# ΗΙΟΚΙ

## POWER ANALYZER PW3390



# High Accuracy Power Analysis. Anywhere, Anytime.





Scan QR Code to Watch Video Newly Added Functions



# High Accuracy and Mobility. A New Value for Power Analysis.

The first-generation Power Analyzer 3390 debuted in 2009 with a collection of the latest measurement technologies packed into a compact design.

Pair with Hioki current sensors and take them anywhere to immediately make highly accurate measurements.

This was the unique value of the 3390.

Now, Hioki has enhanced this value while refining the measurement technology even further.

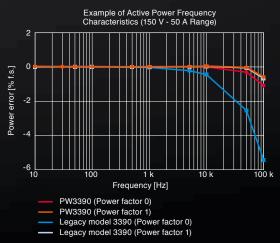
Proper accuracy and bandwidth to precisely measure inverter output. Phase shift function for the exact measurement of high frequency, low power factor power. A broad current sensor lineup that expands the range of measurement possibilities.

Refinements that empower you to conduct precise power analysis in any situation.



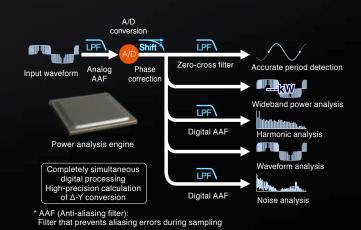
## Complete Pursuit of Measurement Accuracy and High Frequency Characteristics

The PW3390 delivers 4 input channels and  $\pm 0.04\%$  basic accuracy for power - the top instrument in its class. Achieve more precise measurements of the power and efficiency of high efficiency equipment used in power electronics. Further, a 200 kHz measurement band and flat amplitude and phase characteristics up to high frequencies enable the precise measurement of power at top frequency levels and low power factor.



## Power Analysis Engine That Achieves High-Speed Simultaneous Calculation on 5 Systems

Precisely capture input waveforms with 500 kS/s high-speed sampling and a high resolution 16-bit A/D converter. The power analysis engine performs independent digital processing for 5 systems: period detection, wideband power analysis, harmonic analysis, waveform analysis, and noise analysis. High-speed simultaneous calculation processing enables both precise measurements and a 50 ms data refresh rate.



## Current Sensors for the Thorough Pursuit of High Accuracy. <u>Achieve Superior</u> Accuracy for High-Frequency, Low Power Factor Power.

### High Accuracy Pass-Through Sensor

Pass-through sensors deliver accuracy, broad-band performance, and stability. Measure currents of up to 1000 A with a high degree of accuracy across a broad range of operating temperatures.



### High Accuracy Clamp Sensor

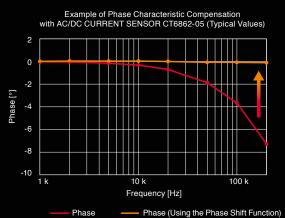
Clamp for quick and easy connections. Conduct extremely accurate measurements of large currents to a maximum of 1000 A over a wide operating temperature range.

### High Accuracy Direct Wiring Sensor

Newly developed DCCT method delivers expansive measurement range and superior measurement accuracy at a rating of 50 A.







\* Virtual oversampling:

Technology that uses a sampling frequency several hundred times higher than the actual sampling frequency to perform virtual deskewing



Scan QR Code to Watch a Video of our Full Lineup of Current Sensors



Scan QR Code to Download Technical Brief About Current Sensor Phase Shift

#### Built-in Current Sensor Phase Shift Function

Equipped with new virtual oversampling technology. Achieve phase shift equivalent to 200 MS/s while maintaining a high speed of 500 kS/s, as well as a high resolution of 16 bits. Set and correct the phase error of the current sensor at a resolution of 0.01°. Use of the phase shift function results in a dramatic reduction of measurement error. This allows the measurement of high-frequency, low-power factor power included in the switching frequency of inverter output, which is difficult to measure with conventional equipment.

# In the Laboratory or in the Field

#### **Take Highly Accurate Measurements Even in Tough Temperature Conditions**

Severe temperature environments, such as engine rooms with intense temperature changes and constant temperature rooms, can hinder high accuracy measurements. The extremely accurate pass-through and clamp type sensors both feature excellent temperature characteristics and a wide operation temperature range to help address these challenges.



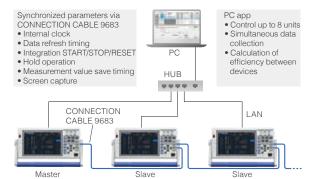
#### Max. 6000 A Measurement on 50 Hz/60 Hz Lines

The CT7040 AC FLEXIBLE CURRENT SENSOR series can measure commercial power lines up to 6000 A, including solar power conditioner output. Even thick cables can be wired easily among crowded wiring or in narrow locations.



### Acquire Data from up to 8 Synchronized Units (32 Channels)

When you connect CONNECTION CABLE 9683 to multiple PW3390 units, the control signals and internal clocks synchronize. From the master unit, you can control the measurement timing on the PW3390 units that are set as slaves. With interval measurement, you can save synchronized measurement data to a CF card or a PC to achieve simultaneous measurements across a larger number of systems.



#### **Achieve High Accuracy Measurement** Even in the Field

Dramatically compact and light-weight form factor achieved by concentrating the calculation functions in the power analysis engine. Highly accurate measurements normally achieved in the laboratory are now also possible in the field.



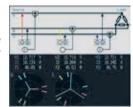
#### **External Power Supply Not Needed for Sensor Connections**

Power can be supplied to the current sensor from the main unit, so there is no need to provide a separate external power supply for the current sensor. Connected sensors are recognized automatically, for reliable and quick measurements.



#### Wiring Displays and Quick Setup Lets You Begin Measuring Immediately

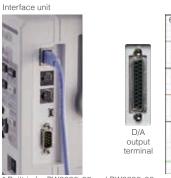
Perform wiring while checking wiring diagrams and vectors on the screen. Optimum settings are performed automatically simply by selecting a connection and using the quick setup function.

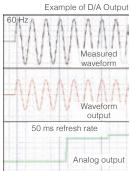


#### **Extensive Interface for Linking with External Devices**

Wide variety of built-in interfaces, including LAN, USB (communication, memory), CF cards, RS-232C, synchronization control, and external control.

D/A output\* delivers analog output at 50 ms for up to 16 parameters. The voltage and current waveform\*\* for each channel can also be output.





Built-in for PW3390-02 and PW3390-03

\*\* During waveform output, accurate reproduction is possible at an output of 500 kS/s and with a sine wave up to 20 kHz

#### Switch Screens with a Single Touch, Accessing a Variety of Power Analysis Methods

The power analysis engine allows the simultaneous, parallel calculation of all parameters. Access a variety of analysis methods simply by pressing the page keys to switch screens.

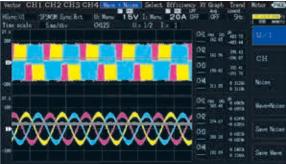


#### Vector



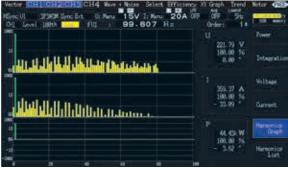
Confirm the voltage/current/power/phase angle for each harmonic order on a vector graph and as numerical values

#### Waveform



voltage/current waveforms for 4 channels at a high speed of 500 kS/s or a maximum length of 5 seconds. Waveform data can be saved.

#### **Harmonics Graph**



Display harmonics up to the 100th order for voltage/current/power in bar graphs. Confirm the numerical data for the selected order at the same time.

#### Efficiency and Loss

Vector CH1 CH2 C	нэсн	4 Nove + Noise   Select Efficie	NY Graph , Trend Notor	
71	3	86.68	%	
72	-	83.18	%	
73	1	72.09	%	
Loss1	4	1.306k	w	
Loss2	1	1.430k	w	
Loss3	-	2.736k	w	

Using active power values and motor power values, confirm efficiency  $\eta$  [%] and loss [W] and total efficiency for each inverter/motor on a single unit at the same time.

Selection Display

Gircul	3301 Sync E	t. 30	Rate	18	V Ictary 20	DA 09	09 St	128 88
Unit	162.85		Und		162.85		OG Renge	4 Ibne
Umm2	163.26	v	Us:2		163.26		Ultrane 15V	
Une3	158.29	v	Ulist		158.29	V	Likene 204	
Urne4	311.86	v	Usof		0.26	v		8 items
Inel	365.93	Λ.	Intl		365.92	A	CH2 Range	
Irm2	375.80	A	Iec2		375.78	A	Ulfana 154	
Irm3	357.98	A	Iac3		357.97	A	I Kinz 200	16 i teas
Intel	183.64	A	I and		27.57	A	1000	
P1	17.52k	w	SI		33.73k	VA	CIG Range	
P2 ::	18.67k	w	52		35.44k	VA:	UNITE 0154	32 item
PS D	17.01k	W	53		33.35k	VA	1 Kmg 284	
PN	56.62k	w.	- 54		57.27k	VA	OM Range	
ff :	99.62	He	<b>X</b>		0.5194		UKenel 68	
f1 f2 f3 f4	99.61	Ha	<b>λ</b> 2		0.5268		Litenci 204	
43	99.62	Hu	A3		0.5099		Linena den	
44	0.0000	He	M		0.9886			Select

Select 4/8/16/32 display parameters individually for each screen, and summarize them on a single screen.



Display FFT results for voltage and current as graphs and numerical values, up to a maximum of 200 kHz. This is perfect for the frequency analysis of inverter noise.



Choose up to eight measurement parameters and display a graph of their variations over time. You can also save a screenshot of the graph.

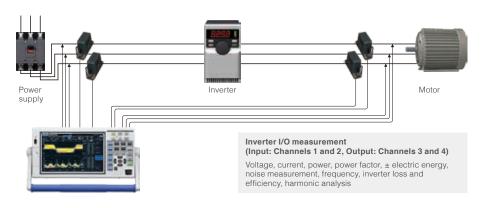




Create inverter characteristic evaluations and motor torque maps. Select the desired parameter to display an X-Y plot graph.

# Applications

## Measure the Power Conversion Efficiency of Inverters

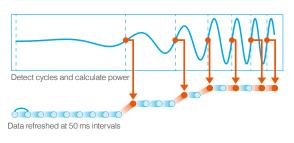


#### **Key features**

- 1. Isolated input of voltage and current on each of 4 channels for simultaneous measurement of the primary and secondary power of inverters
- Simultaneous measurement of all 2. analysis of inverters, such as RMS value, MEAN value, and fundamental components
- Easy wiring with current sensors. Reliable confirmation of wiring with vector diagrams 3.
- Current sensors reduce effects of 4 common mode noise from inverters during power measurement
- Simultaneous measurement of noise 5. components, in addition to the harmonic analysis required for the measurement of inverter control

#### **Highly Accurate and Fast 50 ms Calculation of Power in Transient State**

Measure power transient states, including motor operations such as starting and accelerating, at 50 ms refresh rates. Automatically measure and keep up with power with fluctuating frequencies, from a minimum of 0.5 Hz.

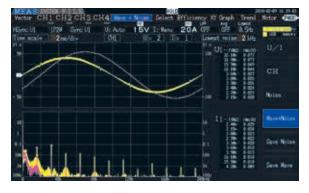


Automatic detection of fundamental wave even if the frequency fluctuates, from low to high frequencies

### Evaluate high-frequency noise /// from an inverter



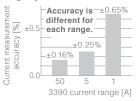
The enhanced noise analysis functionality provided by Version 2.00 of the instrument's firmware lets you perform frequency analysis of noise components from DC to 200 kHz, display and automatically save the top 10 points, and manually save the FFT spectrum. This functionality is an effective tool for evaluating conductive noise from 2 kHz to 150 kHz generated by inverters and switching power supplies



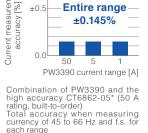
#### **Combined Accuracy of Current Sensors** Applicable throughout Entire Range

Combined accuracy throughout the entire range is provided through the use of a built-to-order high accuracy pass-through type current sensor. Obtain highly accurate measurements regardless of range, from large to minute currents, even for loads that fluctuate greatly.

#### Legacy Model 3390



Combination of 3390 and CT6862-05 (50 A rating) Total Accuracy when measuring currency of 45 to 66 Hz and f.s. for each range



Entire range

Model PW3390

±0.5

%

\* High-accuracy specifications are not defined for the built-to-order high accuracy current sensor when used alone.

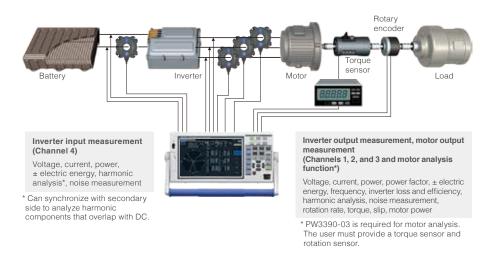
#### Visually assess temporal fluctuations in efficiency



The trend display lets you graph user-selected measurement parameters such as efficiency and frequency over periods of time ranging from dozens of seconds to half a month. This capability makes it possible to visually assess fluctuations, including of transient states in which measured values fluctuate abruptly and steady states in which they exhibit minuscule fluctuations. Graphs can be saved as screenshots, and values can be automatically saved.



## **Analyze and Measure EV/HEV Inverter Motors**



#### Key features

- Easy wiring and highly accurate measurements with the use of a pass-through type current sensor
- Simultaneous measurement of all important parameters for secondary analysis of inverters, such as RMS value, MEAN value, and fundamental components
- 3. 0.5 Hz to 5 kHz harmonic analysis without external clock
- Total measurement of inverter motors with built-in motor analysis function
- Measurement of the voltage, torque, rotation rate, frequency, slip, and motor power required for motor analysis with a single unit
- More precise measurements of electrical angle with incremental type encoders

#### Electric Angle Measurement of Motors (PW3390-03 only)

The PW3390-03 features a built-in electric angle measurement function required for vector control via dq coordinate systems in high-efficiency synchronized motors. Make real-time measurements of phase angles for voltage and current fundamental wave components based on encoder pulses. Further, zero-adjustment of the phase angle when induced voltage occurs allows electric angle measurement based on the inductive voltage phase. Version 2.00 of the firmware introduces the ability to display and manually set phase zero-adjustment values, making it possible to measure electrical angle using a user-selected zero-adjustment value. Electric angle can also be used as an Ld and Lq calculation parameter for synchronized motors.

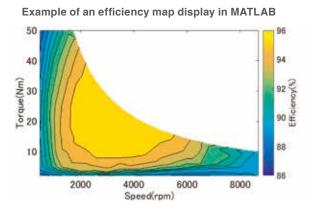
/ Ver 2.00 //



Display motor electric angles on the vector screen

#### Evaluate inverter motor efficiency and loss

Evaluate efficiency and loss for an inverter, motor, and overall system by simultaneously measuring the inverter's input and output power and the motor's output. You can also create an efficiency map or loss map in MATLAB using measurement results recorded by the PW3390 at each operating point.\*MATLAB is a registered trademark of Mathworks, Inc.

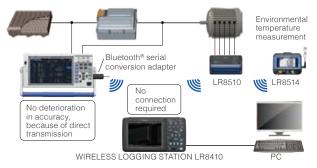




For CH B, enter the Z-phase pulse of the encoder to measure electric angle, and enter the B-phase pulse to measure rotation direction.

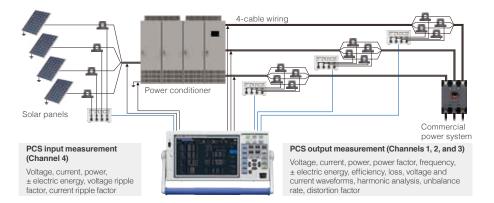
## Transfer to Data Logger via Bluetooth<sup>®</sup> wireless technology

Connect the PW3390 and a data logger (with support of LR8410 Link) via Bluetooth<sup>®</sup> wireless technology to wirelessly transmit 8 parameters of measurement values from the PW3390 to the data logger. In addition to the voltage, temperature, humidity, and other parameters measured by the multichannel data logger, you can also integrate the measurement values of the PW3390 and observe and record them in real time.



\* Connection requires the serial - (Bluetooth® wireless technology) conversion adapter and power supply adapter recommended by Hioki. Please inquire with your Hioki distributor.

## Measure the Efficiency of PV Power Conditioners (PCS)



#### **Key features**

- 4 built-in channels, standard. Simultaneously measure the I/O characteristics of power conditioners.
- Current sensors can measure even large currents with high accuracy. Reliable confirmation of wiring with vector diagrams.
- Measure the amount of power sold/ purchased from power conditioner output on interconnected systems with a single unit.
- DC mode integration function, which responds quickly to input fluctuations such as with solar power, built in.
- Measure ripple factor, efficiency, loss, and all other parameters that are required for the measurement of power conditioners for solar power with a single unit.

#### HIOKI's Current Measurement Solutions for Large Currents of 1000 A or More

Introducing a lineup of sensors taking measurements up to 6000 A for 50 Hz/60 Hz, and up to 2000 A for direct current. The CT9557 SENSOR UNIT lets you add the output waveforms from multiple high accuracy sensors. Use multi-cable wiring lines to take highly accurate measurements of up to 8000 A.

			Blue: High accuracy sense	sor Black: Normal sensors		
current	mended sensor ment target	DC powe	System power 50 Hz/60 Hz	Inverter secondary power		
Oisela estate	1000 A or less		CT6876 or CT6846-05			
Single-cable or bundled	2000 A or less	CT6877 or CT7742	CT6877 or CT7642	CT6877		
wiring	6000 A or less	_	CT7044/CT7045/CT7046	_		
0. aabla wiiina	2000 A or less	CT95574	CT9557+CT6876×2 or CT9557+CT6846-05×2			
2-cable wiring	4000 A or less	CT9557+CT6877×2				
0. aabla wiiina	3000 A or less	CT9557+CT6876×3 or CT9557+CT6846-05×3				
3-cable wiring	6000 A or less	CT9557+CT6877×3				
4 apple witten	4000 A or less	CT9557-	CT6876×4 or CT9557+CT68	46-05×4		
4-cable wiring	8000 A or less		CT9557+CT6877×4			

CT6865-05 (AC/DC 1000 A) Pass-through type; Wideband, high accuracy

CT6877 (AC/DC 2000 A) Pass-through type; Wideband, high accuracy

CT6846-05 (AC/DC 1000 A) Easy-connect clamp type

#### CT9557 Add waveforms from multiple current sensors

CT7742 (AC/DC 2000 A) Stable measurement of DC without zero offset

CT7642 (AC/DC 2000 A)

Wider frequency characteristics than the CT7742

CT7044/ CT7045/ CT7046 (AC 6000 A) Flexible, for easy connections even in narrow gaps

#### **Support for PCS Parameters**

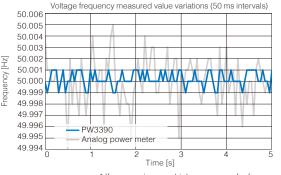
Simultaneously display the parameters required for PCS, such as efficiency, loss, DC ripple factor, and 3-phase unbalance rate. Easily check the required measured items for improved test efficiency. By matching the measurement synchronization source for both input and output, you can perform DC power measurements that are synchronized with the output AC as well as stable efficiency measurements.

P <sub>4</sub>	8.	396k	W
P 123	7.	850k	W
71	93.	498	X
Uef4	0.	212	X
f1	50.	319	H
Uthdl	2.	390	X
Uurb	0.	306	X
Lorel	0.	546k	W

DC power (panel output) 3-phase power (PCS output) Conversion efficiency Ripple factor Frequency Voltage total harmonic distortion Unbalance rate Loss

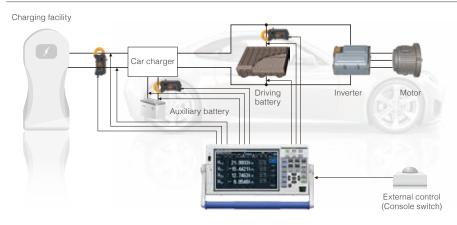
#### ±0.01 Hz<sup>\*</sup> Basic Accuracy for Voltage Frequency Measurements

Perform the frequency measurements that are required for various PCS tests with industry-leading accuracy and stability. Take highly accurate frequency measurements on up to 4 channels simultaneously, while also measuring other parameters at the same time.



