

DIGITAL POWER CLAMP METER OPERATION MANUAL

I. SAFETY INFORMATION

⚠ Warning

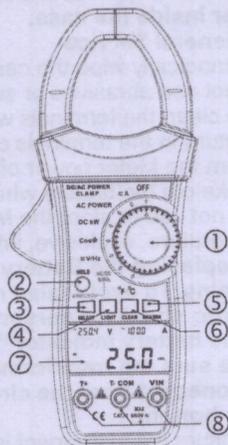
To avoid possible electric shock or personal injury, and to avoid possible damage to the Meter or to the equipment under test, adhere to the following rules:

- Before using the Meter inspect the case. Do not use the Meter if it is damaged or the case (or part of the case) is removed. Look for cracks or missing plastic. Pay attention to the insulation around the connectors.
 - Inspect the test leads for damaged insulation or exposed metal. Replace damaged test leads with identical model number or electrical specifications before using the Meter.
 - Do not apply more than the rated voltage, as marked on the Meter.
 - When measurement has been completed, disconnect the connection between the test leads and the circuit under test, remove the testing leads away from the input terminals of the Meter and turn the Meter power off.
 - Do not carry out the measurement when the Meter's back case and / or battery door is opened to avoid electric shock.
 - When the Meter working at an effective voltage over 30V in AC, special care should be taken.
 - Use the proper terminals and function for your Measurements.
 - Do not use or store the Meter in an environment of high temperature, humidity, explosive, inflammable and strong magnetic field. The performance of the Meter may deteriorate after dampened.
 - Do not use the Meter if the surface of it is wet or the user's hands are wet.
 - When using the test leads, keep your fingers behind the finger guards.
 - Replace the battery as soon as the battery Indicator  appears. With a low battery, the Meter might produce false readings that can lead to electric shock and personal injury.
 - When opening the battery door, must make sure the Meter is power off.
 - When servicing the Meter, use only the same model number or identical electrical specifications replacement parts.
 - The internal circuit of the Meter shall not be altered at will to avoid damage of the Meter and any accident.
 - Soft cloth and mild detergent should be used to clean the surface of the Meter when servicing.
 - No abrasive and solvent should be used to prevent the surface of the Meter from corrosion, damage and accident.
 - The Meter is suitable for indoor use.
 - Turn the Meter off when it is not in use and take out the battery when not using for a long time.
 - Constantly check the battery as it may leak when it has been using for some time, replace the battery as soon as leaking appears.
- A leaking battery will damage the Meter.

2. SPECIFICATIONS

2.1 Panel Layout

- 1) Rotary Switch: use this switch to select functions and ranges
- 2) HOLD key: at kWh test range, the key is start or stop measure, In other range, push the key, the present display value will be locked and the "H" symbol will appear, push it again to exit HOL and the "H" symbol disappear.
- 3) SELECT key: push the key to select the second function of the same range when the range have the second function.
- 4) Back light key: Push the LIGHT button to light the backlight, push it again, back light turn off.
- 5) MAX/MIN key: Press to start recording of maximum / minimum value, it invalid at "kWh" only
- 6) Clear key: turn on the meter ,if DC current make zero in the absense of any input signal, please push the key to clear the DC current , and ensure the accuracy of measurement.
- 7) LCD Display
- 8) V Input Jack , COM Input Jack, temperature Input Jack



- Three measured values are displayed on the LCD
- Overloading: Display OL.
- Battery Deficiency: Display  .
- Data Holding: Display
- Maximum and Minimum value display: Yes
- Display Backlight: White color
- Calibration Feature
- Sleep Mode: To preserve battery life, the Meter automatically turns off if you do not turn press any button for around 15 minutes, except at Active Energy (kWh) range.
- Sampling: 3 times per second.
- Power: 9 V battery type 6F22
- battery consumption: about 8mA

Environmental Requirements

- The Meter is suitable for indoor use.
- Altitude: Operating: 2000m, Storage: 10000m
- Temperature and humidity:

Operating:

Temperature: 0 ~ 40°C Humidity: <85%RH

Storage:

Temperature: -10°C ~ 50°C Humidity: <85%RH

- Safety/ Compliances: IEC 61010 CAT.III 600V, CAT.IV 300V overvoltage and double insulation standard, pollution degree 2

2.3 ELECTRICAL SPECIFICATIONS

Accuracies are \pm (% of reading +number in last digit) at 23 \pm 5°C, \leq 75%RH.

