ranges, you can measure integrated power for the various conditions of devices that experience power fluctuations.

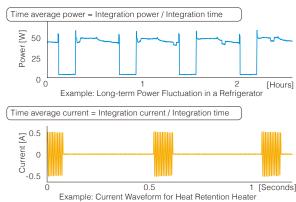


Intermittent Power Supply



Devices that perform intermittent operation and cycle control repeat a cycle of stopped states and operating states. Therefore, with normal power measurement, it is not possible to determine a value for rated power consumption.

Time average active power (current) is a function that allows the measurement of the time average for power (current) that experiences fluctuations.

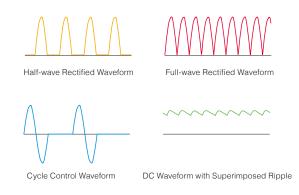


AC/DC Measurement



For equipment that uses rectifiers and control devices, it might not be possible to accurately measure voltage or current without an AC/DC power meter.

- · Half-wave rectified waveforms used for dryers and fans
- Full-wave rectified waveforms used for AC adapters
- Cycle control waveforms used for voltage and temperature adjustment heaters
- DC waveforms with superimposed ripple components



Research, Development, and Inspection of Three-Phase Equipment [PW333 7] [PW333 6]

Transformer

Motor



Current sensor input

Compliant with IEC61000-4-7 Harmonic Measurement Standards

Three-phase

These models are compliant with the IEC61000-4-7 international standard for harmonic measurements. Conduct harmonic analysis up to the 50th order. The upper limit for harmonic analysis can be set from 2nd to 50th, according to the standard used.

IEC61000-4-7 is an international standard for the measurement of harmonic current and harmonic voltage in power supply systems, and the harmonic current emitted from devices. It specifies the performance of standard measurement instruments. Among the series of standards that include specifications for power measurements, it is used as a reference standard for harmonic measurements.

Support for Various Connections

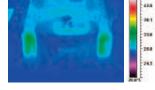
The PW3337 supports not only 3V3A, but also a variety of three-phase connections such as 3P4W, 3P3W2M, and 3P3W3M.

Accuracy Guaranteed for Currents Up to 65 A

Air conditioner

Because DCCT allows a current with an input resistance of 1 m Ω or less, accuracy is guaranteed up to 65 A. No heat is generated even with the input of large currents, so there is no loss of accuracy due to self heating. Even if the current exceeds 65 A, an optional current sensor allows measurements up to 5000 A.

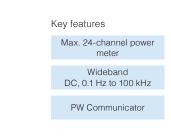




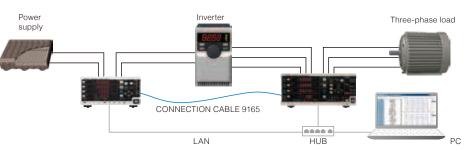
DCCT current sensor (in the PW3337)

Temperature distribution image at 30 A DC/10-minute input

Inverter Efficiency Measurement

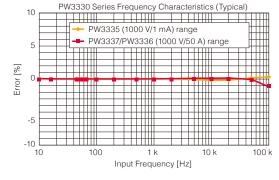


PW333 7 PW333 6 PW333



Wide Frequency Band (DC, 0.1 Hz to 100 kHz)

These models cover not only the fundamental frequency bands for inverters, but also carrier frequency bands, in a wide range that includes DC and frequencies from 0.1 Hz to 100 kHz.



24-channel Power Meter with Synchronous Control for up to 8 Units

Connect 8 units for synchronous measurement of up to 24 channels. The calculation and control timing for PW3337, PW3336, and PW3335 units that are set as slaves are synchronized with the master unit. Use this feature to measure the I/O efficiency of power supply devices, compare multiple pieces of equipment, or to perform simultaneous parallel testing of production lines. Use the free PW COMMUNICATOR* software to calculate the efficiency between multiple units and to acquire data simultaneously from multiple units.



 * This software can be downloaded from the HIOKI website.

PV Power Conditioner (PCS) Efficiency Measurements

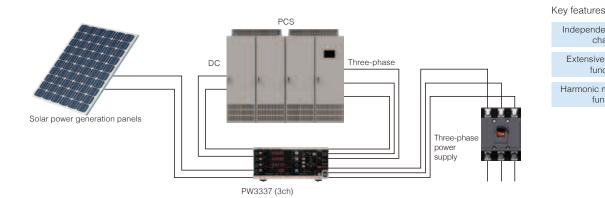


Independent range per

Extensive calculation

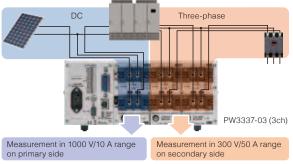
functions

Harmonic measurement function



Independent Ranges Per Channel for Highly Accurate Measurements

Independent channels allow the selection of the optimal range for each connection. One example is the simultaneous measurement of the primary side (DC) and secondary side (three-phase) of a PCS using a single unit. Selecting the optimal range for each target to be measured enables highly accurate measurements.



Setting Optimal Range According to Target to be Measured

Simultaneous Measurement of Power Data and Harmonics

In addition to standard measurement items such as voltage, current, and power, all items related to harmonics, such as distortion and content percentage, are calculated internally in parallel at the same time. Items such as RMS value, MEAN value, DC components, AC components, and fundamental wave components can all be confirmed simply by switching the display. Even for DC waveforms with superimposed ripple components, the AC/DC components can be measured separately.

In addition, when using PC software, more than 180 measurement items can be acquired at the same time.



* AAF (Anti-aliasing filter): Filter that prevents aliasing errors during sampling

I/O Efficiency Calculation with a Single Unit

Input and output can be measured independently at the optimal ranges, and the PCS efficiency can be calculated and displayed on a single unit. PCS can be evaluated with a simple system configuration.

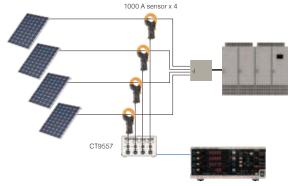
1000 V Range for Evaluation of Large Power Conditioners

These models support the measurement of large voltages, which is required in order to measure power conditioners for solar power generation. Measure up to 1000 Vrms and 1500 Vpeak.



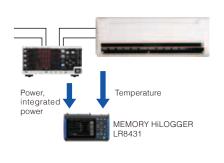
Aggregation of Output from DC Current Sensors (Up to 4000 A)

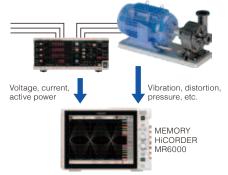
SENSOR UNIT CT9557 is a power supply for highly accurate current sensors that have a waveform output function. In addition to using it as a 4-channel power supply, it is also equipped with a sum feature for aggregating the input waveforms into a single waveform to be output.



Aggregating the Output from 4 Sensors into One Unit

Output Function Linked with Recorder



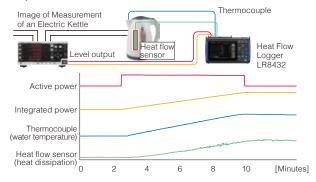


	PW3337-02 PW3337-03	PW3336-02 PW3336-03	PW3335-02 PW3335-04	3334 3334-01	3333 3333-01
Level output (Analog output)	Yes		Yes	Yes	Yes
Waveform output	Yes		Yes	Yes	-
High-speed level output	Active power only		Voltage, current, active power	-	-

Display Trends with a Data Logger



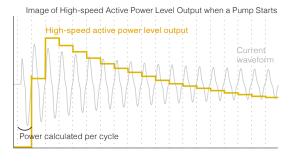
The level output (analog output) function delivers measured values that are displayed on the power meter with an analog voltage that is updated every 200 ms. Connect the unit to a data logger to check trends through synchronization with data such as temperature and heat flow*.



* Heat flow: Parameter for understanding the heat reception and heat dissipation of an object. Can be measured with a heat flow sensor.

Observe Power for Each Cycle PW333 7 PW333 6

The PW3337, PW3336, and PW3335 feature built-in, high-speed active power level output. Level is output for power per cycle. When used in combination with a memory hicorder, fluctuations in power can be observed in real time. This feature is also useful for analyzing equipment that uses power, such as monitoring cutting and grinding tools.



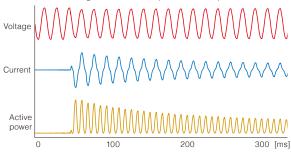
* With the PW3335, high-speed level output is also possible for 45 Hz to 66 Hz

Observe Waveforms with a Memory Hicorder



The waveform output function outputs the voltage/current waveforms captured by a power meter in the form of high-speed analog voltage. Connect to a memory recorder to check behavior when load fluctuates, such as with the inrush current of a motor.

Image of Waveform Output when a Pump Starts



Log Data Measured by a Power Meter Wirelessly on a Hioki Logger(LR8410 Link)



Wirelessly transmit measurement parameters from the Power Meter PW3335 (excluding model -01) to a Wireless Logging Station LR8410 via Bluetooth® wireless technology*.

- The PW3335-02 and PW3335-04 can transmit 7 D/A output parameters.
- The PW3335, PW3335-03 can transmit 4 parameters: voltage, current, power and power factor.

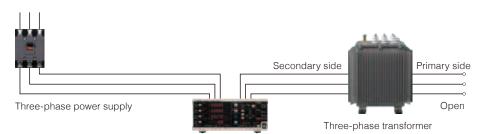
This allows you to combine the voltage and temperature data from the Logger with the current and power from the Power Meter in real time.



* Connection requires the serial - Bluetooth® wireless technology conversion adapter recommended by Hioki. Please inquire with your Hioki distributor.

No-load Loss Measurements for Transformers

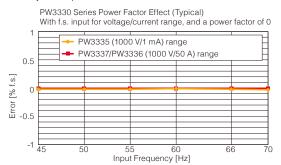




Key features Power factor effect ±0.1% f.s. or less Crest factor 6

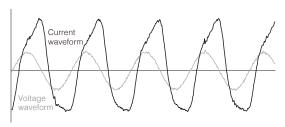
Power Factor Effect of 0.1% or Less, Even at Low Power Factors

A no-load loss test is one indicator for evaluating energy conservation for transformers and motors. The PW3337 and PW3336 are affected very little by power factor, at $\pm 0.1\%$ f.s. or less, allowing active power to be measured with a high level of accuracy at low power factors.



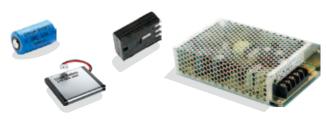
Support for Crest Factor 6

The crest factor of a current waveform increases during no-load operation. The PW3337, PW3336, and PW3335 support a crest factor 6. Therefore, even if the waveform peak value is large relative to the range, accurate measurements are possible without exceeding the range.



Example of Transformer Current Waveform during No-load Operation

DC Power Measurement for Batteries and Power Supplies



Key features DC power accuracy ±0.2% rdg. Power integration function

Best-in-class DC Power Accuracy



These models are best for measuring battery power consumption and output from switching power supplies. Make accurate measurements of DC power, which is an important factor in improving efficiency and saving energy.



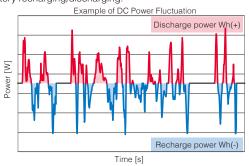


DC power accuracy

Current and Power Integration Function by Polarity



For integrated measurements, recharging power and discharging power are integrated by polarity every 200 ms. The amount of power in the positive direction, the amount of power in the negative direction, and the sum of the amounts of power in the positive and negative direction during the integration period are measured. Accurate measurement of recharging power and discharging power is possible even if there is rapid repetition of battery recharging/discharging.



^{*} For complete details, please refer to the specifications

Options

TYPE 1 Current Sensor (General Current Measurements)

Connect this unit to the current sensor input terminal (BNC) on the PW3337/PW3336. It can be used with a direct connection.



Wiring method	External appearance	Product name/ model no.	Rated current	Frequency band	Diameter of measurable conductors	Basic accuracy (amplitude) Basic accuracy (phase)	Cord lengths	Power supply
	*/	CLAMP ON SENSOR 9660		40 Hz to 5 kHz	φ 15 mm (0.59 in)	±0.3% rdg. ±0.02% f.s. Within ±1°		
	3/	CLAMP ON SENSOR 9661	500 A	40 Hz to 5 kHz	ф 46 mm (1.81 in)	±0.3% rdg. ±0.01% f.s. Within ±0.5°		Not used
Clamp	A	CLAMP ON SENSOR 9669		40 Hz to 5 kHz	φ 55 mm (2.17 in), 80 mm (3.15 in) × 20 mm (0.79 in) BUS BAR	±1.0% rdg. ±0.01% f.s. Within ±1°	3 m (9.84 ft)	
metnoa	80	FLEXIBLE CLAMP ON SENSOR CT9667-01		500 A/ 5000 A 10 Hz to 20 kHz	ф 100 mm (3.94 in)	±2.0% rdg. ±0.3% f.s. Within ±1°	(9.04 11)	AA (LR6) Alkaline Batteries x
	%	FLEXIBLE CLAMP ON SENSOR CT9667-02			ф 180 mm (7.09 in)			2 (approx. 7 days) or
	3	FLEXIBLE CLAMP ON SENSOR CT9667-03			ф 254 mm (10.00 in)			AC ADAPTER 9445-02 (optional)

Options for CT9667-01/-02/-03

External appearance	Product name/ model no.	Functions	Power supply	
O.	AC ADAPTER 9445-02	For supplying power to CT9667-01/-02/-03	100 to 240 V AC	

TYPE 2 Current Sensor (Highly Accurate Current Measurements)

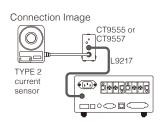
Connect this unit to the current sensor input terminal (BNC) on the PW3337/PW3336/PW3335. SENSOR UNIT CT9555 or CT9557 and CONNECTION CABLE L9217 are required.



Wiring method	External appearance	Product name/ model no.	Rated current	Frequency band	Diameter of measurable conductors	Basic accuracy (amplitude) Basic accuracy (phase)	Cord lengths	Power supply	
		CT6862-05	50 A	DC to 1 MHz	φ 24 mm (0.94 in)	±0.05% rdg. ±0.01% f.s.	3 m (9.84 ft)		
		CT6863-05	200 A	DC to 500 kHz	φ 24 mm (0.94 in)	Within ±0.2°			
Through method		CT6875	500 A	DC to 2 MHz	ф 36 mm (1.42 in)				
		CT6876	1000 A	DC to 1.5 MHz	ф 36 mm (1.42 in)	±0.04% rdg. ±0.008% f.s. Within ±0.1°			
	Q	CT6877	2000 A	DC to 1 MHz	ф 80 mm (3.15 in)				
	1	CT6841-05	20 A	DC to 1 MHz	ф 20 mm (0.79 in)				CT9555 or
	*	CT6843-05	200 A	DC to 500 kHz	ф 20 mm (0.79 in)			CT9557	
Clamp	*	CT6844-05	500 A	DC to 200 kHz	ф 20 mm (0.79 in)	±0.3% rdg. ±0.01% f.s. Within ±0.1°			
method	8	CT6845-05	500 A	DC to 100 kHz	φ 50 mm (1.97 in)				
	8	CT6846-05	1000 A	DC to 20 kHz	φ 50 mm (1.97 in)				
	% \	9272-05	20 A/ 200 A	1 Hz to 100 kHz	ф 46 mm (1.81 in)	±0.3% rdg. ±0.01% f.s. Within ±0.2°			

Options for Current Sensor TYPE 2

External appearance	Product name/ model no.	Max. no. of sensors	Functions	Power supply	Cord lengths
	SENSOR UNIT CT9555	1	For supplying power to the TYPE 2 current sensor	100 V to 240 V AC	-
2 2 2 2 2 E	SENSOR UNIT CT9557	4	For supplying power to the TYPE 2 current sensor With addition output function	100 V to 240 V AC	-
11	CONNECTION CORD L9217	-	For connecting CT9555/CT9557 and PW3330 series units	-	1.6 m (5.25 ft)



Rack Mount Hardware

HIOKI can also manufacture rack mount hardware (EIA, JIS). Please contact your Hioki distributor or subsidiary for more information.

Printing with a Printer

Connect the 3333 to PRINTER 9442* to print out values.

Printing example

STATUS,000000,U,+0200.GE+0,I,+014.82E+0, P,+02.727E+3,S,+02.964E+3,PF,+00.920E+0



PRINTER 9442

Thermal serial dot method, 112 mm (4.41 in) paper widt Power supply: AC ADAPTER 9443-02, or the included nickel hydride batteries

included nickel hydride batteries Dimensions, mass: 160 mm W \times 67 mm H \times 170 mm D (6.30 in W \times 2.64 in H \times 6.69 in D), 580 g (20.5 oz)







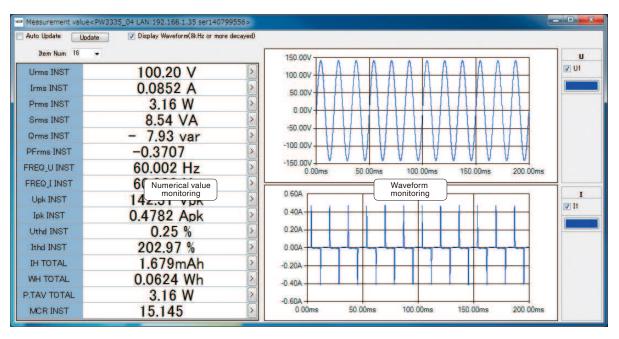
RECORDING PAPER 1196 112 mm (4.41 in) \times 25 m (82.03 ft), 10-roll set

Software

PW Communicator



PW Communicator is an application for communicating between a PW3337/PW3336/PW3335 and a PC. This software can be downloaded free of charge from the HIOKI website. Use this software to configure the power meter, acquire interval data with a PC, perform numerical calculations for measurement data, calculate efficiency between multiple units, display 10 or more measurement items, and display waveforms.







Numerical value monitoring Display the PW3337/PW3336/PW3335 measurement values on the PC screen. You can freely select up to 64 values, such as voltage, current, power, and harmonics.

Waveform monitoring The voltage, current, and waveforms measured by the unit can be monitored on the PC screen.

Meter setting

The configuration of the connected power meter can be changed on the PC screen.

Synchronous

Efficiency calculations, such as input/output of the power supply conversion device, are possible between multiple measurement power meters. Use a sync cable to connect and synchronize the control of up to 8 units.

Save in chronological order

More than 180 pieces of measured data can be recorded to a file in CSV format at regular time intervals.

The minimum time interval for recording is 200 ms.

LabVIEW Driver

PW333 7 | PW333 6 | PW333 5

Obtain data and configure measurement systems with the LabVIEW driver. (LabVIEW is a registered trademark of NATIONAL INSTRUMENTS.)

Sample Software



Sample software for loading data (via RS-232C) can be downloaded from the HIOKI website.

- The 3333/3334 front panel is displayed on the PC screen. Operate the power meter or change settings directly on the PC.
- The measured values for the 3333/3334 are displayed in real time on the PC screen. Save data as a CSV file.

Standby Power Measurement Software



"Standby Power Measurement Software" is an application software exclusively designed for the Power Meter PW3335. This software lets you to view PW3335 measurement data and also save them as reports or in CSV format via a LAN, GP-IB, or RS-232C. Measure standby power consumption in accordance with IEC62301. Download the software free of charge from the HIOKI website.

Workflow for Standby Power Test

1. Connect to power meter

Configure the settings for communication with a power meter. Connect the PC to a power meter, and enter the settings required for the interface used (LAN/RS-232C/GP-IB).



2. Configure the test target

Enter the information of the device under test. The information to be entered includes manufacturer name, model name, serial number, and operation mode. You can also register an image of the test target.



3. Configure the test power supply

Enter the information of the test power supply. Information to be entered includes rating and frequency. Also, enter the values of uncertainty due to the connection method, wiring, power supply, and temperature.



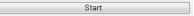
4. Configure the test conditions

Set the current range, stop conditions, algorithm used to judge stability, cycle time, and upper limit for test time.



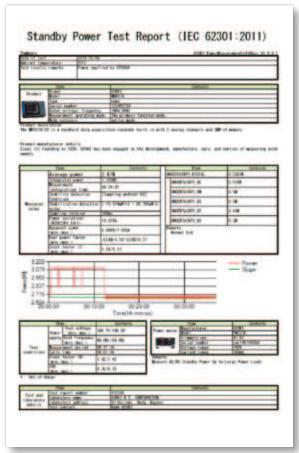
5. Run test

The consumed power is measured according to the configured settings.



6. Create report

Create a report of the test results. Output either a PDF report or CSV file.