\* If you require even higher accuracy for frequency, please inquire with your local Hioki distributor.

## **Test Automobile Fuel Economy**



#### Key features

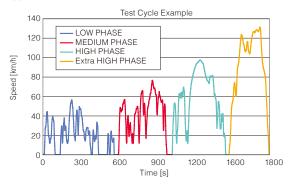
- Accurately measure recharge and discharge power with excellent basic accuracy and DC accuracy.
- 4 built-in channels, standard. Support for multiple recharge and discharge measurements, including auxiliary batteries.
- Easily achieve highly accurate measurements with clamp sensors, which can be used in a wide range of operating temperatures.
- Easily link with other measuring instruments through integration control with an external control interface.



Scan QR Code to Watch Video Illustrating Fuel Economy Evaluation of an Automobile

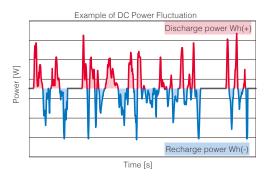
#### Evaluate WLTC Mode Performance - A New Fuel Economy Standard

Taking fuel economy measurements that comply with WLTP international standards requires the precise measurement of current integration and power integration for the recharging/ discharging of each battery in the system. High accuracy clamp current sensors, the excellent DC accuracy of the PW3390, and the ability to integrate current and power at 50 ms intervals are extremely effective in meeting this application.



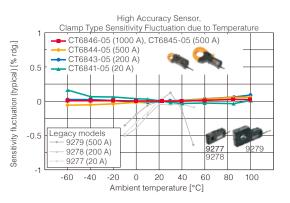
## Current and Power Integration Function by Polarity

DC integration measurement integrates the recharging power and discharging power by polarity for every sample at 500 kS/s, and measures positive-direction power magnitude, negative-direction power magnitude, and the sum of positive- and negative-direction power magnitude during the integration period. Accurate measurement of recharging power and discharging power is possible even if there is rapid repetition of battery recharging/discharging.



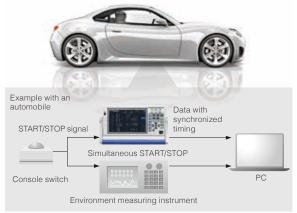
## Optimal Current Sensors for Automotive Testing

Easily connect high accuracy clamp-type sensors without cutting the cables. Sensors operate over a temperature range of -40°C to 85°C (-40°F to 185°F), characteristics that enable highly accurate measurements even inside the engine room of a car.



## Link to Peripheral Devices via External Control

Use external control terminals to START/STOP integration and capture screen shots. This makes it easy to control operations from console switches and link to the timing of other instruments when measuring the performance of an actual automobile.



## **External Appearance**



## Software

Download software, drivers, and the Communications Command Instruction Manual from the Hioki website. https://www.hioki.com

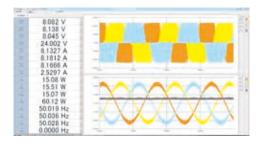
#### PC Communication Software – PW Communicator

PC Communicator is a free application that connects to the PW3390 via a communications interface (LAN, RS-232C, or GP-IB), making it easy to configure the instrument's

settings and to monitor or save measured values and waveform data from a computer. The software can simultaneously connect to up to 8 Hioki power measuring instruments,

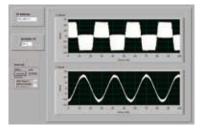
including the PW3390, Power Analyzer PW6001, Power Meter PW3335, PW3336, and PW3337, and it can provide integrated control over multiple models. The software can

also be used to simultaneously save measurement data on the computer and calculate efficiency between instruments.



#### LabVIEW driver

Use the bundled LabVIEW driver to build a measurement system via a simple programming interface that lets you place icons on a window and connect them with lines. Multiple sample programs for configuring settings and downloading data are available, so you can get started right away.



\*LabVIEW is a registered trademark of National Instruments.

#### **GENNECT One SF4000**

The SF4000 is a free application software that lets you display and save measurement data on a PC in real-time after connecting the PW3390 to the PC via Ethernet.

The application is also compatible with other Hioki measuring instruments such as Memory HiLogger LR8450 and the Wireless Logging Station LR8410, letting you connect up to 15 units at the same time to monitor, graph and display lists of measured values from multiple instruments all at once and in real-time. This is especially effective for performing a total analysis of power, temperature and other factors of equipment.



#### Remote control using an web browser

Use the PW3390's HTTP server function to connect to a computer via a LAN interface. You can configure settings or check data from a remote location using a virtual control panel that is displayed in the browser window.



## Specifications

 Basic Specifications
 Accuracy guaranteed for 6 months (and 1.25 times specified accuracy for one year)

 -1. Power Measurement Input Specifications
 Post-adjustment accuracy guaranteed for: 6 months

	Single-phase 2-v (3P3W2M, 3P3V			re (1P3W), 3-pha		
		CH1	CH2	CH3	CH4	
	Pattern 1 Pattern 2	1P2W	1P2W	1P2W 1P2W	1P2W 1P2W	
	Pattern 3	3P3		1P2W	1P2W	
	Pattern 4	1P3		1P3		
	Pattern 5	3P3\		1P:		
	Pattern 6	3P3\	W2M	3P3\	W2M	
	Pattern 7		3P3W3M		1P2W	
	Pattern 8		3P4W		1P2W	
Number of input channels	Voltage: 4 chann	nels U1 to U4, C	urrent: 4 channe	els I1 to I4		
Measurement input	Voltage: 4 channels U1 to U4, Current: 4 channels I1 to I4 Voltage: Plug-in jacks (safety jacks)					
erminal type	Current: Dedicat			)		
nput methods	Voltage: Isolated Current: Insulate			ut)		
/oltage range	Current: Insulated current sensors (voltage output) 15 V/30 V/60 V/150 V/300 V/600 V/1500 V (Selectable for each measured wiring system. AUTO range available.)					
Current range	2 A/4 A/8 A/20 A	4		(with the	9272-05, 20 A)	
): Sensor used	0.4 A/0.8 A/2 A/4 A/8 A/20 A (with the CT6841-0 4 A/8 A/20 A/40 A/80 A/200 A (200 A sensor)					
,,	40 A/80 A/200 A	/400 A/800 A/2	kA	(2000 A s	sensor)	
	0.1 A/0.2 A/0.5 A 1 A/2 A/5 A/10 A			(5 A sens (50 A ser		
	10 A/20 A/50 A/		A	(500 A se		
	20 A/40 A/100 A		kA	(1000 A s	sensor)	
	400 A/800 A/2 k 400 A/800 A/2 k				and CT7742) , CT7045,	
				and CT7	046)	
	400 A/800 A/2 k 40 A/80 A/200 A			(100 uV/A (1 mV/A s	A sensor) sensor)	
	4 A/8 A/20 A/40	A/80 A/200 A		(10 mV/A	sensor)	
	0.4 A/0.8 A/2 A/4 (Selectable for e		viring evetors A	(100 mV/	A sensor)	
Power range	1			UTO range availa		
	range, current ra			iny by the combina	anon or voltage	
Effective measuring	Voltage, Current	t, Power: 1% to 1	10% of the rang	le		
ange Fotal display area	Voltago Curre	Power: free	ro-cuppressie	range ootting (	120%	
Total display area	-		ro-suppression	range setting to	120%	
Zero-suppression anges	Selectable OFF, When OFF, non-		v be displayed e	ven with no meas	surement input	
Zero adjustment				nal offset at or be		
				ffset at or below ±	:10% f.s. ±4 mV	
Naveform peak neasurement range	Within ±300% of	f each voltage ar	nd current range	9		
Naveform peak	Within ±2% f.s. o	of voltage and cu	irrent display ac	curacy		
measurement accuracy						
Crest factor				nt input) (for 1500 500 V range: 1.33		
Input resistance	Voltage input sec			ifferential input and		
50 Hz/60 Hz)	Current sensor in		1 MΩ ±50 kΩ			
Maximum input voltage	Voltage input se Current sensor in	ction : nput section :	1500 V, ±2000	Vpeak		
Maximum rated voltage	Voltage input ter		5 V, ±10 Vpeak 0 Hz/60 Hz)			
	Measurement ca	rminal 1000 V (5 ategories III 600	0 Hz/60 Hz) V (anticipated ti	ransient overvolta		
to earth	Measurement ca Measurement ca Simultaneous di	rminal 1000 V (5 ategories III 600 ategories II 1000 gital sampling o	0 Hz/60 Hz) V (anticipated to V (anticipated to f voltage and cu		age 6000 V)	
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o earth  Measurement method  Sampling  Measurement method  Sampling  Measurement requency range Synchronization source  Data update interval  PF  Zero-crossing filter  Sasic measurement	Measurement ca Simultaneous di zero-crossing ca 500 kHz/16 bit DC, 0.5 Hz to 20 0.5 Hz to 5 kHz Selectable lower U1 to U4, I1 to I4 pulse input), DC (50 ms or 100 Selectable lower U1 to U4, I1 to I4 pulse input), DC (50 ms or 100 Selectable for ea the same synchr The zero-crossing Two filter levels ( Operation and ac Operation	minal 1000 V (5 tategories III 600 gital sampling o alculation metho lo kHz limit measureme , Ext (with the m 0 ms fixed) ach measuremer , Ext (with the m 0 ms fixed) ach measuremer automatics strong or mild) ach measuremer g filter automatics strong or mild) ach measuremer defined at 500 1 (cy defined	0 Hz/60 Hz) V (anticipated t v (anticipated t v (anticipated t voltage and cu d i voltage and cu d i voltage and cu d i voltage and cu i voltage and cu otor evaluation i t channel (U/I fo ) ully matches the c rmined when the rmined when the rm	ransient overvoltt ransient overvolt rrent, simultaneo 5 Hz/1 Hz/2 Hz/5 i 5 Hz/1 Hz/2 Hz/5 i nstalled model ar or each channel m digital LPF when L zero-crossing filte or I is selected ar wiring system) d ±0.1% f.s.) Add 1% rdg. at or n method ication RMS equin damental wave co voltage total ham s current umbait to, current way tor, current way tor, current way tor, current way	age 6000 V) us Hz/10 Hz/20 Hz; dd CH B set for leasured using J or I is selected. r is disabled (off) dd measured above 10 kHz; ralent, voltage omponent, nonic distortion, nean value verage, current eform peak ance factor, hase angle	
o earth Veasurement method Sampling Veasurement method Sampling Veasurement requency range Synchronization source Synchronization source Data update interval _PF Zero-crossing filter Datarity discrimination Basic measurement	Measurement ca Simultaneous di zero-crossing ca 500 kHz/16 bit DC, 0.5 Hz to 20 0.5 Hz to 5 KHz Selectable lower U1 to U4, I1 to I4 pulse input), DC (50 ms or 10 Selectable fore and selectable fore and pulse input), DC (50 ms or 10 Selectable fore and pulse input), DC (50 ms or 10 Selectable fore and Operation and ac Operation	minal 1000 V (5 tategories III 600 gital sampling o alculation metho lo kHz limit measureme , Ext (with the m 0 ms fixed) ach measuremer , Ext (with the m 0 ms fixed) ach measuremer automatics strong or mild) curacy are undete curacy are undete statistical and a statistical and a statistical and a s	0 Hz/60 Hz) V (anticipated t V (anticipated t v ottage and cu d i voltage and cu d i voltage and cu d i voltage and cu d i voltage and cu i voltage and cu d i voltage and cu otor evaluation i t channel (U/I fo ) illy matches the o mined when the rmined when	ransient overvolt rransient overvolt rrent, simultaneo 5 Hz/1 Hz/2 Hz/5 I nstalled model ar or each channel m digital LPF when L zero-crossing filte or I is selected ar wiring system) d ±0.1% f.s.) Add 1% rdg. at or n method ication RMS equiv ndamental wave c voltage total harn s current van cort current tur work current van eak +, ourrent vange er factor, voltage p lirection current tur we - and negative-c	age 6000 V) us Hz/10 Hz/20 Hz; dd CH B set for easured using J or I is selected. r is disabled (off) dd measured above 10 kHz) ralent, voltage omponent, nonic distortion, nean value verage, current eform peak anote factor, hase angle agnitude, lirection current	
o earth Veasurement method Sampling Veasurement method Sampling Veasurement requency range Synchronization source Synchronization source Data update interval _PF Zero-crossing filter Datarity discrimination Basic measurement	Measurement ca Simultaneous di zero-crossing ca 500 kHz/16 bit DC, 0.5 Hz to 20 0.5 Hz to 5 kHz Selectable lower U1 to U4, 11 to 14 pulse input), DC (50 ms or 100 Selectable for ea the same synchr The zero-crossing Two filter levels ( Operation and ac Operation and ac Other section and ac Other section ac Other	minal 1000 V (5 tategories III 600 gital sampling o alculation metho laculation metho 0 kHz limit measureme , Ext (with the m 0 ms fixed) ach measuremer , Ext (with the m 0 ms fixed) ach measuremer g filter automatics strong or mild) ach measuremer g filter automatics strong or mild) defined at sou curacy are undete ccuracy are undete ccuracy are undete ccuracy are undet a defined at 500 defined at 500 act ov clage unblat e provided by . voltage, voltage i peak +, voltage e component, cur monic distortion, ve-direction power, rear gle, power phase n current magnitu	0 Hz/60 Hz) V (anticipated t v (anticipated t v (anticipated t v (anticipated t voltage and cu d i voltage and cu d t channel (U/I fo ) luly matches the c rmined when the rmined wh	ransient overvoltt rransient overvolt rrent, simultaneo 5 Hz/1 Hz/2 Hz/5 i nstalled model ar or each channel m digital LPF when L zero-crossing filte or I is selected ar digital LPF when L zero-crossing filte or I is selected ar digital LOF when L zero-trossing filte digital LOF when L zero-trossing filte or I is selected ar digital LOF when L zero-trossing filte digital LOF when L zero-trossing fi	age 6000 V) us Hz/10 Hz/20 Hz) Hz/10 Hz/20 Hz/20 Hz) Hz/10 Hz/20 Hz/20 Hz) Hz/10 Hz/20 Hz/	
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Maximum rated voltage to earth Measurement method Sampling Measurement requency range Synchronization requency range Synchronization source Data update interval LPF Zero-crossing filter Polarity discrimination Basic measurement parameters	Measurement ca Simultaneous di zero-crossing ca 500 kHz/16 bit DC, 0.5 Hz to 20 0.5 Hz to 5 kHz Selectable lower U1 to U4, 11 to 14 pulse input), DC (50 ms or 100 Selectable for ea the same synchr The zero-crossing Two filter levels ( Operation and ac Operation and ac Other section and ac Other section ac Other	minal 1000 V (5 tategories III 600 gital sampling o alculation metho lo kHz imit measureme , Ext (with the m 0 ms fixed) ach measuremer onization source grifter automatic strong or mild) grifter automatic strong or mild) grifter automatic strong or mild) defined at 500 defined at 60 defined at 500 defined at 200 ng zero-crossing tir tar provided by voltage, voltage i oltage simple ave peak +, voltage e ecomponent, cu monic distortion, ararent power, freas n current magnitu edived.	0 Hz/60 Hz) V (anticipated t v (anticipated t v (anticipated t voltage and cu d int frequency (0.1 otor evaluation i t channel (U/I for ) ully matches the ( rmined when the rmined w	ransient overvoltt rransient overvolt rrent, simultaneo 5 Hz/1 Hz/2 Hz/5 i nstalled model ar or each channel m digital LPF when L zero-crossing filte or I is selected ar digital LPF when L zero-crossing filte or I is selected ar digital LOF when L zero-trossing filte digital LOF when L zero-trossing filte or I is selected ar digital LOF when L zero-trossing filte digital LOF when L zero-trossing fi	age 6000 V) us Hz/10 Hz/20 Hz) Hz/10 Hz/20 Hz/20 Hz) Hz/10 Hz/20 Hz/20 Hz) Hz/10 Hz/20 Hz/	
to earth Veasurement method Sampling Weasurement requency range Synchronization requency range Synchronization source Data update interval LPF Zero-crossing filter Polarity discrimination Basic measurement parameters	Measurement cz Simultaneous di zero-crossing cz 500 kHz/16 bit DC, 0.5 Hz to 200 0.5 Hz to 5 kHz Selectable lower U1 to U4, I1 to I4 pulse input), DC (50 ms or 100 Selectable for ea the same synchr The zero-crossing Titler levels ( Operation and ac Operation and ac Operation and ac Operation and ac OFF/500 Hz/5 kl S00 Hz; Accurac 5 kHz; Accurac 0 KF/500 Hz/5 kl S00 Hz; Accurac 0 KF/500 Hz/5 kl Coronsent, v Voltage/current ; Zero-crossing Til Frequency, RMS fundamental waw -, current total har active power, app urrent phase any negative-direction sum of positive- a (PW3390-03) Motor torque, pp	minal 1000 V (5 tategories III 600 gital sampling o alculation metho lo kHz imit measureme , Ext (with the m 0 ms fixed) ach measuremer onization source g filter automatic strong or mild) g filter automatic strong or mild) g filter automatic strong or mild) curacy are undet ccuracy are dete or above. Hz/100 kHz (self cy defined at 60 d defined at 500 d defined at 500 d defined at 500 d defined at 500 g zero-crossing fir ter provided by . voltage, voltage unbal equivalent, curre monic distortion, ararent power, rea n current magnitu edistortion power, m, motor power,	0 Hz/60 Hz) V (anticipated t v (anticipated t v (anticipated t v (anticipated t voltage and cu d int frequency (0.1 otor evaluation i t channel (U/I fo ) ll) matches the ( rmined when the rmined w	ransient overvolt: rransient overvolt rrent, simultaneo 5 Hz/1 Hz/2 Hz/5 installed model ar or each channel m digital LPF when L zero-crossing filte or I is selected ar digital LPF when L zero-crossing filte or I is selected ar digital LOF when L zero-crossing filte digital LOF when L zero-crossing filte	age 6000 V) us Hz/10 Hz/20 Hz) d CH B set for easured using J or I is selected. r is disabled (off) d measured above 10 kHz) ralent, voltage omponent, nonic distortion, nean value verage, current eform peak ance factor, hase angle agnitude, direction current wer magnitude, oss	
o earth Veasurement method Sampling Veasurement method Sampling Veasurement requency range Synchronization Synchronization source Data update interval PF Zero-crossing filter Polarity discrimination Basic measurement Datameters Voltage/current	Measurement ca Simultaneous di zero-crossing ca 500 kHz/16 bit DC, 0.5 Hz to 200 0.5 Hz to 5 kHz Selectable lower U1 to U4, 11 to 14 pulse input), DC (50 ms or 100 Selectable for ea the same synchr. The zero-crossing Two filter levels ( Operation and ac Operation and ac Off. mild or storo Voltage/current J Coltage/current J current tolat har active power, app active power, app active power, app (PW3390-03) Motor torque, pp	minal 1000 V (5 tategories III 600 gital sampling o alculation metho laculation metho 0 kHz limit measureme , Ext (with the m 0 ms fixed) ach measuremer , Ext (with the m 0 ms fixed) ach measuremer g filter automatic strong or mild) ach measuremer g filter automatic strong or mild) defined at 500 decy defined at 500 decy defined at 500 acy defined at 500 decy defined at 200 mg peak +, voltage unbal equivalent, curre normonic distortion, arent power, read gle, power phase n current magnitu we-direction pow und negative-direc m, motor power, tage and curren	0 Hz/60 Hz) V (anticipated t v (anticipated t v (anticipated t voltage and cu d int frequency (0.1 totor evaluation i at channel (U/I fo ) ully matches the c rmined when the rmined when the region (Add) region (Add	ransient overvoltt rransient overvolt rrent, simultaneo 5 Hz/1 Hz/2 Hz/5 Installed model ar or each channel m digital LPF when L zero-crossing filte or I is selected ar digital LPF when L zero-crossing filte or I is selected ar digital LOF when L zero-crossing filte or calculating ap	age 6000 V) us Hz/10 Hz/20 Hz d CH B set for easured using J or 1 is selected. r is disabled (off) d measured above 10 kHz) ralent, voltage omponent, nonic distortion, nean value verage, current eform peak ance factor, hase angle agnitude, direction current weer magnitude, oss	
o earth Veasurement method Sampling Veasurement method Sampling Veasurement requency range Synchronization source Synchronization source Data update interval _PF Zero-crossing filter Datarity discrimination Basic measurement	Measurement ca Simultaneous di zero-crossing ca 500 kHz/16 bit DC, 0.5 Hz to 20 0.5 Hz to 5 kHz Selectable lower U1 to U4, I1 to I4 pulse input), DC (50 ms or 100 Selectable lower U1 to U4, I1 to I4 pulse input), DC (50 ms or 100 Selectable for ea the same synchr The zero-crossing Two filter levels ( Operation and ac Operation	minal 1000 V (5 tategories III 600 gital sampling o alculation metho laculation metho 0 kHz limit measureme , Ext (with the m 0 ms fixed) ach measuremer , Ext (with the m 0 ms fixed) ach measuremer g filter automatic strong or mild) ach measuremer g filter automatic strong or mild) defined at 500 decy defined at 500 decy defined at 500 acy defined at 500 decy defined at 200 mg peak +, voltage unbal equivalent, curre normonic distortion, arent power, read gle, power phase n current magnitu we-direction pow und negative-direc m, motor power, tage and curren	0 Hz/60 Hz) V (anticipated t v (anticipated t v (anticipated t voltage and cu d int frequency (0.1 totor evaluation i at channel (U/I fo ) ully matches the c rmined when the rmined when the region (Add) region (Add	ransient overvoltt rransient overvolt rrent, simultaneo 5 Hz/1 Hz/2 Hz/5 Installed model ar or each channel m digital LPF when L zero-crossing filte or I is selected ar digital LPF when L zero-crossing filte or I is selected ar digital LOF when L zero-crossing filte or calculating ap	age 6000 V) us Hz/10 Hz/20 Hz) d CH B set for easured using J or I is selected. r is disabled (off) d measured above 10 kHz) ralent, voltage omponent, nonic distortion, nean value verage, current eform peak ance factor, hase angle agnitude, direction current wer magnitude, oss	