2.3.1 DC/AC(True RMS) Voltage

Range	Accuracy	Resolution
1.0~600.0V	\pm (1.0%+8digits)	0.1V

Allowable overload protection voltage:DC 600V or AC 600V RMS

Frequency Range of AC voltage: 40 to 250Hz

Impedance: 2M Ω

2.3.2 DC/AC(True RMS) Current

Range	Accuracy	Resolution
1.0~999.9A	\pm (2.5%+15 digits)	0.1A

Allowable maximum overload protection current:1000A RMS

2.3.3 Frequency

Range	Accuracy	Resolution
45Hz~99.99Hz	\pm (0.5%+5 digits)	0.01Hz
100Hz~250Hz		0.1Hz

Minimum test voltage value: 40V

Allowable maximum overload protection voltage:600V RMS

2.3.4 Active Power (w=VxAxCOS Φ)

Range	Accuracy	Resolution
99.99kW	\pm (3%+12 digits)	0.01 kW
100kW~300kW		0.1kW

2.3.5 Reactive Power (Var =VxAxSIN Φ)

Range	Accuracy	Resolution
0.01VAR-99.99kVar	\pm (3%+15 digits)	0.1 Var
99.99KVAR -120KVAR		0.1 KVAR

2.3.6 Apparent Power (VA = V x A)

Range	Accuracy	Resolution
99.99kVA	\pm (3%+15 digits)	0.1VA
100KVA - 245KVA		0.1KVA

2.3.7DC Power (kW)

Range	Accuracy	Resolution
0~99.99 kWh	\pm (3%+15 digits)	0.001kWh
100kWh ~999.9 kWh		1.0 kWh

All AC/DC Power Test:

Allowable maximum current: Max 1000A

Allowable maximum voltage: Max 600V

Allowable maximum Apparent Power: Max 300 KVA

2.3.8Power Factor (PF = W/VA)

Range	Accuracy	Resolution	Measuring Condition
0~1 (capacitive or inductive)	\pm 0.08	0.01	The minimum measuring current 5A Measuring voltage less than 20V

•Min Input Current/Voltage3.0A/10V

2.3.9 AC/DC Active Energy (kWh)

Range	Accuracy	Resolution
0.0000 kWh		0.01kWh

2.3.10 Temperature

Range	Accuracy	Resolution
-20~150°C	±(3°C+2digits)	1°C
150~1370°C	±(3%+2 digits)	
-4~302°F	±(3°C+4digits)	1°F
302~2498°F	±(3%+4 digits)	

3.Measurement Operation

Note: Please do not connect any signal input when you turn on the meter. And Restart when there are Abnormal situation

1、 AC/DC Current Test

- (1) Set Rotary Switch to "A" position.
- (2) Press SELECT key, select DCA or ACA you need
- (3) According to the direction of the arrow on the clamp, Clamp the wire. LCD displays the values of the current(A).
- (4) when DCA test, if the current display less than 0.5A, please press the CLEAR key to display CLR symbol Then disappeared, At this time shows less than 0.5A

2、 AC POWER

- (1) Set Rotary Switch to "AC POWER" position, push the SELECT key to select you need active power (kW) or Reactive Power(kVar) or Apparent Power(kVa)
- (2) Insert the black lead to "COM" socket and red lead to the "VIN" socket.
- (3) Connect the black lead to the positive terminal of measured load and red lead to the negative terminal of measured load
- (4) According to the direction of the arrow on the clamp, Clamp the wire. LCD displays the values of POWER and voltage (V) and current(A)
- (5) Maximum range of active power is 300 kW, if exceed the range, the "OL" symbol will display.
- (6) Press MAX/MIN key, LCD displays "MAX"symbol, then the maximum values of power and voltage and current in the process of measuring are displayed; Repress MAX/MIN key, LCD displays"MIN"symbol, then the minimum values of power and voltage and current in the process of measuring are displayed; Press MAX/MIN key the third time, the present values of power and voltage and current are displayed.

Note:

- Please do not measure AC Voltage of more than 600V (v.r.s) and AC Current of more than 1000A(v.r.s).
- If test value is negative, you need to change For the direction of current or voltage

3、 DC kW

- (1) Set Rotary Switch to "DC kW" position, if the current display less than 0.5A, please press the CLEAR key to display CLR symbol Then disappeared, At this time shows less than 0.5A
- (2) Insert the black lead to "COM" socket and red lead to the "VIN" socket.
- (3) Connect the black lead to the positive terminal of measured load and red lead to the negative terminal of measured load
- (4) According to the direction of the arrow on the clamp, Clamp the wire. LCD displays the values of POWER and voltage (V) and current(A)
- (5) Maximum range of active power is 300 kW, if exceed the range, the "OL" symbol will display.
- (6) Press MAX/MIN key, LCD displays "MAX"symbol, then the maximum values of power and voltage and current in the process of measuring are displayed; Repress MAX/MIN key, LCD displays"MIN"symbol, then the minimum values of power and voltage and current in the process of measuring are displayed; Press MAX/MIN key the third time, the present values of power and voltage and current are displayed.

