

# CM-2030 AC CLAMP METER OPERATION MANUAL

## 1. INTRODUCTION

This 3 1/2 digital multifunction clamp meter with LCD display is driven by 1.5V X 2 battery. It measures AC/DC voltage, AC current, Resistance, Diode forward voltage drop and continuity. It also has Data hold function, Clamp light and overload protection. Reliable and stable performance makes this clamp meter an ideal tool for electrical measurements.

## 2. GENERAL SPECIFICATION

- 1-1. Display method: 3 1/2 digit LCD display, max "1999" counts;
- 1-2. Polarity display: Automatically display;
- 1-3. Over range indication: display "OL" ;
- 1-4. Measurement method: Micro Controller Unit / Analog to Digital Converter(ADC+MCU)
- 1-5. Sampling rate: 2 or 3 times per second;
- 1-6. Working temperature:(0~40)°C,(32~104)°F;
- 1-7. Storage temperature:(-10~50)°C,(14~122)°F;
- 1-8. Power source: 2pcs ×1.5V battery ("AAA" 7# battery);
- 1-9. Low battery indication: "BAT" symbol displayed;
- 1-10. Dimension: 123mm×270mm×35mm (length×width× height)
- 1-11. Clamp opens: 52mm;
- 1-12. Weight: About 280g (Including battery);
- 1-13. Accessories:Manual,Test leads, Leather handbag, Gift box;

**TEMP PROBE TP-04 IS NOT INCLUDED, CAN BE BOUGHT SEPERATELY**

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## 3. TECHNICAL DATA

To assure Meter accuracy, the environment temperature should be (23±5) °C, relative humidity should <75%.Accuracy: ± (a% × reading data + digits), One year guarantee since production date.

### 1-1. AC Current (ACA)

Range	Accuracy	Resolution
200A	±(2.0%+5)	0.1A
1000A		1A

Frequency response: Sinusoidal and triangular waves are 40Hz-1kHz; The others are 40Hz-200Hz; Displaying: Sine wave RMS(average value response) Overload protection: 1200A(Max for 60 seconds). **NOTE:** The measured current conductor should be placed in the center of the clamp head.

### 1-2. AC Voltage (ACV)

Range	Accuracy	Resolution
20V	±(1.0%+5)	10mV
750V	±(1.2%+5)	1V

Input impedance: 10MΩ; Overload protection: 1000V AC/DC peak value; Frequency response: 20V range is 40 Hz ~2000Hz; 750V range is 40 Hz ~1000Hz; Displaying: True RMS response (calibrated by sinusoidal RMS).

### 1-3. DC Voltage (DCV)

Range	Accuracy	Resolution
200mV	±(0.5%+5)	0.1mV
20V		10mV
1000V	±(1.0%+5)	1V

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Input impedance: 200mV range>40MΩ, the rest is 10MΩ;

Overload protection: 1000V AC/DC peak value.

### 1-4. Resistance (Ω)

Range	Accuracy	Resolution
200Ω	±(0.8%+5)	0.1Ω
2kΩ		1Ω
20kΩ		10Ω
200kΩ		100Ω
2MΩ	±(1.2%+5)	1kΩ
20MΩ		10kΩ
200MΩ		100kΩ

Open circuit voltage: < 500mV; Overload protection: 250V DC/AC peak value; **NOTE:** In 200Ω range, short the test leads first to measure the wire resistance and then subtracts it from the real measurement.

### 1-5 Diode and Continuity Test ( \*\* )

Range	Description	Test Conditions
**	Diode forward voltage drop	Forward DC current is approx0.8mA; Reverse voltage is less than 2.2V.
	When the resistance under test is less than 50Ω, buzzer sounds continuously.	Open circuit voltage: 2V

Overload protection: 250V AC/DC peak value. **WARNING:** Do not Apply any voltage in this range.

### 1-6. Temperature ( °C/°F)

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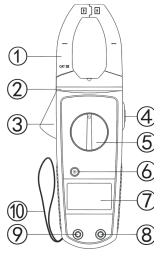
Range	Accuracy	Resolution
-40°C~1000°C	<400°C ±(1.0%+5) ≥400°C±(1.5%+15)	1°C
0F~1832°F	<750°F ±(1.0%+5) ≥750°F±(1.5%+15)	°F

Sensor: K-type (Nickel-Chromium-Nickel-Silicon) **WARNING:**Do not input any voltage at this range!

## 4. PANEL DESCRIPTION

Front panel (picture 1)

- 1-1. Transformer jaw: used to collect AC current and non-contact voltage sensing detection area through the conductor ;
- 1-2. Hand protection: Safely designed to protect users from touching the dangerous parts .
- 1-3. JAW Lever : Press the lever to open the Clamp jaw. When the pressure on the lever is released, the jaw will close.



### 1-4. HOLD/ \* Back LIGHT:

HOLD/ \* :

- 1) Data hold: Short press this button, the current measured value of the meter remains on the LCD display, the display shows "HOLD" symbol, press again to exit the hold mode.
- 2) Backlight: Press this key for more than 2 seconds to turn on the LCD backlight, or turn off by press this key again for more than 2 seconds. The LCD backlight will be turned off automatically after 30 seconds later.