Example of report output

Model	PV6335				
Sorial Number	perf.40290656				
Firmvara Ver	V0:07				
Start Time	2014	7	20	14	32
Voltage Flange	1509				
Current Ringe	200eyA				
Lipidate Rate	200ms				
Algorithm	LR	OA:	621	SPC	SAE
Stop Factor	PassiDonekent D	JRI.			
Valid Perced	0	100			
Time Sect	Test ustass(V)	Test hequercy(Hz)	U-THD(%)	Crest Factor U	Crest Factor I
148	59.49	60.002	0.26	1.4207	5/6212
15	39.49	60,002	027	1.4199	5 6585
15.2	50,49	60,002	025	1,4198	5,6896
15.4	10.40	60,000	026	1:4150	5,6004
15.5	99.49	60,005	026	1.4198	5,6852
158	19.49	60,000	026	1.4198	5,6568
16	99.49	60,002	026	1.4199	5.6464
162	99.49	60 002	0.26	1.4198	5,6575

CSV output example

PW3337 PW3336 PW3337 and PW3336 Specifications

Input Specifications

	iriput opecificati	0113				
ĺ	Measurement line	PW3336 series				
	type	Single-phase 2-wire (1P2W), Single-phase 3-wire (1P3W),				
		Three-phase 3-wire	(3P3W, 3F	P3W2M)		
		Wiring	CH1	CH2		
		1P2W×2	1P2W	1P2W		
		1P3W	1P:	3W		
		3P3W		3W		
		3P3W2M	3P3\	N2M		
		PW3337 series				
		Single-phase 2-wire	(1P2W), S	Single-phas	se 3-wire (1P3W).
		Three-phase 3-wire				
		Three-phase 4-wire			, , ,	- /-
		Wiring	CH1	CH2	CH3	
		1P2W×3	1P2W	1P2W	1P2W	
		1P3W&1P2W	1P:	3W	1P2W	
		3P3W&1P2W	3P:	3W	1P2W	
		3P3W2M	3P3\	N2M	_	
		3V3A		3V3A		
		3P3W3M		3P3W3M		
		3P4W		3P4W		
	Input methods	Voltage Isolated input				
		Current Isolated input,				
	Voltage measurement					0 V/
	ranges	600.00 V/ 1000.0 V (se				
	Current	AUTO/ 200.00 mA/ 50				
	measurement	10.000 A/ 20.000 A/ 50				
	ranges	For more information a			sensor inp	out, see the
		external current sensor				
	Power ranges	Depends on the comb				
		PW3336: from 3.00				
		PW3337: from 3.00			so applies	to VA, var)
	Input resistance	Voltage input terminal		2 ΜΩ		
	(50/60 Hz)	Current direct input ter	minal : 1	I mΩ or les	S	

(50/60 Hz)	Current direct input ter	rminal : 1 mΩ or less				
Basic Measuren	nent Specification:	S				
Measurement method	Simultaneous voltage simultaneous calculati	and current digital sam ion	npling, zero-cross			
Sampling frequency	Approx. 700 kHz					
A/D converter	16-bit resolution					
Frequency bands	DC, 0.1 Hz to 100 kHz U1, U2, U3, I1, I2, I3, [C (fixed at 200 ma)				
Synchronization						
sources Measurement items	Voltage crest factor Time average curren Voltage ripple factor Harmonic parameters Harmonic voltage RM Harmonic active pow Total harmonic currer Current fundamental Apparent power fundament	rent - Active pover factor - Phase and Current in intion - Integrated ak value - Current vet - Time aver - Current rights - Issue - Harmonic - Active powers - Current rights - Current rights - Current rights - Current rights - Active powers - Active powers - Integrated - Active powers - Active powers - Integrated - Active powers - Active powers - Active powers - Integrated - Inte	gle - Frequency legration It time aveform peak value est factor age active power ople factor current RMS value onic voltage distortion ndamental waveform are fundamental waveform wer fundamental waveform			
	Voltage current phas Interchannel voltage Interchannel current Harmonic voltage co Harmonic active pow The following paramet communication but no	e difference fundamen fundamental wave pha fundamental wave pha ntent % Harmonic ver content % ters can be downloade	tal waveform use difference se difference current content % d as data during PC			
	· Harmonic voltage cu	rrent phase difference				
	AC+DC: AC+DC measurement Display of true RMS values for both voltage and current AC+DC Umn: AC+DC measurement Display of average value rectified RMS converted values for voltage and true RMS values for current DC: DC measurement Display of simple averages for both voltage and current Display of values calculated by (voltage DC value) × (current D value) for active power AC: AC measurement Display of values calculated by for both voltage and current Display of values calculated by √(AC+DC value)² - (DC value) for active power FND Extraction and display of the fundamental wave component					
Zero-Crossing	from harmonic measurement 500 Hz/200 kHz					
Filter Measurement accuracy Voltage		Hz, 200 kHz: 0.1 Hz to	200 kHz			
Frequency (f)	Input < 50% f.s.	50%f.s. ≤ Input < 100%f.s.	100%f.s. ≤ Input			
DC DC	±0.1%rdg. ±0.1%f.s.	±0.1%rdg. ±0.1%f.s.	±0.2%rdg.			
0.1Hz ≤ f < 16Hz	±0.1%rdg. ±0.2%f.s.	±0.3%rdg.	±0.3%rdg.			
16Hz ≤ f < 45Hz	±0.1%rdg. ±0.1%f.s.	±0.2%rdg.	±0.2%rdg.			
45Hz ≤ f ≤ 66Hz	±0.1%rdg. ±0.05%f.s.	±0.15%rdg.	±0.15%rdg.			
66Hz < f ≤ 500Hz	±0.1%rdg. ±0.1%f.s.	±0.2%rdg.	±0.2%rdg.			
500Hz < f ≤ 10kHz	±0.1%rdg. ±0.2%f.s.	±0.3%rdg.	±0.3%rdg.			
10kHz < f ≤ 50kHz	±0.5%rdg. ±0.3%f.s.	±0.8%rdg.	±0.8%rdg.			
50kHz < f ≤ 100kHz	±2.1%rdg. ±0.3%f.s.	±2.4%rdg.	±2.4%rdg.			
Current (direct input)						
Frequency (f)	Input < 50% f.s.	50%f.s. ≤ Input < 100%f.s.				
DC	±0.1%rdg. ±0.1%f.s.	±0.1%rdg. ±0.1%f.s.	±0.2%rdg.			
0.1Hz ≤ f < 16Hz	±0.1%rdg. ±0.2%f.s.	±0.3%rdg.	±0.3%rdg.			
16Hz ≤ f < 45Hz	±0.1%rdg. ±0.1%f.s.	±0.2%rdg.	±0.2%rdg.			
45Hz ≤ f ≤ 66Hz	±0.1%rdg. ±0.05%f.s.	±0.15%rdg.	±0.15%rdg.			
66Hz < f ≤ 500Hz	±0.1%rdg. ±0.1%f.s.	±0.2%rdg.	±0.2%rdg.			
500Hz < f ≤ 1kHz	±0.1%rdg. ±0.2%f.s.	±0.3%rdg.	±0.3%rdg.			
1kHz < f ≤ 10kHz	±0.2%f.s.		±(0.23+0.07×F)%rdg.			
10kHz < f ≤ 100kHz	±(0.3+0.04×F)%rdg.	±(0.6+0.04×F)%rdg.	±(0.6+0.04×F)%rdg.			

Comeat	10115					
Active power						
Frequency (f)	Input < 50% f.s.	50%f.s. ≤ Input < 100%f.s.	100%f.s. ≤ Input			
DC	±0.1%rdg. ±0.1%f.s.	±0.1%rdg. ±0.1%f.s.	±0.2%rdg.			
0.1Hz ≤ f < 16Hz	±0.1%rdg. ±0.2%f.s.	±0.3%rdg.	±0.3%rdg.			
16Hz ≤ f < 45Hz	±0.1%rdg. ±0.1%f.s.	±0.2%rdg.	±0.2%rdg.			
45Hz ≤ f ≤ 66Hz	±0.1%rdg. ±0.05%f.s.	±0.15%rdg.	±0.15%rdg.			
66Hz < f ≤ 500Hz		±0.2%rdg.	±0.2%rdg.			
500Hz < f ≤ 1kHz	±0.1%rdg. ±0.2%f.s.	±0.3%rdg.	±0.3%rdg.			
1kHz < f ≤ 10kHz	±(0.03+0.07×F)%rdg. ±0.2%f.s.	±(0.23+0.07×F)%rdg.	±(0.23+0.07×F)%rdg.			
10kHz < f ≤ 50kHz	±(0.07×F)%rdg. ±0.3%f.s.	±(0.3+0.07×F)%rdg.	±(0.3+0.07×F)%rdg.			
50kHz < f ≤ 100kHz		±(0.9+0.07×F)%rdg.	±(0.9+0.07×F)%rdg.			
Guaranteed	Values for f.s. depend on measurement ranges. "F" in the tables refers to the frequency in kHz. Add ±1mA to DC measurement accuracy for current. Add (±1mA) x (voltage read value) to DC measurement accuracy for actipower. When using the 200mA or 500mA range, add ±0.1% rdg. to current and active power for which 1kHz < f ≤ 10kHz. Values for voltage, current, and active power for which 0.1Hz ≤ f < 10Hz are for reference only. Values for voltage, current, and active power in excess of 20A for which 10Hz ≤ f < 16Hz are for reference only. Values for current and active power in excess of 20A for wis 500Hz < f ≤ 50kHz are for reference only. Values for current and active power in excess of 15A for wis 50kHz < f ≤ 100kHz are for reference only. Values for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power in excess of 750V for visuals for voltage and active power of visuals for voltage and active power of visuals for voltage active power of visuals for volt					
accuracy period	1 year					
Post-adjustment	6 months					
accuracy guaranteed						
Maximum effective	±600% of each voltag		45001/			
peak voltage		00 V, and 1000 V range	s, ±1500 vpeak			
Maximum effective peak current	±600% of each curren	nt range ge and 50 A range, ±10	O Apook			
Conditions of		idity: 23°C ±5°C, 80%				
guaranteed	Warm-up time: 30 min		1111011655			
accuracy		power factor of 1, term	inal-to-ground			
accuracy		ter zero adjustment; wit				
		ve satisfies synchroniza				
Temperature characteristic	±0.03% f.s. per °C or		tion source conditions			
Power factor effects		o 66 Hz, at power facto	or = 0)			
1 Ower lactor effects		ge/current phase different				
Effect of common	±0.02% f.s. or less					
mode voltage	(600 V, 50/60 Hz, app	lied between input term	ninals and enclosure)			
Effect of external	400 A/m, DC and 50/6	60 Hz magnetic field				
magnetic field	Voltage :±1.5% f.	s. or less				
interference	Current :±1.5% f.	s. or ±10 mA, whicheve	er is greater, or less			
	Active power:±3.0% f	.s. or (voltage influence	e quantity) \times (± 10 mA),			
	whichev	er is greater, or less				
Magnetization	±10 mA equivalent or					
effect		DC to the current direct	input terminals)			
Adjacent channel	±10 mA equivalent or					
input effect	(when inputting 50 A to	o adjacent channel)				
Voltage/ Current	t/ Active Power Me	easurement Speci	fications			
Measurement types		C, AC, FND, AC+DC Ur				
Effective		0% of range				
measuring range			and 1000 V PMS value)			
oadaring range	(However, up to ±1500 V peak value and 1000 V RMS value) Current: 1% to 130% of range					
	Active power: 0% to 169% of the range					
	(However, defined when the voltage and current fall					
		effective measuremen				
Display range		140% of range (zero-suppre				
p.a.j . a go		196% of the range (no				
Polarity	Voltage/ Current: Displa	yed when using DC red	otifier			
		itive: Power consumption				
		enerated power				

Voltage/ Current/ Active power channel and sum value calculation formulas

Wiring		X: U(Voltage) or I(Current)	P (Active power)	
All channels	1P2W	X(i)	P(i)	
	1P3W 3P3W	$X_{sum} = \frac{1}{2}(X_{(1)} + X_{(2)})$	$Psum = (P_{(1)} + P_{(2)})$	
Sum	3P3W2M			
values	3V3A	$Xsum = \frac{1}{3} (X_{(1)} + X_{(2)} + X_{(3)})$	$Psum = (P_{(1)} + P_{(2)} + P_{(3)})$	
	3P3W3M			
	3P4W			

(i): Measurement channel

Measurement	ivieasures the wavel										
method	negative polarity) based on sampled instantaneous voltage values.										
Sampling frequency	Approx. 700 kHz										
Voltage peak range											
Voltage range	15V 30V		60'	60V		150V		300V		600V	1000V
Voltage peak range	90.000V	180.00	V 360.0)OV	900	.00V	1.8	000kV	3.	6000kV	6.0000kV
Current peak range											
Current range		500mA	1A		2A	5 <i>A</i>		10A		20A	50A
Current peak range	1.2000A	3.0000A	6.0000A	12.0	A000	30.00)0A	60.000)A	120.00A	300.00A
Measurement accuracy	Same as the voltage or current measurement accuracy at DC and when 10 Hz \leq f \leq 1 kHz (f.s.: voltage peak range or current peak range). Provided as reference value when 0.1 Hz \leq f $<$ 10 Hz and					peak					
Effective	when in excess of 1 kHz.										
measuring range	±5% to ±100% of voltage peak range (up to ±1500 V) or ±5% to ±100% of current peak range (up to ±100 A)										
Display range	±0.3% to ±102% of voltage peak range or current peak range (values less than ±0.3% are subject to zero-suppression)					ige					
	j (values le	ess than	±0.3% i	are :	subje	ct to	zer	o-sup	ore	ession)	

Voltage Crest Factor/ Current Crest Factor Measurement Specifications

	coor carrent creet actor meacurement epecineations
	Calculates values from display values once each display update
	interval for voltage and voltage waveform peak values or current
	and current waveform peak values.
Effective measuring	As per voltage and voltage waveform peak value or current and
range	current waveform peak value effective measurement ranges.
Display range	1.0000 to 612.00 (no polarity)

