TURE RMS FLEXIBLE AC CLAMP POWER METER

Model: CWF-3300



You purchased this Flexible AC Clamp POWER Meter It is a precision Watt meter. Marking a step forward As you enter the field Precision measurement. Although this POWER METER is a complex Exquisite instrument, its Durable construction will be Allow years of use If normal operation technology developed. please read the following instructions carefully and always keep this manual within easy reach.



OPERATION MANUAL

Caution Symbol



Caution :

* Risk of electric shock !



Caution :

- * Do not apply the overload voltage, current to the input terminal !
- * Remove test leads before open the battery cover !
- * Cleaning Only use the dry cloth to clean the plastic case !



* Double insulation

Environment Conditions

- * Installation Categories III-1000V.
- * Pollution Degree 2.
- * Altitude up to 2000 meters.
- * Indoor use.
- * Relative humidity 80% max.

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1. FEATURES

- * Meet IEC 1010 CAT III 1000 V safety requirement.
- * 6000 counts A/D, high resolution.
- * Double insulation coil.
- * Voltage and Current are the True RMS value.
- * ACV input impedance is 10 Mega ohms.
- * True Power(KW) measurement.
- * Apparent Power (KVA) measurement.
- * Reactive Power (KVAR) measurement.
- * Power Factor (PF) measurement.
- * Voltage measurement range: 10 to 600 ACV
- * Current measurement range: 1 to 3000 ACA
- * Resistance measurement range: 20 KΩ
- * Data hold .
- * Auto shut off is available to save battery life.
- * Safety Standard : IEC 1010, CAT IV 600V.
- * Powered by AAA (UM-4) DC 1.5 V X 2 batteries
- * Built-in overload protection for most ranges.
- * LSI circuit provides high reliability and durability.
- * Uses durable, long-lasting components, enclosed in strong, light weight ABS-plastic housing.

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2. SPECIFICATIONS

<u></u>		
Display	33.5 mm x18.7 mm LCD display	
Measurement	ACV, ACA, KW, KVA, KVAR, PF	
	Resistance,Continuity beeper	
A/D counts no.	6000 counts.	
Function	" WATT " function can select	
	ACV, ACA, KW , KVA , KVAR , PF	
	Ω function	
	Resistance, Continuity beeper	
Data hold	To freeze the display reading on the LCD display	
Power On/Off	Auto power off or manual power off.	
management		
Selection	Select (ACV, ACA, KW , KVA , KVAR , PF)Function .	
Polarity	Appears when measuring a PF value negative	
	inductive load (current lags voltage)	
Sampling time	Approx. 0.5 to 1 second.	
Operating	0 °C to 50 °C (32 °F to 122 °F)	
Temp. & humidity	Max. 80% RH.	
Power supply	DC 1.5 V battery (UM-4, AAA) x 2	
Power	Approx. DC 25 mA.	
consumption		
Flexible Cable length	300 mm	
Flexible Cable Diameter	8 mm	
Dimension	290 x135 x 27.8 mm (11.4x 5.3 x 1.09 inch).	
Weight	206 g/0.45 LB (w/o battery).	
Accessories	Red and Black Test Leads 1 Set	
Included	Instruction Manual 1 PC	

2-1 General Specifications

AC Voltage	C Voltage	
Range	10.0 to 600.0 V	
Resolution	0.1V	
Accuracy	± (0.5% + 5d)	
	* Spec. are tested under 50/60 Hz.	
Input impedance	10 M ohm.	
Over load protection	750 ACV	

2-2 Electrical Specifications (23 \pm 5 °C)

AC Current	True RMS		
Range	300.0A/3000A		
Resolution	0.1A /1A		
Accuracy	300.0 A Range	±(1% +8d)	
	3000 A Range	± (1% +10d)	
Linearity	± 0.2% of reading value		
	from 10% to 100% of range value.		
Conductor position	± (2% +15d) of reading value		
sensitivity	* The measured conductor		
	distance from cer	nter > 25mm (1")	
External field	increase ± 1.5% of range value max.		
influence	* Recommend the distance between		
	different " Flexible current probe "		
should $>$ 200mm			
	* Accuracy is specifie	d that the measured conductor's	
Remark	position is on the center of "Flexible current probe".		
	* ACA specification be tested on		
	sine wave 50/60 Hz.		
	* Measurement range: 1A to 3000A		

Active / Appare	Active / Apparent / Reactive		
Range	199.9/1.999K/19.99K/199.9K/1800K (W / VA / VAR)		
Resolution	0.1 / 0.001K / 0.01K / 0.1K / 1K (W / VA / VAR)		
Accuracy	± (1.5% +50d)		
	* Spec. are tested under 50/60 Hz.		
	POWER : PF= 0.1~1.0 , PT = 1, ACV >40V, ACA > 5 A		

Power factor: ACV > 40V,ACA > 5A

Range	0.000 to 1.000
Resolution	0.001
Accuracy	±0.04

OHMS	
Range	20 ΚΩ
Resolution	0.01ΚΩ
Accuracy	±(1.5 % + 5d)
Over load protection	±350 DCV, 350 ACV.

Continuity Beeper Beeper will sound if measured resistance less than 0.10 K Ω .

Remark :

* Spec. tested under the environment RF Field Strength less than 3 V/M & frequency less than the 30 MHz only.