Note:

- Please do not measure AC Voltage of more than 600V (v.r.s) and AC Current of more than 1000A(v.r.s).
- If test value is negative, you need to change For the direction of current or voltage

4、 Power Factor (cosØ)

- (1) Set Rotary Switch to "cosØ" position.
- (2) Insert the black lead to "COM" socket and red lead to the "VIN" socket.
- (3) Connect the black lead to the positive terminal of measured load and red lead to the negative terminal of measured load
- (4) According to the direction of the arrow on the clamp, Clamp the wire. LCD displays the values of Power Factor (cosØ)

Note: Please do not measure AC Voltage of more than 600V (v.r.s) and AC Current of more than 1000A(v.r.s).

5、 DCV OR ACV OR Frequency(Hz)

- (1) Set Rotary Switch to "V/Hz" position, Press SELECT key,

load and red lead to the negative terminal of measured load

- (4) LCD displays the values of you need.

Note:

- (1) Please do not measure Voltage of more than 600V dc/ac
- (2) maximum Frequency values less than 250Hz.

6、 Active Energy(kWh)

- (1) Set Rotary Switch to "AC/DC kWh" position, push the SELECT key to select AC kWh or DC kWh.
- (2) Insert the black lead to "COM" socket and red lead to the "VIN" socket.
- (3) Connect the black lead to the positive terminal of measured load and red lead to the negative terminal of measured load
- (4) According to the direction of the arrow on the clamp, Clamp the wire.
- (5) Press the HOLD key, at this moment, display value Be cleared, time display symbol ":" on LCD is flash, indicate Active Energy is being measured. And then energy value will rise with time .when you want to stop measure, Press HOLD button again to stop measure Active Energy and display the measuring time and data.

Note:

- (1) For Active Energy, there is no function of maximum measurement and minimum measurement.
- (2) Measuring time and data is refreshed once a minute
- (3) Please do not measure Voltage of more than 600V and Current of more than 1000A, and do not measure active power more than 300kW
- (4) Not auto power off when measure Active Energy, maximum measure time is 99 hours and 99 minutes, when Measuring time up to maximum measure time, auto stop test , and the Meter automatically turns off if you do not turn press any button for around 15 minutes .

7、 Temperature (°F/°C)

- (1) Set Rotary Switch to "°F/°C" position, push the SELECT key to select °F or °C
 - (2) Connect the black test lead of the sensor to "T-COM" socket and the red test lead to the "T+" socket.
 - (3) Put the sensor probe into the temperature field under measurement.
 - (4) Read the result from the LCD panel.
- Max.input over-load: 250V rms<10sec
The temperature function shows the random number at ordinary times, must insert the thermocouple in temperature test hole while examining temperature.
- A. This meter inclosure WRNM-010 type contact thermocouple limit temperature is 250 °C (300 °C shortly) ;
 - B. Please don't change the thermocouple at will , otherwise we can't guarantee to measure accuracy ;
 - C. Please don't importing the voltage in the temperature function.
 - D. Please use special probe for test high temperature.

MAINTENANCE

This section provides basic maintenance information including battery replacement instruction.

Warning

Do not attempt to repair or service your Meter unless you are qualified to do so and have the relevant calibration, performance test, and service information.
To avoid electrical shock or damage to the Met do not get water inside the case.

A. General Service

- Periodically wipe the case with a damp cloth and mild detergent. Do not use abrasives or solvents.
- To clean the terminals with cotton bar with detergent, as dirt or moisture in the terminals can affect readings.
- Turn the Meter power off when it is not in use.
- Take out the battery when it is not using for a long time.
- Do not use or store the Meter in a place of humidity, high temperature, explosive, inflammable and strong magnetic field.

B. Replacing the Battery

Warning: To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery indicator "B" appears.

Make sure the transformer jaw and the tests leads are disconnected from the circuit being tested before opening the case bottom.

- 1) Ensure the instrument is not connected to any external circuit. Set the Rotary switch to "OFF" position and remove the test leads from the terminals.
- 2) Open the cover of the battery cabinet by a screwdriver.
- 3) Replace the old batteries with the same type batteries.
- 4) Close the battery cabinet cover and fasten the screw.