Measuren method			AC com		(peak	to peak [peak width]) as a		
Effective		proportion of the voltage or current DC component As per voltage and voltage waveform peak value or current and						
measuring range Display range		current waveform peak value effective measurement ranges 0.00[%] to 500.00[%]						
Polarity		None	.00[/6]					
Apparent F	Power/ Rea	active Power/ Po	wer Fac	tor/ Pha	se And	ale Measurement Specificatio		
Measurer		Rectifiers				,		
types		Phase Angle				ctor : AC+DC, AC, FND, AC+DC Um : AC, FND		
Effective mea Display ra						r effective measurement ranges. % of the range (no zero-suppression)		
Display range		Power Factor Phase Angle		:	±0.000	00 to ±1.0000 00 to -180.00		
Polarity		Reactive Power		Factor/	/ Phase	e Angle		
		voltage wavef	orm risir urrent la	ng edge ags volta	and the	lead/lag relationship of the e current waveform rising edge polarity display)		
Power ch	nannel an	d sum value c						
	ring	S: Appa			10.00	Q: Reactive power		
All channels	1P2W	$S_{(i)} = U_{(i)} \times$				$Q(i) = si(i)\sqrt{S(i)^2 - P(i)^2}$		
	1P3W	$S_{sum} = S_{(1)} +$						
Sum	3P3W 3P3W2M	$S_{sum} = \frac{\sqrt{3}}{2} (S_{c})$				$Q_{sum} = Q_{(1)} + Q_{(2)}$		
values	3V3A	$S_{sum} = \frac{\sqrt{3}}{3} (S_{c})$						
	3P3W3M 3P4W	$S_{sum} = S_{(1)} +$	· S ₍₂₎ + 5	S ₍₃₎		$Q_{\rm sum} = Q_{(1)} + Q_{(2)} + Q_{(3)}$		
i): Meas	urement cl	nannel						
Win	ring		wer fact			$oldsymbol{\phi}$: Phase angle		
All channels		λ(i) =	$Si(i) \frac{P_{(i)}}{S_{(i)}}$	-		$\phi_{(i)} = si_{(i)} cos^{-1} l \lambda_{(i)} l$		
	1P3W 3P3W		,		W	hen Psum ≥ 0		
Sum	3P3W2M	λsum =	Sisum Sisum	ım		$ \Phi_{\text{sum}} = \text{Sisum } \cos^{-1}l \lambda \text{ sum}l $ $ (0^{\circ} \text{ to } \pm 90^{\circ}) $		
values	3V3A 3P3W3M		Osu	m l	W	hen Psum≥0 Фsum = Sisum 180 - cos ⁻¹ λsum		
: \- Magazz	3P4W	anal . The nelevit	ا م مامس ده ،	alauma la		(±90° to ±180 ed from the Qsum symbol.		
						ed from the Qsum symbol.		
	ncy IVIea neasurement	surement Sp	ecitica	ations				
channels	nousuronioni	0 011						
Measurement source								
		Select from U (
Measureme	nt method		n input v	wavefori	m perio	od (reciprocal method)		
Measureme Measureme Measureme	nt method nt range nt accuracy	Calculated from 500 Hz/ 200 kH ±0.1% rdg. ±1 d	n input v Iz (linke dgt. (0°0	wavefori d to zer	m perio	od (reciprocal method)		
Measureme Measureme Measureme Effective r	nt method nt range	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 d 0.1 Hz to 100 kI For sine wave ii	n input v Iz (linke dgt. (0°0 Hz nput tha	waveform d to zer C to 40° at is at le	m perio o-cros C)	od (reciprocal method)		
Measureme Measureme Measureme Effective r	nt method nt range nt accuracy	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave it source's measu	n input v Iz (linke dgt. (0°0 Hz nput tha urement	waveformed to zer C to 40° at is at learninge.	m perio o-cros C) east 20	od (reciprocal method) s filter) % of the measurement		
Measureme Measureme Measureme Effective r range	nt method nt range nt accuracy measuring	Calculated from 500 Hz/200 kH±0.1% rdg. ±1 con 100 kl For sine wave in source's measumeasurement lcon 1000 Hz to 9.99	n input v dz (linke dgt. (0°0 Hz nput tha urement ower limi 99 Hz, 9.1	waveformed to zer C to 40° at is at least range. it freque	m perio o-cros C) east 20 ency se o 99.999	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 10 sec. Hz, 99.00 Hz to 999.99 Hz,		
Measureme Measureme Measureme Effective r range	nt method nt range nt accuracy measuring	Calculated from 500 Hz/200 kH±0.1% rdg. ±1 f 0.1 Hz to 100 kHz for sine wave in source's measu Measurement Ic 0.1000 Hz to 9.9999900 kHz to 9.999	n input v Hz (linke dgt. (0°0 Hz nput tha urement ower limi 99 Hz, 9.9 99 kHz, 9	waveformed to zer C to 40° at is at least range. It freque 900 Hz to .900 kHz	m perio o-cros C) east 20 ency se o 99.999	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 10 sec.		
Measureme Measureme Measureme Effective r range Display fo	nt method nt range nt accuracy measuring ormat	Calculated from 500 Hz/200 kH±0.1% rdg. ±1 0 0.1 Hz to 100 kl For sine wave in source's measurement lc 0.1000 Hz to 9.99 9900 kHz to 9.99 urement Spec	n input v dz (linke dgt. (0°0 Hz nput tha urement ower limi 99 Hz, 9.9 cificatio	waveformed to zero to 40° to 40° at is at learning. It freques 1900 Hz to 1900 kHz	m perio co-cross C) east 20 ency se co 99.999 to 99.9	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec d Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme	nt method nt range nt accuracy measuring ormat cy Measu	Calculated from 500 Hz/ 200 kH ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's meas. Measurement lc 0.1000 Hz to 9.99 9900 kHz to 9.99s	n input v dz (linke dgt. (0°C Hz nput tha urement bwer limi 99 Hz, 9. 99 kHz, 9 cificatio ency h [%]	waveform d to zer C to 40° at is at learninge. it freque 900 Hz tr .900 kHz	m periodo-cross (C) east 20 ency setto 99.999 etto 99.99	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 10 sec. Hz, 99.00 Hz to 999.99 Hz,		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measu Measurement lc 0.100 Hz to 9.99 9900 kHz to 9.99 virement Spec Calculates the efficie Calculated bas PW3336	n input v Hz (linke dgt. (0°C Hz nput tha urement bwer limi 99 Hz, 9. 99 kHz, 9 cificatio ency h [%]	waveformed to zero to 40° cat is at least range. It freques 900 Hz to 1900 kHz construction from the range AC+1	m periodo-cross (C) east 20 ency setto 99.999 etto 99.99	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 3 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and wire tiffier active power		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measu Measurement lc 0.100 Hz to 9.99 9900 kHz to 9.99 (Calculates the efficie Calculated bas PW3336 Wiring	n input v Hz (linke dgt. (0°C Hz nput tha urement bower limi 99 Hz, 9 99 kHz, 9 cificatio ency h [%]	waveforn d to zer C to 40° at is at let rrange. it freque 900 Hz tr .900 kHz	m periodo-cross (C) east 20 ency setto 99.999 etto 99.99	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 0 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and win tifier active power Calculation formulas		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measu Measurement lc 0.100 Hz to 9.99 9900 kHz to 9.99 (Calculates the efficie Calculated bas PW3336 (Wiring 1P2W × 2)	n input v Hz (linke dgt. (0°C Hz nput tha upurement bwer limi 99 Hz, 9. 99 kHz, 9 cificatio ency h [%] ed on the	wavefornd to zero to 40° at is at lear range. It frequency from the range from th	m periodo-cross (C) east 20 ency setto 99.999 etto 99.99	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 3 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and wire tiffier active power		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kH ± 0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's meas. Measurement lc 0.1000 Hz to 9.99 9900 kHz to 9.99 (Calculates the efficie Calculated bas PW3336 (Wiring 1P2W × 2 1P3W 3P3W)	n input v lz (linke dgt. (0°C Hz nnput tha urement ower limi 99 Hz, 9. 99 kHz, 9 cificatic ency h [%] ed on th	waveform d to zero d to ze	m periodo-cross (C) east 20 ency setto 99.999 etto 99.99	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 9 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and wire tifier active power Calculation formulas η1=100x P2 / P1		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's meast Measurement lc 0.100 Hz to 9.99 9900 kHz to 9.99 (Calculated base PW3336) Wiring 1P2W × 2 1P3W 3P3W 3P3W2M	n input v lz (linke dgt. (0°C Hz nnput tha urement ower limi 99 Hz, 9. 99 kHz, 9 cificatic ency h [%] ed on th	waveform d to zero to 40° at is at learninge. it freque 900 Hz to 900 kHz to 900 kHz to 100 kHz to	m periodo-cross (C) east 20 ency setto 99.999 etto 99.99	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 9 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and wire tifier active power Calculation formulas η1=100x P2 / P1		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kF	n input v lz (linke dgt. (0°C Hz nnput tha urement ower limi 99 Hz, 9. 99 kHz, 9 cificatic ency h [%] ed on th	waveform d to zero d to ze	m periodo-cross (C) east 20 ency setto 99.999 etto 99.99	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 9 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and wire tifier active power Calculation formulas η1=100x P2 / P1		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's meast Measurement lc 0.100 Hz to 9.99 9900 kHz to 9.99 (Calculated base PW3336) Wiring 1P2W × 2 1P3W 3P3W 3P3W2M	n input v Iz (linke dgt. (lorc Hz nput tha urement ower limi 99 Hz, 9. 99 Hz, 9. 90 Hz, 9. cificatic ency h [%] CH1 1P2W 1P2 3P3 3P3\	waveform d to zero to 40° at is at learninge. It is reques 900 Hz to 1.900 kHz DNS from the report AC+1 CH2 1P2W 3W W2M CH2	m perido-crossico) east 20 ency se o 99.999 to 99.9 atio of ac DC rec	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 10 sec. Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and wire tifier active power Calculation formulas η1=100x P2 / P1 η2=100x P3 / P2		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave is source's means Measurement Ic 0.1000 Hz to 9.99 9900 kHz to 9.99 year ement Spec Calculates the efficie Calculates the efficie Calculated bas PW3336 Wiring 1P2W × 2 1P3W 3P3W2M PW3337 Wiring 1P2W × 3 1P3W & 3 1P2W × 3 1P3W & 1P2W	n input viz (input viz (linke digit. (0°C) Hz (nput thaurement were limit 99 Hz, 9.99 kHz, 9 hz (input thaurement) hz (input thaurem	waveford to zer C to 40° at is at learninge. It frequence 900 Hz to 900 kHz t	m periodo-cross CO Co-cross CO East 20	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 0 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and win tifier active power Calculation formulas \[\eta_1 = 100 \times P2 / P1 \\ \eta_2 = 100 \times P1 / P2 \\ Calculation formulas \[\eta_1 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P3 \\ \eta_1 = 100 \times P3 / P3 \\ \eta_2 = 100 \times P3 / P3 \\ \eta_1 = 100 \times P3 / P3 \\ \eta_2 = 100 \times P3 P3 \		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kF	n input v lac (linke dgt. (0°C Hz nput tha urement yeer limi 99 Hz, 9.99 kHz, 9 99 kHz, 9 Cificatic ency h [%] ed on th 1P2W 1P3 3P3 CH1 1P2W 1P2W 1P2W 1P2W 3P3 3P3 3P3 3P3 3P3 3P3 3P3 3P3	waveform d to zer C to 40° at is at learning to the service of the	m periodo-cross o-cross o-cross east 20 east 2	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 0 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and win tifier active power Calculation formulas \[\eta_1 = 100 \times P2 / P1 \\ \eta_2 = 100 \times P1 / P2 \\ Calculation formulas \[\eta_1 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P3 \\ \eta_1 = 100 \times P3 / P3 \\ \eta_2 = 100 \times P3 / P3 \\ \eta_1 = 100 \times P3 / P3 \\ \eta_2 = 100 \times P3 P3 \		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measumeant lc 0.1000 Hz to 9.99 9900 kHz to 9.99 1000 Hz to 9.99 100	n input viz (inke dagt. (0°C Hz nput thaurement were limited by 199 kHz, 9 hz nput thaurement were limited by 199 kHz, 9 hz nput thaurement hz npu	waveford d to zer d t	m perico-cross o-cross co-cross east 20 ency se ency s	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 0 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and win tifier active power Calculation formulas \[\eta_1 = 100 \times P2 / P1 \\ \eta_2 = 100 \times P1 / P2 \\ Calculation formulas \[\eta_1 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P3 \\ \eta_1 = 100 \times P3 / P3 \\ \eta_2 = 100 \times P3 / P3 \\ \eta_1 = 100 \times P3 / P3 \\ \eta_2 = 100 \times P3 P3 \		
Measureme Measureme Measureme Effective r range Display fo Efficienc Measureme Wiring mo and calcu	nt method nt range nt accuracy measuring ormat cy Measu nt method odes ulation	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measu Measurement lc 0.1000 Hz to 9.99 9900 kHz to 9.99 9900 kHz to 9.99 (Calculates the efficie Calculates the efficie Calculated bas PW33336 (Wiring 1P2W × 2 1P3W 3P3W2M PW3337 (Wiring 1P2W × 3 1P3W & 1P2W & 3P3W2M 3P3W2M	n input viz (inke dagt. (0°C Hz nput thaurement were limited by 199 kHz, 9 hz nput thaurement were limited by 199 kHz, 9 hz nput thaurement hz npu	waveford d to zer d t	m perico-cross o-cross co-cross east 20 ency se ency s	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 0 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and win tifier active power Calculation formulas \[\eta_1 = 100 \times P2 / P1 \\ \eta_2 = 100 \times P1 / P2 \\ Calculation formulas \[\eta_1 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P3 \\ \eta_1 = 100 \times P3 / P3 \\ \eta_2 = 100 \times P3 / P3 \\ \eta_1 = 100 \times P3 / P3 \\ \eta_2 = 100 \times P3 P3 \		
Measureme Measureme Measureme Measureme Effective r range Display for Measureme Wiring mo Measureme Wiring mo Leguations	nt method nt range nt accuracy measuring primat cy Measu nt method odes plation s	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's means Measurement Ic 0.100 Hz to 9.99 9900 kHz to 9.99 yearnement Spec Calculates the efficie Calculated bas PW3336 Wirring 1P2W × 2 1P3W 3P3WZM 3P3WZM 1P2W × 3 1P3W & 1P2W 3 3P3WZM 3P3WZM 3P3WZM 3P3WZM 3P3WZM 3P3WZM 3P3WZM 3P3WZM 3P3WM 3P4W As per the activ	n input viz linke digit. (0°C Hz nput thaurement were limit 99 Hz, 9:99 Hdz, 9:99 Hdz, 9:99 Hdz, 9:10 Hz nput thaurement hz npu	waveford d to zer d t	m perico-cross o-cross east 20 ency se so 99.99 et to 99.99 to Pop.99 CH3 1P2W 1P2W 1P2W 1	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 1 sec. / 10 sec 0 Hz, 99.00 Hz to 999.99 Hz, 99 kHz, 99.00 kHz to 220.00 kHz tive power values for channels and win tifier active power Calculation formulas \[\eta_1 = 100 \times P2 / P1 \\ \eta_2 = 100 \times P1 / P2 \\ Calculation formulas \[\eta_1 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P1 \\ \eta_2 = 100 \times P3 / P3 \\ \eta_1 = 100 \times P3 / P3 \\ \eta_2 = 100 \times P3 / P3 \\ \eta_1 = 100 \times P3 / P3 \\ \eta_2 = 100 \times P3 P3 \		
Measureme Measureme Measureme Measureme Effective r range Display for Efficienc Measureme Wiring mo and calcu equations	nt method nt range nt accuracy measuring primat cy Measu nt method odes plation s	Calculated from 500 Hz/ 200 kF	n input viz linke digit. (0°C Hz nput thaurement were limit 99 Hz, 9:99 Hdz, 9:99 Hdz, 9:99 Hdz, 9:10 Hz nput thaurement hz npu	waveford d to zer d t	m perico-cross o-cross east 20 ency se so 99.99 et to 99.99 to Pop.99 CH3 1P2W 1P2W 1P2W 1	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 10		
Measureme Measureme Measureme Measureme Effective r range Display for Efficienc Measureme Wiring mo and calcu equations Effective mea Display re Fime Aver	nt method nt range nt accuracy measuring primat by Measu nt method odes plation s assuring range arage arage crage Currer	Calculated from 500 Hz/ 200 kF	n input viz (inke digital (inke digital) (inke digi	waveford to zer d to zer t to 40° t is at le it is at le if frequeue g900 Hz te g900 Hz	m perico-cross o-cross east 20 ency se so 99.99 ency se to 99.99 ency se t	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 10		
Measureme Measureme Measureme Measureme Effective r range Display for Measureme Wiring mo and calcu equations Display ra Time Aver	nt method nt range nt accuracy measuring primat cy Measu nt method des allation s assuring range ange rage Curre ent method	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's means Measurement Ic 0.1000 Hz to 9.99 9900 kHz to 9	n input viz (inke digit. (0°C) Hz (10°C) Hz (1	waveford to zere d to zere t is at le it is at le if frequeue geography geog	m perico-cross o-cross o-cross east 20 ency se o 99.99 ency se o 99.99 ency se to 99.91 ency se to 99.99 enc	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 10		
Measureme Measureme Measureme Measureme Measureme Effective re range Display fo Efficienc Measureme Wiring ma and calcuequations Effective mea Display re Display re Measureme Measureme Measureme Measureme	nt method nt range nt method nt range nt accuracy measuring primat p	Calculated from 500 Hz/ 200 kHz/ 200 kH	n input viz (inke dagt. (0°C Hz nput thau rement to wer limi 99 Hz, 9.99 kHz, 9 (inke do nt the to the thau rement to the the thau rement to the	waveford d to zer d t	m perico-cross o-cross o-cross east 20	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 10		
Measureme Measureme Measureme Measureme Effective range Display for Measureme Wiring mo and calcu. equations Effective mea Display ra Fime Aver Measureme Measureme Measureme Measureme Measureme Measureme Effective mea	nt method nt range nt accuracy measuring primat by Measu nt method odes plation silver assuring range ange rage Curre ent method ent accuracy assuring range assuring range	Calculated from 500 Hz/ 200 kF ±0.1% rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measu Measurement Ic 0.100 Hz to 9.99 9900 kHz to 9.	n input viz (inke dagt. (0°C Hz nput thau rement to wer limi 99 Hz, 9.99 kHz, 9 (inke do nt the to the thau rement to the the thau rement to the	waveford to zer control to zer contr	m perico-cross o-cross o-cross east 20	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 10		
Measureme Measureme Measureme Measureme Effective r range Display for Measureme Wiring mo and calcu equations Fifective mea Display ra Fime Aver Measureme Measureme Measureme Measureme Effective mea - unction	nt method nt range nt accuracy measuring primat by Measu nt method odes des des des des des des des des des	Calculated from 500 Hz/ 200 kF 501 Hz/ 200 kF 0.1 Hz to 100 kl For sine wave in source's meast Measurement lc 0.100 Hz to 9.99 9900 kHz to 9.99 9900 kHz to 9.99 Irement Spec Calculated bas PW3336 Wirring 1P2W × 2 1P3W 3P3W2M 3P3W2M PW3337 Wirring 1P2W × 3 1P2W × 3 1P2W × 3 1P2W × 3 1P3W & 1P2W 3P3W2M 3P3W2M 3P3W2M 3P3W2M 3P3W2M 3P3W2M 3P3W2M 3P3W3M 3P3W3M 3P4W As per the activ 0.00[%] to 200 Int / Time Averag Calculates the ave £(Current or acti As per the currectifications	n input viz (inke digit. (10°C) (10°C	waveford to zer C to 40° c to	m perico-cross o-cross o-cross east 20 ency se o 99.99 ency se	od (reciprocal method) s filter) % of the measurement titing: 0.1 sec. / 10		
Measureme Measureme Measureme Measureme Effective re range Display for Measureme Meas	nt method nt range nt accuracy measuring primat by Measu nt method odes des des des des des des des des des	Calculated from 500 Hz/ 200 kF with 18 minus 18	n input viz (inke digit. (0°C Hz nput thau ment wer limit 99 Hz, 9.99 kHz, 999 kHz, 990 kHz, 900 kHz,	waveford to zer C to 40° C to	m perico-cross co-cross co-cro	od (reciprocal method) s filter) % of the measurement tting: 0.1 sec. / 10		
Measureme Measureme Measureme Measureme Measureme Effective re range Display for Measureme Wiring ma and calcu equations Effective mea Display ra Time Aver Measureme Measureme Measureme Measureme Measureme Measureme Effective mea Functiol Auto-rang	nt method nt range nt accuracy measuring primat by Measu nt method odes des des des des des des des des des	Calculated from 500 Hz/ 200 kF with 7500 Hz/ 200 kF on 14 kg on 14	n input viz (inke digit. (0°C Hz input that	waveford to zer control to zer contr	m perico-cross co-cross co-cro	od (reciprocal method) s filter) % of the measurement titing: 0.1 sec. / 10 sec. / 1		
Measureme Measureme Measureme Measureme Measureme Effective re range Display for Measureme Wiring ma and calcu equations Effective mea Display ra Time Aver Measureme Measureme Measureme Measureme Measureme Measureme Effective mea Functiol Auto-rang	nt method nt range nt accuracy measuring primat by Measu nt method odes des des des des des des des des des	Calculated from 500 Hz/ 200 kF	n input viz (input viz (linke digit. (0°C) Hz (10°C) Hz	waveford to zer control to zer contr	m perico-cross co-cross co-cro	od (reciprocal method) s filter) % of the measurement titing: 0.1 sec. / 10 sec. / 1		
Measureme Measureme Measureme Measureme Measureme Effective re range Display for Measureme Wiring ma and calcu equations Effective mea Display ra Time Aver Measureme Measurem	nt method nt range nt accuracy measuring primat by Measu nt method odes des des des des des des des des des	Calculated from 500 Hz/ 200 kF work rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measumement lc 0.100 Hz to 9.99 g9900 kHz to 9.99 g9900 kHz to 9.99 g9900 kHz to 9.99 g9900 kHz to 9.99 kHz t	n input viz in input viz (linke digit. (0°C Hz nput thau wer limit 99 Hz, 9.99 kHz, 9.99 kHz, 9.99 kHz, 9.91 kHz, 9.99 kHz, 9.99 kHz, 9.90 kHz, 9.	waveford to zer C to 40° c to	m perico-cross co-cross co-cro	od (reciprocal method) s filter) % of the measurement titing: 0.1 sec. / 10 sec. / 1		
Measureme Measureme Measureme Measureme Measureme Effective re range Display for Measureme Wiring ma and calcu equations Effective mea Display ra Time Aver Measureme Measurem	nt method nt range nt accuracy measuring primat by Measu nt method odes des des des des des des des des des	Calculated from 500 Hz/ 200 kF work rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measumement lc 0.100 Hz to 9.99 g9900 kHz to 9.99 g9900 kHz to 9.99 g9900 kHz to 9.99 g9900 kHz to 9.99 kHz t	n input viz (inine digital) in input viz (linke digital) (10°C Hz nput that wer limi 99 Hz, 9.99 kHz, 999 kHz,	waveford to zer C to 40° c to	m perico-cross o-cross o-cross past 20	od (reciprocal method) is filter) % of the measurement titing: 0.1 sec. / 10 sec. / 1		
Measureme Measureme Measureme Measureme Measureme Effective range Display for Measureme Wiring moderate and calculations Effective measureme Measureme Measureme Measureme Measureme Measureme Effective measureme Effective measureme Effective measureme Effective measureme Meas	nt method int range in tange in the accuracy measuring measuring format correct in the method oddes plation in the	Calculated from 500 Hz/ 200 kF work rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measurement lc 0.100 Hz to 9.99 g9900 kHz to 9.99	n input viz (inke digit. (0°C) Hz (inke digi	waveford to zer C to 40° C to	m perico-cross co-cross co-cro	od (reciprocal method) is filter) % of the measurement titing: 0.1 sec. / 10 sec. / 1		
Measureme Measureme Measureme Measureme Measureme Effective range Display for Measureme Measureme Measureme Measureme Measureme Display rand calculus equations Effective mea Display rand Measureme Measure	nt method int range in tange in the accuracy measuring measuring format correct in the method oddes plation in the	Calculated from 500 Hz/ 200 kF work rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measument le 0.100 Hz to 9.99 9900 kHz to 9.99 9900 kHz to 9.99 9900 kHz to 9.99 (Calculated base PW3336 Wiring 1P2W × 2 1P3W 3P3W2M PW3337 Wiring 1P2W × 3 1P3W & 1P2W & 1P2	n input viz (inke digit. (0°C Hz input that	waveford to zer C to 40° c to	m perico-cross C) aast 20 ency se s 99.99 atio of ac DC rec CH3 1P2W I 1P2	od (reciprocal method) is filter) % of the measurement titing: 0.1 sec. / 10 sec. /		
Measureme Measureme Measureme Measureme Measureme Effective range Display for Measureme Measureme Measureme Measureme Measureme Display rand calculus equations Effective mea Display rand Measureme Measure	nt method int range in tange in the accuracy measuring measuring format correct in the method oddes plation in the	Calculated from 500 Hz/ 200 kF work rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measus Measurement lc 0.1000 Hz to 9.99 9900 kHz to 9.99 9900 kHz to 9.99 9900 kHz to 9.99 Wirement Spec Calculates the efficie Calculates the efficie Calculates the fifting 1P2W x 2 1P3W 3P3W2M PW3337 Wiring 1P2W x 3 1P3W & 1P2W 3P3W2M PW3337 Wiring 1P2W x 3 1P3W & 1P2W 3P3W2M 3P3W3M 3P3W2M 3P3W3M 3P3W3	n input viz filing in input viz (linke digt. (0°C Hz nput thau rement ower limit 199 Hz, 9.99 kHz, 9.90 kH	waveforn d to zer C to 40° c to zer C to 20° c to zer C t	m perico-cross C) east 20 ency se o 99.99 atio of ac DC rec CH3 1P2W 1P2W 1P2W 1P2W 1P2W 1P2W 1P2W 1P2W	od (reciprocal method) is filter) % of the measurement titing: 0.1 sec. / 10 sec. / 1		
Measureme Measureme Measureme Measureme Effective range Display for Measureme Wiring mo and calcu equations Effective mea Display ra Time Aver Measureme Measureme Effective mea	nt method int range in tange in the accuracy measuring measuring format correct in the method oddes plation in the	Calculated from 500 Hz/ 200 kF work rdg. ±1 c 0.1 Hz to 100 kl For sine wave in source's measumement lc 0.100 Hz to 9.99 g9900 kHz to 9.99 g9900 kHz to 9.99 g9900 kHz to 9.99 g9900 kHz to 9.99 kHz t	n input viz (inine digit. (0°C Hz input that	waveford to zer control to zer contr	m perico-cross C) aast 20 annoy se s 99,993 atio of ac DC rec CH3 1P2W 1P2W 4 A A A A A A A A A A A A A A A A A A	od (reciprocal method) is filter) % of the measurement titing: 0.1 sec. / 10 sec. /		
Measureme Measureme Measureme Measureme Measureme Effective range Display for Measureme Measureme Measureme Measureme Measureme Display rand calculus equations Effective mea Display rand Measureme Measure	nt method int range in tange in the accuracy measuring measuring format correct in the method oddes plation in the	Calculated from 500 Hz/ 200 kF 501 Hz/ 200 kF 0.1 Hz to 100 kl For sine wave in source's meast Measurement lc 0.100 Hz to 9.99 9900 kHz to 9.99 9900 kHz to 9.99 Irement Special Calculated bas PW3336 Wiring 1P2W × 2 1P3W 3P3W2M 3P3W2M 3P3W2M 1P2W × 3 1P3W & 1P2W 3P3W2M 3P3W3M 3P4W As per the active 0.00[%] to 200. Int / Time Average Calculates the ave ±(Current or acti As per the current Cifications Automatically c Wiring mode ac Range up: The range The range The range The range The range In Is exceed - Averages the reactive powe The power fact Measured validatortion, and Method : Sir Method : Sir Method : Sir Method : Sir Automatically Calculates Calculates	n input viz (inine digit (inite digit)))))))))))))))))))))))))))))))))))	waveford d to zer C to 40° d to zer C to 20° d to zer C t	m perico-cross o-cross co-cross co-cros	od (reciprocal method) is filter) % of the measurement titing: 0.1 sec. / 10 sec. / 1		
Measureme Measureme Measureme Measureme Measureme Effective range Display for Measureme Measureme Measureme Measureme Measureme Display rand calculus equations Effective mea Display rand Measureme Measure	nt method int range in tange in the accuracy measuring measuring format correct in the method oddes plation in the	Calculated from 500 Hz/ 200 kF 501 Hz/ 200 kF 0.1 Hz to 100 kl For sine wave in source's meast Measurement lc 0.100 Hz to 9.99 9900 kHz to 9.99 9900 kHz to 9.99 Irement Special Calculated bas PW3336 Wiring 1P2W × 2 1P3W 3P3W2M 3P3W2M 3P3W2M 1P2W × 3 1P3W & 1P2W 3P3W2M 3P3W3M 3P4W As per the active 0.00[%] to 200. Int / Time Average Calculates the ave ±(Current or acti As per the current Cifications Automatically c Wiring mode ac Range up: The range The range The range The range The range In Is exceed - Averages the reactive powe The power fact Measured validatortion, and Method : Sir Method : Sir Method : Sir Method : Sir Automatically Calculates Calculates	n input viz (linke digit. (0°C Hz linke digit. (0°C Hz linke hz li	waveford to zer C to 40° d to 20° d to 40° d to	m perico-cross o-cross co-cross co-cros	od (reciprocal method) is filter) % of the measurement titing: 0.1 sec. / 10 sec. /		