Accuracy		Voltage (U)	Current (I)
	DC	±0.05% rdg. ±0.07% f.s	. ±0.05% rdg. ±0.07% f.s.
	0.5 Hz ≤ f < 30 Hz	±0.05% rdg. ±0.1% f.s.	±0.05% rdg. ±0.1% f.s.
	30 Hz ≤ f < 45 Hz	±0.05% rdg. ±0.1% f.s.	±0.05% rdg. ±0.1% f.s.
	45 Hz ≤ f ≤ 66 Hz	±0.04% rdg. ±0.05% f.s	. ±0.04% rdg. ±0.05% f.s.
	66 Hz < f ≤ 1 kHz	±0.1% rdg. ±0.1% f.s.	±0.1% rdg. ±0.1% f.s.
	1 kHz < f ≤ 10 kHz	±0.2% rdg. ±0.1% f.s.	±0.2% rdg. ±0.1% f.s.
	10 kHz < f ≤ 50 kHz	±0.3% rdg. ±0.2% f.s.	±0.3% rdg. ±0.2% f.s.
	50 kHz < f ≤ 100 kH		±1.0% rdg. ±0.3% f.s.
	100 kHz < f ≤ 200 kl	-	±20% f.s.
	100 KHZ < 1 5 200 K		
		Active power (P)	Phase difference
	DC	±0.05% rdg. ±0.07% f.s	
	0.5 Hz ≤ f < 30 Hz	±0.05% rdg. ±0.1% f.s.	±0.08°
	30 Hz ≤ f < 45 Hz	±0.05% rdg. ±0.1% f.s.	±0.08°
	45 Hz ≤ f ≤ 66 Hz	±0.04% rdg. ±0.05% f.s	. ±0.08°
	66 Hz < f ≤ 1 kHz	±0.1% rdg. ±0.1% f.s.	±0.08°
	1 kHz < f ≤ 10 kHz	±0.2% rdg. ±0.1% f.s.	±(0.06*f+0.02)°
	10 kHz < f ≤ 50 kHz	±0.4% rdg. ±0.3% f.s.	±0.62°
	$50 \text{ kHz} < f \le 100 \text{ kHz}$	-	±(0.005*f+0.4)°
		°	
	$100 \text{ kHz} < f \le 200 \text{ kHz}$		±(0.022*f-1.3)°
	Values of f in above ta	voltage and current are defined for	or Lide and Ide, while accuracy
		other than DC are defined for Urm	
	Accuracy figures for p	hase difference values are defir	
	power factor of zero a		
		oltage, current, and active powe Iz are provided as reference va	
		oltage and active power values	
		Hz to 16 Hz are provided as ref	
		oltage and active power values	
		kHz to 100 kHz are provided as tage and active power values in e	
		100 kHz to 200 kHz are provided	
	Accuracy figures for ve	oltage and active power values	
	provided as reference		
	to 66 Hz are provided	hase difference values outside as reference values	the frequency range of 45 Hz
		of 600 V, add the following to the	he phase difference accuracy:
	500 Hz < f ≤ 5 kHz:±	0.3°	
	$5 \text{ kHz} < f \le 20 \text{ kHz}$		
	$20 \text{ kHz} < f \le 200 \text{ kHz}$	z:±1° Courrent and active power acc	uracy (at 2 V fs.)
		ouncill and active power act	araoy (at 2 v 1.5.)
		or accuracy to the above accu	racy figures for current, active
	power, and phase diff		
	measurement options	ed accuracy is defined separa s listed below	tery for the current
	incustrement options	nated below.	
		ent measurement options PW9	
	combined accuracy is	s defined as follows (with PW3	390 range as f.s.):
		Current (I)	Active power (P)
	DC	±0.07% rdg. ±0.077% f.s.	±0.07% rdg. ±0.077% f.s.
	DC 45 Hz ≤ f ≤ 66 Hz		±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s.
	45 Hz ≤ f ≤ 66 Hz	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s.	±0.06% rdg. ±0.055% f.s.
	45 Hz ≤ f ≤ 66 Hz	±0.07% rdg. ±0.077% f.s.	±0.06% rdg. ±0.055% f.s.
	$45 \text{ Hz} \le f \le 66 \text{ Hz}$ Add ±0.12% f.s. (f.s. = F	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. PW3390 range) when using 1 A c	±0.06% rdg. ±0.055% f.s. or 2 A range.
	$45 \text{ Hz} \le f \le 66 \text{ Hz}$ Add ±0.12% f.s. (f.s. = F When used in combin	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c nation with Models CT6875, C	±0.06% rdg. ±0.055% f.s. or 2 A range. T6876 or CT6877, the
	$45 \text{ Hz} \le f \le 66 \text{ Hz}$ Add $\pm 0.12\%$ f.s. (f.s. = F When used in combin following specification	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. PW3390 range) when using 1 A c nation with Models CT6875, C ns apply (f.s. refers to the PWS	±0.06% rdg. ±0.055% f.s. or 2 A range. 16876 or CT6877, the 3390's range)
	$45 \text{ Hz} \le f \le 66 \text{ Hz}$ Add ±0.12% f.s. (f.s. = f When used in combir following specification	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. PW3390 range) when using 1 A c nation with Models CT6875, C ns apply (f.s. refers to the PW3 Current (I)	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P)
	$45 \text{ Hz} \le f \le 66 \text{ Hz}$ Add ±0.12% f.s. (f.s. = F When used in combin following specification DC	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. W3390 range) when using 1 A c nation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s.	±0.06% rdg. ±0.055% f.s. or 2 A range. 16876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s.
	$45 \text{ Hz} \le f \le 66 \text{ Hz}$ Add ±0.12% f.s. (f.s. = F When used in combin following specification DC	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. PW3390 range) when using 1 A c nation with Models CT6875, C ns apply (f.s. refers to the PW3 Current (I)	±0.06% rdg. ±0.055% f.s. or 2 A range. 16876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s.
	$\begin{array}{c} 45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s.} (f.s. = f \\ \mbox{When used in combin following specification} \\ \hline \mbox{DC} \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{CT6875: When using CT6875: When using CT6876: When using } \end{array}$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. W3390 range) when using 1 A c nation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s.	±0.06% rdg. ±0.055% f.s. or 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.058% f.s. 2% f.s. (f.s. = PW3390 range) % f.s. (f.s. = PW3390 range)
	$\begin{array}{c} 45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s. } (f.s. = f \\ \mbox{ollowing specification} \\ \mbox{following specification} \\ \mbox{Ollowing specification} \\ \mbox{DC } \\ \mbox{45 \mbox{ Hz } sf } \le 66 \mbox{ Hz } \\ \mbox{CT6875: When using } \\ \mbox{CT6876: When using } \\ \mbox{CT6877: When using } \\ \mbox{When used with any } \\ \mbox{when used with any } \\ \mbox{migh-accuracy CT686} \\ \mbox{CT6876: When used with any } \\ \mbox{Men used with any } \\ Men used with a$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. <sup>20</sup> 3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. the 10A or 20A range, add ±0. the 20A or 40A range, add ±0. of the following current measu of the following current measu	±0.06% rdg. ±0.055% f.s. or 2 A range. 16876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.058% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde
	$\begin{array}{c} 45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s. } (f.s. = f \\ \mbox{ollowing specification} \\ \mbox{following specification} \\ \mbox{Ollowing specification} \\ \mbox{DC } \\ \mbox{45 \mbox{ Hz } sf } \le 66 \mbox{ Hz } \\ \mbox{CT6875: When using } \\ \mbox{CT6876: When using } \\ \mbox{CT6877: When using } \\ \mbox{When used with any } \\ \mbox{when used with any } \\ \mbox{migh-accuracy CT686} \\ \mbox{CT6876: When used with any } \\ \mbox{Men used with any } \\ Men used with a$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. <sup>2</sup> W3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PW Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. the 10A or 20A range, add ±0. the 20A or 40A range, add ±0. of the following current measu of the following current measu to PW3390 range as f.s.):	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. (s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 4% f.s. (f.s. = PW390 range) 4% f.s. (f.s. = PW390 range) 4% f.s. (f.s. = PW390 ran
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	$\begin{array}{c} 45 \text{ Hz} \leq 1 \leq 66 \text{ Hz} \\ \text{Add} \pm 0.12\% \text{ f.s.} (f.s. = f \\ \text{When used in combin} \\ \text{following specification} \\ \hline \\ DC \\ 45 \text{ Hz} \leq f \leq 66 \text{ Hz} \\ \hline \\ CT6875: \text{When using} \\ CT6877: \text{When using} \\ CT6877: \text{When using} \\ \text{When used with any } \\ \text{high-accuracy CT686} \\ \text{defined as follows (w)} \\ \hline \\ DC \\ \hline \\ DC \\ \hline \\ DC \\ \hline \end{array}$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. 20 f the following current measu \$2.05, or high-accuracy CT686 th PW3390 range as f.s.): Current (I) ±0.095% rdg. ±0.08% f.s.	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.058% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 3-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s.
	$\begin{array}{c} 45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s.} (f.s. = f \\ \mbox{When used in combin following specification} \\ \hline \mbox{DC} \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{CT6875: When using } \\ \mbox{CT6877: When using } \\ \mbox{CT6877: When used with any } \\ \mbox{high-accuracy CT686 } \\ \mbox{defined as follows (with a star) } \\ \hline \mbox{CT6876: When used with a star) } \\ \hline \mbox{CT6876: When used with a star) } \\ \hline \mbox{CT6876: When used with any } \\ \hline \mbox{CT6876: When used with a star) } \\ \hline \$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 200390 range) when using 1 A control to the temperature ation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.058% f.s. ±0.09% rdg. ±0.078% f.s. ±0.078\% f.s. \pm0.078\% f.s. \pm0.	±0.06% rdg. ±0.055% f.s. or 2 A range. 16876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 33-05, combined accuracy is Active power (P)
	$\begin{array}{c} 45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s.} (f.s. = f \\ \mbox{When used in combir following specification} \\ \hline \mbox{DC} \\ \mbox{45 } \mbox{Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{T6876: When using } \\ \mbox{CT6877: When using } \\ \mbox{When used with any } \\ \mbox{high-accuracy CT686 } \\ \mbox{defined as follows (w) } \\ \hline \mbox{DC} \\ \mbox{45 } \mbox{Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{45 } \mbox{Hz } \le f \le 66 \mbox{Hz } \\ \end{tabular}$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. 20 f the following current measu \$2.05, or high-accuracy CT686 th PW3390 range as f.s.): Current (I) ±0.095% rdg. ±0.08% f.s.	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.058% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde i3-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s.
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	$\begin{array}{c} 45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s. } (f.s. = f \\  color with a second transmission of the synch and the sync$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PW3 Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. the 10A or 20A range, add ±0.7 the 20A or 40A range, add ±0.7 the 40A or 80A range, add ±0.7 of the following current measu £2.05, or high-accuracy CT686 th PW3390 range as f.s.): Current (I) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. thefinitions to the above accuracy ridity for guaranteed accuracy n. or more	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.058% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde i3-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. ty figures when using the LPF : 23°C ±3°C (73°F ±5°F), rental wave is synchronized ver factor of one, or DC input
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guaranteed accuracy	$\begin{array}{c} 45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s. } (f.s. = f \\ \mbox{When used in combin following specification } \\ \mbox{Dc} \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{C16876: When using } \\ C16876: When using C16877: When using U16877: When using C16877: When used When use C16877: When used When use C16877: When used When use C168777: When use C168777; When use C1687777; When use C1687777; When use C1687777; When use C1687777; When use C1687$	$\pm 0.07\%$ rdg. $\pm 0.077\%$ f.s. $\pm 0.06\%$ rdg. $\pm 0.055\%$ f.s. $20.06\%$ rdg. $\pm 0.055\%$ f.s. $\pm 0.06\%$ rdg. $\pm 0.055\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.078\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.058\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.058\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.058\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.095\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.085\%$ rdg. $\pm 0.09\%$ f.s. $\pm 0.085\%$ rdg. $\pm 0.09\%$ f.s. $\pm 0.085\%$ rdg. $\pm 0.09\%$ f.s. $\pm 0.085\%$ rdg. $\pm 0.00\%$ rdg. \pm 0	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s.
guaranteed accuracy Temperature coefficient Effect of common mode	$\begin{array}{c} 45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s. } (f.s. = f \\ \mbox{When used in combin following specification } \\ \mbox{Dc} \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{C16876: When using } \\ C16876: When using C16877: When using U16877: When using C16877: When used When use C16877: When used When use C16877: When used When use C168777: When use C168777; When use C1687777; When use C1687777; When use C1687777; When use C1687777; When use C1687$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PWC Current (l) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. 2205, or high-accuracy CT686 th PW3390 range as f.s.): Current (l) ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. telinitions to the above accuracy n. or more ified ranges when the fundarr purce, for sine wave input, pow tage, within effective measure to, add ±0.01% f.s./°C) h 1000 V @50 H2/60 Hz appliet	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s.
guaranteed accuracy Temperature coefficient Effect of common mode voltage	$\begin{array}{c} 45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{Add $\pm$0.12\%$ f.s. (f.s. = f \\ \mbox{column} close in combir \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{column} close in close$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PWC Current (l) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. 2205, or high-accuracy CT686 th PW3390 range as f.s.): Current (l) ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. telinitions to the above accuracy n. or more ified ranges when the fundarr purce, for sine wave input, pow tage, within effective measure to, add ±0.01% f.s./°C) h 1000 V @50 H2/60 Hz appliet	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.058% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde i3-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. ty figures when using the LPF : 23°C ±3°C (73°F ±5°F), theretal wave is synchronized ver factor of one, or DC input ment range after zero- fundamental wave satisfies d between voltage
guaranteed accuracy Temperature coefficient Effect of common mode voltage Magnetic field interference	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 20/3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PW: Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. the 10A or 20A range, add ±0.2 the 40A or 80A range, add ±0.2 of the following current measu ±20.50, or high-accuracy CT686 th PW3390 range as f.s.): Current (I) ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. telinitions to the above accuracy h. or more ified ranges when the fundarr ource, for sine wave input, pow h. or more ified ranges when the fundarr ource, for sine wave input, pow c. add ±0.01% f.s./C) h 1000 V @50 Hz/60 Hz applied d chassis)	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. (s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 33-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. ry figures when using the LPF : 23°C ±3°C (73°F ±5°F), tental wave is synchronized wer factor of one, or DC input ment range after zero- fundamental wave satisfies d between voltage 50 Hz/60 Hz) accuracy/cos(\$
guaranteed accuracy Temperature coefficient. Effect of common mode voltage Magnetic field interference Power factor influence	$ \begin{array}{c} 45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s. } (f.s. = f \\ \mbox{ collowing specification } \\ \mbox{DC } \\ \mbox{45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{T6875: When using } \\ \mbox{CT6875: When using } \\ \mbox{CT6877: When used with any } \\ \mbox{ing the securacy CT686 } \\ \mbox{defined as follows (without within the spec with the spec model with the spec with the spec model with the spec with the synchroniz \\ \mbox{±0.01\%, f.s./°C (Iors Without without without without without without max with measurement jacks ar \\ \mbox{±1\%, f.s. or less (in 40 \mbox{Other than } \phi = \pm 90^{\circ\circ}: \pm 00^{\circ\circ}. \pm 00^{\circ\circ}. \mbox{tors } \\ \mbox{total without without without max } \\ \mbox{total without max } \m$	$\pm 0.07\%$ rdg. $\pm 0.077\%$ f.s. $\pm 0.06\%$ rdg. $\pm 0.055\%$ f.s. $20.06\%$ rdg. $\pm 0.055\%$ f.s. $\pm 0.06\%$ rdg. $\pm 0.055\%$ f.s. $\pm 0.03\%$ rdg. $\pm 0.058\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.078\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.078\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.078\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.058\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.095\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.095\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.085\%$ rdg. $\pm 0.08\%$ rdg. f.s. $\pm 0.09\%$ rdg. f.s. rdg.	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.058% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 3-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. y figures when using the LPF : 23°C ±3°C (73°F ±5°F), wental wave is synchronized ver factor of one, or DC input ment range after zero- fundamental wave satisfies d between voltage 50 Hz/60 Hz) S100% f.s.
guaranteed accuracy Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility	$\begin{array}{c} 45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s. } (f.s. = f \\ \mbox{When used in combin following specification } \\ \mbox{Dc} \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{CT6875: When using } \\ \mbox{CT6877: When used with any (with the synce s) } \\ \mbox{Dc} \\ \mbox{LS \mbox{LS \mbox{CT6866 } } \\ \mbox{Dc} \\ \mbox{LS \mbox{LS \mbox{CT6866 } } \\ \mbox{LS \mbox{LS \mbox{LS \mbox{LS \mbox{CT6876 } } \\ LS \mbox{LS \mbox$	$\pm 0.07\%$ rdg. $\pm 0.077\%$ f.s. $\pm 0.06\%$ rdg. $\pm 0.055\%$ f.s. $20.06\%$ rdg. $\pm 0.055\%$ f.s. 20.3390 range) when using 1 A con- hation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) $\pm 0.09\%$ rdg. $\pm 0.078\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.078\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.078\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.078\%$ f.s. the 10A or 20A range, add $\pm 0.1$ the 20A or 40A range, add $\pm 0.2$ the 40A or 80A range, add $\pm 0.2$ of the following current measure $\pm 0.09\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.085\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.085\%$ rdg. $\pm 0.08\%$ f.s. lefinitions to the above accurace indity for guaranteed accuracely n, or more $\pm 0.01\%$ f.s./°C) h 1000 V @50 Hz/60 Hz applied id chassis) 0 A/m magnetic field, DC and $\pm (1-cs)$ (p+Phase difference accurace	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. ±0.08% rdg. ±0.08% f.s. so the second se
Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.075% f.s. 200390 range) when using 1 A control of the second	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.058% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 30-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. 10.085% rdg. ±0.06% f.s. y figures when using the LPF : 23°C ±3°C (73°F ±5°F), wental wave is synchronized ver factor of one, or DC input mment range after zero- tundamental wave satisfies 1 between voltage 50 Hz/60 Hz) accuracy/locs(φ)) ×100% rdg y) ×100% f.s. 1.s., o the current sensor
Temperature coefficient Effect of common mode voltage Wagnetic field interference Power factor influence Susceptibility to conducted	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\pm 0.07\%$ rdg. $\pm 0.077\%$ f.s. $\pm 0.06\%$ rdg. $\pm 0.055\%$ f.s. $20.06\%$ rdg. $\pm 0.055\%$ f.s. 20.3390 range) when using 1 A con- hation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) $\pm 0.09\%$ rdg. $\pm 0.078\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.078\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.078\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.078\%$ f.s. the 10A or 20A range, add $\pm 0.1$ the 20A or 40A range, add $\pm 0.2$ the 40A or 80A range, add $\pm 0.2$ of the following current measure $\pm 0.09\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.09\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.08\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.085\%$ rdg. $\pm 0.08\%$ f.s. $\pm 0.085\%$ rdg. $\pm 0.08\%$ f.s. lefinitions to the above accurace indity for guaranteed accuracely n, or more $\pm 0.01\%$ f.s./°C) h 1000 V @50 Hz/60 Hz applied id chassis) 0 A/m magnetic field, DC and $\pm (1-cs)$ (p+Phase difference accurace	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.058% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 30-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. 10.085% rdg. ±0.06% f.s. y figures when using the LPF : 23°C ±3°C (73°F ±5°F), wental wave is synchronized ver factor of one, or DC input mment range after zero- tundamental wave satisfies 1 between voltage 50 Hz/60 Hz) accuracy/locs(φ)) ×100% rdg y) ×100% f.s. 1.s., o the current sensor
guaranteed accuracy Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted electromagnetic field	$ \begin{array}{c} 45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s. } (f.s. = f \\ \mbox{When used in combin following specification } \\ \mbox{DC } \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{CT6875: When using } \\ \mbox{CT6875: When using } \\ \mbox{CT6877: When used with any CT686 } \\ \mbox{defined as follows (with the spec size size of ground vo adjustment and hur 80\% R-H. + or less \\ \mbox{Warm-up time: 30 min linput: Within the spec size size of ground vo adjustment and the synchron (trooper signal size size of ground vo adjustment and the synchron (trooper size size (int 41\% f.s. or less (with measurement jacks at 11\% f.s. or less (with measurement jacks at 11\% f.s. or less (int 40) \\ \mbox{Cther than } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{Acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{Acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{Acos } \\ \mbox{When } \phi = \pm 90^{-1} \mbox{Acos } \\ \mbox{Acos } \mbox{Acos } \\ \mbox{Acos } \mbox{Acos } \mbox{Acos } \\ \mbox{Acos } Aco$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.075% f.s. 200390 range) when using 1 A control of the second	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 1% f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 50 Hz/60 Hz) accuracy)/cos(ψ) ×100% rdg 40 y ×100% f.s. f.s., of the current sensor ed primary-side current of the
Temperature coefficient Effect of common mode voltage Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated	$ \begin{array}{c} 45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s. } (f.s. = f \\ \mbox{When used in combin following specification } \\ \mbox{Dc} \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{CT6875: When using } \\ \mbox{CT6877: When used with any cT686 \\ \mbox{defined as follows (with the sync ss ) } \\ \mbox{DC} \\ \mbox{LS \mbox{LS \mbox{CT6877: When used with any cT686 \\ \mbox{defined as follows (with the sync ss ) } \\ \mbox{DC} \\ \mbox{LS \mbox{LS \mbox{CT6877: When used with any cursen and hur some source of the synchroniz } \\ \mbox{adjustment and char with the sync ss ) } \\ \mbox{adjustment and ac } \\ \mbox{when } \mbox{LS \mbox{CT coss (in 40 \mbox{CT6867: LCOS } \\ \mbox{When } \mbox{P \ \pm 190^{\circ}: LCOS } \\ \mbox{When } \mbox{P \ \pm 290^{\circ}: LCOS }$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 200390 range) when using 1 A co ation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. the 10A or 20A range, add ±0. the 20A or 40A range, add ±0. of the following current measu ±0.08% rdg. ±0.08% f.s. ±0.08% rdg. ±0.08% f.s. ±0.08% rdg. ±0.08% f.s. ±0.08% rdg. ±0.08% f.s. ±0.08% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. the rate f.s. the rate f.s. the rate f.s. ret f.s. the rate f.s. the rat	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. spi fs. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 1% f.g. = PW3390 range) 1% f.s. 10005% rdg. ±0.06% f.s. 1% f.s.