3. FRONT PANEL DESCRIPTION





- 3-1 Flexible current probe
- 3-2 Probe lock/open
- 3-3 Display
- 3-4 POWER button
- 3-5 HOLD button
- 3-6 SELECT button
- 3-7 Function Switch
- 3-8 Battery compartment/Cover

- 3-9 COM input terminal
- 3-10 V / ohm / Continuity input terminal

4. PRECAUTIONS & PREPARATIONS FOR MEASUREMENT

- 1) Ensure that the DC 1.5V X2 batteries are connected with the right polarity and placed in the battery compartment correctly.
- 2) Place the Red & Black Test Leads into the proper input terminal before making measurement.
- 3) Do not exceed the maximum rated voltage and current to the input terminal.
- Except operate the "Data Hold "function, it should cancel the "Data Hold "function, otherwise the display reading will freeze permanently.
- 6) Remove the battery if the instrument is not to be used in a long period of time.
- 7) For safety consideration, when change the new test leads, it should use the replace test leads that already approval of "CATIII-1000 V" at least.
- 8) Power On/Off management :
 - a. When not use the meter, press the "POWER button " switch (3-4, Fig. 1)> 2 seconds, turn off the power complete.
 - b. During the measurement, after 10 minutes of the meter It will automatically shut down.
 - c. Disable Auto Power Off (no automatic shutdown) Press the "Select Button" (3-6, Fig. 1) first and do not let go Then press the power button (3-4, Fig. 1)> 2 seconds, Turn on the power.

5. MEASURING PROCEDURE

5-1 Symbols & units of display	
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Symbols Units	Descriptions
AUTO	Appears when " Automatic range " mode.
ÂĊ	Appears when AC mode. (AC voltage or AC current)
•	Appears when the " Data hold " function is operated.
	Power voltage is already under the low condition.
•)))	Appears when the " Continuity beeper " is operated.
V	Units for voltage measurements.
A	Units for " Current " measurements.
ΚΩ	Units for "Resistance" measurements.
KW	Units for "Active Power "measurements.
KVA	Units for "Apparent Power " measurements.
KVAR	Units for "Reactive Power " measurements.
PF	Units for " Power Factor " measurements.
	inductive load
	(current waveform lag voltage waveform)
	Over range indicator for voltage and current,
	ohm function.

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5-2 AC voltage true rms Measurement

- Power the meter using the" power button "(3-4,Fig. 1)
 > 2 seconds .
- 2) Connect BLACK test lead into " COM " terminal (3-9, Fig. 1)
- 3) Connect RED test lead into " V " terminal (3-10, Fig. 1).
- 4) Put the "Function switch " (3-7, Fig. 1) to the "WATT " position.
- 5) Press the "SELECT button " (3-6, Fig. 1) to the "ACV " measurement. display will show " \widehat{AC} " marker.
- press the leads across the circuit under test and read the voltage on the display.

5-3 Resistance Measurement & Continuity Check

- Power the meter using the" power button "(3-4,Fig. 1)
 > 2 seconds .
- 2) Connect BLACK test lead into " COM " terminal (3-9, Fig. 1).
- 3) Connect RED test lead into " Ω " terminal (3-10, Fig. 1).
- 4) Put the "Function Switch " (3-7, Fig. 1) to the " Ω " position.
- When LCD show the "KΩ" marker, the meter is under the "20KΩ" mode.
- 6) The meter can measure the Resistance value.
- 7) When the resistance value is less than 0.10 KΩ, the beeper sound will be generated. The display will show "•)) " indicator.

5-4 AC Current true rms Measurement

- 1) Power the meter using the" power button "(3-4,Fig. 1) > 2 seconds.
- 2) Put the "Function switch " (3-7, Fig. 1) to the "WATT " position.
- 3) Press the "SELECT button " (3-6, Fig. 1) to the "A " measurement. Display will show "AUTO " & " \sim_{AC} " marker, meter is under the auto range operation.
- Unscrew according to the illustrated "Probe Locker " (3-2, Fig. 1) Remove the flexible probe, the measuring probe on the hook The current conductor.
- 5) The flexible probe into the "Probe Locker " (3-2, Fig. 1) After locking means according to FIG direction, can be measured ACA currents.
- 6) The meter can measure the 300ACA / 3000ACA true rms automatically.



Fig. 2

- 1) Switch OFF power to the device under test.
- 2) Power the meter using the" power button "(3-4, Fig. 1) > 2 seconds .
- 3) Put the "Function switch " (3-7, Fig. 1) to the "WATT " position.
- 4) Connect BLACK test lead into " COM " terminal (3-9, Fig. 1)
- 5) Connect RED test lead into "V" terminal (3-10, Fig. 1).
- 6) Turn the knurled clamp lock mechanism clockwise the flexible clamp. (3-2, Fig. 1)
- 7) Fully enclose only one conductor of the device under test with the flexible clamp probe (see accompanying diagrams Fig. 2).
- 8) Connect the V and COM test leads to the AC power (L) and (N)
- Press the "SELECT button " (3-6, Fig. 1) Select "ACV", "ACA", KW, "KVA", "KVAR", "PF" measurement value on the display.

5-6 Data Hold Operation

- During the measurement, pushing the "Hold button " (3-5, Fig. 1) once a while will freeze the measured value & the LCD will indicate " H "symbol.
- 2) Push the "Hold Button " again to cancel the data hold function.

6. MAINTENANCE

6-1 Battery replacement



Caution : *Remove test leads before* opening the battery cover !

- When the LCD display showing the mark of " it is necessary to replace the battery, However in-spec. measurement may still be made for several hours after " Low battery indicator " appears before the instrument become inaccurate.
- 2) Open the screw of "Battery Cover " (3-8, Fig. 1) by loosing the screws, then move the battery.
- 3) Replace with DC 1.5V X2 batteries and reinstate the cover.
- 6-2 Cleaning



Caution :

Cleaning - Only use the dry cloth to clean the plastic case !

7. OPTIONAL ACCESSORIES

Item	Model
Carrying Case	CA-05A

8. THE ADDRESS OF AFTER SERVICE CENTER

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