Scaling (VT, CT)	Applies user-defined VT and CT ratio set	ttings to measured values.
(VI, CI)		I to 1000 (setting: 0000)
HOLD	CT ratio setting range : OFF (1.0), 0.0	001 to 1000 (setting: 0000) values and fixes the
(HOLD)	display values at that point in time.	
	 Measurement data acquired by commu that point in time. 	nications is also fixed at
	 Internal calculations (including integrati time) will continue. 	on and integration elapsed
	· Analog output and waveform output are	
Maximum value/ minimum value	 Detects maximum and minimum measu maximum and minimum values for the v 	
hold (MAX/MIN HOLD)	waveform peak and holds them on the	display.
(MAX/MINTIOLD)	For data with polarity, display of the ma value for the data's absolute values is h	eld (so that both positive
	and negative polarity values are shown Internal calculations (including integrati	
	time) will continue. Analog output and waveform output are	
Zero Adjustment	Degausses the current input unit DCCT	
(0 ADJ) Key-lock	current input offset. Disables key input in the measurement s	tate, except for the SHIFT
(KÉY LOCK)	key and KEÝ LÓCK key.	
Backup	Backs up settings and integration data if off and if a power outage occurs.	the instrument is turned
System Reset	Initializes the instrument's settings. Communical (communications speed, address, and LAN-relations)	tions-related settings
Integration Mea	surement Specifications	ated settings) are not initialized.
Measurement items	Simultaneous integration of the following 6 pa	arameters for each channel
	(total of 18 parameters):	
	Sum of current integrated values (displayed Positive current integrated value (displayed	as Ah+ on panel display)
	Negative current integrated value (displayed Sum of active power integrated values (disp	
	Positive active power integrated value (display	red as Wh+ on panel display)
Measurement types	Negative active power integrated value (disp Rectifiers: AC+DC, AC+DC Umn	iayed as wn- on panei dispiay)
	Current: Displays the result of integrating c	urrent PMS value data
	(display values) once every displa	
	200 ms) as an integrated value. Active power:	
	Displays the result of integrating a	
	by polarity calculated once every synchronization source as integra	
	Rectifier: DC Displays the result of integrating instar	ntaneous data obtained by
	sampling both current and active power	er by polarity as integrated
	values (When the active power contain DC component will not be integrated))
Integration time Integration time accuracy	1 min. to 10000 hr., settable in 1 min. blo ±100 ppm ±1 dgt. (0°C to 40°C)	ocks
		(roou) : (:0.010/ rda :1 dat)
Integration	(Current or active power measurement accu	racy) + (±0.01% rug. ±1 ugi.)
measurement accuracy Effective measuring range		
measurement accuracy Effective measuring range Display resolution	Until PEAK OVER U or PEAK OVER I occ 999999 (6 digits + decimal point)	curs
measurement accuracy Effective measuring range	Until PEAK OVER U or PEAK OVER I occ 999999 (6 digits + decimal point) - Stopping integration based on integrati - Displaying the integration elapsed time (displ	on time setting (timer) ayed as TIME on panel display)
measurement accuracy Effective measuring range Display resolution	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integrati - Displaying the integration elapsed time (displi - Additional integration by repeatedly sta	on time setting (timer) ayed as TIME on panel display) rting/stopping integration
measurement accuracy Effective measuring range Display resolution Functions	Until PEAK OVER U or PEAK OVER I oc: 999999 (6 digits + decimal point) - Stopping integration based on integrati - Displaying the integration elapsed time (displey - Additional integration by repeatedly state - Backing up integrated values and the integration - Stopping integration when power return	on time setting (timer) ayed as TIME on panel display) rting/stopping integration lapsed time during power outages is
measurement accuracy Effective measuring range Display resolution	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integrati - Displaying the integration elapsed time (displ. - Additional integration by repeatedly sta - Backing up integrated values and the integration of	curs on time setting (timer) ayed as TIME on panel display) rting/stopping integration lapsed time during power outages as displayed time during time du
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integration. Displaying the integration elapsed time (displaying the integration by repeatedly sta-Backing up integrated values and the integration estopping integrated when power return. Stopping integration when power return.	curs on time setting (timer) ayed as TIME on panel display) rting/stopping integration lapsed time during power outages is d values based on external control integretation
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integrati - Displaying the integration elapsed time (display Additional integration by repeatedly sta-Backing up integrated values and the integration e-Stopping integrated values and the integration e-Stopping integration when power return Stopping/starting integration and resetting integrate Corresponds to the range set for START urement Specifications (built-in to-Zero-cross simultaneous calculation me	on time setting (timer) ayed as TIME on panel display) tritng/stopping integration elapsed time during power outages to values based on external control integretation function) ethod (separate windows
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integration. Displaying the integration elapsed time (displaying the integration by repeatedly sta-Backing up integrated values and the integration. Stopping integrated values and the integration. Stopping integration when power return Stopping/starting integration and resetting integrate. Corresponds to the range set for START urement Specifications (built-in 1/2 ero-cross simultaneous calculation me by channel according to the wiring mochuniform thinning between zero-cross events.	cours on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is d values based on external control integretation function) etcl le)
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integration. Displaying the integration elapsed time (displey - Additional integration by repeatedly standardistic by the standard of the integration of the stopping integration when power return Stopping/starting integration and resetting integration. Standardisting integration and resetting integrated Corresponds to the range set for START urement Specifications (built-information of the standard of the standard of the wiring mode)	on time setting (timer) ayed as TIME on panel display) rting/stopping integration elapsed time during power outages is d values based on external control integretation function) ethod (separate windows le) vents after processing with
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integration. Displaying the integration based on integration. Additional integration by repeatedly standardistic by the standard of the integration of the stopping integrated values and the integration. Estopping integration when power return Stopping/starting integration and resetting integrated. Corresponds to the range set for START urement Specifications (built-in 1 - Zero-cross simultaneous calculation me by channel according to the wiring modulification of the synchronization frequency falls with the synchronization fall fall fall fall fall fall fall fal	cours on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is d values based on external control integretation function) ethorus (separate windows le) vents after processing with erpolation)
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integration. Displaying the integration based on integration. Displaying the integration by repeatedly sta-Backing up integrated values and the integration - Stopping integrated values and the integration - Stopping integration when power return Stoppingstarting integration and resetting integrated corresponds to the range set for START urement Specifications (built-in 1 - Zero-cross simultaneous calculation my channel according to the wiring moc - Uniform thinning between zero-cross et a digital antialiasing filter - Interpolation calculations (Lagrange int - When the synchronization frequency falls wi w IEC 61000-4-7:2002 compliant Gaps and overlaps may occur if the measureme	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is d values based on external control integretation function) ethod (separate windows le) vents after processing with erpolation) thin the 45 Hz to 66 Hz range int frequency is not 50 Hz or 60 Hz
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement	Until PEAK OVER U or PEAK OVER Loce 999999 (6 digits + decimal point) Stopping integration based on integration Displaying the integration elapsed time (displey) Additional integration by repeatedly states Backing up integrated values and the integration elapsed integration by repeatedly states Backing up integrated values and the integration of Stopping integration when power return stopping/starting integration and resetting integrated Corresponds to the range set for START Urement Specifications (built-information of START Zero-cross simultaneous calculation meby channel according to the wiring moder of the summary of the synchronization (Lagrange into When the synchronization frequency falls with summary of the synchronization frequency falls out when the synchronizati	cours on time setting (timer) ayed as TIME on panel display) riting/stopping integration lapsed time during power outages is d values based on external control integretation function) etcl etcl etcl etcl etcl etcl etcl etcl
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integration. Displaying the integration based on integration. Displaying the integration by repeatedly sta-Backing up integrated values and the integration - Stopping integration when power return Stopping/starting integration and resetting integrate. Corresponds to the range set for START urement Specifications (built-in 1 - Zero-cross simultaneous calculation me by channel according to the wiring moculation of the companies of the starting integration (Lagrange in 1 - Uniform thinning between zero-cross et a digital antialiasing filter - Uniterpolation calculations (Lagrange in 1 - When the synchronization frequency falls with samples and overlaps may occur if the measureme - When the synchronization frequency falls out - No gaps or overlap will occur - Conforms to synchronization source (SYNC) for the	cours on time setting (timer) ayed as TIME on panel display) riting/stopping integration lapsed time during power outages is d values based on external control integretation function) etcl etcl etcl etcl etcl etcl etcl etcl
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integration. Displaying the integration by repeatedly standardinal integration by repeatedly standardinal integration by repeatedly standardinal integration by repeatedly standardinal integration when power return Stopping integration when power return Stopping/starting integration and resetting integrated Corresponds to the range set for START urement Specifications (built-information of the wiring moderate of the standardinal integration in the synchronization frequency falls and integration of the wiring moderated integration of the synchronization frequency falls of the wiring moderate of the synchronization frequency falls of the wiring moderate integration in the synchronization frequency falls out when the synchronization frequency falls out. No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the synchronization frequency falls out when the synchronization source (SYNC) for the 3 section of the synchronization frequency falls out when the synchronization source (SYNC) for the 3 section of the synchronization frequency falls out when the synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the synchronization source (SYNC) for the 3 section of the s	cours on time setting (timer) ayed as TIME on panel display) rting/stopping integration lapsed time during power outages is d values based on external control integretation function) function ethod (separate windows le) vents after processing with erpolation) thin the 45 Hz to 66 Hz range interpretation for 60 Hz side the 45 Hz to 66 Hz range basic measurement specifications conic voltage content %
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integratio Displaying the integration based on integratio Displaying the integration by repeatedly sta - Backing up integrated values and the integration Stopping integrated values and the integration Stopping integration when power return Stoppingstarting integration and resetting integrate - Corresponds to the range set for START urement Specifications (built-in 1 - Zero-cross simultaneous calculation me by channel according to the wiring moc - Uniform thinning between zero-cross et - a digital antialiasing filter - Uniform thinning between zero-cross et - a digital antialiasing filter - Uniform thinning between zero-cross et - uniform thinning thinning thinning - uniform thinning thinning - uniform th	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is display time. It is a set of the control integretation function) at the control integretation function between the control integretation function the control integretation function at the control integretation function the control integretation function the control integretation function the control integretation at the control integretation that the control integretation integretatio
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integration. Displaying the integration because of integration and integration by repeatedly standarditional integration by repeatedly standarditional integration by repeatedly standardition with the integration of Stopping integration when power return Stopping/starting integration and resetting integrated Corresponds to the range set for START or a standardition of START or a standardition of START or a standardition of START or a digital antialiasing filter or a digital antialiasing filter or interpolation calculations (Lagrange into When the synchronization frequency falls out will specify and overlaps may occur if the measureme of When the synchronization frequency falls out will open overlaps will occur. Conforms to synchronization source (SYNC) for the synchronization source (SYNC) for the synchronization source (SYNC) for the Harmonic outlage phase angle of Harmonic Alarmonic active power of Harmonic Alarmonic Al	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is divalues based on external control integretation function) function) function) thin the 45 Hz to 66 Hz range at the 45 Hz to 66 Hz range interpolation the 45 Hz to 66 Hz range interpolation the 45 Hz to 66 Hz range interpolation to 60 Hz rang
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integration. Displaying the integration based time (displey - Additional integration by repeatedly stales - Backing up integrated values and the integration - Stopping integration when power return Stopping integration when power return Stopping/starting integration and resetting integrated Corresponds to the range set for START Urement Specifications (built-in in - Zero-cross simultaneous calculation me by channel according to the wiring moderate of the stopping integration of the wiring moderate of the stopping integration in which is supported in the support of the stopping in the support of the stopping in the support of the s	cours on time setting (timer) ayed as TIME on panel display) rting/stopping integration lapsed time during power outages is d values based on external control integretation function) ethod (separate windows tele) vents after processing with erpolation) thin the 45 Hz to 66 Hz range integrated to 66 Hz range basic measurement specifications onic voltage content % onic current RMS value poinc current phase angle incia cative power content % narmonic voltage distortion ie fundamental waveform
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integration. Displaying the integration based on integration. Displaying the integration by repeatedly stales acking up integrated values and the integration. Stopping integration by repeatedly stales acking up integrated values and the integration. Stopping integration when power return Stopping/starting integration and resetting integrate. Corresponds to the range set for START urement Specifications (built-in 1 - Zero-cross simultaneous calculation mey channel according to the wiring moder of the properties of the viring moderation o	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is dvalues based on external control integretation function) athod (separate windows le) vents after processing with erpolation) thin the 45 Hz to 66 Hz range interpretation frequency is not 50 Hz or 60 Hz side the 45 Hz to 66 Hz range basic measurement specifications onic voltage content % onic current PMS value onic current phase angle indicactive power content % narmonic voltage distortion e fundamental waveform power fundamental waveform power fundamental waveform
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integration. Displaying the integration based on integration. Displaying the integration by repeatedly standarditional integration by repeatedly standardition by repeatedly standardition and integration and resetting integration when power return Stopping integration when power return Stopping/starting integration and resetting integrated. Corresponds to the range set for START urement Specifications (built-information of the wiring moderate of the synchronization of the wiring moderate of the synchronization (Lagrange into When the synchronization (Lagrange into When the synchronization frequency falls out when the synchronization source (SYNC) for the 3 sharmonic outrage phase angle Harmonic voltage phase angle Harmonic outrage to current the Harmonic voltage falls out of Harmonic outrage for the Harmonic voltage falls out of Harmonic	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is divalues based on external control integretation function) function) function) function (separate windows let) vents after processing with erpolation) thin the 45 Hz to 66 Hz range interepolation threquency is not 50 Hz or 60 Hz side the 45 Hz to 66 Hz range basic measurement specifications onic voltage content % onic current RMS value onic current phase angle onic active power content % narmonic voltage distortion the fundamental waveform power fundamental waveform power fundamental waveform e power fundamental waveform
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integration - Displaying the integration by repeatedly sta - Additional integration by repeatedly sta - Backing up integrated values and the integration - Stopping integration when power return - Stopping integration when power return - Stopping integration when power return - Stopping integration and resetting integrate - Corresponds to the range set for START Urement Specifications (built-in 1) - Zero-cross simultaneous calculation me - Uniform thinning between zero-cross et - a digital antialiasing filter - Uniform thinning between zero-cross et - a digital antialiasing filter - Uniform thinning between zero-cross et - a digital antialiasing filter - Uniform thinning between zero-cross et - uniform t	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is divided time during power outages is divided time during power outages is divided time to the divided time time to the divided time time time time time time time time
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integra- Displaying the integration based on integra- Displaying the integration by repeatedly sta- Backing up integrated values and the integration - Stopping integration when power return Stopping integration when power return Stopping integration and resetting integrate Corresponds to the range set for START Urement Specifications (built-in in Zero-cross simultaneous calculation me by channel according to the wiring mod Uniform thinning between zero-cross ev a digital antialiasing filter Interpolation calculations (Lagrange int When the synchronization frequency falls wi IEC 61000-4-7:2002 compliant Gaps and overlaps may occur if the measurene When the synchronization frequency falls out No gaps or overlap will occur Conforms to synchronization frequency falls out No gaps or overlap will occur Conforms to synchronization frequency falls out Harmonic voltage RMS value Harmonic voltage phase angle Harmonic ourrent content % Harmonic durrent fundamental waveform Notlage current phase difference Total I Total harmonic voltage fundamental waveform Notlage current phase difference fundan Interchannel voltage fundamental wave Interchannel current fundamental wave	cours on time setting (timer) ayed as TIME on panel display) rting/stopping integration lapsed time during power outages is divalues based on external control integretation function) ethod (separate windows tele) vents after processing with erpolation) thin the 45 Hz to 66 Hz range that the 45 Hz to 66 Hz range basic measurement specifications onic voltage content % onic current RMS value poinc current phase angle incic active power content % narmonic voltage distortion to fundamental waveform power fundamental waveform power fundamental waveform onase difference onase difference
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integratio. Displaying the integration by repeatedly sta - Backing up integrated values and the integration Stopping integrated values and the integration Stopping integration when power return Stoppingstarting integration when power return Stoppingstarting integration and resetting integrate Corresponds to the range set for START urement Specifications (built-in 1 - Zero-cross simultaneous calculation me by channel according to the wiring mod - Uniform thinning between zero-cross et a digital antialiasing filter - Uniform thinning between zero-cross et a digital antialiasing filter - Uniform thinning between zero-cross et a digital antialiasing filter - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning between zero-cross et a digital entities of the wiring mod - Uniform thinning betwee	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is dividual state of the time of t
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integra- Displaying the integration by repeatedly sta Backing up integrated values and the integration - Stopping integration by repeatedly sta Backing up integrated values and the integration - Stopping integration when power return Stopping/starting integration and resetting integrated Corresponds to the range set for START urement Specifications (built-in in Zero-cross simultaneous calculation me by channel according to the wiring mod - Uniform thinning between zero-cross ev - a digital antialiaesing filter - Interpolation calculations (Lagrange int - When the synchronization frequency falls w - a legistal antialiaesing filter - Interpolation calculations (Lagrange int - When the synchronization frequency falls out - Was and overlaps may occur if the measureme - When the synchronization frequency falls out - No gaps or overlap will occur - Conforms to synchronization source (SYNC) for the - 3 - Harmonic voltage RMS value - Harmonic voltage phase angle - Harmonic voltage current phase difference - Total harmonic current content % - Harmonic voltage current phase difference - Total in - Voltage current phase difference - Interpolation - Voltage current phase difference fundan - Interchannel voltage fundamental waveform - Active - Apparent power fundamental waveform - Notage current phase difference fundan - Interchannel current fundamental wave	on time setting (timer) ayed as TIME on panel display) riting/stopping integration lapsed time during power outages is divalues based on external control integretation function) function) function) function (separate windows let) vents after processing with erpolation) thin the 45 Hz to 66 Hz range interpolation) thin the 45 Hz to 66 Hz range interpolation integrations integrated by the following the following interpolations on the following interpolations on the following interpolations on the following interpolation interpolat
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels Measurement items	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integration. Displaying the integration based on integration. Displaying the integration by repeatedly stales acking up integrated values and the integration. Stopping integrated values and the integration. Estopping integration when power return Stoppingstarting integration when power return Stoppingstarting integration and resetting integrated values and the integration. Corresponds to the range set for START urement Specifications (built-in 1 - Zero-cross simultaneous calculation my channel according to the wiring mod Uniform thinning between zero-cross et a digital antialiasing filter - Interpolation calculations (Lagrange int. When the synchronization frequency falls wi wide in IEC 61000-4-7:2002 compliant wide in Saps and overlaps may occur if the measureme. When the synchronization frequency falls out wide in Saps and overlaps may occur if the measureme. When the synchronization frequency falls out wide in Saps and overlaps will occur Conforms to synchronization source (SYNC) for the 3. Harmonic voltage RMS value Harmonic voltage phase angle Harmonic voltage current distortion Voltage Harmonic voltage current distortion. Voltage Harmonic voltage current distortion. Active Apparent power fundamental waveform. Active Apparent power fundamental waveform. Peactive Tundamental waveform. Voltage current phase difference fundan. Interchannel voltage fundamental wave interchannel current fundamental wave interchannel current fundamental wave interchannel current fundamental wave interchannel voltage phase angle. Harmonic voltage phase angle. Harmonic voltage current phase difference fundan. Interchannel voltage current phase difference fundan. Harmonic voltage phase angle. Harmonic voltage current phase difference fundan. Harmonic voltage current phase difference fundan.	on time setting (timer) ayed as TIME on panel display) riting/stopping integration lapsed time during power outages is divalues based on external control integretation function) function) function) function (separate windows let) vents after processing with erpolation) thin the 45 Hz to 66 Hz range interpolation) thin the 45 Hz to 66 Hz range interpolation integrations integrated by the following the following interpolations on the following interpolations on the following interpolations on the following interpolation interpolat
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement items Measurement items	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integration Displaying the integration by repeatedly sta Backing up integrated values and the integration - Stopping integration by repeatedly sta Backing up integrated values and the integration - Stopping integration when power return Stopping/starting integration and resetting integrated Corresponds to the range set for START Urement Specifications (built-in in - Zero-cross simultaneous calculation me by channel according to the wiring mod Uniform thinning between zero-cross et a digital antialialising filter Interpolation calculations (Lagrange int When the synchronization frequency falls wi IEC 61000-4-7:2002 compliant Gaps and overlaps may occur if the measurene When the synchronization frequency falls out No agaps or overlap will occur Conforms to synchronization frequency falls out No agaps or overlap will occur Conforms to synchronization source (SYNC) for the 3 Harmonic voltage RMS value Harmonic outrent ocinent % Harmonic outrent content % Harmonic outrent ocinent % Harmonic outrent for ocinent % Harmoni	on time setting (timer) ayed as TIME on panel display) riting/stopping integration lapsed time during power outages is divalues based on external control integretation function) function) function) function (separate windows let) vents after processing with erpolation) thin the 45 Hz to 66 Hz range interpolation) thin the 45 Hz to 66 Hz range interpolation integrations integrated by the following the following interpolations on the following interpolations on the following interpolations on the following interpolation interpolat
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels Measurement items FFT processing word length Number of FFT points Window function Analysis window	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integration. Displaying the integration based on integration. Displaying the integration by repeatedly stales acking up integrated values and the integration. Stopping integration when power return Stoppingsitarting integration when power return Stoppingsitarting integration and resetting integrated values and the integration. Corresponds to the range set for START urement Specifications (built-in 1 - Zero-cross simultaneous calculation my channel according to the wiring modulation and supplied in the viring modulation supplied in the viring modulation and supplied in the viring modulation and supplied in the viring modulation and supplied in the viring modulation supplied in the viring modulation and supplied in the viring modulation and supplied in the viring modulation supplied in the viring	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is divalues based on external control integretation function) athod (separate windows le) when the time of ti
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels Measurement items FFT processing word length Number of FFT points Window function	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integration Displaying the integration based time (displey - Additional integration by repeatedly stales - Backing up integrated values and the integration - Stopping integration when power return - Stopping integration when power return - Stopping integration when power return - Stopping/starting integration and resetting integrated - Corresponds to the range set for START Urement Specifications (built-in 1 Zero-cross simultaneous calculation me by channel according to the wiring moder - Uniform thinning between zero-cross et a digital antialialising filter Interpolation calculations (Lagrange into - When the synchronization frequency falls with less of the synchronization frequency falls out - When the synchronization frequency falls out - Who agas or overlap will occur Conforms to synchronization source (SYNC) for the - Stopping - When the synchronization frequency falls out - No agas or overlap will occur Conforms to synchronization source (SYNC) for the - Stopping - When the synchronization source (SYNC) for the - Stopping - When the synchronization source (SYNC) for the - Harmonic voltage phase angle - Harmonic ourrent content - Harmonic ourrent outled - Harmonic - When the synchronization - Voltage - Current fundamental waveform - Active - Apparent power fundamental waveform - Woltage current phase difference - Total - Interchannel voltage fundamental waveform - Marmonic voltage current fundamental waveform - Woltage current fundamental waveform - Harmonic voltage current fundamental waveform - Woltage - Interchannel current fundamental waveform - Woltage - Interchannel voltage fundamental waveform - Harmonic voltage current fundamental waveform - Harmonic voltage	curs on time setting (timer) ayed as TIME on panel display) rring/stopping integration lapsed time during power outages is divalues based on external control integretation function) ethod (separate windows tel) vents after processing with erpolation) thin the 45 Hz to 66 Hz range the 45 Hz to 66 Hz range basic measurement specifications onic voltage content % onic current RMS value onic current phase angle onic active power content % narmonic voltage distortion te fundamental waveform power fundamental waveform onase difference onase difference aded as data during PC onic current phase angle
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels Measurement items FFT processing word length Number of FFT points Window function Analysis window width Data update rate	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integratio. Displaying the integration based on integratio. Displaying the integration by repeatedly sta - Backing up integrated values and the integration - Stopping integration when power return Stoppingsitarting integration and resetting integrate Corresponds to the range set for START urement Specifications (built-in 1) - Zero-cross simultaneous calculation may by channel according to the wiring mod - Uniform thinning between zero-cross et a digital antialiasing filter - Interpolation calculations (Lagrange int - When the synchronization frequency falls wi - IEC 61000-4-7:2002 compliant - Was and overlaps may occur if the measureme - When the synchronization frequency falls out - No gaps or overlap will occur - Conforms to synchronization source (SYNC) for the - 3 - Harmonic voltage RMS value - Harmonic voltage phase angle - Harmonic voltage current phase difference - Total harmonic active power - Harmonic active power - Harmonic voltage fundamental - Waveform - Voltage current phase difference - Total harmonic dative power - Harmonic voltage fundamental waveform - Active - Apparent power fundamental waveform - Reactiv - Power factor fundamental waveform - Reactiv - Power factor fundamental waveform - Harmonic voltage phase angle - Harmonic voltage current phase difference - Total harmonic voltage phase angle - Harmonic voltage current phase difference - Total harmonic voltage phase angle - Harmonic voltage current phase difference - Total harmonic voltage phase angle - Harmonic voltage current phase difference - Total harmonic voltage current phase difference - Total harmonic voltage current phase difference - Total harmonic voltage current phase difference - To	curs on time setting (timer) ayed as TIME on panel display) rring/stopping integration lapsed time during power outages is divalues based on external control integretation function) ethod (separate windows tel) vents after processing with erpolation) thin the 45 Hz to 66 Hz range the 45 Hz to 66 Hz range basic measurement specifications onic voltage content % onic current RMS value onic current phase angle onic active power content % narmonic voltage distortion te fundamental waveform power fundamental waveform onase difference onase difference aded as data during PC onic current phase angle
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels Measurement items FFT processing word length Number of FFT points Window function Analysis window width Data update rate Synchronization frequency range	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integration Displaying the integration by repeatedly sta Backing up integrated values and the integration - Stopping integration by repeatedly sta Backing up integrated values and the integration - Stopping integration when power return Stopping/starting integration and resetting integrate Corresponds to the range set for START urement Specifications (built-in 1 Zero-cross simultaneous calculation mey channel according to the wiring mod value of the value of the viring mod	curs on time setting (timer) ayed as TIME on panel display) rring/stopping integration lapsed time during power outages is divalues based on external control integretation function) ethod (separate windows tel) vents after processing with erpolation) thin the 45 Hz to 66 Hz range the 45 Hz to 66 Hz range basic measurement specifications onic voltage content % onic current RMS value onic current phase angle onic active power content % narmonic voltage distortion te fundamental waveform power fundamental waveform onase difference onase difference aded as data during PC onic current phase angle
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels Measurement items FFT processing word length Number of FFT points Window function Analysis window width Data update rate Synchronization frequency range Maximum	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) - Stopping integration based on integration. Displaying the integration by repeatedly sta - Backing up integrated values and the integration Stopping integration by repeatedly sta - Backing up integrated values and the integration Stopping integration when power return Stopping integration when power return Stopping integration and resetting integrate. Corresponds to the range set for START urement Specifications (built-in 1) - Zero-cross simultaneous calculation me by channel according to the wiring mod - Uniform thinning between zero-cross eva - a digital antialiasing filter - Interpolation calculations (Lagrange int - When the synchronization frequency falls wi - » IEC 61000-4-7:2002 compliant - » Gaps and overlaps may occur if the measureme - When the synchronization frequency falls out - No gaps or overlap will occur - Conforms to synchronization source (SYNC) for the - 3 - Harmonic voltage RMS value - Harmonic voltage phase angle - Harmonic voltage current phase difference - Total harmonic active power - Harmonic outrent distortion - Voltage - Current fundamental waveform - Notage current phase difference fundan - Interchannel voltage fundamental wave - Power factor fundamental waveform - Pased fundamental waveform - Harmonic voltage phase angle - Harmonic voltage phase angle - Harmonic voltage phase angle - Harmonic voltage fundamental wave - Power factor fundamental waveform - Notage current phase difference fundan - Interchannel voltage fundamental wave - Power factor fundamental waveform - Pased fiference - Total harmonic voltage phase angle - Harmonic voltage current phase difference - Power factor fundamental waveform - Reactive - Power factor	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is dvalues based on external control integretation function) athod (separate windows le) yents after processing with erpolation) thin the 45 Hz to 66 Hz range interpolation trequency is not 50 Hz or 60 Hz side the 45 Hz to 66 Hz range basic measurement specifications onic voltage content % onic current RMS value onic current phase angle onic active power content % narmonic voltage distortion er fundamental waveform power fundamental waveform enental waveform onase difference onace difference on the current phase angle onic active power content waveform on the power fundamental waveform on the power fundamental waveform on the current phase angle on the
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels Measurement items FFT processing word length Number of FFT points Window function Analysis window width Data update rate Synchronization frequency range	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integration Displaying the integration by repeatedly sta Backing up integrated values and the integration - Stopping integration by repeatedly sta Backing up integrated values and the integration - Stopping integration when power return Stopping/starting integration and resetting integrate Corresponds to the range set for START urement Specifications (built-in 1 Zero-cross simultaneous calculation mey channel according to the wiring mod value of the value of the viring mod value of the mod value of the mod value of the mod value of the measurem va	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is divalues based on external control integretation function) function funct
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels Measurement items FFT processing word length Number of FFT points Window function Analysis window width Data update rate Synchronization frequency range Maximum	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integratio Displaying the integration by repeatedly sta Additional integration by repeatedly sta Backing up integrated values and the integration - Stopping integration when power return Stopping integration when power return Stopping/starting integration and resetting integrated Corresponds to the range set for START urement Specifications (built-inf Zero-cross simultaneous calculation me by channel according to the wiring mod Uniform thinning between zero-cross et a digital antialiasing filter Interpolation calculations (Lagrange int When the synchronization frequency falls out When the synchronization frequency falls out No gaps and overlaps may occur if the measureme When the synchronization frequency falls out No gaps or overlap will occur Conforms to synchronization source (SYNC) for the 3 I-Harmonic voltage RMS value I-Harmonic voltage phase angle I-Harmonic voltage phase angle I-Harmonic ourrent content % I-Harmonic ourrent content % I-Harmonic voltage phase in I-Harmonic voltage current gistortion I-Votal harmonic current distortion I-Votal harmonic ourrent distortion I-Votal parent on the voltage fundamental waveform I-Harmonic voltage fundamental waveform I-Harmonic voltage fundamental waveform I-Harmonic voltage fundamental wave I-Harmonic voltage fundamental w	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is dvalues based on external control integretation function) function) function) function (separate windows let) //ents after processing with erpolation) thin the 45 Hz to 66 Hz range interpolation frequency is not 50 Hz or 60 Hz range interpolation for the 45 Hz to 66 Hz range basic measurement specifications onic current RMS value onic current phase angle onic current phase angle onic active power content % narmonic voltage content % narmonic voltage distortion power fundamental waveform power fundamental waveform power fundamental waveform enaltal waveform base difference on the fundamental waveform on t
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels Measurement items FFT processing word length Number of FFT points Window function Analysis window width Data update rate Synchronization frequency range Maximum	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integration Displaying the integration by repeatedly sta Backing up integrated values and the integration - Stopping integration by repeatedly sta Backing up integrated values and the integration - Stopping integration when power return Stopping integration when power return Stopping integration and resetting integrate Corresponds to the range set for START urement Specifications (built-in 1 Zero-cross simultaneous calculation me by channel according to the wiring mod value of the wiring mod value of the wiring mod uniform thinning between zero-cross eva a digital antialiasing filter interpolation calculations (Lagrange int When the synchronization frequency falls wi » IEC 61000-4-7:2002 compliant » Gaps and overlaps may occur if the measureme When the synchronization frequency falls out No gaps or overlap will occur Conforms to synchronization source (SYNC) for the 3 Harmonic voltage RMS value Harmonic current content % Harmonic voltage phase angle Harmonic voltage phase angle Harmonic voltage phase angle Harmonic voltage fundamental Harmonic voltage fundamental Waveform Voltage current phase difference fundan Interchannel voltage fundamental wave form Voltage current phase difference fundan Interchannel current fundamental wave form Voltage current phase difference fundan Interchannel voltage fundamental wave form Voltage current phase difference fundan Interchannel voltage phase angle Harmonic voltage phase angle Harmonic voltage phase angle Harmonic voltage fundamental wave form Voltage current phase difference fundan Interchannel voltage fundamental wave form Voltage current phase difference fundan Interchannel voltage fundamental wave form Voltage current phase difference fundan Harmonic voltage phase angle Harmonic voltage phase	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is dvalues based on external control integretation function) ethod (separate windows le) yents after processing with erpolation) thin the 45 Hz to 66 Hz range interpolation frequency is not 50 Hz or 60 Hz side the 45 Hz to 66 Hz range basic measurement specifications onic voltage content % onic current RMS value onic current phase angle onic active power content % narmonic voltage distortion e fundamental waveform power fundamental waveform enantal waveform one active power content waveform on the fundamental waveform on th
measurement accuracy Effective measuring range Display resolution Functions External control Measuring range Harmonic Meas Measurement method Synchronization source Measurement channels Measurement items FFT processing word length Number of FFT points Window function Analysis window width Data update rate Synchronization frequency range Maximum	Until PEAK OVER U or PEAK OVER I oct 999999 (6 digits + decimal point) Stopping integration based on integratio Displaying the integration by repeatedly sta Additional integration by repeatedly sta Backing up integrated values and the integration - Stopping integration when power return Stopping integration when power return Stopping/starting integration and resetting integrated Corresponds to the range set for START urement Specifications (built-inf Zero-cross simultaneous calculation me by channel according to the wiring mod Uniform thinning between zero-cross et a digital antialiasing filter Interpolation calculations (Lagrange int When the synchronization frequency falls out When the synchronization frequency falls out No gaps and overlaps may occur if the measureme When the synchronization frequency falls out No gaps or overlap will occur Conforms to synchronization source (SYNC) for the 3 I-Harmonic voltage RMS value I-Harmonic voltage phase angle I-Harmonic voltage phase angle I-Harmonic ourrent content % I-Harmonic ourrent content % I-Harmonic voltage phase in I-Harmonic voltage current gistortion I-Votal harmonic current distortion I-Votal harmonic ourrent distortion I-Votal parent on the voltage fundamental waveform I-Harmonic voltage fundamental waveform I-Harmonic voltage fundamental waveform I-Harmonic voltage fundamental wave I-Harmonic voltage fundamental w	on time setting (timer) ayed as TIME on panel display) rrting/stopping integration lapsed time during power outages is dvalues based on external control integretation function) function) function) function (separate windows let) //ents after processing with erpolation) thin the 45 Hz to 66 Hz range interpolation frequency is not 50 Hz or 60 Hz range interpolation for the 45 Hz to 66 Hz range basic measurement specifications onic current RMS value onic current phase angle onic current phase angle onic active power content % narmonic voltage content % narmonic voltage distortion power fundamental waveform power fundamental waveform power fundamental waveform enaltal waveform base difference on the fundamental waveform on t