Temperature coefficient Effect of common mode voltage Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated		±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 200390 range) when using 1 A construction ataion with Models CT6875, C is apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. the 10A or 20A range, add ±0.2 the 20A or 40A range, add ±0.2 the 20A or 40A range, add ±0.2 the 30A or 80A range, add ±0.2 the 30A or 80A range, add ±0.2 the 30A or 80A range, add ±0.2 the 20As or 40A range as f.s.): Current (I) ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. the	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. spi fs. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 1% f.g. = PW3390 range) 1% f.s. 10005% rdg. ±0.06% f.s. 1% f.s.
Temperature coefficient Effect of common mode voltage Wagnetic field interference Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated	$ \begin{array}{c} 45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s. } (f.s. = f \\ \mbox{When used in combin following specification } \\ \mbox{Dc} \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{45 \mbox{ Hz } \le f \le 66 \mbox{ Hz } \\ \mbox{CT6875: When using } \\ \mbox{CT6877: When used with any cT686 \\ \mbox{defined as follows (with the sync ss ) } \\ \mbox{DC} \\ \mbox{LS \mbox{LS \mbox{CT6877: When used with any cT686 \\ \mbox{defined as follows (with the sync ss ) } \\ \mbox{DC} \\ \mbox{LS \mbox{LS \mbox{CT6877: When used with any cursen and hur some source of the synchroniz } \\ \mbox{adjustment and char with the sync ss ) } \\ \mbox{adjustment and ac } \\ \mbox{when } \mbox{LS \mbox{CT coss (in 40 \mbox{CT6867: LCOS } \\ \mbox{When } \mbox{P \ \pm 190^{\circ}: LCOS } \\ \mbox{When } \mbox{P \ \pm 290^{\circ}: LCOS }$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 200390 range) when using 1 A co ation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. the 10A or 20A range, add ±0. the 20A or 40A range, add ±0. of the following current measu ±0.08% rdg. ±0.08% f.s. ±0.08% rdg. ±0.08% f.s. ±0.08% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. the rate f.s. the rate f.s. the rate f.s. ret f.s. the rate f.s. the r	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. spi fs. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 1% f.g. = PW3390 range) 1% f.s. 10005% rdg. ±0.06% f.s. 1% f.s.
Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated electromagnetic field		±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 200390 range) when using 1 A control of the second	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. spi fs. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 1% f.g. = PW3390 range) 1% f.s. 10005% rdg. ±0.06% f.s. 1% f.s.
Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated electromagnetic field 2. Frequency Mea	$ \begin{array}{c} 45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{Add $\pm 0.12\% f.s. (t.s. = f \\ \mbox{When used in combir following specification \\ \mbox{DC } \\ \mbox{45 \mbox{Hz }\le 1 \le 66 \mbox{ Hz } \\ \mbox{45 \mbox{Hz }\le 1 \le 66 \mbox{Hz } \\ \mbox{Hz }\le 1 \le 66 \mbox{Hz } \\ \mbox{45 \mbox{Hz }\le 1 \le 66 \mbox{Hz } \\ \mbox{Hz }\le 1 \le 66 \mbox{Hz } \\ \mbox{Hz }\mbox{Hz }\le 1 \le 66 \mbox{Hz } \\ \mbox{Hz }\mbox{Hz }\mbox{Hz }\mbox{Hz }\mbox{Hz } \\ \mbox{Hz }\mbox{Hz }H$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 200390 range) when using 1 A control of the second	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. spi fs. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 1% f.g. = PW3390 range) 1% f.s. 10005% rdg. ±0.06% f.s. 1% f.s.
Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated electromagnetic field 2. Frequency Mea Measurement channels	$ \begin{array}{c} 45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{Add } \pm 0.12\% \mbox{ f.s.} (f.s. = f \\ \mbox{When used in combin following specification } \\ \mbox{Dc} \\ \mbox{45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{45 \mbox{ Hz } \le 1 \le 66 \mbox{ Hz } \\ \mbox{CT6875: When using } \\ CT6876: When using CT6877: When using CT6876: When using CT6876: When using CT6877: When using CT6877: When using CT6877: When used with any LPF accuracy CT686 \\ \mbox{defined as follows (with the sync ss vare of the sync ss vare $	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 200389 range) when using 1 A c ataion with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. the 10A or 20A range, add ±0.7 the 20A or 40A range, add ±0.3 of the following current measur ±0.09% rdg. ±0.08% f.s. Current (I) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. the 10A or 80A range as f.s.): Current (I) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. telfinitions to the above accuracy idity for guaranteed accuracy n. or more ified ranges when the fundam pource, for sine wave input, pov tage, within effective measure within the range in which the tion source conditions 2, add ±0.01% f.s./°C) h 1000 V @50 H2/60 Hz applied dchassis) 0 A/m magnetic field, DC and ±(1-cos (q+Phase difference accuracy tive power not more than ±6% he rated primary-side current or als the voltage range x the rater tates the rater and the rater cations	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. spi fs. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 1% f.g. = PW3390 range) 1% f.s. 10005% rdg. ±0.06% f.s. 1% f.s.
Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted electromagnetic field Susceptibility or radiated electromagnetic field 2. Frequency Mea Measurement channels Measurement source		±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c ation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. the 10A or 20A range, add ±0.1 the 20A or 40A range, add ±0.2 of the following current measu ±0.09% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.095% rdg. ±0.06% f.s. ±0.095% rdg. ±0.06% f.s. ±0.095% rdg. ±0.06% f.s. ±0.085% rdg. ±0.08% f.s. the rate f.s. the r	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. rement options: special-orde 33-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. ry figures when using the LPF : 23°C 43°C (73°F ±5°F), the taken the table of the table of the table of the table of table of the table of tabl
Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated electromagnetic field 2. Frequency Mea Measurement channels Measurement source Measurement method	$\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{Add} \pm 0.12\% \text{ f.s.} (f.s. = f}}$ When used in combin following specification DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{CT6875: When using}}$ CT6875: When using CT6876: When using CT6877: When using Mark as follows (with DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{CT6877: When using}}$ When used with any high-accuracy CT686 defined as follows (with DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{CT6877: When using}}$ When UFF accuracy 0 $\frac{30\% \text{ R.H. or less}}{\text{Warm-up time: 30 min}}$ When $f.s. or less (withmeasurement jacks ar \frac{41\% f.s. or less (in 40 \text{ Cther than } \phi = \pm 90^\circ: \text{ toos}}{\text{CW Men } \phi = \pm 90^\circ: \text{ toos}} When \phi = \pm 90^\circ: \text{ toos}}{\text{CW Men } \phi = \pm 90^\circ: \text{ toos}} When \phi = \pm 90^\circ: \text{ toos}\frac{600 \text{ Vm, current and active power equacurrent sensor}}{\text{Surremt Specifit}} Four (f1 to f4)Select U/I for each mReciprocal method +$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PW/ Current (I) ±0.09% rdg. ±0.078% f.s. the 200 or 400 range, add ±0.1 the 200 or 200 range, add ±0.1 the 400 or 200 range, add ±0.1 of the following current measure ±0.08% rdg. ±0.08% f.s. the 400 or 800 range, add ±0.1 of the following current measure ±0.08% rdg. ±0.08% f.s. the 400 or 800 range, add ±0.1 be 205, or high-accuracy CT686 th PW3390 range as f.s.): Current (I) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. telinitions to the above accurace indity for guaranteed accuracy h. or more tifted ranges when the fundarr burce, for sine wave input, pow burde site accurace of the following current within the range in which the ation source conditions 2, add ±0.01% f.s./°C) h 1000 V @50 Hz/60 Hz applied d chassis) 0 A/m magnetic field, DC and ±(1-cos (µ+Phase difference accurace is the voltage range × the rate active power not more than ±6% he rated primary-side current als the voltage range × the rate <b>cations</b>	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. (s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 33-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. ty figures when using the LPF : 23°C ±3°C (73°F ±5°F), tental wave is synchronized ver factor of one, or DC inpu- fundamental wave satisfies d between voltage 50 Hz/60 Hz) accuracy/icos(φ)) ×100% rdg y) ×100% f.s. f.s., of the current sensor ed primary-side current of the 6% f.s., of the current sensor ed primary-side current of the 6% f.s.,
Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated electromagnetic field <b>2. Frequency Mea</b> Measurement channels Measurement source Measurement method Measuring range	$\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{Add} \pm 0.12\% \text{ f.s.} (t.s.} = f$ When used in combir following specification DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{CT6875: When using}}$ CT6875: When using CT6876: When using CT6877: When using When used with any of high-accuracy CT686 defined as follows (with DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{Apply LPF accuracy of}}$ Temperature and here. 30 min Input: Within the spect with the sync's vizer oground the synchroniz: ±0.01% f.s./°C (for DC 40.01% f.s./°C (for DC 41.5. or less (in 40 Other than $\phi = \pm 90^{\circ}: \pm \cos$ @3 V, current and ac where f.s. current is 1 f.s. active power equa current sensor surement Specifit Four (11 to 14) Select U/I for each m Reciprocal method + Synchronous range from	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. <sup>20</sup> 3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. the 10A or 20A range, add ±0.2 the 20A or 40A range, add ±0.2 the 20A or 40A range, add ±0.2 the 20A or 40A range, add ±0.2 the 20A or 80A range, add ±0.2 the 40A or 80A range, add ±0.2 the 40A or 80A range, add ±0.2 the 40A or 80A range, add ±0.2 the 20A or 40A range as f.s.): Current (I) ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. telinitions to the above accuracy n. or more filted ranges when the fundam ource, for sine wave input, pov tage, within effective measure I within the range in which the taion source conditions 2, add ±0.01% f.s./°C) h 1000 V @50 Hz/60 Hz applied d chassis) 0 A/m magnetic field, DC and ±(1-cos (φ+Phase difference accuracy tive power not more than ±6% he rated primary-side current tals the voltage range × the rate d active power not more than ±1 active power not more than ±1 activ	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. (s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 33-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. ty figures when using the LPF : 23°C ±3°C (73°F ±5°F), tental wave is synchronized ver factor of one, or DC inpu- fundamental wave satisfies d between voltage 50 Hz/60 Hz) accuracy/icos(φ)) ×100% rdg y) ×100% f.s. f.s., of the current sensor ed primary-side current of the 6% f.s., of the current sensor ed primary-side current of the 6% f.s.,
Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated electromagnetic field <b>2. Frequency Mea</b> Measurement channels Measurement source Measurement method Measuring range Lower limit	$\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{Add} \pm 0.12\% \text{ f.s.} (f.s. = f}}$ When used in combin following specification DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{CT6875: When using}}$ CT6875: When using CT6876: When using CT6877: When using Mark as follows (with DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{CT6877: When using}}$ When used with any high-accuracy CT686 defined as follows (with DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{CT6877: When using}}$ When UFF accuracy 0 $\frac{30\% \text{ R.H. or less}}{\text{Warm-up time: 30 min}}$ When $f.s. or less (withmeasurement jacks ar \frac{41\% f.s. or less (in 40 \text{ Cther than } \phi = \pm 90^\circ: \text{ toos}}{\text{CW Men } \phi = \pm 90^\circ: \text{ toos}} When \phi = \pm 90^\circ: \text{ toos}}{\text{CW Men } \phi = \pm 90^\circ: \text{ toos}} When \phi = \pm 90^\circ: \text{ toos}\frac{600 \text{ Vm, current and active power equacurrent sensor}}{\text{Surremt Specifit}} Four (f1 to f4)Select U/I for each mReciprocal method +$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. <sup>20</sup> 3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. the 10A or 20A range, add ±0.2 the 20A or 40A range, add ±0.2 the 20A or 40A range, add ±0.2 the 20A or 40A range, add ±0.2 the 20A or 80A range, add ±0.2 the 40A or 80A range, add ±0.2 the 40A or 80A range, add ±0.2 the 40A or 80A range, add ±0.2 the 20A or 40A range as f.s.): Current (I) ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. telinitions to the above accuracy n. or more filted ranges when the fundam ource, for sine wave input, pov tage, within effective measure I within the range in which the taion source conditions 2, add ±0.01% f.s./°C) h 1000 V @50 Hz/60 Hz applied d chassis) 0 A/m magnetic field, DC and ±(1-cos (φ+Phase difference accuracy tive power not more than ±6% he rated primary-side current tals the voltage range × the rate d active power not more than ±1 active power not more than ±1 activ	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.08% f.s. (s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 33-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. ty figures when using the LPF : 23°C ±3°C (73°F ±5°F), tental wave is synchronized ver factor of one, or DC inpu- fundamental wave satisfies d between voltage 50 Hz/60 Hz) accuracy/icos(φ)) ×100% rdg y) ×100% f.s. f.s., of the current sensor ed primary-side current of the 6% f.s., of the current sensor ed primary-side current of the 6% f.s.,
Temperature coefficient Effect of common mode voltage Wagnetic field interference Power factor influence Susceptibility to conducted electromagnetic field 2. Frequency Mea Measurement channels Measurement source Measurement source Measurement method Measurement frequency		±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PW/ Current (I) ±0.09% rdg. ±0.078% f.s. the 10A or 20A range, add ±0.1 the 20A or 40A range, add ±0.1 the 40A or 20A range, add ±0.1 of the following current measu ±0.05% rdg. ±0.08% f.s. the 40A or 80A range, add ±0.1 of the following current measu ±0.08% rdg. ±0.08% f.s. the 40A or 80A range, add ±0.1 if the 500% rdg. ±0.08% f.s. the 40A or 80A range, add ±0.1 if the 600% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. ±0.085% rdg. ±0.06% f.s. the finitions to the above accurace indity for guaranteed accuracey h. or more itiled ranges when the fundarr burce, for sine wave input, pow h. or more twithin the range in which the ation source conditions 2, add ±0.01% f.s./°C) h 1000 V @50 Hz/60 Hz applied d chasis) 0 A/m magnetic field, DC and ±(1-cos (¢+Phase difference accurace is the voltage range x the rate d active power not more than ±6% he rated primary-side current als the voltage range x the rate cations easurement channel zero-crossing sample value c 10.5 Hz to 5 kHz (with "0.0000 Hz" z/10 Hz/20 Hz	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% orange) 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 33-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. ty figures when using the LPF : 23°C ±3°C (73°F ±5°F), tental wave is synchronized ver factor of one, or DC inpu- fundamental wave satisfies d between voltage 50 Hz/60 Hz) accuracy)/cos(φ)) ×100% rdg y) ×100% f.s. f.s., of the current sensor ed primary-side current of the 6% f.s., of the current sensor ed primary-side current of the 6% f.s., of the current sensor ed primary-side current of the 6% f.s., of the current sensor ed primary-side current of the f.% f.s., orrection or " Hz" unmeasurable time)
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Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated electromagnetic field 2. Frequency Mea Measurement channels Measurement source Measurement method Measuring range Lower limit measurement frequency Data update interval	$\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{Add} \pm 0.12\% \text{ f.s.} (f.s. = f}}$ When used in combin following specification DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{CT6875: When using}}$ CT6875: When using CT6876: When using CT6877: When using DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{Apply LPF accuracy CT6867}}$ When $45 \text{ f.s.} < 1686 \text{ f.s.}$ Apply LPF accuracy of Temperature and hur 80% R.H. or less Warm-up time: 30 mil Input: Within the spec with the sync so are or ground vo adjustment and the synchronizi ≠ 0.01% f.s. or less (in 40 Other than $\phi = \pm 90^{\circ\circ}: \pm cos$ @ 3 V, current and ac where f.s. current is 1 f.s. active power equi current sensor @ 10 V/m, current and ac where f.s. current is 1 f.s. active power equi current sensor Surement Specifit Four (11 to 14) Select U/I for each m Reciprocal method + Synchronous range from 0.5 Hz/1 Hz/2 Hz/5 H 50 ms (measurement ± 0.01 Hz (during voltag	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c ation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. the 10A or 20A range, add ±0. the 20A or 40A range, add ±0. of the following current measu ±0.09% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.05% rdg. ±0.08% f.s. ±0.000% f.s. ±0.05% rdg. ±0.000% f.s.	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 3°-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. 10.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. 10.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. 10.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. 10.005% f.s. 11.5, 10.00% f.s. 1.s., 11.5, 11.5, 11.5, 11.5, 12.5% f.s., 12.5% f.s., 13.5% f.s., 14.5% f.s., 15.5% f.
Temperature coefficient Effect of common mode voltage Magnetic field interference Power factor influence Susceptibility to conducted electromagnetic field Susceptibility to radiated electromagnetic field 2. Frequency Mea Measurement channels Measurement source Measurement method Measuring range Lower limit measurement frequency Data update interval	$\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{Add} \pm 0.12\% \text{ f.s.} (f.s. = f}}$ When used in combin following specification DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{CT6875: When using}}$ CT6875: When using CT6876: When using CT6877: When using When used with any of high-accuracy CT686 defined as follows (with DC $\frac{1}{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}$ Apply LPF accuracy of 30% R.H. or less Warm-up time: 30 min Input: Within the spec with the syncs zero ground vo adjustment and the synchroniz: ±0.01% f.s. or less (inth 0.01% cl.s. or less (inth 0.01% cl.s. ourrent is the f.s. active power equal current sensor #10 vfm, current and where f.s. current is the f.s. active power equal current sensor Surement Specifit Four (11 to 14) Select UJI for each m Reciprocal method + Synchronous range from 0.5 Hz/1 Hz/2 Hz/5 H 50 ms (measurement ±0.01 Hz (during voltag ±0.05% rdg., ±1 dgt. (u	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c hation with Models CT6875, C ns apply (f.s. refers to the PW Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. the 10A or 20A range, add ±0.1 the 20A or 40A range, add ±0.2 the 40A or 80A range, add ±0.2 of the following current measure ±0.08% rdg. ±0.08% f.s. ±0.08% rdg. ±0.08% f.s. the 10A or 20A range, add ±0.2 of the following current measure ±0.08% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. telinitions to the above accurace indity for guaranteed accuracey h. or more tifted ranges when the fundarr burce, for sine wave input, pow tho or Wore ture at the fetcitve measure within the range in which the ation source conditions 2, add ±0.01% f.s./°C) h 1000 V @50 Hz/60 Hz applied d chassis) 0 A/m magnetic field, DC and ±(1-cos (µ+Phase difference a (µ+Phase difference accurace the rated primary-side current als the voltage range × the rate the rated primary-side current als the voltage range × the rate <b>cations</b> easurement channel zero-crossing sample value c 0.5.Hz to 5.KHz (with "0.0000 Hz" z/10 Hz/20 Hz -frequency-dependent at 45 H ge frequency measurement with der other conditions)	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.085% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. transformer the terper- transformer the terper- transformer terper- fundamental wave satisfies to between voltage 50 Hz/60 Hz) accuracy/cos(Φ)) ×100% rdg y) ×100% f.s. f.s., of the current sensor d primary-side current of the terfer terper- terper terper- terper terper- terper terper- fundamental wave satisfies to between voltage 50 Hz/60 Hz) accuracy/cos(Φ)) ×100% rdg to fthe current sensor d primary-side current of the terper terper- terper terper ter
	$\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{Add} \pm 0.12\% \text{ f.s.} (f.s. = f}}$ When used in combin following specification DC $\frac{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}{\text{CT6875}}$ CT6875: When using CT6876: When using CT6876: When using CT6876: When using CT6877: When used with a diffication of the the theory of the theory of the theory defined as follows (wi DC $\frac{1}{45 \text{ Hz} \le 1 \le 66 \text{ Hz}}$ Apply LPF accuracy O Temperature and hur 80% R.H. or less with the sync s: zero ground vo adjustment and the synchroniz ±0.01% f.s./°C (for DC ±0.01% f.s./°C (sor US): when $\phi = \pm 90^{\circ::} \pm 00^{\circ:} \pm 00^{\circ::} \pm 00^{\circ:} \pm 00^{\circ:}$	±0.07% rdg. ±0.077% f.s. ±0.06% rdg. ±0.055% f.s. 2W3390 range) when using 1 A c ation with Models CT6875, C ns apply (f.s. refers to the PWC Current (I) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. the 10A or 20A range, add ±0. the 20A or 40A range, add ±0. of the following current measu ±0.09% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.05% rdg. ±0.08% f.s. ±0.000% f.s. ±0.05% rdg. ±0.000% f.s.	±0.06% rdg. ±0.055% f.s. r 2 A range. F6876 or CT6877, the 3390's range) Active power (P) ±0.09% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. ±0.08% rdg. ±0.078% f.s. 2% f.s. (f.s. = PW3390 range) 2% f.s. (f.s. = PW3390 range) rement options: special-orde 33-05, combined accuracy is Active power (P) ±0.095% rdg. ±0.08% f.s. ±0.085% rdg. ±0.08% f.s. ±0.085% rdg. ±0.06% f.s. y figures when using the LPF : 23°C ±3°C (73°F ±5°F), wental wave is synchronized wer factor of one, or DC input ment range after zero- fundamental wave satisfies 1 between voltage 50 Hz/60 Hz) accuracy/cos(Φ)) ×100% rdg y) ×100% f.s. f.s., of the current sensor de primary-side current of the 46% f.s., of the current sensor de primary-side current of the 5% f.s., of the current sensor de primary-side current of the 15% f.s. f.s. (f.s. (f