Analysis order	2nd to 50th	
upper limit setting		
Measurement	f.s.: Measurement range	
accuracy	Frequency (f)	Voltage, Current, Active power
	DC	±0.4%rdg.±0.2%f.s.
	10 Hz ≤ f < 30 Hz	±0.4%rdg.±0.2%f.s.
	30 Hz ≤ f ≤ 400 Hz	±0.3%rdg.±0.1%f.s.
	400 Hz < f ≤ 1 kHz	±0.4%rdg.±0.2%f.s.
	1 kHz < f ≤ 5 kHz	±1.0%rdg.±0.5%f.s.
	5 kHz < f ≤ 8 kHz	±4.0%rdg.±1.0%f.s.
	For DC, add ±1 mA to current and (±1 mA	A) × (voltage read value) to active power.

Display Specifications

Display	7-segment LED
Number of display parameters	4
	Other than integrated values: 99999 count
	Integrated values: 999999 count
Display update rate	200 ms to 20 s (varies with number of averaging iterations setting)

Synchronized C	ontrol
Functions	Timing of calculations, display updates, data updates, integration start/stop/reset
	events, display hold operation, key lock operation, and zero-adjustment operation for the slave PW3336/ PW3337 are synchronized with the master PW3336/ PW3337.
Terminal	BNC terminal × 1 (non-isolated)
Terminal name	EXT SYNC
I/O settings	Off: Synchronized control function off
-	In : The EXT SYNC terminal is set to input, and a dedicated
	synchronization signal can be input (slave).
	Out: The EXT SYNC terminal is set to output, and a dedicated
	synchronization signal can be output (master).
Number of units for which	1 master unit and 7 slave units (total 8 units)
synchronized control can	
be performed	

External Current Sensor Input Specifications (built-in feature)

Terminal	Isolated BNC terminals, 1 for each channel						
Current sensor	Off / Type 1 / Type 2						
type switching	When set to off, input from the external current sensor input terminal is ignored						
Current sensor	TYPE1 (100 A to 5000 A sensors)						
options	9660, 9661, 9669,	CT9667-01/-02/-03					
	TYPE2 (20 A to 1000 A	A sensors, Power suppl	y is required to use)				
	CT6862-05, CT686	3-05, CT6875, CT6876	, CT6877, 9272-05,				
	CT6841-05, CT6843	-05, CT6844-05, CT684	5-05, CT6846-05, etc.				
Current	Auto / 10 A / 20 A / 50	Auto / 10 A / 20 A / 50 A (range noted on panel)					
measurement	User-selectable for each wiring mode. Can be read directly by						
range	manually setting the CT ratio.						
Power range	Depends on the comb	ination of voltage and o	current ranges; from				
configuration	60.000W to 15.000MW (also applies to VA, var)						
Measurement accuracy							
Current, Active power							
Frequency	Input < 50%f.s.	50%f.s. ≤ Input < 100%f.s.	100%f.s. ≤ Input				

direit, Motive power			
Frequency	Input < 50%f.s.	50%f.s. ≤ Input < 100%f.s.	100%f.s. ≤ Input
DC	±0.2%rdg. ±0.6%f.s.	±0.2%rdg. ±0.6%f.s.	±0.8%rdg.
0.1Hz≤ f <16Hz	±0.2%rdg. ±0.2%f.s.	±0.4%rdg.	±0.4%rdg.
16Hz≤ f < 45Hz	±0.2%rdg. ±0.2%f.s.	±0.4%rdg.	±0.4%rdg.
45Hz ≤ f ≤ 66Hz	±0.2%rdg. ±0.1%f.s.	±0.3%rdg.	±0.3%rdg.
66Hz < f ≤ 500Hz	±0.2%rdg. ±0.2%f.s.	±0.4%rdg.	±0.4%rdg.
500Hz < f ≤ 1kHz	±0.2%rdg. ±0.3%f.s.	±0.5%rdg.	±0.5%rdg.
1kHz < f ≤ 10kHz	±5.0%rdg.	±5.0%rdg.	±5.0%rdg.

50kHz < f ≤ 100kHz Each measurement range

f.s.: Each measurement range
•To obtain the current or active power accuracy, add the current sensor's accuracy to the above current and active power accuracy figures.
•The effective measurement range and frequency characteristics conform to the current sensor's specifications.

Temperature characteristics

conform to the current sensor's specifications.

•Values for current, and active power for which

0.1 Hz ≤ f < 10 Hz are for reference only.

•Values for voltage in excess of 220 V active power for which

10 Hz ≤ f < 16 Hz are for reference only.

Current, active power:

±0.08% f.s./°C (instrument temperature coefficient;
f.s.: instrument measurement range)

Add current sensor temperature coefficient to above.

•Instrument: ±0.15% f.s. or less (45 Hz to 66 Hz with power factor = 0)

•Internal circuit voltage/current phase difference: ±0.086°

•Add the current sensor phase accuracy to the internal circuit voltage/current phase difference noted above.

•(External current sensor input instrument accuracy) + (±2.0% f.s.)

(f.s.:current peak range) Power factor effects Current peak value measurement

accuracy Harmonic measurement accuracy

(t.s.:current peak range)
Add the current sensor accuracy to the above.

Frequency

Voltage

Current, Active power

DC

±0.4%rdg, ±0.2%f.s. ±0.6%rdg, ±0.8%f.s.

10Hz≤f < 30Hz
±0.4%rdg, ±0.2%f.s. ±0.6%rdg, ±0.4%f.s.

30Hz≤f ≤ 400Hz
±0.3%rdg, ±0.1%f.s. ±0.5%rdg, ±0.3%f.s.

400Hz < f ≤ 1kHz
±0.4%rdg, ±0.2%f.s. ±0.6%rdg, ±0.5%f.s.

1kHz < f ≤ 5kHz
±1.0%rdg, ±0.5%f.s. ±1.0%rdg, ±5.5%f.s. 5kHz < f ≤ 8kHz ±4.0%rdg. ±1.0%f.s. ±2.0%rdg. ±6.0%f.s.

f.s.: Each measurement range
•To obtain the current or active power accuracy, add the current sensor's accuracy to the above current and active power accuracy figures.

D/A Output Specifications (PW3336-02/-03 and PW3337-02/-03)

Number of	116
output channels	
Configuration	16-bit D/A converter (polarity + 15 bits)
Output parameters	U1 to U3 (voltage level) or u1 to u3 (instantaneous voltage waveform) (switchable) 11 to 13 (current level) or i1 to i3 (instantaneous current waveform) (switchable) P1 to P3 (active power level) or p1 to p3 (instantaneous power waveform) (switchable) Psum (active power level) or Hi-Psum (high-speed active power level) (switchable) Psum and Hi-Psum output is not available (0 V) when using the 1P2W wiring mode.P12 is output when using 1P3W, 3P3W, or 3P3W2M, and P123 is output when using 3V3A, 3P3W3M, or 3P4W. D/A1 to D/A3 : Select any 3 from channel or sum value for Voltage, Current, Active power, Apparent power, Reactive power, Power factor, Phase angle, Total harmonic voltage/current ifsortion, Inter-channel voltage/current fundamental wave phase difference, Voltage/current rest factor, Time average current/active power, Voltage/current ripple rate, Frequency, Efficiency, Current integration, Active power integration (Harmonic output is not available for individual orders). Hi-P1 to Hi-P3 and Hi-Psum (high-speed active power level): Fixed to AC+DC For other level output, select AC+DC, AC+DC Umn, DC, AC, or fnd.

Output accuracy	f.s.: Relative to the output voltage rated value for each output parameter				
	Level output				
	: (Output parameter measurement accuracy) + (±0.2% f.s.)				
	High-speed active power level output				
	: (Output parameter measurement accuracy) + (±0.2% f.s.)				
	Instantaneous waveform output				
	: (Output parameter measurement accuracy) + (±1.0% f.s.) Instantaneous voltage, instantaneous current: RMS value level				
	Instantaneous voltage, instantaneous current. Hivis value ievel				
Output frequency	Instantaneous waveform output, high-speed active power level output				
band	At DC or 10 Hz to 5 kHz, accuracy is as defined above.				
Output voltage	Level output				
	Voltage, Current, Active power, Apparent power,				
	Reactive power, Time average current/active power				
	: ±2 V DC for ±100% of range				
	Power factor				
	: ±2 V DC at ±0.0000, 0 V DC at ±1.0000				
	Phase angle				
	: 0 V DC at 0.00°, ±2 V DC at ±180.00° Voltage/current ripple rate, total harmonic voltage/current distortion				
	: + 2 V DC at 100.00%				
	Voltage/current crest factor				
	: +2 V DC at 10.000				
	Frequency				
	: Varies with measured value.				
	+2 V DC per 100 Hz from 0.1000 Hz to 300.00 Hz				
	+2 V DC per 10 kHz from 300.01 Hz to 30.000 kHz				
	+2 V DC per 100 kHz from 30.001 kHz to 220.00 kHz				
	Efficiency : +2 V DC at 200.00%				
	Current integration, active power integration				
	: ±5 V DC at (range) × (integration set time)				
	Waveform output				
	: 1 V f.s. relative to 100% of range				
Maximum output voltage	Approx. ±12 V DC				
Output update rate	Level output				
	: Fixed at 200 ms ±50 ms (approx. 5 times per sec.)				
	Update rate is unrelated to number of averaging iterations				
	setting and display hold operation. Waveform output				
	: Approx. 11.4 µs (approx. 87.5 kHz)				
	High-speed P level				
	: Updated once every cycle for the input waveform set as the synchronization source.				
Response time	Level output				
	: 0.6 sec. or less (when the input changes abruptly from 0% to 90%, or from				
	100% to 10%, the time required in order to satisfy the accuracy range)				
	Waveform output				
	: 0.2 ms or less				
	High-speed active power level output				
Tomporatura abarasteriatia	: 1 cycle ±0.05% f.s./°C or less				
Output resistance	100 0 +5 0				
Output resistance	100 12 ±3 12				

External control (huilt-in feature)

External control	(built in leature)							
Functions	Integration st	Integration start/stop, integration reset and hold via external control						
External control	Input signal level: 0 to 5 V (high-speed CMOS level or shorted [Lo]/open [Hi])							
	Functions	Functions External control signal External control termi						
	Start	$Hi \rightarrow Lo$	START/STOP					
	Stop	Lo → Hi	017 (1170101					
	Reset	Lo interval of at least 200 ms	RESET					
	Hold on Hi → Lo							
	Hold off	Hold off I o → Hi HOLD						

GP-IB interface (PW3336-01/-03, PW3337-01/-03)

	(* ************************************
Method	IEEE488.1 1978 compliant; see IEEE488.2 1987
	Interface functions: SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0
	Remote control by controller
Address	00 to 30

RS-232C interface (built-in feature)

Connector	D-sub 9-pin connector x 1
Communication	Full duplex, Start-stop synchronization, Stop bits: 1 (fixed),
method	Data bits: 8 (fixed), Parity: None
	Remote control by controller
Communication Speed	9600bps/ 38400bps

LAN interface (built-in feature)

Connector	RJ-45 connector x 1			
	IEEE802.3 compliant			
Transmission Method	10BASE-T/100BASE-TX (automatic detection)			
Protocol	TCP/IP			
Functions	HTTP server (remote operation, firmware updates)			
	Dedicated ports (command control, data transfer)			
	Remote control by controller (REMOTE lamp will light up.)			

General Specifications (product guaranteed for 3 year) Operating environment | Indoors, altitude up to 2000 m (6562-ft.), pollution degree 2 | Operating temperature | 0 to 40°C (32 to 104°F), 80% RH or less (non-condensating)

and humidity	
Storage temperature and humidity	-10 to 50°C (14 to 122°F) 80% RH or less (non-condensating)
Dielectric strength	4290 Vrms AC (sensed current: 1 mA) Between voltage input terminals and (case, interface, and output terminals) Between current direct input terminals and (case, interface, and output terminals) Between voltage input terminals and current direct input terminals
Maximum rated voltage to earth	Voltage input terminal, Current direct input terminal Measurement category III 600 V (anticipated transient overvoltage 6000 V) Measurement category II 1000 V (anticipated transient overvoltage 6000 V)
Maximum input voltage	Between voltage input terminals U: 1000 V, ±1500 Vpeak
Maximum input current	Between +/- current direct input terminals I: ±70 A, ±100 Apeak
Applicable Standards	Safety: EN61010, EMC: EN61326 Class A/ EN61000-3-2/ EN61000-3-3
Rated supply voltage	100 VAC to 240 VAC, Rated power supply frequency: 50/60 Hz
Maximum rated power	40 VA or less
Dimensions	Approx. 305W(12.01") × 132H(5.20") × 256D(10.08") mm
	(excluding protrusions)
Mass	PW3336 series Approx. 5.2 kg (183.4 oz.) PW3337 series Approx. 5.6 kg (197.5 oz.)
Accessories	Instruction manual \times 1, Measurement guide \times 1, Power cord \times 1

PW3335 Specifications

In	nut	Sne	ecifi	icati	ions

P P					
Measurement line type	Single-phase 2-wire(1P2W)				
Input methods	Voltage Isolated input, resistive voltage divider method				
	Current Isolated input, shunt input method				
Voltage measurement	AUTO/ 6 .0000 V/ 15.000 V/ 30.000 V/ 60.000 V/ 150.00 V/				
ranges	300.00 V/ 600.00 V/ 1.0000 kV				
Current	AUTO/ 1.0000 mA/ 2.0000 mA/ 5.0000 mA/ 10.000 mA/				
measurement	20.000 mA/ 50.000 mA/ 100.00 mA/ 200.00 mA/ 500.00 mA/				
ranges	1.0000 A/ 2.0000 A/ 5.0000 A/ 10.000 A/ 20.000 A				
Power ranges	Depends on the combination of voltage and current ranges;				
	From 6.0000 mW to 20.000 kW (also applies to VA, var)				
	The details are as below.				
Input resistance	Voltage input terminal: 2 MΩ				
	Current input terminal: 1 mA to 100 mA range 520 mΩ or less				
	200 mA to 20 A range 15 mΩ or less				

ъ.		. 0 '(' .'	
Ragin	Naggurama	nt Specification:	c

Laurent van die terrene	The details are as being						
Input resistance	Voltage input terminal:						
	Current input terminal: 1 mA to 100 mA range 520 mΩ or less						
	200 mA to 20 A range 15 mΩ or less						
Basic Measuren	nent Specification:	S					
Measurement Simultaneous voltage and current digital sampling, zero-cross							
			i ulgitai saii	ipiirig, zero-cross			
method	simultaneous calculati	OH					
Sampling frequency	Approx. 700 kHz						
A/D converter resolution							
Frequency bandwidth	DC, 0.1 Hz to 100 kHz (Va	alues within 0	$.1Hz \le f < 10 F$	Hz are for reference only)			
Synchronization sources	U, I, DC (fixed to 200 r	ns)					
Measurement items	Voltage	Current		Active power			
	Apparent power	Reactive p	ower	Power factor			
	Phase angle	Frequency	,	Current integration			
	Active power integra	ation	Integration				
	Voltage waveform pe			veform peak value			
	Voltage crest factor	Jan value	Current cre				
	Maximum current ra	tio	Time avera				
			Tillic avera	ige current			
	Time average active	power	0	-lt-			
	Voltage ripple rate		Current rip	pie rate			
	Harmonic parameters						
	Harmonic voltage RI			current RMS value			
	Harmonic active pov			onic voltage distortion			
	Total harmonic curren	t distortion		ntal wave voltage			
	Fundamental wave of	current	Fundamen	tal wave active power			
	Fundamental wave app	parent powe	r Fundament	al wave reactive power			
	Fundamental wave p	ower facto	r (Displacer	ment power factor)			
	Fundamental wave v	oltage curr	ent phase o	lifference			
	Harmonic voltage co						
	Harmonic current co						
	Harmonic active pov			7			
	(The following parameters		nloaded as da	ta via PC communication)			
	Harmonic voltage pl						
	Harmonic current ph						
	Harmonic voltage cu	urrent phas	<u>e difference</u>	:			
Rectifiers	AC+DC : AC+DC mea	surement					
	Display of true RMS	values for b	ooth voltage	and current			
	AC+DC Umn : AC+DC	measuren	nent				
	Display of average v			verted values for			
	voltage and true RM						
	DC : DC measurement						
	Display of simple av		hoth voltage	and current			
				ent DC value) for active power			
	AC : AC measurement		O valuo) x (ouri	site bo value) for active power			
	Display of values ca						
				a and aument			
	√(AC+DC value)² - (DC Display of values ca	value) ² 101	both voitag	e and current			
	Display of values ca	iculated by					
	(AC+DC value) - (DC						
	FND : Extraction and display of						
Zero-cross Filter	100 Hz: 0.1 Hz to 100 I	Hz 500 Hz	:: 0.1 Hz to 5	600 Hz			
	5 kHz: 0.1 Hz to 5 kHz	100 kH	z: 0.1 Hz to	100 kHz			
Measurement accuracy							
,							
Voltage	loout . FOO/f -	F00/4 c - 1		1000/10 111			
Frequency (f)	Input < 50%f.s.		out < 100%f.s.	100%f.s. ≤ Input			
DC	±0.1rdg.±0.1%f.s.		J.±0.1%f.s.	±0.2%rdg.			
0.1Hz≤f<16Hz	±0.1%rdg.±0.2%f.s.		%rdg.	±0.3%rdg.			
16Hz≤f<45Hz	±0.1%rdg.±0.1%f.s.	±0.2°	%rdg.	±0.2%rdg.			
45Hz≤f≤66Hz	±0.1%rdg.±0.05%f.s.		%rdg.	±0.15%rdg.			
66Hz <f≤500hz< td=""><td>±0.1%rdg.±0.1%f.s.</td><td></td><td>%rdg.</td><td>±0.2%rdg.</td></f≤500hz<>	±0.1%rdg.±0.1%f.s.		%rdg.	±0.2%rdg.			
500Hz <f≤10khz< td=""><td>±0.1%rdg.±0.2%f.s.</td><td></td><td>%rdg.</td><td>±0.3%rdg.</td></f≤10khz<>	±0.1%rdg.±0.2%f.s.		%rdg.	±0.3%rdg.			
10kHz <f≤50khz< td=""><td>±0.5%rdg.±0.3%f.s.</td><td>±0.8°</td><td>%rdg.</td><td>±0.8%rdg.</td></f≤50khz<>	±0.5%rdg.±0.3%f.s.	±0.8°	%rdg.	±0.8%rdg.			
50kHz <f≤100khz< td=""><td>±2.1%rdg.±0.3%f.s.</td><td></td><td>%rdg.</td><td>±2.4%rdg.</td></f≤100khz<>	±2.1%rdg.±0.3%f.s.		%rdg.	±2.4%rdg.			
	711 251 2112 701101		-9-	==:::====			
Current							
Frequency (f)	Input < 50%f.s.	50%f.s. ≤ Inc	out < 100%f.s.	100%f.s. ≤ Input			
DC	±0.1%rdg.±0.1%f.s.		j.±0.1%f.s.	±0.2%rdg.			
0.1Hz≤f<16Hz	±0.1%rdg.±0.2%f.s.		%rdg.	±0.2%rdg.			
16Hz≤f<45Hz	±0.1%rdg.±0.1%f.s.		%rdg.	±0.2%rdg.			
45Hz≤f≤66Hz	±0.1%rdg.±0.05%f.s.		%rdg.	±0.15%rdg.			
66Hz <f≤500hz< td=""><td colspan="5">Hz ±0.1%rdg.±0.1%f.s. ±0.2%rdg. ±0.2%rdg.</td></f≤500hz<>	Hz ±0.1%rdg.±0.1%f.s. ±0.2%rdg. ±0.2%rdg.						
500Hz <f≤1khz< td=""><td>±0.1%rdg.±0.2%f.s.</td><td></td><td>%rdg.</td><td>±0.3%rdg.</td></f≤1khz<>	±0.1%rdg.±0.2%f.s.		%rdg.	±0.3%rdg.			
1kHz <f≤10khz td="" ±(0.03+0.07×f)%rdg.="" ±(0.23+0.07×f)%<="" ±(0.23+0.07×f)%rdg.=""></f≤10khz>							
100012	±0.2%f.s.	_(0.2010.0	, , , , ag.	(0.2010.07A1 //31dg.			
10kHz <f≤100khz< td=""><td></td><td>±(U.6+0.0</td><td>4×F)%rag.</td><td>±(0.6+0.04×F)%rdg.</td></f≤100khz<>		±(U.6+0.0	4×F)%rag.	±(0.6+0.04×F)%rdg.			
	±0.3%f.s.						