#### -3. Integration Measurement Specifications

Measurement mode	Selectable between RMS or DC for each wiring mode
Measurement items	Current integration (Ih+, Ih-, and Ih), active power integration (WP+, WP-, and WP) Ih+ and Ih- only for DC mode measurements, and Ih only for RMS mode measurements
Measurement method	Digital calculation from each current and active power phase (when averaging, calculates with previous average value) In DC mode: calculates current value at every sample, and integrates instantaneous power independent of polarity In RMS mode: Integrates current effective values between measurement intervals, and polarity-independent active power value
Measurement interval	50 ms data update interval
Measuring range	Integration value: 0 Ah/Wh to ±9999.99 TAh/TWh Integration time: No greater than 9999h59m
Integration time accuracy	±50 ppm ±1 dgt. (0°C to 40°C (32°F to 104°F))
Integration accuracy	± (current and active power accuracy) ± integration time accuracy
Backup function	Integration automatically resumes after power outages.

#### -4. Harmonic Measurement Specifications

Number of	4 channels Harmonic measurements no	t available for mult	into systems with diff	foront froquencies	
Measurement items	Harmonic rms voltage, harm harmonic rms current, harm harmonic active power, harm difference, total harmonic vo voltage unbalance factor, cu	onic voltage perce onic current percer nonic power percer ltage distortion, tot	ntage, harmonic volt ntage, harmonic curre ntage, harmonic volta al harmonic current	age phase angle, ent phase angle, age-current phase	
Measurement method	Zero-crossing synchronous calculation (all channels in same window), with gap Fixed 500 kS/s sampling, after digital anti-aliasing filter Equal thinning between zero crossings (with interpolation calculation)				
Harmonic sync source	U1 to U4, 11 to 14, External (with motor analysis and CH B set for pulse input), D selectable (50 ms or 100 ms)				
FFT calculation word length	32 bits				
Anti-aliasing filter	Digital filter (automatically	set based on synd	chronization freque	ncy)	
Windows	Rectangular				
Synchronization frequency range	As specified for power mea	asurements			
Data update interval	50 ms (measurement-frequ	ency-dependent	at 45 Hz and below	/)	
Phase zero adjustment	Provided by key operation or Automatic or manual config Phase zero-adjustment set	juration of phase	zero-adjustment va	lues	
THD calculation	THD-F/THD-R				
Highest order analysis and window waveforms	Synchronization frequency range	Window waveforms	Analysis order		
	0.5 Hz ≤ f < 40 Hz	1	100th	1	
	40 Hz ≤ f < 80 Hz	1	100th		
	80 Hz ≤ f < 160 Hz	2	80th	1	
	160 Hz ≤ f < 320 Hz	4	40th		
	320 Hz ≤ f < 640 Hz	8	20th	-	
	640 Hz ≤ f < 1.2 kHz	16	10th	-	
	1.2 kHz ≤ f < 2.5 kHz	32	5th		
	2.5 kHz ≤ f < 5.0 kHz	64	3th	]	
Accuracy	Frequency	Frequency Voltage(U), Current(I		wer(P)	
	0.5 Hz ≤ f < 30 Hz	±0.4% rdg. ±0	.2% f.s.		
	30 Hz ≤ f ≤ 400 Hz ±0.3% rdg. ±0.1% f.s.		0.1% f.s.		
	400 Hz < f ≤ 1 kHz ±0.4% rdg. ±0.2% f.		.2% f.s.		
	1 kHz < f ≤ 5 kHz	±1.0% rdg. ±0	.5% f.s.		
	5 kHz < f ≤ 10 kHz	±2.0% rdg. ±1	.0% f.s.		
	10 kHz < f ≤ 13 kHz	±5.0% rdg. ±1	.0% f.s.		
	Not specified for sync freque Add the LPF accuracy to the second				

#### -5. Noise Measurement Specifications

-5. Noise measurer	ment opecifications
Calculation channels	1 (Select one from CH1 to CH4)
Calculation items	Voltage noise/Current noise
Calculation type	RMS spectrum
Calculation method	Fixed 500 kS/s sampling, thinning after digital anti-aliasing filter
FFT calculation word length	32 bits
FFT data points	1000/5000/10,000/50,000 (according to displayed waveform recording length)
Anti-aliasing filter	Automatic digital filter (varies with maximum analysis frequency)
Windows	Rectangular/Hanning/flat-top
Data update interval	Determined by FFT points within approx. 400 ms, 1 s, 2 s, or 15 s, with gap
Highest analysis frequency	200 kHz/50 kHz/20 kHz/10 kHz/5 kHz/2 kHz
Frequency resolution	0.2 Hz to 500 Hz (Determined by FFT points and maximum analysis frequency
Noise amplitude measurement	Calculates the ten highest level and frequency voltage and current FFT peak values (local maxima).
Lower limit noise frequency	0 kHz to 10 kHz
6. Motor Analysis	Specifications (Model PW3390-03)
Number of input channels	3 channels CH A: Analog DC input/Frequency input (selectable) CH B: Analog DC input/Pulse input (selectable) CH Z: Pulse input
Measurement input terminal type	Insulated BNC jacks
Input impedance (DC)	1 MΩ ±100 kΩ
Input methods	Isolated and differential inputs (not isolated between channels B and Z)
Measurement items	Voltage, torque, rotation rate, frequency, slip, and motor power
Synchronization source	U1 to U4, I1 to I4, Ext (with CH B set for pulse input), DC (50 ms/100 ms) Common to channels A and B

# Synchronization source Common to channels A and B Measurement f1 to f4 (for slip calculations) frequency source ±20 V (during analog, frequency, and pulse input) Maximum input voltage ±20 V (during analog, frequency, and pulse input) Maximum ated voltage to earth 50 V (50 Hz/60 Hz) (1). Analog DC Input (CH A/CH B) 50 V (50 Hz/60 Hz)

Measurement range	±1 V, ±5 V, ±10 V (when inputting analog DC)
Valid input range	1% to 110% f.s.
Sampling	10 kHz/16 bits
Response time	1 ms (measuring zero to full scale, with LPF off)
Measurement method	Simultaneous digital sampling and zero-crossing synchronous calculation system (cumulative average of intervals between zero crossings)
Measurement accuracy	±0.08% rdg. ±0.1% f.s.
Temperature coefficient	±0.03% f.s./°C
	Not more than ±0.01% f.s. (with 50 V [DC or 50 Hz/60 Hz] between measurement jacks and PW3390 chassis)