Ac	ctive power			
Frequency (f)		Input < 50%f.s.	50%f.s. ≤ Input < 100%f.s.	100%f.s. ≤ Input
	DC	±0.1%rdg.±0.1%f.s.	±0.1%rdg.±0.1%f.s.	±0.2%rdg.
	0.1Hz≤f<16Hz	±0.1%rdg.±0.2%f.s.	±0.3%rdg.	±0.3%rdg.
	16Hz≤f<45Hz	±0.1%rdg.±0.1%f.s.	±0.2%rdg.	±0.2%rdg.
	45Hz≤f≤66Hz	±0.1%rdg.±0.05%f.s.	±0.15%rdg.	±0.15%rdg.
	66Hz <f≤500hz< td=""><td>±0.1%rdg.±0.1%f.s.</td><td>±0.2%rdg.</td><td>±0.2%rdg.</td></f≤500hz<>	±0.1%rdg.±0.1%f.s.	±0.2%rdg.	±0.2%rdg.
	500Hz <f≤1khz td="" ±0.1%rdg.±0.2%f.s.<=""><td>±0.3%rdg.</td><td>±0.3%rdg.</td></f≤1khz>		±0.3%rdg.	±0.3%rdg.
	1kHz <f≤10khz< td=""><td>±(0.03+0.07×F)%rdg.</td><td>±(0.23+0.07×F)%rdg.</td><td>±(0.23+0.07×F)%rdg.</td></f≤10khz<>	±(0.03+0.07×F)%rdg.	±(0.23+0.07×F)%rdg.	±(0.23+0.07×F)%rdg.
		±0.2%f.s.		
	10kHz <f≤50khz< td=""><td>±(0.07×F)%rdg.</td><td>±(0.3+0.07×F)%rdg.</td><td>±(0.3+0.07×F)%rdg.</td></f≤50khz<>	±(0.07×F)%rdg.	±(0.3+0.07×F)%rdg.	±(0.3+0.07×F)%rdg.
±0.3%f.s. 50kHz <f≤100khz td="" ±(0.6+0.07×f)9<=""><td>±0.3%f.s.</td><td></td><td></td></f≤100khz>		±0.3%f.s.		
			±(0.9+0.07×F)%rdg.	±(0.9+0.07×F)%rdg.
		±0.3%f.s.		

- Values for f.s. depend on measurement ranges
- "F" in the tables refers to the frequency in kHz.

 When using the 1 mA/ 2 mA range:
 Add ±1 μA to 0.1 Hz to 100 kHz measurement accuracy for current.

Add ($\pm 1 \mu A$) × (voltage read value) to 0.1 Hz to 100 kHz measurement accuracy for active power.

•When using the 200 mA/ 500 mA/ 1 A/ 2 A/ 5 A/ 10 A/ 20 A range:

- Add ± 1 mA to DC measurement accuracy for current. Add (± 1 mA) x (voltage read value) to DC measurement accuracy for active power. When using the 1 mA/2 mA/5 mA/10 mA/20 mA/50 mA/100 mA range Add ±10 µA to DC measurement accuracy for current. Add (\pm 10 µÅ) × (voltage read value) to DC measurement accuracy for active power. •When using the 200 mA/ 500 mA/ 1 A/ 2 A/ 5 A/ 10 A/ 20 A range:
- Add \pm (0.02×F)% rdg, to the measurement accuracy for current and active power for which (10 kHz < f \le 100 kHz).

 •The measurement results for following input are considered reference values: Values for voltage, current, and active power for which 0.1 Hz \le f < 10 Hz. Values for voltage, current, and active power in excess of 220 V or 20 A for which $10 \, \text{Hz} \cdot \text{s}^{-1} < 16 \, \text{Hz}$. Values for current and active power in excess of 20 A for which $500 \, \text{Hz} < \text{f} < 50 \, \text{kHz}$. Values for current and active power in excess of 10 A for which $500 \, \text{Hz} < \text{f} \le 100 \, \text{kHz}$.
- Values for voltage and active power in excess of 750 V for which 30 ktz < f ≤ 100 ktdz.</th>

 Voltage
 1% to 150% of the range (1000 V range, up to 1000 V)

 Current
 1% to 150% of the range (when using 1000 V range, up to 150%)
 Effective measuring range
- However, valid when the voltage and current fall within the effective measurement range ±600% of each voltage range However, for 300 V, 600 V, and 1000 V ranges, ±1500 V peak Maximum effective
- peak voltage Maximum effective ±600% of each current range However, for 20 A range, ±60 A peak peak current
- Guaranteed accuracy Post-adjustment accuracy guaranteed Conditions of 6 months

Temperature and humidity range: 23°C±5°C (73°F±9°F), 80% RH or less Warm-up time: 30 minutes guaranteed

accuracy Input: Sine wave input, power factor of 1, voltage to earth of 0 V, after zero-adjustment; within range in which the fundamental wave satisfies synchronization

source conditions ±0.03%f.s. per °C or less. Temperature ±0.05 % is. per °C or less.

±0.196f.s. or less (45 to 66 Hz, at power factor = 0)

Internal circuitry voltage/current phase difference: ±0.0573°

±0.01%f.s. or less (600 V, 50 Hz/60 Hz, applied between input coefficient Effect of power factor Effect of common

mode voltage Effect of magnetic terminals and enclosure) 400 A/m, DC and 50 Hz/60 Hz magnetic field Voltage ±1.5%f.s. or less field

±1.5%f.s. or less than or equal to the following value, whichever is greater
±1.5%f.s. or less than or equal to the following value, whichever is greater

200 mA/ 500 mA/ 1 A/ 2 A/ 5 A/ 10 A/ 20 A range: ±20 mA 1 mA/ 2 mA/ 5 mA/ 10 mA/ 20 mA/ 50 mA/ 100 mA range: ±200 μA Active power ±3.0%f.s. or less than or equal to the following value, whichever is greater

200 mA/ 500 mA/ 1 A/ 2 A/ 5 A/ 10 A/ 20 A range: (Voltage influence quantity)x(\pm 20 mA) 1 mA/ 2 mA/ 5 mA/ 10 mA/ 20 mA/ 50 mA/ 100 mA range: (Voltage influence quantity)x(\pm 200 µA)

Effect of self-With input of at least 15 A to current input terminals heating Current AC input signal

±(0.025+0.005×(I-15))%rdg. or less

200 mA/ 500 mA/ 1 A/ 2 A/ 5 A/ 10 A/ 20 A range ±((0.025+0.005×(I-15))% rdg.+(0.5+0.1×(I-15))mA) or less 1 mA/ 2 mA/ 5 mA/ 10 mA/ 20 mA/ 50 mA/ 100 mA range $\pm ((0.025+0.005\times(I-15))\% \text{ rdg.}+(5+1\times(I-15))\mu\text{A}) \text{ or less}$

I: Current read value (A)

(above current influence quantity) x (voltage read value) or less The effects of self-heating will continue to manifest themselves until the input resistance temperature falls, even if the current value is low

Range table (Power ranges)

Voltage	6.0000 V	15.000 V	30.000 V	60.000 V	150.00 V	300.00 V	600.00 V	1.0000 kV
1.0000 mA	6.0000 mW	15.000 mW	30.000 mW	60.000 mW	150.00 mW	300.00 mW	600.00 mW	1.0000 W
2.0000 mA	12.000 mW	30.000 mW	60.000 mW	120.00 mW	300.00 mW	600.00 mW	1.2000 W	2.0000 W
5.0000 mA	30.000 mW	75.000 mW	150.00 mW	300.00 mW	750.00 mW	1.5000 W	3.0000 W	5.0000 W
10.000 mA	60.000 mW	150.00 mW	300.00 mW	600.00 mW	1.5000 W	3.0000 W	6.0000 W	10.000 W
20.000 mA	120.00 mW	300.00 mW	600.00 mW	1.2000 W	3.0000 W	6.0000 W	12.000 W	20.000 W
50.000 mA	300.00 mW	750.00 mW	1.5000 W	3.0000 W	7.5000 W	15.000 W	30.000 W	50.000 W
100.00 mA	600.00 mW	1.5000 W	3.0000 W	6.0000 W	15.000 W	30.000 W	60.000 W	100.00 W
200.00 mA	1.2000 W	3.0000 W	6.0000 W	12.000 W	30.000 W	60.000 W	120.00 W	200.00 W
500.00 mA	3.0000 W	7.5000 W	15.000 W	30.000 W	75.000 W	150.00 W	300.00 W	500.00 W
1.0000 A	6.0000 W	15.000 W	30.000 W	60.000 W	150.00 W	300.00 W	600.00 W	1.0000 kW
2.0000 A	12.000 W	30.000 W	60.000 W	120.00 W	300.00 W	600.00 W	1.2000 kW	2.0000 kW
5.0000A	30.000 W	75.000 W	150.00 W	300.00 W	750.00 W	1.5000 kW	3.0000 kW	5.0000 kW
10.000 A	60.000 W	150.00 W	300.00 W	600.00 W	1.5000 kW	3.0000 kW	6.0000 kW	10.000 kW
20.000 A	120.00 W	300.00 W	600.00 W	1.2000 kW	3.0000 kW	6.0000 kW	12.000 kW	20.000 kW



Voltage/ Current/ Active Power Measurement Specifications

Measurement types	Rectifiers: AC+DC, DC, AC, FND, AC+DC Umn	
Effective measuring range	Voltage ±1% to ±150% of the range. However, up to ±1500 V peak value and 1000 V RMS value	
	Current ±1% to ±150% of the range	
	Active Power ±0% to ±225% of the range. However, valid when the voltage and current fall within the effective measurement range.	
Display range	Voltage Up to ±152% of the range. However, zero-suppression when less than ±0.5%	
	Current Up to ±152% of the range. However, zero-suppression when less than ±0.5% or less than ±9 µA.	
	Active Power ±0% to ±231.04% of the range (no zero-suppression)	
Polarity	Voltage/ Current Displayed when using DC rectifier	
	Active Power Positive : Power consumption (no polarity display) Negative : generation or regenerated power	

Voltage Waveform Peak Value/ Current Waveform Peak Value

Measurement S	Specifications		
Measurement	Measures the voltage waveform's peak value (for both positive and		
method	negative polarity) based on sampled instantaneous voltage values.		
Range	Voltage		
configuration	Voltage range	Voltage peak range	
	6.0000 V	36.000 V	
	15.000 V	90.000 V	
	30.000 V	180.00 V	
	60.000 V	360.00 V	
	150.00 V	900.00 V	
	300.00 V	1.8000 kV	
	600.00 V	3.6000 kV	
	1.0000 kV	6.0000 kV	
	Current		
	Current range	Current peak range	
	1.0000 mA	6.0000 mA	
	2.0000 mA	12.000 mA	
	5.0000 mA	30.000 mA	
	10.000 mA	60.000 mA	
	20.000 mA	120.00 mA	
	50.000 mA	300.00 mA	
	100.00 mA	600.00 mA	
	200.00 mA	1.2000 A	
	500.00 mA	3.0000 A	
	1.0000 A	6.0000 A	
	2.0000 A	12.000 A	
	5.0000 A	30.000 A	
	10.000 A	60.000 A	
	20.000 A	120.00 A	
Measurement accuracy	$\pm 2.0\%$ f.s. at DC and when 10 Hz \leq f \leq 1 kHz (f.s.: current peak range). Provided as reference value when 0.1 Hz \leq f $<$ 10 Hz and when 1 kHz $<$ f. The above measurement accuracy is multiplied by 2 for the 1 mA range.		
Effective measuring range	±5% to ±100% of current peak range, however, up to ±60 A		
Display range	Up to ±102% of current peak range, however, the value 0 will be displayed if the current RMS value triggers the instrument's zero suppression function.		

Voltage Crest Factor/Current Crest Factor Measurement Specifications

	Calculates the ratio of the voltage waveform peak value to the voltage RMS value.
	As per voltage and voltage waveform peak value, or current and current waveform peak value effective measurement ranges.
Display range	1.0000 to 612.00 (no polarity)

Voltage Ripple Rate/ Current Ripple Rate Measurement Specifications

Measurement	Calculates the AC component (peak to peak [peak width]) as a	
method	proportion of the voltage or current DC component.	
Effective	As per voltage and voltage waveform peak value, or current and	
measuring range	current waveform peak value effective measurement ranges.	
Display range	0.00 to 500.00 (No polarity)	

Apparent Power/ Reactive Power/ Power Factor/ Phase Angle Measurement Specifications

Measurement types	Rectifiers Apparent Power/ Reactive Power/ Power Factor AC+DC, AC, FND, AC+DC Umn Phase Angle AC, FND
Effective measuring range	As per voltage, current, and active power effective measurement ranges
Display range	Apparent Power/ Reactive Power 0% to 231.04% of the range (no zero-suppression)
	Power Factor ±0.0000 to ±1.0000
	Phase Angle +180.00 to -180.00

Polarity	Reactive Power/ Power Factor/ Phase Angle
	Polarity is assigned according to the lead/lag relationship of the
	voltage waveform rising edge and the current waveform rising edge.
	+: When current lags voltage (no polarity display)
	-: When current leads voltage

Power Calculation Formulas

S : Apparent power	$S = U \times I$	
Q : Reactive power	$Q = si\sqrt{S^2 - P^2}$	
λ : Power factor	$\lambda = silP/Sl$	
φ : Phase angle	$\phi = si \cos^{-1} \lambda $ $\phi = si 180 - cos^{-1} \lambda $	(±90° to ±180°)

U: Voltage, I: Current, P: Active Power, si: Polarity symbol (acquired based on voltage waveform and current waveform lead and lag)

Frequency Measurement Specifications

Number of	2 (Voltage, current)	
measurement channels		
Measurement method	Calculated from input waveform period (reciprocal method)	
Measurement ranges	100 Hz/ 500 Hz/ 5 kHz/ 100 kHz (linked to zero-cross filter)	
Measurement accuracy	±0.1% rdg. ±1 dgt. However, for 1 mA range, ±0.2% rdg. ±1 dgt.	
Effective	0.1 Hz to 100 kHz	
measuring range	For sine wave input that is at least 20% of the measurement	
	source's measurement range	
	Measurement lower limit frequency setting: 0.1 sec. / 1 sec. / 10	
	sec. (linked to synchronization timeout setting)	
Display format	0.1000 Hz to 9.9999 Hz,	9.900 Hz to 99.999 Hz,
	99.00 Hz to 999.99 Hz,	0.9900 kHz to 9.9999 kHz,
	9 900 kHz to 99 999 kHz	99 00 kHz to 100 00 kHz

Maximum Current Ratio Measurement Specifications (MCR)

Measurement	Calculates the ratio of the current crest factor to the power factor.	
method	(MCR) = (Current Crest Factor) / (Power Factor)	
Effective	As per power factor (voltage, current, active power) and current crest factor	
measuring range (current, current waveform peak value) effective measurement ranges.		
Display range	1.0000 to 6.1200 M (no polarity)	

Time Average Current/ Time Average Active Power Measurement Specifications

	Calculates the average by dividing the current or active power	
method	integrated value by the integration time.	
Measurement accuracy	(Current or Active power measurement accuracy) + (±0.01% rdg. ±1 dgt.)	
Effective measuring range	As per the current or active power integration effective measurement range.	
Display range	range Time Average Current ±0% to ±612% of the range (Has polarity when using the DC rectifier.)	
	Time Average Active Power +0% to +3745.4% of the range (Has polarity)	

Range select

Hold

	Time Average Active Power ±0% to ±3745.4% of the range (Has polarity)	
Functional Specifications		
Auto-range (AUTO)	Automatically changes the voltage and current range according to the input.	
	Range up: The range is increased when input exceeds 150% of the range or when the peak is exceeded.	

Range down: The range is decreased when input falls below 15% of the range. However, the range is not decreased when the peak is exceeded

at the lower range. The input level is monitored, and the range is switched over multiple ranges. Range select can be used to disable ranges so that they are not selected

Selects whether to enable (turn on) or disable (turn off) individual voltage and current ranges. Enabled (use):
Ranges can be selected with the range keys.

Range switching occurs using auto-range operation. Range switching occurs during auto-range integration.

Disabled (do not use): Ranges cannot be selected with the range keys.
Range switching does not occur using auto-range operation

Range switching does not occur during auto-range integration. Zero-cross filter's

Sets the zero-cross filter's threshold level for voltage and current ranges. Set from 1% to 15% (in 1% intervals). Synchronization occurs when the threshold level percentage level set for each measurement range is exceeded. Averaging Averages the voltage, current, active power, apparent power, and reactive

power. (Other than harmonic measurement parameters.)
The power factor and phase angle are calculated from averaged data. Averaging is not performed for parameters other than those listed above. Method: Simple averaging

Number of averaging iterations and display update interval

Number of averaging iterations	Display update interval
1 (OFF)	200 ms
2	400 ms
5	1 s
10	2 s
25	5 s
50	10 s
100	20 s

Scaling (VT, CT) Applies user-defined VT and CT ratio settings to measured values. VT ratio setting range OFF (1.0), 0.001 to 1000 CT ratio setting range OFF (1.0), 0.001 to 1000

Stops display updates for all measured values and fixes the display values at that point in time.

Measurement data acquired by communications is also fixed at

that point in time. Internal calculations (including integration and integration elapsed time) will continue.