	I
Effect of external magnetic field	Not more than $\pm 0.1\%$ f.s. (at 400 A/m DC and 50 Hz/60 Hz magnetic fields)
LPF	OFF/ON (OFF: 4 kHz, ON: 1 kHz)
Total display area Zero adjustment	Zero-suppression range setting ±120% Zero-corrected input offset of voltage ±10% f.s. or less
Zero adjustment Scaling	2ero-corrected input onset of voltage ±10% t.s. or less 0.01 ~ 9999.99
Unit	CH A: V, N• m, mN• m, kN• m, CH B: V, Hz, r/min
2). Frequency Inpu	
Valid amplitude range	±5 V peak (5 V symmetrical, equivalent to RS-422 complementary signal)
Max. measurement	100 kHz
frequency Measurement range	1 kHz to 100 kHz
Data output interval	According to synchronization source
Measurement accuracy	±0.05% rdg., ±3 dgt.
Total display area	1.000 kHz to 99.999 kHz
Frequency range	Select fc and fd for frequency range fc $\pm$ fd [Hz] (frequency measurement only) 1 kHz to 98 kHz in 1 kHz units, where fc + fd < 100 kHz and fc - fd > 1 kHz
Rated torque	1 ~ 999
Unit	Hz, N• m, mN• m, kN• m
(3). Pulse Input (CH	H B only)
Detection level	Low: 0.5 V or less; High: 2.0 V or more
Measurement range	1 Hz to 200 kHz (at 50% duty)
Division setting range Measurement	<ol> <li>1 ~ 60000</li> <li>0.5 Hz to 5.0 kHz (limited to measured pulse frequency divided by selected no.</li> </ol>
frequency range	of divisions)
Minimum detectable	2.5 µs or more
pulse width Measurement accuracy	±0.05% rdg., ±3 dgt.
Motor poles	2~98
Max. measurement	100 Hz, 500 Hz, 1 kHz, 5 kHz
frequency Pulse count	Integer multiple of half the number of motor poles, from 1 to 60,000
Unit	Hz, r/min
4). Pulse Input (CH	
Detection level	Low: 0.5 V or less; High: 2.0 V or more
Measurement range	0.1 Hz to 200 kHz (at 50% duty)
Minimum detectable	2.5 µs or more
pulse width Settings	OFF/Z Phase/B Phase (clear counts of CHB in rising edge during Z Phase,
Settings	detect polar code for number of rotations during B Phase)
7. D/A Output Opti	on Specifications (Models PW3390-02 and PW3390-03)
Number of output channels	16 channels
Output contents	CH1 to CH8: Selectable analog/waveform outputs
Output items	CH9 to CH16: Analog output Analog output: Select a basic measurement item for each output channel.
Output items	Waveform output: Output voltage or current measured waveforms.
Output connector	One 25-pin female D-sub
D/A conversion resolution	16 bits (polarity + 15 bits)
Output accuracy	Analog output: Measurement accuracy ±0.2% f.s. (DC level)
	Waveform output: Measurement accuracy ±0.5% f.s. (at ±2 V f.s.), ±1.0% f.s. (at ±1 V f.s.)
	(rms level within synchronous frequency range)
Output update interval	Analog output: 50 ms (according to input data update interval of selected parameter Waveform output: 500 kHz
Output voltage	Analog output: ±5 V DC nom. (approx. ±12 V DC max.) Waveform output: ±2 V/±1 V switchable, crest factor of 2.5 or greater
Output impedance	Setting applies to all channels. 100 Ω ±5 Ω
Temperature coefficient	±0.05% f.s./°C
-8. Display Specific	cations
Display type	9-inch TFT color LCD (800×480 dots)
Display refresh interval	Measurement values: 200 ms (independent of internal data update interval)
	Waveforms, FFT: screen-dependent
9. External Interfa	ce Specifications
(1). USB Interface (	
	(Functions)
Connector	Mini-B receptacle ×1
Connector Compliance standard	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed)
Connector Compliance standard Class	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB488h)
Connector Compliance standard Class Connection destination	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB488h)
Connector Compliance standard Class Connection destination Function	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB488h) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control
Connector Compliance standard Class Connection destination Function 2). USB Memory In	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB488h) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control
Connector Compliance standard Class Connection destination Function 2). USB Memory In Connector	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB488h) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control <b>Interface</b>
Connector Compliance standard Class Connection destination Function 2). USB Memory II Connector Compliance standard USB power supply	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB488h) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control nterface USB type A connector ×1 USB2.0 500 mA maximum
Connector Compliance standard Class Connection destination Function (2). USB Memory II Connector Compliance standard USB power supply USB storage device support	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB488h) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control nterface USB type A connector ×1 USB2.0 500 mA maximum USB Mass Storage Class
Connector Compliance standard Class Connection destination Function 2). USB Memory II Connector Compliance standard USB power supply USB storage device support	Mini-B receptacle ×1 USB2:0 (Full Speed/High Speed) Individual (USB488h) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control nterface USB type A connector ×1 USB2:0 500 mA maximum USB Mass Storage Class Save and load settings files, Save waveform data
Connector Compliance standard Class Connection destination Function 2). USB Memory II Connector Compliance standard USB power supply USB storage device support	Mini-B receptacle ×1 USB2:0 (Full Speed/High Speed) Individual (USB488h) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control nterface USB type A connector ×1 USB2:0 500 mA maximum USB Mass Storage Class Save and load settings files, Save waveform data Save displayed measurement values (CSV format) Copy measurement values and recorded data (from CF card)
Connector Compliance standard Class Connection destination Function 2). USB Memory II Connector Compliance standard USB power supply USB storage device support	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB488h) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control nterface USB type A connector ×1 USB2.0 500 mA maximum USB Mass Storage Class Save and load settings files, Save waveform data Save displayed measurement values (CSV format)
Connector Compliance standard Class Connection destination Function 2). USB Memory II Connector Compliance standard USB power supply USB storage device support Function	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB488h) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control <b>Interface</b> USB type A connector ×1 USB2.0 500 mA maximum USB Mass Storage Class Save and load settings files, Save waveform data Save displayed measurement values (CSV format) Copy measurement values and recorded data (from CF card) Save waveform data
Connector Compliance standard Class Connection destination Function 2). USB Memory II Connector Compliance standard USB power supply USB storage device support Function 3). LAN Interface	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB488h) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control nterface USB type A connector ×1 USB2.0 500 mA maximum USB Mass Storage Class Save and load settings files, Save waveform data Save displayed measurement values (CSV format) Copy measurement values and recorded data (from CF card) Save F spectrum for noise measurement
Connector Compliance standard Class Connection destination Function 2). USB Memory In Connector Compliance standard USB power supply USB storage device support Function 3). LAN Interface Connector	Mini-B receptacle ×1         USB2:0 (Full Speed/High Speed)         Individual (USB488h)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control         nterface         USB type A connector ×1         USB Mass Storage Class         Save and load settings files, Save waveform data         Save and load settings files, Save waveform data         Save waveform data         Save and load settings files, Save waveform data         Save and load settings files, Save waveform data         Save and load settings files, Save waveform data         Save saveform data         Save and load settings files, Save waveform data         Save/load screenshots         RJ-45 connector × 1
Connector Compliance standard Class Connection destination Function (2). USB Memory In Connector Compliance standard USB power supply USB storage device support Function (3). LAN Interface Connector Compliance standard	Mini-B receptacle ×1         USB2.0 (Full Speed/High Speed)         Individual (USB48bh)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control <b>hterface</b> USB type A connector ×1         USB2.0         500 mA maximum         USB Mass Storage Class         Save and load settings files, Save waveform data         Save displayed measurement values (CSV format)         Copy measurement values and recorded data (from CF card)         Save efform data         Save/load screenshots
Connector Compliance standard Class Connection destination Function (2). USB Memory In Connector Compliance standard USB power supply USB storage device support Function (3). LAN Interface Connector Compliance standard Transmission method	Mini-B receptacle ×1 USB2.0 (Full Speed/High Speed) Individual (USB48bh) Computer (Windows10/Windows8/Windows7, 32bit/64bit) Data transfer and command control Interface USB type A connector ×1 USB2.0 500 mA maximum USB Mass Storage Class Save and load settings files, Save waveform data Save displayed measurement values (CSV format) Copy measurement values and recorded data (from CF card) Save aref paper data Save FFT spectrum for noise measurement Save/load screenshots RJ-45 connector × 1 IEEE 802.3 compliant 10BASE-T/100BASE-TX Auto detected
Connector Compliance standard Class Connection destination Function (2). USB Memory II Connector Compliance standard USB power supply USB storage device support Function (3). LAN Interface Connector Compliance standard Transmission method Protocol	Mini-B receptacle ×1         USB2:0 (Full Speed/High Speed)         Individual (USB488h)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control         nterface         USB type A connector ×1         USB type A connector ×1         USB tasks Storage Class         Save and load settings files, Save waveform data         Save and load settings files, Save waveform data         Save waveform data         Save PFT spectrum for noise measurement         Save/load screenshots         RJ-45 connector × 1         IEEE 802.3 compliant         10BASE-T/100BASE-TX Auto detected         TCP/IP
Connector Compliance standard Class Connection destination Function 2). USB Memory In Connector Compliance standard USB storage device support Function 3). LAN Interface Connector Compliance standard Transmission method Frotocol Function	Mini-B receptacle ×1         USB2:0 (Full Speed/High Speed)         Individual (USB488h)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control         nterface         USB type A connector ×1         USB type A connector ×1         USB tasks Storage Class         Save and load settings files, Save waveform data         Save and load settings files, Save waveform data         Save waveform data         Save PFT spectrum for noise measurement         Save/load screenshots         RJ-45 connector × 1         IEEE 802.3 compliant         10BASE-T/100BASE-TX Auto detected         TCP/IP
Connector Compliance standard Class Connection destination Function 2). USB Memory In Connector Compliance standard USB power supply USB storage device support Function 3). LAN Interface Connector Compliance standard Transmission method Frotocol Function Maximum cable length	Mini-B receptacle ×1         USB2:0 (Full Speed/High Speed)         Individual (USB488h)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control         nterface         USB type A connector ×1         USB type A connector ×1         USB Mass Storage Class         Save and load settings files, Save waveform data         Save files         Save files         Save files         Save form data         Save Files         Save/load screenshots         RJ-45 connector × 1         IEEE 802.3 compliant         10BASE-T/100BASE-TX Auto detected         TCP/IP         HTTP server (remote operation), Dedicated port (data transfer and command control         Up to 3 m
Connector Compliance standard Class Connection destination Function 2). USB Memory In Connector Compliance standard USB power supply USB storage device support Function 3). LAN Interface Connector Compliance standard Transmission method Protocol Function Maximum cable length 4). CF Card Interface	Mini-B receptacle ×1         USB2:0 (Full Speed/High Speed)         Individual (USB48bh)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control         nterface         USB type A connector ×1         USB Mass Storage Class         Save and load settings files, Save waveform data         Save FT spectrum for noise measurement         Save/load screenshots         RJ-45 connector × 1         IEEE 802.3 compliant         10BASE-T/100BASE-TX Auto detected         TCP/IP         HTTP server (remote operation), Dedicated port (data transfer and command control         Up to 3 m         Ce
Connector Compliance standard Class Connection destination Function 2). USB Memory In Connector Compliance standard USB power supply USB storage device support Function 3). LAN Interface Connector Compliance standard Transmission method Protocol Function Maximum cable length 4). CF Card Interfa Slot	Mini-B receptacle ×1         USB2:0 (Full Speed/High Speed)         Individual (USB488h)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control         nterface         USB type A connector ×1         USB type A connector ×1         USB type A connector ×1         USB Mass Storage Class         Save and load settings files, Save waveform data         Save All Save files         Save All Save files         Save files         Save files         Save form data         Save Files         Save/load screenshots         RJ-45 connector × 1         IEEE 802.3 compliant         10BASE-T/100BASE-TX Auto detected         TCP/IP         HTTP server (remote operation), Dedicated port (data transfer and command control         Up to 3 m
Connector Compliance standard Class Connection destination Function 2). USB Memory II Connector Compliance standard USB power supply USB storage device support Function 3). LAN Interface Connector Compliance standard Transmission method Protocol Function Maximum cable length 4). CF Card Interfa Slot Compatible card	Mini-B receptacle ×1         USB2:0 (Full Speed/High Speed)         Individual (USB48bh)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control <b>tterface</b> USB type A connector ×1         USB2:0         500 mA maximum         USB Mass Storage Class         Save and load settings files, Save waveform data         Save displayed measurement values (CSV format)         Copy measurement values and recorded data (from CF card)         Save waveform data         Save PFT spectrum for noise measurement         Save/load screenshots         RJ-45 connector × 1         IEEE 802.3 compliant         10BASE-T/100BASE-TX Auto detected         TCP/IP         HTTP server (remote operation), Dedicated port (data transfer and command control         Up to 3 m <b>ace</b> One Type 1
Connector Compliance standard Class Connection destination Function 2). USB Memory In Connector Compliance standard USB power supply USB storage device support Function 3). LAN Interface Connector Compliance standard Transmission method Protocol Function Maximum cable length 4). CF Card Interfa Stot Compatible card Supported memory capacity Data format	Mini-B receptacle ×1         USB2:0 (Full Speed/High Speed)         Individual (USB48bh)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control <b>tterface</b> USB type A connector ×1         USB type A connector ×1         USB type A connector ×1         USB Mass Storage Class         Save and load settings files, Save waveform data         Save and settings files, Save waveform data         Save and settings files, Save waveform data         RJ-45 connector × 1         IEEE 802.3 compliant
Connector Compliance standard Class Connection destination Function 2). USB Memory In Connector Compliance standard USB power supply USB storage device support Function 3). LAN Interface Connector Compliance standard Transmission method Protocol Function Maximum cable length 4). CF Card Interfa Stot Compatible card Supported memory capacity Data format	Mini-B receptacle ×1         USB2.0 (Full Speed/High Speed)         Individual (USB48bh)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control <b>tterface</b> USB type A connector ×1         USB2.0         500 mA maximum         USB Mass Storage Class         Save and load settings files, Save waveform data         Save displayed measurement values (CSV format)         Copy measurement values and recorded data (from CF card)         Save waveform data         Save/load screenshots         RJ-45 connector × 1         IEEE 802.3 compliant         10BASE-T/100BASE-TX Auto detected         TCP/IP         HTTP server (remote operation), Dedicated port (data transfer and command control         Up to 3 m <b>ACE</b> One Type 1         CompactFlash memory card (32 MB or higher)         Up to 2 GB         MS-DOS format (FAT16/FAT32)         Save waveform data
Connector Compliance standard Class Connection destination Function 2). USB Memory In Connector Compliance standard USB power supply USB storage device support Function 3). LAN Interface Connector Compliance standard Transmission method Protocol Function Maximum cable length 4). CF Card Interfa Stot Compatible card Supported memory capacity Data format	Mini-B receptacle ×1         USB2:0 (Full Speed/High Speed)         Individual (USB48bh)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control <b>tterface</b> USB type A connector ×1         USB2:0         500 mA maximum         USB Mass Storage Class         Save and load settings files, Save waveform data         Save and load settings files, Save waveform data         Save and load settings files, Save waveform (CSV format)         Copy measurement values and recorded data (from CF card)         Save waveform data         Save FFT spectrum for noise measurement         Save/load screenshots         RJ-45 connector × 1         IEEE 802.3 compliant         10BASE-T/100BASE-TX Auto detected         TCP/IP         HTTP server (remote operation), Dedicated port (data transfer and command control         Up to 3 m         COE         One Type 1         CompactFlash memory card (32 MB or higher)         Up to 2 GB         MS-DOS format (FAT16/FAT32)         Save and load settings files, Save waveform data         Save displayed measurement values and auto-recorded data (CSV format)         Copy measurementstrecorded data (mou USB storage)
Connector Compliance standard Class Connection destination Function (2). USB Memory In Connector Compliance standard USB power supply USB storage device support Function (3). LAN Interface Connector Compliance standard Transmission method Protocol Function Maximum cable length (4). CF Card Interfa Slot Compatible card Supported memory capacity Data format Recordable content	Mini-B receptacle ×1         USB2:0 (Full Speed/High Speed)         Individual (USB488h)         Computer (Windows10/Windows8/Windows7, 32bit/64bit)         Data transfer and command control         nterface         USB type A connector ×1         Save and load settings files, Save waveform data         Save FFT spectrum for noise measurement         Save/FFT spectrum for noise measurement         Save/Load screenshots         RJ-45 connector × 1         IEEE 802.3 compliant         10BASE-T/100BASE-TX Auto detected         TCP/IP         HTTP server (remote operation), Dedicated port (data transfer and command control         Up to 3 m         ACE         One Type 1         CompactFlash memory card (32 MB or higher)         Up to 2 GB         MS-DOS format (FAT16/FAT32)         Save and load settings files, Save waveform data

#### (5). RS-232C Interface

Method	RS-232C, [EIA RS-232D], [CCITT V.24], [JIS X5101] compliant
Method	Full duplex, start-stop synchronization, 8-bit data, no parity, one stop bit
	Hardware flow control. CR+LF delimiter
Connector	D-sub9 pin connector ×1
Communication speeds	9600 bps, 19,200 bps, 38,400 bps
Function	Command control, Bluetooth® logger connectivity (simultaneous use not supported)
(6). Synchronizatio	n Control Interface
Signal contents	One-second clock, integration START/STOP, DATA RESET, EVENT
Connector types	IN: One 9-pin female mini-DIN jack, OUT: One 8-pin female mini-DIN jack
Signal	5 V CMOS
Max. input	±20 V
Max. signal delay	2 μs (rising edge)
(7). External Contro	bl Interface
Connector types	9-pin round connector x1; also used as synchronization control interface
Electrical specifications	Logic signal of 0 V/5 V (2.5 V to 5 V), or contact signal (shorted/open)
Function	Integration start, integration stop, data reset, event (the event set as the
	synchronization control function)
	Cannot be used at the same time as synchronization control.

## Function Specifications

-1. Control Function	ns
AUTO range function	Automatically selects voltage and current ranges according to measured ampli- tude on each phase. Operating states: Selectable on or off for each phase system
Timing control function	Auto-ranging span: Wide/Narrow (common to all wiring systems) Interval
	OFF/50 ms/100 ms/200 ms/500 ms/1 s/5 s/10 s/ 15 s/30 s/1 min/5 min/10 min/15 min/30 min/60 min
	Setting determines the maximum data-saving capacity
	Timing controls
	OFF/Timer/RTC Timer : 10 s to 9999:59:59 [h:m:s] (in seconds)
	Real-time clock : Start and stop times (in minutes)
Hold function	Stops all updating of displayed measurement values and waveforms, and holds
	display. Internal calculations such as integration and averaging, clock, and peak-over display continue to be updated.
Peak hold function	All measurement values are updated to display the maximum value for each measurement.
	Displayed waveforms and integration values continue to be updated with instan- taneous values.
-2. Calculation Fun	
Scaling calculation	VT(PT) ratio and CT ratio: OFF/0.01 to 9999.99
Average calculation	OFF/FAST/MID/SLOW/SLOW2/SLOW3
	Exponentially averages all instantaneous measurement values including harmonics (but not peak, integration, or FFT noise values). Applied to displayed values and saved data.
	Response speed (time remains within specified accuracy when input changes from 0 to 100% f.s.)
	FAST: 0.2 s, MID: 1.0 s, SLOW: 5 s, SLOW2: 25 s, SLOW3: 100 s
Efficiency and loss calculations	Efficiency n [%] and Loss [W] are calculated from active power values measured
calculations	on each phase and system. For PW3390-03, motor power (Pm) is also applied as a calculation item.
	Maximum no. of simultaneous calculations: Efficiency and loss, by three
	formulas (Parameters are specified for Pin and Pout)
	Calculation method: Efficiency $\eta = 100 \times \text{IPoutl/IPinl}$ Loss = IPinl - IPoutl
Δ-Y calculation	For 3P3W3M systems, converts between line-to-line voltage and phase voltage
	waveforms using a virtual center point.
	All voltage parameters including harmonics such as true rms voltage are calculated as
	phase voltage waveforms. U1s = (U1s-U3s)/3, U2s = (U2s-U1s)/3, U3s =(U3s-U2s)/3
Selecting the	TYPE1/TYPE2 (only valid when wiring is 3P3W3M)
calculation method	Select the calculation method used to calculate the apparent power and reactive
	power during 3P3W3M wiring.
Current sensor phase	Only affect measurement values S123, Q123, φ123, λ123 Compensation by calculating the current sensor's harmonic phase characteristics
correction calculations	Correction points are set using frequency and phase difference (set separately for each wiring mode).
	Frequency: 0.001 kHz to 999.999 kHz (in 0.001 kHz increments)
	Phase difference: 0.00 °. to ±90.00 °. (in 0.01 °. increments) However, the time difference calculated from the frequency phase difference is
	limited to a maximum of 200 us in 5 ns increments.
-3. Display Functio	
Wiring Check screen	The wiring diagram and voltage/current vectors are displayed for the selected
-	wiring system(s).
	The correct range for the wiring system is shown on the vector display, to confirm proper measurement cable connections.
Independent wiring	Displays power and harmonic measurement values for channels 1 to 4.
system display mode	A composite measurement line pattern is displayed for each system.
	Basic, voltage, current, and power measurement parameter,
Display Coloction -	harmonic bar graph, harmonic list, and harmonic vector screens
Display Selections screen	Select to display any 4, 8, 16, or 32 of the basic measurement parameters. Display layout: 4, 8, 16, or 32 parameters (4 patterns)
Efficiency and Loss screen	The efficiency and loss obtained by the specified calculation formulas are displayed numerically. Three efficiency and three loss values.
Waveform &	Voltage and current waveforms sampled at 500 kHz and noise measurements
Noise screen	are displayed compressed on one screen. Trigger: Synchronized with the harmonic sync source
	Irigger: Synchronized with the narmonic sync source Recording length: 1000/5000/10,000/50,000 × All voltage and current channels Compression ratio: 1/1, 1/2, 1/5, 1/10, 1/20, 1/50 (peak-to-peak compression) Recording time:

Recording speed/ Recording length	1000	5000	10,000	50,000
500 kS/s	2 ms	10 ms	20 ms	100 ms
250 kS/s	4 ms	20 ms	40 ms	200 ms
100 kS/s	10 ms	50 ms	100 ms	500 ms
50 kS/s	20 ms	100 ms	200 ms	1000 ms
25 kS/s	40 ms	200 ms	400 ms	2000 ms
10 kS/s	100 ms	500 ms	1000 ms	5000 ms

Trend screen	Display a time-sequence graph of measured values for basic measurement parameters that have been selected as trend display parameters. Waveforms are graphed using peak-peak compression of data refresh rate data based on the time axis setting. Data is not stored. Number of graphed parameters: Up to 8 Time axis to 1/2 4/10/20 arkis 1/2/16/10/20 min (disc.
	Time axis: 1.5 / 3 / 6 / 12 / 30 s/div.; 1 / 3 / 6 / 10 / 30 min./div.; 1 / 3 / 6 / 12 hour/div.; 1 day/div. Vertical axis: Auto (configured so that the data in the screen display range fits
	on the screen) / semi-auto (user selects the zoom factor relative to the full-scal values for graphed parameters from the following: 1/8, 1/4, 1/2, x1, x2, x5, x10, x50, x100, x200, x500) /manual (user sets the maximum and minimum values for the display)
X-Y Plot screen	Select horizontal and vertical axes from the basic measurement items to displa
	on the X-Y graphs. Dots are plotted at the data update interval, and are not saved. Drawing data can be cleared.
	Horizontal: 1 data item (gauge display available), Vertical: 2 data items (gauge display available)
4. Saving Functior	IS
Auto-save function	As the items to be saved, select any measured values including harmonics and noise value data of the FFT function. The selected items are stored to CF card during every measurement interval. (Storage to USB memory is not available.)
	Can be controlled by timer or real-time clock. Max. no. of saved items: Interval-setting-dependent
	Data format: CSV format
Manual saving function	Save destinations: USB memory/CF card
	Measurement data     As the items to be saved, select any measured values including harmonics     and noise value data of the FFT function.     Pressing the SAVE key saves each measurement value at that moment to     the save destination.     File format: CSV format
	Screen capture     The COPY key captures and saves a bitmap image of the display to the sa     destination.     The copy of the same save save save save save save save sav
	*This function can be used at an interval of 5 sec or more while automatic saving is in progress. File format: Compressed BMP format
	<ul> <li>Settings data Settings information can be saved/loaded as a settings file. File format: SET format (for PW3390 only)</li> </ul>
	Waveform data     Saves the waveform being displayed by means of [Wave/Noise] display.     File format: CSV format
	<ul> <li>FFT data Save the noise measurement FFT spectrum shown on the Waveform/Noise screet</li> </ul>
	File format: CSV format
-5. Synchronous C	File format: CSV format
5. Synchronous C	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW3390 (master/slave).
	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW3390 (master/slave). When internal settings match, auto-save is available while synchronized. Clock, data update interval (except for FFT calculations), integration start/stop
Function	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW3390 (master/slave). When internal settings match, auto-save is available while synchronized.
Function Synchronized items	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW3390 (master/slave). When internal settings match, auto-save is available while synchronized. Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events
Function Synchronized items Event items Synchronization timing	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW3390 (master/slave). When internal settings match, auto-save is available while synchronized. Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events Hold, manual save, screen capture • Clock, data update interval Within 10 s after power-on by a slave PW3390 • Start/stop, data reset, event Upon key-press and communications operations on the master PW3390
Function Synchronized items Event items Synchronization timing Synchronization delay	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW390 (master/slave). Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events Hold, manual save, screen capture • Clock, data update interval Within 10 s after power-on by a slave PW3390 • Start/stop, data reset, event Upon key-press and communications operations on the master PW3390 Maximum 5 µs per connection. Maximum synchronization delay of an event is +50 to
Function Synchronized items Event items Synchronization timing	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW390 (master/slave). Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events + Clock, data update interval Within 10 s after power-on by a slave PW3390 + Start/stop, data reset, event Upon key-press and communications operations on the master PW3390 Maximum 5 µs per connection. Maximum synchronization delay of an event is +50 m Ger Connectivity
Function Synchronized items Event items Synchronization timing Synchronization delay -6. Bluetooth® Logg Function	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW3390 (master/slave). When internal settings match, auto-save is available while synchronized. Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events Hold, manual save, screen capture • Clock, data update interval Within 10 s after power-on by a slave PW3390 • Start/stop, data reset, event Upon key-press and communications operations on the master PW3390 Maximum 5 µs per connection. Maximum synchronization delay of an event is +50 i ger Connectivity Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.
Function Synchronized items Event items Synchronization timing Synchronization delay 6. Bluetooth® Logg	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW3390 (master/slave). When internal settings match, auto-save is available while synchronized. Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events Hold, manual save, screen capture • Clock, data update interval Within 10 s after power-on by a slave PW3390 • Start/stop, data reset, event Upon key-press and communications operations on the master PW3390 Maximum 5 us per connection. Maximum synchronization delay of an event is +50 to ger Connectivity Sends measured values wirelessly to logger by using a Bluetooth® serial
Function Synchronized items Event items Synchronization timing Synchronization delay 6. Bluetooth® Logg Function Supported devices	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect         Model PW3390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events         Hold, manual save, screen capture         • Clock, data update interval within 10 s after power-on by a slave PW3390         • Start/stop, data reset, event         Upon key-press and communications operations on the master PW3390         Maximum 5 µs per connection. Maximum synchronization delay of an event is +50 µ         ger Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hioki LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters
Function Synchronized items Event items Synchronization timing Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Display language	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect         Model PW3390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events         Hold, manual save, screen capture         • Clock, data update interval within 10 s after power-on by a slave PW3390         • Start/stop, data reset, event         Upon key-press and communications operations on the master PW3390         Maximum 5 µs per connection. Maximum synchronization delay of an event is +50 µ         ger Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hioki LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters
Function Synchronized items Event items Synchronization timing Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Display language selection	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect         Model PW3390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop         data reset, certain events         Hold, manual save, screen capture         * Clock, data update interval         Within 10 s after power-on by a slave PW3390         * Start/stop, data reset, event         Upon key-press and communications operations on the master PW3390         Maximum 5 µs per connection. Maximum synchronization delay of an event is +50 in         ger Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hicki LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters         Japanese, English, Chinese
Function Synchronized items Event items Synchronization timing Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Display language	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW3390 (master/slave). When internal settings match, auto-save is available while synchronized. Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events Hold, manual save, screen capture • Clock, data update interval Within 10 s after power-on by a slave PW3390 • Start/stop, data reset, event Upon key-press and communications operations on the master PW3390 Maximum 5 µs per connection. Maximum synchronization delay of an event is +50 µ ger Connectivity Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter. Hioki LR8410 Link-compatible loggers (LR8410, LR8416) Measured values assigned to the D/A CH9 to CH16 analog output parameters Japanese, English, Chinese OFF/ON
Function Synchronized items Event items Synchronization delay Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Displection Beep sound Screen color schemes Start-up screen	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect Model PW390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events         Hold, manual save, screen capture         * Clock, data update interval Within 10 s after power-on by a slave PW3390         * Start/stop, data reset, event Upon key-press and communications operations on the master PW3390         Maximum 5 µs per connection. Maximum synchronization delay of an event is +50 is ger Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hicki LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters         Japanese, English, Chinese         OFF/ON         COLOR1 (black)/2 (blue-green)/3 (blue)/4 (gray)/5 (navy blue)         Wiring or Last-displayed screen (Measurement screens only)
Function Synchronized items Event items Synchronization delay Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Display language selection Beep sound Screen color schemes Start-up screen selection LCD backlight	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect         Model PW390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events         Hold, manual save, screen capture         • Clock, data update interval         Within 10 s after power-on by a slave PW3390         • Start/stop, data reset, event         Upon key-press and communications operations on the master PW3390         Maximum 5 us per connection. Maximum synchronization delay of an event is +50 in ger Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hicki LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters         Japanese, English, Chinese         OFF/ON         COLOR1 (black)/2 (blue-green)/3 (blue)/4 (gray)/5 (navy blue)         Wiring or Last-displayed screen (Measurement screens only)         ON/1 min/5 min/10 min/30 min/60 min
Function Synchronized items Event items Synchronization delay Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Displection Beep sound Screen color schemes Start-up screen	File format: CSV format ontrol Function Synchronous measurements are available by using sync cables to connect Model PW390 (master/slave). When internal settings match, auto-save is available while synchronized. Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events Hold, manual save, screen capture • Clock, data update interval Within 10 s after power-on by a slave PW3390 • Start/stop, data reset, event Upon key-press and communications operations on the master PW3390 Maximum 5 us per connection. Maximum synchronization delay of an event is +50 r ger Connectivity Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter. Hioki LR8410 Link-compatible loggers (LR8410, LR8416) Measured values assigned to the D/A CH9 to CH16 analog output parameters Japanese, English, Chinese OFF/ON COLOR1 (black//2 (blue-green)/3 (blue)/4 (gray)/5 (navy blue) Wiring or Last-displayed screen (Measurement screens only) ON/1 min/5 min/10 min/30 min/60 min CSV/SSV
Function Synchronized items Event items Synchronization timing Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Display language selection Beep sound Screen color schemes Start-up screen selection LCD backlight CSV file format	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect         Model PW390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events         Hold, manual save, screen capture         • Clock, data update interval (worker) a slave PW3390         • Start/stop, data reset, event         Upon key-press and communications operations on the master PW3390         • Maximum 5 µs per connection. Maximum synchronization delay of an event is +50 r         ger Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hioki LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters         Japanese, English, Chinese         OFF/ON       COLOR1 (black)/2 (blue-green)/3 (blue)/4 (gray)/5 (navy blue)         Wiring or Last-displayed screen (Measurement screens only)       ON/1 min/5 min/10 min/30 min/60 min
Function Synchronized items Event items Synchronization timing Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Display language selection Beep sound Screen color schemes Start-up screen selection LCD backlight CCSV file format Real-time clock function	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect Model PW390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events         Hold, manual save, screen capture         • Clock, data update interval Within 10 s after power-on by a slave PW3390         • Start/stop, data reset, event Upon key-press and communications operations on the master PW3390 Maximum 5 us per connection. Maximum synchronization delay of an event is +50 r ger Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hioki LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters         Japanese, English, Chinese         OFF/ON         COLOR1 (black/2 (blue-green)/3 (blue)/4 (gray)/5 (navy blue)         Wiring or Last-displayed screen (Measurement screens only)         ON/1 min/5 min/10 min/30 min/60 min         CSV/SSV         Auto-calendar, leap-year correcting 24-hour clock ±3 s per day @255°C (77°F)         Current sensors are automatically recognized when connected (Excluding the
Function Synchronized items Event items Synchronization delay Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Display language selection Beep sound Screen color schemes Start-up screen selection LCD backlight CSV file format Real-time clock function RTC accuracy	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect Model PW390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events         Hold, manual save, screen capture         • Clock, data update interval Within 10 s after power-on by a slave PW3390         • Start/stop, data reset, event Upon key-press and communications operations on the master PW3390 Maximum 5 us per connection. Maximum synchronization delay of an event is +50 m ger Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hioki LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters         Japanese, English, Chinese         OFF/ON         COLOR1 (black)/2 (blue-green)/3 (blue)/4 (gray)/5 (navy blue)         Wiring or Last-displayed screen (Measurement screens only)         ON/1 min/5 min/10 min/30 min/60 min         CSV/SSV         Auto-calendar, leap-year correcting 24-hour clock ±3 s per day @25°C (77°F)         Current sensors are automatically recognized when connected (Excluding the CT7000 series sensors)         When peak over occurs on voltage and current measurement channels, When no syncs source is detected
Function Synchronized items Event items Synchronization timing Synchronization timing Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Display language selection Beep sound Screen color schemes Start-up screen selection LCD backlight CSV file format Real-time clock function RTC accuracy Sensor recognition	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect         Model PW390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events         Hold, manual save, screen capture         • Clock, data update interval         Within 10 s after power-on by a slave PW3390         • Start/stop, data reset, event         Upon key-press and communications operations on the master PW3390         Maximum 5 us per connection. Maximum synchronization delay of an event is +50 r         per Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hicki LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters         Japanese, English, Chinese         OFF/ON         COLOR1 (black)/2 (blue-green)/3 (blue)/4 (gray)/5 (navy blue)         Wiring or Last-displayed screen (Measurement screens only)         ON/1 min/5 min/10 min/30 min/60 min         CSV/SSV         Auto-calendar, leap-year correcting 24-hour clock         4.3 s per day @25° (77°F)         Current sensors are automatically recognized when connected (Excluding the C1700
Function Synchronized items Event items Synchronization timing Synchronization timing Synchronization delay 6. Bluetooth® Logg Function Supported devices Sent data 7. Other Functions Display language selection Beep sound Screen color schemes Start-up screen selection LCD backlight CCSV file format Real-time clock function RTC accuracy Sensor recognition Warning indicators	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect Model PW3390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events         Hold, manual save, screen capture         • Clock, data update interval Within 10 s after power-on by a slave PW3390         • Start/stop, data reset, event Upon key-press and communications operations on the master PW3390         Maximum 5 µs per connection. Maximum synchronization delay of an event is +50 r ger Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hick LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters         Japanese, English, Chinese         OFF/ON         COLOR1 (black)/2 (blue-green)/3 (blue)/4 (gray)/5 (navy blue)         Wiring or Last-displayed screen (Measurement screens only)         ON/1 min/5 min/10 min/30 min/60 min CSV/SSV         Auto-calendar, leap-year correcting 24-hour clock         43 s per day @25°C (77°F)         Currot sensors are automatically recognized when connected (Excluding the CT7000 series sensors)         When peak over occurs on voltage and current measurement channels, When no sync source is detected
Function Synchronized items Event items Synchronization delay Synchronization delay G. Bluetooth® Logg Function Supported devices Sent data T. Other Functions Display language selection Beep sound Screen color schemes Start-up screen selection LCD backlight CSV file format Reeal-time clock function RTC accuracy Sensor recognition Warning indicators Key-lock	File format: CSV format         ontrol Function         Synchronous measurements are available by using sync cables to connect Model PW390 (master/slave).         When internal settings match, auto-save is available while synchronized.         Clock, data update interval (except for FFT calculations), integration start/stop data reset, certain events         Hold, manual save, screen capture         • Clock, data update interval Within 10 s after power-on by a slave PW3390         • Start/stop, data reset, event Upon key-press and communications operations on the master PW3390         Maximum 5 us per connection. Maximum synchronization delay of an event is +50 r per Connectivity         Sends measured values wirelessly to logger by using a Bluetooth® serial conversion adapter.         Hicki LR8410 Link-compatible loggers (LR8410, LR8416)         Measured values assigned to the D/A CH9 to CH16 analog output parameters         Japanese, English, Chinese         OFF/ON         COLOR1 (black)/2 (blue-green)/3 (blue)/4 (gray)/5 (navy blue)         Wiring or Last-displayed screen (Measurement screens only)         ON1 min/5 min/10 min/30 min/60 min         CSV/SSV         Auto-calendar, leap-year correcting 24-hour clock ±3 s per day @25°C (77°F)         Current sensors are automatically recognized when connected (Excluding the CT7000 series sensors)         When peak over occurs on voltage and current measurement channels, When no sync source is detected Warning indicators f

## General Specifications

Operating environment	Indoors, Pollution Degree 2, altitude up to 2000 m (6562.20 ft)
Operating temperature	Temperature: 0°C to 40°C (32°F to 104°F), Humidity: 80% RH or less
and humidity	(no condensation)
Storage temperature and humidity	-10°C to 50°C (14°F to 122°F), 80% RH or less (no condensation)
Dustproof and waterproof	IP30 (EN 60529) (With CF card cover open: IP20)
Applicable standards	Safety EN 61010
	EMC EN 61326 Class A
Power supply	100 V to 240 V AC, 50 Hz/60 Hz, Maximum rated power: 140 VA
	Anticipated transient overvoltage: 2500 V
Backup battery life	Clock, settings and integration values (Lithium battery), Approx. 10 years, @23°C (73°F)
Dimensions	340 mm (13.39 in) W × 170 mm (6.69 in) H × 156 mm (6.14 in) D (excluding protrusions)
Mass	4.6 kg (162.3 oz) with PW3390-03
Product warranty period	3 year
Accessories	Instruction Manual ×1, Measurement Guide ×1, Power cord ×1, USB cable (0.9 m
	(2.95 ft)) ×1, Input cord label ×2, D-sub connector ×1 (PW3390-02, PW3390-03)

Model	AC/DC CURRENT SENSOR CT6862-05	AC/DC CURRENT SENSOR CT6863-05	AC/DC CURRENT SENSOR CT6875, CT6875-01*1	AC/DC CURRENT SENSOR CT6876, CT6876-01*1	AC/DC CURRENT SENSOR CT6877, CT6877-01*1
Appearance			NEW	NEW	NEW
Rated current	50 A AC/DC	200 A AC/DC	500 A AC/DC	1000 A AC/DC	2000 A AC/DC
Frequency band	DC to 1 MHz	DC to 500 kHz	DC to 2 MHz, DC to 1.5 MHz *1	DC to 1.5 MHz, DC to 1.2 MHz *1	DC to 1 MHz
Diameter of measurable conductors	Max.φ 24mm (0.94")	Max.φ 24 mm (0.94")	Max.φ 36 mm (1.42")	Max.φ 36 mm (1.42")	Max.φ 80 mm (3.15")
Basic accuracy	±0.05 % rdg.±0.01 % f.s. (amplitude) ±0.2° (phase, not defined for DC) (At DC and 16 Hz to 400 Hz)	±0.05 % rdg,±0.01 % f.s. (amplitude) ±0.2° (phase, not defined for DC) (At DC and 16 Hz to 400 Hz)	±0.04 % rdg.±0.008 % f.s. (amplitude) ±0.1° (phase, not defined for DC) (At DC and 45 Hz to 66 Hz)	±0.04 % rdg.±0.008 % f.s. (amplitude) ±0.1° (phase, not defined for DC) (At DC and 45 Hz to 66 Hz)	±0.04 % rdg.±0.008 % f.s. (amplitude) ±0.1° (phase, not defined for DC) (At DC and 45 Hz to 66 Hz)
Frequency characteristics (Amplitude)	to 16 Hz: ±0.1% rdg. ±0.02% f.s. 400Hz to 1kHz: ±0.2% rdg. ±0.02% f.s. to 50 kHz: ±1.0% rdg. ±0.02% f.s. to 100 kHz: ±2.0% rdg. ±0.05% f.s. to 1 MHz: ±30% rdg. ±0.05% f.s.	to 16 Hz: ±0.1% rdg, ±0.02% f.s. 400Hz to 1kHz: ±0.2% rdg, ±0.02% f.s. to 10 kHz: ±1.0% rdg, ±0.02% f.s. to 100 kHz: ±5.0% rdg, ±0.05% f.s. to 500 kHz: ±30% rdg, ±0.05% f.s.	to 16 Hz: ±0.1%/dg.±0.02%/s. 16 Hz: to 45 Hz: ±0.05%/dg.40.01%/s. to 1 kHz: ±0.2%/dg.±0.02%/s. to 10 kHz: ±0.4%/dg.±0.02%/s. to 100 kHz: ±2.5%/dg.±0.05%/s. * <sup>1</sup> to 1 MHz: ±(0.025x f kHz)%/dg. ±0.05%/s.	to 16 Hz: ±0.1% rdg.±0.02% f.s. 16 Hz: to 45 Hz: ±0.05% rdg.±0.01% f.s. to 1 kHz: ±0.2% rdg.±0.02% f.s. to 10 kHz: ±0.5% rdg.±0.02% f.s. *1 to 1 MHz: ±0.3% rdg.±0.05% f.s. *1 to 1 MHz: ±0.03x f kHz)% rdg. ±0.05% f.s.	to 16 Hz: ±0.1% rdg.±0.02% i.s. 16 Hz to 45 Hz: ±0.05% rdg.±0.02% i.s. to 1 kHz: ±0.2% rdg.±0.02% i.s. to 10 kHz: ±0.5% rdg.±0.02% i.s. to 100 kHz: ±2.5% rdg.±0.05% i.s. * <sup>1</sup> to 700 kHz: ±0.025x f kH2)% rdg. ±0.05% i.s.
Operating Temperature	-30°C to 85°C (-22°F to 185°F)	-30°C to 85°C (-22°F to 185°F)	-40°C to 85°C (-40°F to 185°F)	-40°C to 85°C (-40°F to 185°F)	-40°C to 85°C (-40°F to 185°F)
Effect of conductor position	Within ±0.01% rdg. (50 A, DC to 100 Hz)	Within ±0.01% rdg. (100 A, DC to 100 Hz)	Within ±0.01% rdg. (100 A, DC, 50 Hz/60 Hz)	Within ±0.01% rdg. (100 A, DC, 50 Hz/60 Hz)	Within ±0.01% rdg. (100 A, DC, 50 Hz/60 Hz)
Effect of external magnetic fields	10 mA equivalent or lower (400 A/m, 60 Hz and DC)	50 mA equivalent or lower (400 A/m, 60 Hz and DC)	20 mA equivalent or lower (400 A/m, 60 Hz and DC)	40 mA equivalent or lower (400 A/m, 60 Hz and DC)	80 mA equivalent or lower (400 A/m, 60 Hz and DC)
Maximum rated voltage to earth	CAT III 1000 V rms	CAT III 1000 V rms	CAT III 1000 V rms	CAT III 1000 V rms	CAT III 1000 V rms
Dimensions	70W (2.76") × 100H (3.94") × 53D (2.09") mm Cable length: 3 m (9.84 ft)	70W (2.76") × 100H (3.94") × 53D (2.09") mm Cable length: 3 m (9.84 ft)	160W (6.30") × 112H (4.41") × 50D (1.97") mm Cable length [CT6875: 3 m (9.84 ft), CT6875-01:10 m (32.81 ft)]	160W (6.30") × 112H (4.41") × 50D (1.97") mm Cable length [CT6876: 3 m (9.84 ft), CT6876-01:10 m (32.81 ft)]	229W (9.02") × 232H (9.13") × 112D (4.41") mm Cable length [CT6877: 3 m (9.84 ft), CT6877-01:10 m (32.81 ft)]
Mass	340 g (12.0 oz.)	350 g (12.3 oz.)	850 g (30.0 oz.), 1100 g (38.8 oz) *1	950 g (35.5 oz), 1250 g (44.1 oz) *1	5 kg (176 4oz), 5.3 kg (186.9 oz) *1
Derating properties	[sturf] 100 100 100 100 100 100 100 100	Tequency (Hz)	Ti: Ambient temperature Ti: Ambient temperatu	DC 124A-DC 15kA TA Ambient temperature	Tx: Ambient temperature

## High Accuracy Sensor, Pass-Through Type

Custom cable lengths also available. Please inquire with your Hioki distributor.