Analog output and waveform output are not held

minimum value	Detects maximum and minimum measured values (except
hold (MAX/MIN	current integration, active power integration, integration elapsed time, time average current, and time average active power
HOLD)	values) as well as maximum and minimum values for the voltage waveform peak and current waveform peak and holds them on
	the display.
	 For data with polarity, display of the maximum value and minimum value for the data's absolute values is held (so that both
	positive and negative polarity values are shown). However, this does not apply to the voltage waveform peak value or the current
	waveform peak value.
	 Internal calculations (including integration and integration elapsed time) will continue.
	The maximum and minimum values during integration are detected (maximum/minimum value measurement during the
	integration interval). • Analog output and waveform output are not held.
Zero Adjustment	Zeroes out the voltage and current input offset.
Key-lock	Disables key input in the measurement state, except for the KEY LOCK key.
Backup	Backs up settings and integration data if the instrument is turned off and if a power outage occurs.
System Reset	Initializes the instrument's settings.
ntegration Mea	surement Specifications
Integration operation modes	Switchable between fixed-range integration and auto-range integration
speration modes	Fixed-range integration Integration can be performed for all voltage and current ranges. The voltage and current ranges are fixed once integration starts.
	Auto-range integration
	Integration can be performed for all voltage ranges. The current is set to auto-range operation using ranges from 200 mA
	to 20 A. The integrated value for each range can be displayed by switching
	the current range (200 mA to 20 A) while integration is stopped.
Measurement items and display	Simultaneous integration of the following 6 parameters: Positive current integrated value (Ah+)
, , , , , ,	Negative current integrated value (Ah-)
	Sum of current integrated values (Ah) Positive active power integrated value (Wh+)
	Negative active power integrated value (Wh-) Sum of active power integrated values (Wh)
Measurement	Rectifiers: AC+DC, AC+DC Umn
types	Current: Displays the result of integrating current RMS value data (display
	values) once every display update interval as an integrated value.
	Active power:
	Displays the result of integrating active power values by polarity calculated once every cycle for the selected synchronization
	source as integrated values.
	Rectifier: DC
	Displays the result of integrating instantaneous data obtained by sampling both current and active power by polarity as
	integrated values (these values are not integrated values for the
	DC component when active power contains both DC and AC components)
Integration time	1 min. to 10000 hr., settable in 1 min. blocks
Integration time	±0.01% rdg. ±1 dgt.
accuracy Integration	(Current or active power measurement accuracy) + (±0.01% rdg.
	±1 dgt.)
measurement accuracy	
measurement accuracy Effective	Until PEAK OVER U lamp or PEAK OVER I lamp lights up.
measurement accuracy	
measurement accuracy Effective measuring range	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) Stopping integration based on integration time setting (timer)
measurement accuracy Effective measuring range Display resolution	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) Stopping integration based on integration time setting (timer) Stopping/starting integration and resetting integrated values based on external control
measurement accuracy Effective measuring range Display resolution	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) Stopping integration based on integration time setting (timer) Stopping/starting integration and resetting integrated values based on external control Displaying the integration elapsed time
measurement accuracy Effective measuring range Display resolution	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration
measurement accuracy Effective measuring range Display resolution	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration • Backing up integrated values and the integration elapsed time during power outages
measurement accuracy Effective measuring range Display resolution Functions	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration elapsed time during power outages • Stopping integration when power returns
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration Backing up integrated values and the integration elapsed time during power outages • Stopping integration when power returns urement Specifications
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration elapsed time during power outages • Stopping integration when power returns
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration elapsed time during power outages • Stopping integrated values and the integration elapsed time during power outages • Stopping integration when power returns wrement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration elacybed during power outages • Stopping integrated values and the integration elapsed time during power outages • Stopping integration when power returns wrement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range:
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration elapsed time during power outages • Stopping integrated values and the integration elapsed time during power outages • Stopping integration when power returns Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 6100-4-7:2002 compliant
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) Stopping integration based on integration time setting (timer) Stopping/starting integration and resetting integrated values based on external control Displaying the integration elapsed time (displayed as TIME on panel display) Additional integration by repeatedly starting/stopping integration Backing up integrated values and the integration elapsed time during power outages Stopping integration when power returns Verement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 61000-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz.
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration elapsed time during power outages • Stopping integrated values and the integration elapsed time during power outages • Stopping integration when power returns Verement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 6100-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range:
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement method Synchronization	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping jatarting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration • Backing up integrated values and the integration elapsed time during power outages • Stopping integration when power returns Urement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 61000-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range: No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the basic
measurement accuracy Effective measuring range Display resolution Functions	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration • Backing up integrated values and the integration elapsed time during power outages • Stopping integration when power returns Verement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 61000-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range: No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the basic measurement specifications.
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement method Synchronization source	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping jatarting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration Backing up integrated values and the integration elapsed time during power outages • Stopping integration when power returns Urement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 61000-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range: No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the basic measurement specifications. Harmonic voltage RMS value Harmonic voltage content percentage Harmonic voltage phase angle Harmonic current RMS value
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement method Synchronization source	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration elapsed time during power outages • Stopping integrated values and the integration elapsed time during power outages • Stopping integration when power returns Wrement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 6100-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range: No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the basic measurement specifications. Harmonic voltage RMS value
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement method Synchronization source	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping jatarting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration • Backing up integrated values and the integration elapsed time during power outages • Stopping integration when power returns Urement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 61000-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range: No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the basic measurement specifications. Harmonic voltage RMS value Harmonic voltage RMS value Harmonic current RMS value Harmonic active power Harmonic active power content percentage
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement method Synchronization source	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration elapsed time during power outages • Backing up integrated values and the integration elapsed time during power outages • Stopping integration when power returns Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 6100-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range: No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the basic measurement specifications. Harmonic voltage RMS value Harmonic current RMS value Harmonic current content percentage Harmonic active power Harmonic active power Harmonic voltage current phase difference Total harmonic outrage distortion Total harmonic current distortion
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement method Synchronization source	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration Backing up integrated values and the integration elapsed time during power outages • Stopping integration when power returns urement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 61000-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range: No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the basic measurement specifications. Harmonic voltage RMS value Harmonic voltage content percentage Harmonic current Phase angle Harmonic active power Harmonic voltage current phase difference Total harmonic voltage distortion Total harmonic current distortion Fundamental wave voltage Fundamental wave current
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement method Synchronization source	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration elapsed time during power outages • Stopping integrated values and the integration elapsed time during power outages • Stopping integration when power returns Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 6100-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range: No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the basic measurement specifications. Harmonic voltage RMS value Harmonic current RMS value Harmonic voltage phase angle Harmonic current content percentage Harmonic active power Harmonic active power Fundamental wave active power Fundamental wave apparent power Fundamental wave apparent power Fundamental wave apparent power Fundamental wave power factor
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement method Synchronization source	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping jatarting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration • Backing up integrated values and the integration elapsed time during power outages • Stopping integration when power returns Verement Specifications Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 61000-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range: No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the basic measurement specifications. Harmonic voltage RMS value Harmonic current precentage Harmonic outrent percentage Harmonic active power Harmonic cative power content percentage Harmonic voltage current phase difference Total harmonic voltage distortion Total harmonic current distortion Fundamental wave active power Fundamental wave current Fundamental wave apparent power
measurement accuracy Effective measuring range Display resolution Functions Harmonic Meas Measurement method Synchronization source	Until PEAK OVER U lamp or PEAK OVER I lamp lights up. 999999 (6 digits + decimal point) • Stopping integration based on integration time setting (timer) • Stopping/starting integration and resetting integrated values based on external control • Displaying the integration elapsed time (displayed as TIME on panel display) • Additional integration by repeatedly starting/stopping integration elapsed time during power outages • Stopping integrated values and the integration elapsed time during power outages • Stopping integration when power returns Zero-cross simultaneous calculation method Uniform thinning between zero-cross events after processing with a digital antialiasing filter Interpolation calculations (Lagrange interpolation) When the synchronization frequency falls within the 45 Hz to 66 Hz range: IEC 6100-4-7:2002 compliant Gaps and overlaps may occur if the measurement frequency is not 50 Hz or 60 Hz. When the synchronization frequency falls outside the 45 Hz to 66 Hz range: No gaps or overlap will occur. Conforms to synchronization source (SYNC) for the basic measurement specifications. Harmonic voltage RMS value Harmonic current Pase angle Harmonic voltage phase angle Harmonic current content percentage Harmonic active power Harmonic active power Fundamental wave active power Fundamental wave apparent power Fundamental wave apparent power Fundamental wave power factor

FFT processing	FFT processing word length: 32 bits Number of FFT points: 4096 points			
Window function	Rectangular	11.5		
Analysis window	45 Hz ≤ f < 56 Hz : 178.57 ms to 222.22 ms (10 cycles)			
width	56 Hz ≤ f < 66 Hz : 181.82 ms to 214.29 ms (12 cycles) Frequencies other than the above : 185.92 ms to 214.08 ms			
Data update rate	Depends on window width.			
Maximum analysis order	Synchronization frequency (f) ra	ange	Analysis order	
oraci	10 Hz ≤ f < 45 Hz 45 Hz ≤ f < 56 Hz		50th 50th	
	56 Hz ≤ f ≤ 66 Hz		50th	
	66 Hz < f ≤ 100 Hz		50th	
	100 Hz < f ≤ 200 Hz		40th	
	200 Hz < f ≤ 300 Hz		25th	
	300 Hz < f ≤ 500 Hz		15th	
Analysis order	500 Hz < f ≤ 640 Hz 2nd to 50th		11th	
upper limit setting	2110 10 50111			
Measurement	f.s.: Measurement range	\	A-4	
accuracy	Frequency (f)		ge, Current, Active power 0.4% rdg. ±0.2%f.s.	
	10 Hz ≤ f < 30 Hz		0.4% rdg. ±0.2%f.s.	
	30 Hz ≤ f ≤ 400 Hz		0.3% rdg. ±0.1%f.s.	
	400 Hz < f ≤ 1 kHz		0.4% rdg. ±0.2%f.s.	
	1 kHz < f ≤ 5 kHz		1.0% rdg. ±0.5%f.s.	
	5 kHz < f ≤ 8 kHz		4.0% rdg. ±1.0%f.s.	
	When using the 1 mA/ 2 mA ran Add ±1 μA to 10 Hz to 8 kHz mea Add (±1 μA) × (voltage read valu measurement accuracy for active	asuren ıe) to 1	0 Hz to 8 kHz	
	When using the 200 mA/ 500 mA/ 1 A/ 2 A/ 5 A/ 10 A/ 20 A range: Add ±1 mA to DC measurement accuracy for current. Add (±1 mA) × (voltage read value) to DC measurement accuracy for active power.			
	When using the 1 mA/2 mA/5 mA/ Add ±10 µA to DC measurement Add (±10 µA) × (voltage read val	accur	acy for current.	
	for active power. cations 7-segment LED			
Display Specific Display Number of display parameters Display resolution	cations 7-segment LED	999 co		
Display Number of display parameters Display resolution	cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 999999 count	(6 digi	unt (5 digits) ts)	
Display Number of display parameters	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 998	(6 digi es per	unt (5 digits) ts)	
Display Number of display parameters Display resolution Display update rate Synchronized of	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations se	(6 digi es per etting)	unt (5 digits) ts) sec.) to 20 s (varies with	
Display Number of display parameters Display resolution Display update rate Synchronized of	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations se	es per etting) update: y hold eration /3335 s	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integratior operation; key lock for the slave PW3335 serieseries. Synchronization with	
Display Number of display Parameters Display resolution Display update rate Synchronized of Functions	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations secontrol The timing of calculations; display of start, stop, and reset events; display operation; and zero-adjustment opis synchronized with the master PW the PW3336 series and PW3337 second process of the	es per etting) update: y hold eration /3335 series is	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integratior operation; key lock for the slave PW3335 series. Synchronization with	
Display Number of display Number of display parameters Display resolution Display update rate Synchronized of Functions Terminal Terminal name	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations secontrol The timing of calculations; display ustart, stop, and reset events; display operation; and zero-adjustment opis synchronized with the master PW the PW3336 series and PW3337 second per second per second per series and PW3337 second per second p	es per etting) update: y hold eration /3335 series is	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integratior operation; key lock for the slave PW3335 series. Synchronization with	
Display Number of display Parameters Display resolution Display update rate Synchronized of Functions Terminal Terminal name	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations secontrol The timing of calculations; display ustart, stop, and reset events; display operation; and zero-adjustment ope is synchronized with the master PW the PW3336 series and PW3337 se BNC terminal x 1 (non-isolated) External synchronization terminal Off Synchronized control function of synchronization terminal (EXT.S)	es per etting) update: y hold eration /3335 series is (EXT.S	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integration operation; key lock for the slave PW3335 serieseries. Synchronization with also supported.	
Display Number of display Parameters Display resolution Display update rate Synchronized of the process of the	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 9999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations sees the seed of the se	updates y hold eration (3335 series is (EXT.S.)	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integratior operation; key lock for the slave PW3335 serie series. Synchronization with also supported. SYNC) als input to the external re ignored) EXT.SYNC) is set to input	
Display Number of display Parameters Display resolution Display update rate Synchronized of Functions Terminal Terminal name	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 9999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations sees sees the sees of t	(6 digi es per tetting) update: y hold /3335 s (EXT.s (F (signar YNC) a	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integratior operation; key lock for the slave PW3335 serie series. Synchronization with also supported. SYNC) als input to the external re ignored) EXT.SYNC) is set to input I can be input (slave). (T.SYNC) is set to output,	
Display Number of display parameters Display resolution Display update rate Synchronized of Functions Terminal Terminal name I/O settings	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations sees the sees of the see	(6 digi	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integratior operation; key lock for the slave PW3335 serieseries. Synchronization with also supported. SYNC) als input to the external re ignored) EXT.SYNC) is set to input I can be input (slave). (T.SYNC) is set to output, can be output (master).	
Display Number of display parameters Display resolution Display update rate Synchronized of Functions Terminal Terminal name I/O settings Number of units for which synchronized control can be performed External Currer (PW3335-03 and second parameters)	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 9999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations secontrol The timing of calculations; display ustart, stop, and reset events; display operation; and zero-adjustment opis synchronized with the master PW the PW3336 series and PW3337 set BNC terminal × 1 (non-isolated) External synchronization terminal Off Synchronized control function of synchronization terminal (EXT.S) In The external synchronization terminal a dedicated synchronization terminal a dedicated synchronization services and services are services and services and services are services and services and services and services are services and services and services and services and services are services and services and services and services are services and services and services and services and services are services and services are services and ser	(6 digi es per estating) update: y hold (3335 s s s s s s s s s s s s s s s s s s	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integratior operation; key lock for the slave PW3335 serieseries. Synchronization with also supported. SYNC) als input to the external re ignored) EXT.SYNC) is set to input I can be input (slave). (T.SYNC) is set to output, can be output (master).	
Display Number of display parameters Display resolution Display update rate Synchronized of Functions Terminal Terminal name I/O settings Number of units for which synchronized control can be performed External Currer (PW3335-03 ar Terminal	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations set) Control The timing of calculations; display start, stop, and reset events; display operation; and zero-adjustment opins synchronized with the master PW the PW3336 series and PW3337 set BNC terminal × 1 (non-isolated) External synchronization terminal Off Synchronized control function of synchronization terminal (EXT.S) In The external synchronization terminal a dedicated synchronization terminal a dedicated synchronization terminal a dedicated synchronization set and a dedicated synchronization terminal a dedicated synchronization set and a dedicated synchronization terminal a dedicated synchronization terminal and a dedicated synchronization terminal	(6 digi es per estating) update: y hold (3335 s s s s s s s s s s s s s s s s s s	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integratior operation; key lock for the slave PW3335 serieseries. Synchronization with also supported. SYNC) als input to the external re ignored) EXT.SYNC) is set to input I can be input (slave). (T.SYNC) is set to output, can be output (master).	
Display Number of display parameters Display resolution Display update rate Synchronized of Functions Terminal Terminal name I/O settings Number of units for which synchronized control can be performed External Currer (PW3335-03 an	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 9999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations secontrol The timing of calculations; display ustart, stop, and reset events; display operation; and zero-adjustment opis synchronized with the master PW the PW3336 series and PW3337 set BNC terminal × 1 (non-isolated) External synchronization terminal Off Synchronized control function of synchronization terminal (EXT.S) In The external synchronization terminal a dedicated synchronization terminal a dedicated synchronization services and services are services and services and services are services and services and services and services are services and services and services and services and services are services and services and services and services are services and services and services and services and services are services and services are services and ser	(6 digi	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integratior operation; key lock for the slave PW3335 serie series. Synchronization with also supported. SYNC) als input to the external re ignored) EXT.SYNC) is set to input I can be input (slave). (T.SYNC) is set to output, can be output (master). W3337 series)	
Number of display parameters Display resolution Display update rate Synchronized of Functions Terminal Terminal name I/O settings Number of units for which synchronized control can be performed External Currer (PW3335-03 ar Terminal Current sensor type	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 9999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations secontrol The timing of calculations; display ustart, stop, and reset events; display operation; and zero-adjustment opis synchronized with the master PW the PW3336 series and PW3337 set BNC terminal × 1 (non-isolated) External synchronization terminal Off Synchronized control function of synchronization terminal (EXT.S) In The external synchronization term and a dedicated synchronization term and a dedicated synchronization service of the external synchronization terminal (EXT.S) Up to 7 slaves per master (total of 8 units including the PW3 Its Sensor Input Specification of PW3335-04) Isolated BNC terminals Off / TYPE.1 / TYPE.2 When set to off, input from the external synchronity from the external synchronity of the PW3	(6 digities per extension of the control of the con	unt (5 digits) ts) sec.) to 20 s (varies with sec.) lock for the slave PW3335 serie series. Synchronization with also supported. SYNC) als input to the external re ignored) EXT.SYNC) is set to input I can be input (slave). (T.SYNC) is set to output, can be output (master). W3337 series)	
Display Number of display parameters Display resolution Display update rate Synchronized of Functions Terminal Terminal name I/O settings Number of units for which synchronized control can be performed External Currer (PW3335-03 ar Terminal Current sensor type switching Current sensor	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations secontrol The timing of calculations; display of start, stop, and reset events; display operation; and zero-adjustment opic synchronized with the master PW the PW3336 series and PW3337 set BNC terminal × 1 (non-isolated) External synchronization terminal Off Synchronized control function of synchronization terminal (EXT.S) In The external synchronization terminal dedicated synchronization terminal a dedicated synchronization service of the external synchronization terminal and a dedicated synchronization service of the external synchronization terminal and a dedicated synchronization service of the external synchronization for	(6 digities per extension of the second of t	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integration operation; key lock for the slave PW3335 series. Synchronization with also supported. EXT.SYNC) als input to the external re ignored) EXT.SYNC) is set to input I can be input (slave). (T.SYNC) is set to output, ran be output (master). W3337 series) current sensor input surpply is required to use) 16876, CT6877, 9272-05,	
Display Number of display parameters Display resolution Display update rate Synchronized of Functions Terminal Terminal name I/O settings Number of units for which synchronized control can be performed External Currer (PW3335-03 ar Terminal Current sensor type switching Current sensor options	Cations 7-segment LED 4 (display area a, b, c, and d) Other than integrated values: 999 Integrated values: 999999 count 200 ms ±50 ms (approx. 5 updat number of averaging iterations secontrol The timing of calculations; display ustart, stop, and reset events; display operation; and zero-adjustment opis synchronized with the master PW the PW3336 series and PW3337 set BNC terminal × 1 (non-isolated) External synchronization terminal Off Synchronized control function of synchronized control function of synchronization terminal (EXT.S) In The external synchronization terminal a dedicated synchronization term and a dedicated synchronization set of the external synchronization terminal of PW3335-04) Isolated BNC terminals Off / TYPE.1 / TYPE.2 When set to off, input from the exterminal is ignored. TYPE1 (100 A to 5000 A sensors) 9660, 9661, 9669, CT9667-01, TYPE2 (20 A to 1000 A sensors), CT6862-05, CT6863-05, CT6867-05, CT6863-05, CT6867-05, CT6867-05	(6 digities per extension of the per extension of t	unt (5 digits) ts) sec.) to 20 s (varies with s; data updates; integration operation; key lock for the slave PW3335 series. Synchronization with also supported. SYNC) als input to the external re ignored) EXT.SYNC) is set to input I can be input (slave). (T.SYNC) is set to output, can be output (master). W3337 series) current sensor input supply is required to use) 16876, CT6877, 9272-05, CT6845-05, CT6846-05, e	



1 11000				
Power range	Depends on the combination of voltage and current ranges;			
configuration	from 24.000 W to 5.0000 MW (also applies to VA, var)			
Measurement				
accuracy Current/ Active Po	1			
		F00// 1 1 1000//	1000//	
Frequency (f)	Input < 50%f.s.	50%f.s. ≤ Input < 100%f.s.	100%f.s. ≤ Input	
DC	±0.1%rdg.±0.2%f.s.	±0.1%rdg.±0.2%f.s.	±0.3%rdg.	
0.1Hz≤f<16Hz	±0.1%rdg.±0.2%f.s.	±0.3%rdg.	±0.3%rdg.	
16Hz≤f<45Hz	±0.1%rdg.±0.2%f.s.	±0.3%rdg.	±0.3%rdg.	
45Hz≤f≤66Hz	±0.1%rdg.±0.1%f.s.	±0.2%rdg.	±0.2%rdg.	
66Hz <f≤500hz< td=""><td>±0.1%rdg.±0.2%f.s.</td><td>±0.3%rdg.</td><td>±0.3%rdg.</td></f≤500hz<>	±0.1%rdg.±0.2%f.s.	±0.3%rdg.	±0.3%rdg.	
500Hz <f≤1khz< td=""><td>±0.1%rdg.±0.2%f.s.</td><td>±0.3%rdg.</td><td>±0.3%rdg.</td></f≤1khz<>	±0.1%rdg.±0.2%f.s.	±0.3%rdg.	±0.3%rdg.	
Current	·			
Frequency (f)	Input < 50%f.s.	50%f.s. ≤ Input < 100%f.s.	100%f.s. ≤ Input	
1kHz <f≤10khz< td=""><td>±(0.03+0.07×F)%rdg. ±0.2%f.s.</td><td>±(0.23+0.07×F)%rdg.</td><td>±(0.23+0.07×F)%rdg.</td></f≤10khz<>	±(0.03+0.07×F)%rdg. ±0.2%f.s.	±(0.23+0.07×F)%rdg.	±(0.23+0.07×F)%rdg.	
10kHz <f≤100khz ±(0.3+0.04×f)%rdg.<br="">±0.3%f.s.</f≤100khz>		±(0.6+0.04×F)%rdg.	±(0.6+0.04×F)%rdg.	
Active Power				
Frequency (f)	Input < 50%f.s.	50%f.s. ≤ Input < 100%f.s.	100%f.s. ≤ Input	
1kHz <f≤10khz< td=""><td>±(0.03+0.07×F)%rdg. ±0.2%f.s.</td><td>±(0.23+0.07×F)%rdg.</td><td>±(0.23+0.07×F)%rdg.</td></f≤10khz<>	±(0.03+0.07×F)%rdg. ±0.2%f.s.	±(0.23+0.07×F)%rdg.	±(0.23+0.07×F)%rdg.	
10kHz <f≤50khz< td=""><td>±(0.07×F)%rdg. ±0.3%f.s.</td><td>±(0.3+0.07×F)%rdg.</td><td>±(0.3+0.07×F)%rdg.</td></f≤50khz<>	±(0.07×F)%rdg. ±0.3%f.s.	±(0.3+0.07×F)%rdg.	±(0.3+0.07×F)%rdg.	
50kHz <f≤100khz< td=""><td>±(0.6+0.07×F)%rdg. ±0.3%f.s.</td><td>±(0.9+0.07×F)%rdg.</td><td>±(0.9+0.07×F)%rdg.</td></f≤100khz<>	±(0.6+0.07×F)%rdg. ±0.3%f.s.	±(0.9+0.07×F)%rdg.	±(0.9+0.07×F)%rdg.	

- Values for f.s. depend on measurement ranges.

 "F" in the tables refers to the frequency in kHz.

 To obtain the current or active power accuracy, add the current sensor's accuracy to the above current and active power accuracy figures.

 The effective measurement range and frequency characteristics conform to the current sensor's securicity.
- current sensor's specifications.
- The following input are considered reference values:
 Values for voltage, current, and active power for which 0.1 Hz ≤ f < 10 Hz. Values for voltage, current, and active power for which 0.1 Hz ≤ 1 < 10 Hz. Values for voltage and active power in excess of 220 V for which 10 Hz ≤ f < 16 Hz. Values for voltage and active power in excess of 750 V for which 30 kHz < f ≤ 100 kHz.

 • When using the CT684x-05 series, add ±2 mV to the CT684x-05 series accuracy after performing CT684x-05 series zero adjustment using the 1 A range noted on the panel.

Temperature coefficient	Current, active power: ±0.08%f.s./°C or less (instrument temperature coefficient; f.s.: instrument measurement range) Add current sensor temperature coefficient to above.			
Effect of power factor	Instrument: ±0.15%f.s. or less (45 to 66 Hz with power factor = 0) Internal circuit voltage/current phase difference: ±0.0859° Add the current sensor phase accuracy to the internal circuit voltage/current phase difference noted above.			
Current waveform peak value measurement specifications	$\pm 2.0\%$ at DC or 10 Hz \leq f \leq 1 kHz (f.s.: current peak range) Add the current sensor accuracy to the above.			
Harmonic	External current sensor input instrument measurement accuracy only			
measurement	Frequency (f)	Voltage, Current, Active power		
accuracy	DC	±0.4% rdg.±0.2%f.s.		
	10 Hz ≤ f < 30 Hz	±0.4% rdg.±0.2%f.s.		
	30 Hz ≤ f ≤ 400 Hz	±0.3% rdg.±0.1%f.s.		
	400 Hz < f ≤ 1 kHz	±0.4% rdg.±0.2%f.s.		
	1 kHz < f ≤ 5 kHz	±1.0% rdg.±0.5%f.s.		
	5 kHz < f ≤ 8 kHz ±4.0% rdg.±1.0%f.s.			
	Values for f.s. depend on meas To obtain the current or active psensor's accuracy to the above accuracy figures. When using the CT684x-05 seriseries accuracy after performinadjustment using the 1 A range	ower accuracy, add the current current and active power ies, add ±2 mV to the CT684x-05 g CT684x-05 series zero		

D/A Output Specifications (PW3335-02 and PW3335-04)

Number of output channels	7 channels
Configuration	16-bit D/A converter (polarity + 15 bits)
Output voltage	The output level, output speed, and waveform output can be selected. Level output 2 Vf.s. or 5 Vf.s., linked to display updates High-speed level output 2 Vf.s. or 5 Vf.s., linked to synchronization interval Waveform output 1 Vf.s., linked to sampling
Output parameters	Output parameters for all channels Available selections vary with the output parameter. Level output/ High-speed level output/ Waveform output Voltage, current, active power Only Level output Apparent power, reactive power, power factor, phase angle, total harmonic voltage distortion, total harmonic current distortion, voltage ripple rate, current ripple rate, voltage crest factor, current crest factor, time average current, time average active power, maximum current ratio Only Level output 5 Vf.s. Frequency, current integration, active power integration The rectifier can be selected. Harmonic-order output is not supported.