\*1: Models CT6875-01, CT6876-01 and CT6877-01 have 10m cable lengths. When using these sensors, please add ±(0.005x f kHz)% rdg. to the amplitude accuracy and ±(0.015x f kHz)\* to the phase accuracy for frequency bandwidth 1 kHz < f ≤ 1MHz (1kHz < f ≤ 700kHz for the CT6877-01.)</p>

## High Accuracy Sensor, Clamp Type

	AC/DC CURRENT SENSOR CT6865-05		
External Appearance	Ultra-high accuracy Wideband 4 MHz		
Rated current	500 A AC/DC		
Frequency band	DC to 4 MHz		
Diameter of measurable conductors	φ 32 mm (1.26 in) or less		
Basic accuracy	For 45 Hz to 65 Hz Amplitude: ±0.02% rdg. ±0.007% f.s. Phase: ±0.08° For DC Amplitude: ±0.025% rdg. ±0.007% f.s.		
Frequency characteristics (Amplitude)	to 16 Hz: ±0.2% rdg. ±0.02% f.s. 65 Hz to 850 Hz: ±0.05% rdg.±0.007% f.s. to 10 kHz: ±0.05% rdg.±0.02% f.s. to 300 kHz: ±2.0% rdg.±0.05% f.s. to 1 MHz: ±30% rdg.±0.05% f.s. 4 MHz: ±3dB Typical		
Operating temperature range	-10°C to 50°C (14°F to 122°F)		
Effect of conductor position	±0.01% rdg. or less (50/60 Hz)		
Effects of external magnetic fields	In 400 A/m magnetic field (DC and 60 Hz) 50 mA or less		
Maximum rated voltage to ground	CAT III 1000 V		
Output connector	HIOKI ME15W		
Dimensions	139 mm (5.47 in) W x 120 mm (4.72 in) H x 52 mm (2.05 in) D, Cable length: 3 m (9.84 ft)		
Mass	Approx. 1.0 kg (35.3 oz)		
Derating Characteristics	Tx: Amblent temperature 600 A 500 A 1000 100		

	AC/DC CURRENT PROBE CT6841-05	AC/DC CURRENT PROBE CT6843-05	AC/DC CURRENT PROBE CT6844-05
External Appearance		٩.	
Rated current	20 A AC/DC	200 A AC/DC	500 A AC/DC
Frequency band	DC to 1 MHz	DC to 500 kHz	DC to 200 kHz
Diameter of measurable conductors	φ 20 mm (0.79 in) or less (insulated conductor)	φ 20 mm (0.79 in) or less (insulated conductor)	φ 20 mm (0.79 in) or less (insulated conductor)
Basic accuracy	For DC < f ≤ 100 Hz Amplitude: ±0.3% rdg. ±0.01% f.s. Phase:±0.1° For DC Amplitude: ±0.3% rdg. ±0.05% f.s.	For DC < f ≤ 100 Hz Amplitude: ±0.3% rdg. ±0.01% f.s. Phase:±0.1° For DC Amplitude: ±0.3% rdg. ±0.02% f.s.	For DC < f ≤ 100 Hz Amplitude: ±0.3% rdg. ±0.01% f.s. Phase:±0.1° For DC Amplitude: ±0.3% rdg. ±0.02% f.s.
Frequency characteristics (Amplitude)	to 500 Hz: ±0.3% rdg.±0.02% f.s. to 1 kHz: ±0.5% rdg.±0.02% f.s. to 10 kHz: ±1.5% rdg.±0.02% f.s. to 100 kHz: ±5.0% rdg.±0.05% f.s. to 1 MHz: ±30% rdg.±0.05% f.s.	to 500 Hz: ±0.3% rdg.±0.02% f.s. to 1 kHz: ±0.5% rdg.±0.02% f.s. to 10 kHz: ±1.5% rdg.±0.02% f.s. to 50 kHz: ±5.0% rdg.±0.02% f.s. to 500 kHz: ±3.0% rdg.±0.05% f.s.	to 500 Hz: ±0.3% rdg. ±0.02% f.s. to 1 kHz: ±0.5% rdg. ±0.02% f.s. to 10 kHz: ±1.5% rdg. ±0.02% f.s. to 50 kHz: ±5.0% rdg. ±0.02% f.s. to 200 kHz: ±30% rdg. ±0.05% f.s.
Operating temperature range	-40°C to 85°C (-40°F to 185°F)	-40°C to 85°C (-40°F to 185°F)	-40°C to 85°C (-40°F to 185°F)
Effect of conductor position	±0.1% rdg. or less (DC to 100 Hz)	±0.1% rdg. or less (DC to 100 Hz)	±0.1% rdg. or less (DC to 100 Hz)
Effects of external magnetic fields	In 400 A/m magnetic field (DC and 60 Hz) under 50 mA	In 400 A/m magnetic field (DC and 60 Hz) under 50 mA	In 400 A/m magnetic field (DC and 60 Hz) under 100 mA
Output connector	HIOKI ME15W	HIOKI ME15W	HIOKI ME15W
Dimensions	153 mm (6.02 in) W x 67 mm (2.64 in) H x 25 mm (0.98 in) D Cable length: 3 m (9.84 ft)	153 mm (6.02 in) W x 67 mm (2.64 in) H x 25 mm (0.98 in) D Cable length: 3 m (9.84 ft)	153 mm (6.02 in) W x 67 mm (2.64 in) H x 25 mm (0.98 in) Cable length: 3 m (9.84 ft)
Mass	350 g (12.3 oz)	370 g (13.1 oz)	400 g (14.1 oz)
Derating Characteristics	Tx: Anbient temperature           40°C (-40°F) < TA < 60°C (140°F)	Th: Ambient temperature 500 Th: Ambient temperature 40°C (-40°F) Th 4 40°C (100°F) -40°C (-40°F) Th 4 60°C (100°F) -40°C (-40°F)	20 10 10 10 10 10 10 10 10 10 10 10 10 10

Custom cable lengths also available. Please inquire with your Hioki distributor.

## High Accuracy Sensor, Clamp Type

	AC/DC CURRENT PROBE CT6845-05	AC/DC CURRENT PROBE CT6846-05	CLAMP ON SENSOR 9272-05
External Appearance			
Rated primary current	500 A AC/DC	1000 A AC/DC	200 A/20 A AC switching
Frequency band	DC to 100 kHz	DC to 20 kHz	1 kHz to 100 kHz
Diameter of measurable conductors	φ 50 mm (1.97 in) or less (insulated conductor)	φ 50 mm (1.97 in) or less (insulated conductor)	φ 46 mm (1.81 in) or less
Basic accuracy	For DC <f 100="" hz<br="" ≤="">Amplitude: ±0.3% rdg. ±0.01% f.s. Phase:±0.1° For DC Amplitude: ±0.3% rdg. ±0.02% f.s.</f>	For DC < f ≤ 100 Hz Amplitude: ±0.3% rdg. ±0.01% f.s. Phase:±0.1° For DC Amplitude: ±0.3% rdg. ±0.02% f.s.	For 45 Hz to 66 Hz Amplitude: ±0.3% rdg. ±0.01% f.s. Phase:±0.2 °
Frequency characteristics (Amplitude)	to 500 Hz: ±0.3% rdg. ±0.02% f.s. to 1 kHz: ±0.5% rdg. ±0.02% f.s. to 10 kHz: ±1.5% rdg. ±0.02% f.s. to 20 kHz: ±5.0% rdg. ±0.02% f.s. to 100 kHz: ±30% rdg. ±0.05% f.s.	to 500 Hz: ±0.5% rdg. ±0.02% f.s. to 1 kHz: ±1.0% rdg. ±0.02% f.s. to 5 kHz: ±2.0% rdg. ±0.02% f.s. to 10 kHz: ±5.0% rdg. ±0.05% f.s. to 20 kHz: ±30% rdg. ±0.10% f.s.	$\begin{array}{llllllllllllllllllllllllllllllllllll$
Operating temperature range	-40°C to 85°C (-40°F to 185°F)	-40°C to 85°C (-40°F to 185°F)	0°C to 50°C (32°F to 122°F)
Effect of conductor position	±0.2% rdg. or less (DC to 100 Hz)	±0.2% rdg. or less (50 Hz/60 Hz)	±0.2% rdg. or less (60 Hz)
Effects of external magnetic fields	In 400 A/m magnetic field (DC and 60 Hz) under 150 mA	In 400 A/m magnetic field (DC and 60 Hz) under 150 mA	In 400 A/m magnetic field (60 Hz) under 100 mA
Output connector	HIOKI ME15W	HIOKI ME15W	HIOKI ME15W
Dimensions	238 mm (9.37 in) W x 116 mm (4.57 in) H x 35 mm (1.38 in) D Cable length: 3 m (9.84 ft)	238 mm (9.37 in) W x 116 mm (4.57 in) H x 35 mm (1.38 in) D Cable length: 3 m (9.84 ft)	78 mm (3.07 in) W x 188 mm (7.40 in) H x 35 mm (1.38 in) D Cable length: 3 m (9.84 ft)
Mass	860 g (30.3 oz)	990 g (34.9 oz)	450 g (15.9 oz)
Derating Characteristics	$\begin{array}{c c c c c c c c c c c c c c c c c c c $		400 100 C C C C C C C C C C C C C C C C C C

## **Current Summing**

	SENSOR UNIT CT9557		
	FRONT		
External Appearance	Sensor input		
	REAR		
	Summed waveform output (CT9904 connected)		
Connectable current sensor	Current sensor with HIOKI ME15W (male on the output connector		
Summed waveform output accuracy	DC:         ±0.06% rdg.±0.03% f.s.           to 1 kHz:         ±0.06% rdg.±0.03% f.s.           to 10 kHz:         ±0.10% rdg.±0.03% f.s.           to 100 kHz:         ±0.20% rdg.±0.10% f.s.           to 300 kHz:         ±1.0% rdg.±0.20% f.s.           to 700 kHz:         ±5.0% rdg.±0.20% f.s.           to 700 kHz:         ±1.0% rdg.±0.20% f.s.           to 700 kHz:         ±1.0% rdg.±0.20% f.s.		
Operating temperature range	-10°C to 50°C (14°F to 122°F)		
Power supply	AC ADAPTER Z1002 (100 to 240 V AC, 50/60 Hz, Max. rated power when in combination with other units: 155 VA External power supply (10 to 30 V DC, Max. rated power: 60 VA)		
Output connector	HIOKI ME15W (male)*		
External dimensions	116 mm (4.57 in) W x 67 mm (2.64 in) H 132 mm (5.20 in) D		
Mass	420 g (14.8 oz)		
Accessories	AC ADAPTER Z1002, Power cord, Instruction Manual		

PW3390.

Custom cable lengths also available. Please inquire with your Hioki distributor.

## High Accuracy Sensor, Direct Wire Type

Newly developed DCCT method allows world-class measurement range and measurement accuracy at a rating of 50 A. (5 A rating version also available. Please inquire with your Hioki distributor.)

	AC/DC CURRENT BOX PW9100-03	AC/DC CURRENT BOX PW9100-04	
External Appearance	in in in		
Number of input channels	3ch	4ch	
Rated primary current	50 A /	AC/DC	
Frequency band	DC to 3.5 M	/Hz (-3 dB)	
Measurement terminals	Terminal block (with sa	afety cover), M6 screws	
Basic accuracy	For 45 Hz to 65 Hz Amplitude: ±0.02% rdg. ±0.005% f.s. Phase: ±0.1 ° For DC Amplitude: ±0.02% rdg. ±0.007% f.s.		
Frequency characteristics (Amplitude)	total         ±0.1% rdg. ±0.02% f.s.           to 45 Hz;         ±0.1% rdg. ±0.01% f.s.           to 50 KHz;         ±1% rdg. ±0.02% f.s.           to 50 KHz;         ±1% rdg. ±0.05% f.s.           to 100 KHz;         ±2% rdg. ±0.05% f.s.           to 100 KHz;         ±10% rdg. ±0.05% f.s.           3.5 MHz;         -3 dB Typical		
Input resistance	1.5 mΩ or less (50 Hz/60 Hz)		
Operating temperature range	0°C to 40°C (32°F to 104°F)		
Effects of common- mode voltage (CMRR)	50 Hz/60 Hz 120 dB or greater 100 kHz 120 dB or greater (Effect on output voltage/common-mode voltage)		
Maximum rated voltage to ground	1000 V (Measurement category II), 600 V (Measurement category III), Anticipated transient overvoltage 6000 V		
Output connector	HIOKI ME15W		
Dimensions	430 mm (16.93 in) W x 88 mm (3.46 in) H x 260 mm (10.24 in) D, Cable length: 0.8 m (2.62 ft)		
Mass	3.7 kg (130.5 oz)	4.3 kg (151.7 oz)	
Derating Characteristics	War y lubrit rubrit rub		

## **Standard Sensor**

 $^{\ast}$  CT9920 (sold separately) is required to connect PW3390 to the sensor with HIOKI PL14 on the output connector.

	AC/DC CURRENT SENSOR CT7642 AC/DC AUTO ZERO CURRENT SENSOR CT7742	AC FLEXIBLE CURRENT SENSOR CT7044, CT7045, CT7046	
External Appearance			
Rated primary current	2000 A AC/DC	6000 A AC	
Frequency band	CT7642: DC to 10 kHz CT7742: DC to 5 kHz	10 Hz to 50 kHz (±3 dB)	
Diameter of measurable conductors	φ 55 mm (2.17 in) or less	CT7044: φ 100 mm (3.94 in) or less CT7045: φ 180 mm (7.09 in) or less CT7046: φ 254 mm (10.00 in) or less	
Basic accuracy	For DC, 45 Hz to 66 Hz Amplitude: ±1.5% rdg. ±0.5% f.s. For up to 66 Hz Phase:±2.3 °	For 45 to 66 Hz, with flexible cable core Amplitude: ±1.5% rdg. ±0.25% f.s. Phase:±1.0 °	
Frequency characteristics (Amplitude)	66 Hz to 1 kHz ±2.5% rdg. ±1.0% f.s.	-	
Operating temperature range	-25°C to 65°C (-13°F to 149°F)	-25°C to 65°C (-13°F to 149°F)	
Effect of conductor position	±1.0% rdg. or less	±3.0% or less	
Effects of external magnetic fields	In 400 A/m magnetic field (DC) 0.2% f.s. or less	In 400 A/m magnetic field (50 Hz/60 Hz) CT7044, CT7045: 1.25% f.s. or less CT7046: 1.5% f.s. or less	
Output connector	HIOKI PL14*	HIOKI PL14*	
Dimensions	64 mm (2.52 in) W x 195 mm (7.68 in) H x 34 mm (1.34 in) D Cable length: 2.5 m (8.20 ft)	Circuit box: 25 mm (0.98 in) W x 72 mm (2.83 in) H x 20 mm (0.79 in) D Cable length: 2.5 m (8.20 ft)	
Mass	510 g (18.0 oz)	CT7044: 160 g (5.6 oz) CT7045: 174 g (6.1 oz) CT7046: 186 g (6.6 oz)	
Derating Characteristics	2.5 k (m 2 k 1 k 1 k 1 k 1 0 k 10 k 10 k 10 k 10 k	12 k PEO 0 k 0 k 0 k 0 k 0 k 0 k 0 k 0 k	

#### Model : POWER ANALYZER PW3390

Model No. (Order Code)	D/A output	Motor analysis
PW3390-01	-	—
PW3390-02	0	_
PW3390-03	0	0

Accessories: Instruction Manual ×1, Measurement Guide ×1, Power cord ×1, USB cable ×1, Input cord label ×2, D-sub 25-pin connector ×1 (PW3390-02, PW3390-03)

. The optional voltage cord and current sensor are required for taking measurements.

• Motor analysis and D/A output cannot be changed or added after delivery

#### **Current Measurement Options**

Name (Note)	Model No. (Order Code)
AC/DC CURRENT SENSOR (50 A)	CT6862-05
AC/DC CURRENT SENSOR (200 A)	CT6863-05
AC/DC CURRENT SENSOR (500 A) Ultra-high accuracy	CT6904
AC/DC CURRENT SENSOR (500 A)	CT6875
AC/DC CURRENT SENSOR (500 A)	CT6875-01
AC/DC CURRENT SENSOR (1000 A)	CT6876
AC/DC CURRENT SENSOR (1000 A)	CT6876-01
AC/DC CURRENT SENSOR (2000 A)	CT6877
AC/DC CURRENT SENSOR (2000 A)	CT6877-01
AC/DC CURRENT PROBE (20 A)	CT6841-05
AC/DC CURRENT PROBE (200 A)	CT6843-05
AC/DC CURRENT PROBE (500 A, \$\$\phi\$ 20 mm (0.79 in))	CT6844-05
AC/DC CURRENT PROBE (500 A, φ 50 mm (1.97 in))	CT6845-05
AC/DC CURRENT PROBE (1000 A)	CT6846-05

Name (Note)	Model No. (Order Code)
CLAMP ON SENSOR (AC 20 A/200 A)	9272-05
AC/DC CURRENT BOX (50 A, 3 ch)	PW9100-03
AC/DC CURRENT BOX (50 A, 4 ch)	PW9100-04
AC/DC AUTO ZERO CURRENT SENSOR (2000 A)	CT7742 *
AC/DC CURRENT SENSOR (2000 A)	CT7642 *
AC FLEXIBLE CURRENT SENSOR (6000 A, \$\$\phi\$ 100 mm (3.94 in))	CT7044 *
AC FLEXIBLE CURRENT SENSOR (6000 A, \$\$\phi\$ 180 mm (7.09 in))	CT7045 *
AC FLEXIBLE CURRENT SENSOR (6000 A, \$\$\phi\$ 254 mm (10.00 in))	CT7046 *
SENSOR UNIT (Sensor power supply with 4 channel summing function)	CT9557 **

\* CONVERSION CABLE CT9920 is required to connect to PW3390. \*\* CONNECTION CABLE CT9904 is required to connect to PW3390.

#### Built-To-Order (Current Measurement)

PW9100 5A-rated model

CT6862-05 high-accuracy model CT6863-05 high-accuracy model Please contact your Hioki distributor or subsidiary for more information.

Cable length: 1 m (3.28 ft) Required to connect

the summing waveform output terminal of CT9557 to PW3390.

#### **CONNECTION CABLE CT9904**

CT9557



current sensor with HIOKI PL23 on the output connector. [Applicable products] CT6841, CT6843, CT6844, CT6845, CT6846, CT6862, CT6863, 9272-10

Required to connect PW3390 to the

#### Voltage Measurement Options

**CONVERSION CABLE CT9900** 

#### VOLTAGE CORD L9438-50 Red, black: 1 each,

#### 1000 V specification, Cord length: 3 m (9.84 ft)

CAT IV 600 V. CAT III 1000 V

#### **VOLTAGE CORD L1000**

Red, yellow, blue, gray: 1 each; Black: 4 1000 V specification, Cord length: 3 m (9.84 ft) CAT IV 600 V, CAT III 1000 V 14

#### WIRING ADAPTER PW9000

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

Connection Options -

#### **CONNECTION CORD L9217** BNC-BNC,



**ONNECTION CABLE 9683** 

For synchronous measurement, Cable length: 1.5 m (4.92 ft)

HIOKI E.E. CORPORATION

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

> Scan for all regional contact information

HEADQUARTERS 81 Koizumi.

For motor analysis input

Cable length: 1.6 m (5.25 ft)

## LAN CABLE 9642

Supplied with straight to cross conversion connector Cable length: 5 m (16.41 ft)

#### **RS-232C CABLE 9637** 9pin-9pin cross Cable length: 1.8 m (5.91 ft)

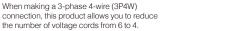
D-sub 25-pin - BNC (male) 16 ch conversion, Cord length: For EIA or JIS 2.5 m (8.20 ft)

Please contact your Hioki distributor or subsidiary for more information

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## PC CARD 512 MB 9728 PC CARD 1 GB 9729

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



PW3390 and 3390 448 mm (17.64 in) W x 618 mm (24.33 in) H x 295 mm (11.61 in) D



WIRING ADAPTER PW9001



## D/A output cable



Banana branch-banana, Red: 1

[Applicable products]

For branching from the L9438-50 or

### PATCH CORD L1021-02



For branching from the L9438-50 or L1000 CAT IV 600 V, CAT III 1000 V













Carrving Case for





# CT7742, CT7642, CT7044, CT7045, CT7046

Required to connect PW3390 to the current sensor with HIOKI PL14 on the

#### **EXTENSION CABLE SET L4931**

**CONVERSION CABLE CT9920** 

## CAT IV 600 V, CAT III 1000 V **GRABBER CLIP L9243**







output connector



Cable length: 0.5 m L1000 CAT IV 600 V, CAT III 1000 V

#### Banana branch-banana, Black: 1 Cable length: 0.5 m





PC CARD 2 GB 9830

## **CARRYING CASE 9794**