Maximum input current

Applicable Standards

Rated supply voltage

Dimensions

Accessories

power

Mass

Maximum rated

100 V AC to 240 V AC 50 Hz/60 Hz

(excluding protrusions)

Approx. 3 kg (105.8 oz.) Instruction manual ×1 Power cord ×1

30 VA or less

Between the current input terminals I and ± 200 mA to 20 A range 30 A, ±100 A peak 1 mA to 100 mA range 20 A, ±30 A peak Safety EN61010

EN61326 Class A EN61000-3-2 EN61000-3-3

Approx. 210W × 100H × 245D mm (8.27"W × 3.94"H × 9.65"D)

Voltage and current input terminal safety cover ×2

Output accuracy	f.s.: Relative to the output voltage rated value for each output
Output accuracy	parameter
	Level output (Output parameter measurement accuracy) + (±0.2%f.s.)
	High-speed level output
	(Output parameter measurement accuracy) + (±0.2%f.s.) Waveform output
0. 4 4 6	(Output parameter measurement accuracy) + (±1.0%f.s.)
Output frequency band	Waveform output, high-speed level output At DC or 10 Hz to 30 kHz, accuracy is as defined above.
Maximum output	Approx. ±12 V DC
voltage Output update	Level output
rate	Same as the data update period.
	High-speed level output AC Updated once every cycle for the input waveform set as the
	synchronization source. However, voltage and current are only updated once every cycle for input signals from 45 to 66 Hz.
	Waveform output
Response time	Approx. 1.43 µs (approx. 700 kHz) Level output
ricoponiae time	0.6 sec. or less
	High-speed level output 2 ms or less
	Waveform output
Temperature	0.2 ms or less ±0.05%f.s./°C or less
coefficient	·
Output resistance	Approx. 100 Ω
External control	Integration start/stop, integration reset and hold via external
	control
Input signal level	0 to 5 V (high-speed CMOS level) or shorted [Lo]/ open [Hi]
GP-IB interface (PW3335-01 an	d PW3335-04)
Method	Compliant with IEEE488.1 1987, in reference to IEEE488.2 1987
	Interface functions SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0
Address	
	00 to 30
RS-232C interfa	ace
RS-232C interfa (PW3335, PW33	nce 35-02, PW3335-03, and PW3335-04)
RS-232C interfa (PW3335, PW33 Connector	D-sub 9-pin connector x 1
RS-232C interfa (PW3335, PW33	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed)
RS-232C interfa (PW3335, PW33 Connector Communication	D-sub 9-pin connector x 1 Full duplex, Start-stop synchronization
RS-232C interfate (PW3335, PW33) Connector Communication method Communication	D-sub 9-pin connector x 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed)
RS-232C interfate (PW3335, PW33) Connector Communication method Communication speed	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None
RS-232C interface (PW3335, PW33) Connector Communication method Communication speed LAN interface	D-sub 9-pin connector x 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps
RS-232C interfa (PW3335, PW33 Connector Communication method Communication speed LAN interface Connector Electrical	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None
RS-232C interfate (PW3335, PW33) Connector Communication method Communication speed LAN interface Connector Electrical specifications	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3
RS-232C interfa (PW3335, PW33 Connector Communication method Communication speed LAN interface Connector Electrical	D-sub 9-pin connector x 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector x 1
RS-232C interfate (PW3335, PW33) Connector Communication method Communication speed LAN interface Connector Electrical specifications Transmission method Protocol	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP
RS-232C interfate (PW3335, PW33) Connector Communication method Communication speed LAN interface Connector Electrical specifications Transmission method	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer)
RS-232C interfate (PW3335, PW33) Connector Communication method Communication speed LAN interface Connector Electrical specifications Transmission method Protocol Functions	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller
RS-232C interfate (PW3335, PW33) Connector Communication method Communication speed LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specific	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller
RS-232C interfate (PW3335, PW33) Connector Communication method Communication speed LAN interface Connector Electrical specifications Transmission method Protocol Functions	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller
RS-232C interfate (PW3335, PW33). Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications General Specifications Operating	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller
RS-232C interfate (PW3335, PW33) Connector Communication method Communication speed LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications Product warranty period	Ce 35-02, PW3335-03, and PW3335-04) D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller Cations 3 year
RS-232C interfate (PW3335, PW33) Connector Communication method Communication speed LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications Product warranty period Operating environment Operating temperature and	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller Cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2
RS-232C interfate (PW3335, PW33) Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specific Product warranty period Operating environment Operating	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller Cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2
RS-232C interfate (PW3335, PW33) Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications Product warranty period Operating environment Operating temperature and humidity Storage temperature and	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2 0°C to 40°C (32°F to 104°F), 80% RH or less (no condensation)
RS-232C interfate (PW3335, PW33) Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specific Product warranty period Operating environment Operating temperature and humidity Storage	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2 0°C to 40°C (32°F to 104°F), 80% RH or less (no condensation) 4290 V rms AC (current sensitivity: 1 mA)
RS-232C interfate (PW3335, PW33). Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications Product warranty period Operating environment Operating temperature and humidity Storage temperature and humidity	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller Cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2 0°C to 40°C (32°F to 104°F), 80% RH or less (no condensation) -10°C to 50°C (14°F to 122°F), 80% RH or less (no condensation) 4290 V rms AC (current sensitivity: 1 mA) Between the voltage input terminals and a connection consisting
RS-232C interfate (PW3335, PW33). Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications Product warranty period Operating environment Operating temperature and humidity Storage temperature and humidity	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller Cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2 0°C to 40°C (32°F to 104°F), 80% RH or less (no condensation) 4290 V rms AC (current sensitivity: 1 mA) Between the voltage input terminals and a connection consisting of chassis, interfaces, and output terminals Between the current input terminals and a connection consisting between the current input terminals and a connection consisting between the current input terminals and a connection consisting
RS-232C interfate (PW3335, PW33). Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications Froduct warranty period Operating environment Operating environment Operating temperature and humidity Storage temperature and humidity	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller Cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2 0°C to 40°C (32°F to 104°F), 80% RH or less (no condensation) -10°C to 50°C (14°F to 122°F), 80% RH or less (no condensation) 4290 V rms AC (current sensitivity: 1 mA) Between the voltage input terminals and a connection consisting of chassis, interfaces, and output terminals Between the current input terminals and a connection consisting of chassis, interfaces, and output terminals
RS-232C interfate (PW3335, PW33). Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications Product warranty period Operating environment Operating temperature and humidity Storage temperature and humidity Dielectric strength	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2 0°C to 40°C (32°F to 104°F), 80% RH or less (no condensation) -10°C to 50°C (14°F to 122°F), 80% RH or less (no condensation) 4290 V rms AC (current sensitivity: 1 mA) Between the voltage input terminals and a connection consisting of chassis, interfaces, and output terminals Between the voltage input terminals and a current input terminals Between the voltage input terminals and current input terminals Voltage input terminal, Current input terminals
RS-232C interfate (PW3335, PW33) Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications Product warranty period Operating environment Operating temperature and humidity Storage temperature and humidity Dielectric strength	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2 0°C to 40°C (32°F to 104°F), 80% RH or less (no condensation) -10°C to 50°C (14°F to 122°F), 80% RH or less (no condensation) 4290 V rms AC (current sensitivity: 1 mA) Between the voltage input terminals and a connection consisting of chassis, interfaces, and output terminals and a connection consisting of chassis, interfaces, and output terminals and current input terminals Between the voltage input terminals and a connection consisting of chassis, interfaces, and output terminals and terminals Between the voltage input terminals and a connection consisting of chassis, interfaces, and output terminals and terminals Between the voltage input terminals and current input terminals Between the voltage input terminals and current input terminals Between the voltage input terminals and current input terminals
RS-232C interfate (PW3335, PW33). Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications Product warranty period Operating environment Operating temperature and humidity Storage temperature and humidity Dielectric strength	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2 0°C to 40°C (32°F to 104°F), 80% RH or less (no condensation) -10°C to 50°C (14°F to 122°F), 80% RH or less (no condensation) 4290 V rms AC (current sensitivity: 1 mA) Between the voltage input terminals and a connection consisting of chassis, interfaces, and output terminals Between the voltage input terminals and a connection consisting of chassis, interfaces, and output terminals Between the voltage input terminals and current input terminals Between the voltage input terminals and current input terminals Voltage input terminal, Current input terminal Measurement category II 600 V (anticipated transient overvoltage: 6000 V) Measurement category II 1000 V (anticipated transient
RS-232C interfate (PW3335, PW33). Connector Communication method Communication method Communication method Communication method LAN interface Connector Electrical specifications Transmission method Protocol Functions General Specifications Product warranty period Operating environment Operating temperature and humidity Storage temperature and humidity Dielectric strength	D-sub 9-pin connector × 1 Full duplex, Start-stop synchronization Stop bits: 1 (fixed) Data length: 8 (fixed) Parity: None 9600 bps/ 38400 bps RJ-45 connector × 1 Compliant with IEEE802.3 10Base-T/ 100Base-TX (automatic detection) TCP/ IP HTTP server (remote operation, firmware updates) Dedicated ports (command control, data transfer) Remote control by controller Cations 3 year Indoors, altitude up to 2000 m (6562 ft.), pollution degree 2 0°C to 40°C (32°F to 104°F), 80% RH or less (no condensation) -10°C to 50°C (14°F to 122°F), 80% RH or less (no condensation) 4290 V rms AC (current sensitivity: 1 mA) Between the voltage input terminals and a connection consisting of chassis, interfaces, and output terminals Between the voltage input terminals and a connection consisting of chassis, interfaces, and output terminals Between the voltage input terminals and a current input terminals Between the voltage input terminals and current input terminals Between the voltage input terminals and current input terminals Between the voltage input terminals and current input terminals Between the voltage input terminals and current input terminals Between the voltage input terminals and current input terminals Between the voltage input terminals and current input terminals

3334 Specifications

Measu	rable lines	Single-phase, 2-wire (AC/DC)					
Measurement		Voltage, current, active power, apparent power, power factor,					
parameters		frequency, integrated current and active power, waveform peak					
		(voltage an	(voltage and current)				
Measure	ement method	Simultaneo	us digital s	ampling of	oltage and	current, Tru	ie RMS
Sampling	g Frequency	Approx. 74	Approx. 74.4kHz				
Measure	ement Ranges						
	Currnet Voltage	100.00 mA	300.0 mA	1.0000 A	3.000 A	10.000 A	30.00 A
	15.000 V	1.5000 W	4.500 W	15.000 W	45.00 W	150.00 W	450.0 W
	30.00 V	3.000 W	9.000 W	30.00 W	90.00 W	300.0 W	900.0 W
	150.00 V	15.000 W	45.00 W	150.00 W	450.0 W	1.5000 kW	4.500 kW
	300.0 V	30.00 W	90.00 W	300.0 W	900.0 W	3.000 kW	9.000 kW
Frequency bandwidth DC, 45Hz to 5kHz							

Measurement accuracy

Warm-up time	3 minutes			
	3 years (better accuracy specifications available for 1-year period)			
		1 year (accuracy specifications available for 1-year period)		
	Voltage, current: 1% to 100% (Power: 0% to 100%) Measurements below 0.5% of the voltage or current range will be zero suppressed.			
Effect of power factor (at pf=0.5)	Maximum ±0.4%±rdg. (45 to 66Hz)			
Temperature Coefficient	Maximum ±0.03%f.s./°C			
Frequency	Guaranteed Period	Voltage, current and active power (at less than 50% of input range)	Current and active power (at 50% to 100% of input range)	
		0.4.0/	0.0.011	

Frequency	Guaranteed	Voltage, current and active power	Current and active power	
riequency	Period	(at less than 50% of input range)	(at 50% to 100% of input range)	
DC *	1 year	±0.1 %rdg. ±0.2 %f.s.		
DC	3 years	±0.1 %rdg.	±0.35 %f.s.	
45 Hz ≤ f ≤ 66 Hz	1 year	±0.1 %rdg. ±0.1 %f.s.	±0.2 %rdg.	
43 HZ S I S 00 HZ	3 years	±0.1 %rdg. ±0.2 %f.s.	±0.3 %rdg.	
66 Hz < f ≤ 1 kHz **	1 year	±0.1 %rdg. ±0.2 %f.s.	±0.3 %rdg.	
00 HZ < 1 \ 1 KHZ	3 years	±0.1 %rdg. ±0.35 %f.s.	±0.45 %rdg.	
1 kHz < f ≤ 5 kHz **	1 year	±3.0 %f.s.	±3.0 %rdg.	
I KMZ < I S D KMZ	3 years	±4.5 %f.s.	±4.5 %rdg.	
*Add + FOUA to the accuracy when measuring DC current				

*Add ±50µA to the accuracy when measuring DC current Add (±50µA x voltage value) to the accuracy when measuring DC active power ** Accuracy not defined for current input exceeding 20A

Input Specifications

Input impedance	2.4 M Ω for voltage, 10 m Ω or better (50/ 60 Hz) for current
Maximum input voltage	300 V, ±425 Vpeak
Maximum input current 30 A, ±54.0 Apeak	
Maximum effective peak voltage	±300% of each voltage range, Within ±425 Vpeak
Maximum effective peak current	±300% of each current range, Within ±54.0 Apeak *1
Max. rated voltage to earth	300 V (DC, 50/ 60 Hz)

Display Specifications

	Voltage and current: 0.5% to 105% of range
range	Active power: 0% to 110.25% of range
Displacement power factor	0.000 to 1.000 (no polarity display)
Display refresh rate	approx. 5 times per second
Response time	within 0.5 s (Time to rated accuracy after abrupt change in input [0 to 90% or 100 to 10% of range])

Functional Specifications

i dilotional opot		
Integration measurement	No.of displayed digits: Current Integration:	Six digits From 0.00000mAh, Polarity-independent integration and Sum value
	Active power Integration:	
	Integration time: Measurement accuracy:	1 min to 10000 h Measurement accuracy of active power ±1dgt.
Wave peak measurement	current (up to 300% of	
Rectification method		y: ±1.2%f.s. ("f.s." is 300% of each range) True RMS), DC(simple average display) and AC(True RMS)
Analog output (D/A output)	Parameter output repre Voltage, Current and A	esentation: ctive power (3 simultaneous channels) n Current integration, Active power integration, r factor
		5% f.s. + individual measurement accuracy
Waveform output	Voltage output: 1 VE	esentation: I Active power (3 simultaneous channels) OC f.s. for each range % f.s. + individual measurement accuracy
Average function	Simple averaging of specif	ied number of samples: 1, 2, 5, 10, 25, 50 or 100
VT or CT ratio		0, 30, 60, 100 8, 10, 12, 15, 16, 20, 24, 25, 30, 40, 50, 60, 75, 300, 500, 1000, 2000, 3000, 5000, 10000
External Interfaces	GP-IB interface (Mode	nunication method: rate: 9600 bps (fixed)
Miscellaneous		n value hold, Peak value hold, Key lock, erves settings, integration data)

General Specifications

Safety	N61010 Pollution Factor 2,					
	Measurement Category III (4000 V anticipated overvoltage)					
EMC	EN61326, EN61000-3-2, EN61000-3-3					
Operating environment	0 to 40 °C, 80% RH or less, non-condensating					
Storage environment	-10 to 50 °C, 80% RH or less, non-condensating					
Rated supply voltage	100 to 240 VAC, 50/60 Hz					
Maximum rated power	20 VA					
Dimensions and mass	210 mm (8.27 in)W × 100 mm (3.94 in)H × 245 mm (9.65 in)D (excluding feet and projections), 2.5 kg (88.2 oz)					

3333 Specifications

Basic specifications

Measurab	le lines	Single-pha	Single-phase, 2-wire (AC)						
Measuremen	t parameters	Voltage, Current, Active power, Apparent power, Power factor							
Measuremer	nt method	Simultaneo	Simultaneous digital sampling of voltage and current, True RMS						
Sampling f	requency	Approx. 48	Approx. 48kHz						
Measureme	ent ranges								
Vol	Currnet	50.00 mA	200.0 mA	500.0 mA	2.000 A	5.000 A	20.00 A		
200.0 V 10.000 W 40.00 W 100.00 W 400.0 W 1.0000 kW 4.0							4.000 kW		
Frequency b	andwidth	45Hz to 5k	Hz						

Measurement accuracy

Constanted at 25 0 25, max. 60 km, sine wave injust, power lactor = 1, in-prinate voltage = 01, according specifications direct depending on disage period or 1 of 5 years)								
Warm-up time	10 minutes	0 minutes						
Period of guaranteed accuracy	3 years (better accuracy spe	years (better accuracy specifications available for 1-year period)						
Post-adjustment accuracy guarantee	1 year (accuracy specific	ations available for 1-year period)						
Effective measurement	Voltage, current, power: 1	/oltage, current, power: 10% to 150%						
range	Measurements below 1% of the	Measurements below 1% of the voltage or current range will be zero suppressed.						
Effect of power factor (at pf=0.5)	Maximum ±0.4%±rdg. (45 to 66Hz)							
Temperature Coefficient	Maximum ±0.03%f.s./°C	Maximum ±0.03%f.s./°C						
Frequency	Guaranteed Period	Guaranteed Period Voltage, current and active power						
	1 year ±0.1 %rdg. ±0.1 %f.s.							

Frequency	Guaranteed Period	Voltage, current and active power				
45 Hz ≤ f ≤ 66 Hz	1 year	±0.1 %rdg. ±0.1 %f.s.				
	3 years	±0.1 %rdg. ±0.2 %f.s.				
66 Hz < f ≤ 1 kHz *	1 year	±0.1 %rdg. ±0.2 %f.s.				
	3 years	±0.1 %rdg. ±0.35 %f.s.				
1 kHz < f < 5 kHz *	1 year	±3.0 %f.s.				
I KHZ < I \ O KHZ	3 years	±4.5 %f.s.				

* Accuracy not defined for current input exceeding 20A

Input specifications

Input impedance	2.4 M Ω for voltage, 7 m Ω or better (50/60 Hz) for current
Maximum input voltage	300 Vrms, 425 Vpeak
Maximum input current	30 Arms, 42.5 Apeak
Maximum effective peak voltage	Within 425Vpeak
Maximum effective peak current	±300% of each current range, Within ±42.5Apeak
Max. rated voltage to earth	300V (50/60Hz)

Display specifications

	voltage and current: 1% to 152% of range
range	active power: 0% to 231.04% of range
Displacement power factor	0.000 to 1.000 (no polarity display)
Display refresh rate	approx. 5 times per second
Response time	within 0.5 s (Time to rated accuracy after abrupt change in input [0
	to 90% or 100 to 10% of range])

Functional Specifications

Rectification method	AC(True RMS)
Analog output (D/A output)	Parameter output representation: voltage, current and active power (3 simultaneous channels) Voltage output: +2 VDC f.s. for each range Output accuracy: ±0.5% f.s. + individual measurement accuracy
Average function	Simple averaging of specified number of samples: 1, 2, 5, 10, 25, 50 or 100
VT or CT ratio	VT ratios: 1, 2, 4, 10, 20, 30, 60, 100 CT ratios: 1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 16, 20, 24, 25, 30, 40, 50, 60, 75, 80, 100
External Interfaces	RS-232C interface: Included as standard Asynchronous communication method: full-duplex; Baud rate: 9600 bps (fixed) GP-IB interface (Model 3333-01 only) IEEE-488.1 1987 compliant, IEEE-488.2 1987 reference
Miscellaneous	Display hold, Key lock, Settings backup (preserves settings)

General Specifications

Safety	EN61010 Pollution Factor 2,
,	Measurement Category III (4000 V anticipated overvoltage)
EMC	EN61326, EN61000-3-2, EN61000-3-3
Operating environment	0 to 40 °C, 80% RH or less, non-condensating
Storage environment	-10 to 50 °C, 80% RH or less, non-condensating
Rated supply voltage	100 to 240 VAC, 50/60 Hz
Maximum rated power	20 VA
Dimensions and mass	160 mm (6.30 in)W × 100 mm (3.94 in)H × 227 mm (8.94 in)D
	(excluding feet and projections), 1.9 kg (67.0 oz)

Calculation formulas (3333 & 3334)

	,
Measurement	Formula
Parameters	
Apparent Power (S)	$S = U \times I$
Power Factor (λ)	λ = I P/S I
Integrated Current*	(Sum of I from start of integration)/ (Number of 1 hour data)
Integrated Active	(Sum of P from start of integration)/ (Number of 1 hour data)
Power *	

^{*} Current and active power integration available only on Model 3334.

3-phase Power Meter

Model & Appearance	Model No. (Order Code)	Number of Channels	AC/ DC	Harmonic Measurement	LAN	RS-232C	GP-IB	D/A output	Current Sensor Input	Synchronized Control
	PW3337	3	AC/ DC	~	~	~	×	×	•	~
POWER METER PW3337	PW3337-01	3	AC/ DC	~	~	~	~	×	~	~
	PW3337-02	3	AC/ DC	~	~	•	×	~	•	~
	PW3337-03	3	AC/ DC	•	✓	•	~	~	•	~
	PW3336	2	AC/ DC	~	~	~	×	×	•	~
POWER METER PW3336	PW3336-01	2	AC/ DC	~	~	v	~	×	~	~
	PW3336-02	2	AC/ DC	~	~	v	×	~	•	~
	PW3336-03	2	AC/ DC	V	~	~	~	~	v	~

Accessories: Instruction manual ×1, Measurement guide ×1, Power cord ×1

Single-phase Power Meter

Model & Appearance	Model No. (Order Code)	Number of Channels	AC/ DC	Harmonic Measurement	LAN	RS-232C	GP-IB	D/A output	Current Sensor Input	Synchronized Control
	PW3335	1	AC/ DC	✓	~	~	×	×	×	✓
POWER METER	PW3335-01	1	AC/ DC	V	~	×	~	×	×	~
PW3335	PW3335-02	1	AC/ DC	V	~	~	×	~	×	~
	PW3335-03	1	AC/ DC	V	~	~	×	×	~	✓
	PW3335-04	1	AC/ DC	~	~	~	~	~	~	✓
AC/ DC POWER HITESTER 3334	3334	1	AC/ DC	×	×	~	×	~	×	×
	3334-01	1	AC/ DC	×	×	~	~	~	×	×
POWER HITESTER 3333	3333	1	AC	×	×	~	×	~	×	×
	3333-01	1	AC	×	×	~	~	~	×	×

Accessories : Instruction manual ×1, Power cord ×1

Communications and control options



RS-232C CABLE 9637 Cable length: 1.8 m (5.91 ft)



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

DISTRIBUTED BY



9642 Cable length: 5 m (16.41 ft) supplied with straight to cross conversion cable



CONNECTION CORD 9165 For synchronized control Cable length: 1.5 m (4.92 ft), metal BNC to metal BNC

 $Note: Company\ names\ and\ product\ names\ appearing\ in\ this\ brochure\ are\ trademarks\ or\ registered\ trademarks\ of\ various\ companies$



HEADQUARTERS

81 Koizumi, Ueda, Nagano 386-1192 Japan https://www.hioki.com/