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- 1-5. Rotary switch: Turn on/off the meter, and to choose functions and ranges.

### 1-6.SELECT/REL/☐☐:

- 1) Function selection button by short press it. Short press this button to select the desired measurement mode:Select \* or \*\* function under \*\* status; Select °C or °F at temperature °C/°F status.
- 2) It is REL function in voltage, current or resistance range. Short press this button, the current display is immediately zero.
- 3) Clamp light control button, press for more than 2 seconds, the clamp light will be turned on, press for more than 2 seconds again, then it will be turned off.

1-7.LCD: Shows the test results.

1-8.V/Ω input terminal: Positive input terminal for red test lead.

1-9.COM input terminal: Negative input terminal for black test lead.

1-10.Anti-fall wrist strap.

## 5. OPERATION INSTRUCTION

### Preparation and Cautions before Measurement.

- 1-1.Make sure the polarity of the battery is correctly connected and placed in the battery slot.
- 1-2.Set the rotary switch to the right position before measurement.
- 1-3.If test leads are used for measurement, insert the red probe into V/Ω terminal and the black probe into COM terminal.
- 1-4.If the range is unknown, turn the rotary switch to the highest range, then, change to proper range according to the display. When changing

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ranges, test leads should be removed from the test points. If the LCD displays "OL", it indicates that the range has been exceeded and should be increased by one range;

- 1-5.It is forbidden to measure voltage exceeding the maximum value of the instrument, and it is strictly forbidden to measure the voltage with resistance or diode range so as to avoid damaging the meter.

1-6.Please operate the meter under conditions of temperature 0~40, and relative humidity < 75%RH.

- 1-7.Turn OFF the meter if not used. Remove the battery from the battery compartment if the meter will not be used for a long time.

### AC Current Measurement (ACA)

- 1-1.Set the rotary switch to "ACA" range and choose 200A/1000A range according to the test value.
- 1-2.Press the lever to open the transformer jaw, and place a current-carrying conductor to be tested (not more than two conductors at the same time) in the center of the surrounding part of the clamp head, and close the clamp head to read the current data.

### AC Voltage Measurement (ACV)

- 1-1.Make sure the input voltage is not higher than AC 750V.
- 1-2.Set the rotary switch to "ACV" range. Select 20V or 750V;
- 1-3.Connect the test leads to the circuit under test to get the results.

### DC Voltage Measurement (DCV)

- 1-1.Make sure the input voltage is not higher

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than DC 1000V.

- 1-2.Set the rotary switch to "DCV" range. Select 200mV/20V/1000V.

1-3.Connect the test leads to the circuit under test to get the results.

### Resistance Measurements (Ω)

- 1-1.Set the rotary switch to "Ω" range,and choose 200Ω/2kΩ/20kΩ/200kΩ/2MΩ/20MΩ/200 MΩ range, according to the test value; When 200Ω range input terminal short circuit and not return to zero, press RE button and then measure.

1-2.Connect the test leads to the resistor under test to get the results.

### Diode and Continuity Test ( \*\* )

- 1-1.Turn Switch to "\*\*" ,press SELECT to choose \* or \*\* measurement mode.
- 1-2.Connect RED Test Lead and the Positive electrode of Target Diode, and Connect Black Test Lead and the Negative electrode of Target Diode, LCD will shows similar value of forward Voltage drop for Diode.
- 1-3.Select \*\* if Resistance is lower than (50+10)Ω the Buzzer will makes alarm reminder.

### Non-Contact Voltage Detecting

#### WARNING

This Function might be disturbing by different external Sources, then might be incurred a wrong alarm reminder, test result is just for reference when using this function.

Turn Switch button to "NCV" position, the Target Circuit to be placed on the top of Meter, Meter will shows strong and weak signals,

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meanwhile, Beeper will makes "tick-tick-tick" of alarm reminder.

#### Attention :

- 1-1. Even if there is no any indication, the voltage might still be there. Do not rely on NCV detector as the only way to judge whether a Voltage is still existed on the Wire lead or not.
- 1-2. Voltage detecting may be affected by power socket design, type of insulation and its thickness and other factors.
- 1-3. Interference sources at the external environment such as flashing light, motor might cause a wrong signal for a wrong judgment.

### Temperature Measurement

- 1-1. Turn Switch button to "°C/°F", press "SELECT/☐☐"key to choose °C or °F measurement mode.
- 1-2. Put the cold ends(Free ends) of thermocouple /Sensor respectively into "VΩmA(+)" and COM(-)"terminal, put the working end (Temperature measuring end) of thermocouple/ Sensor in the field of target temperature, then LCD shows the Temperature value of target temperature field, reading value is Centigrade degree. ( Please pay attention to the polarity, if it is opposite, display value will be drop when the target temperature is rising)

#### NOTE:

- 1-1. When input end is open-circuit,it will displays normal temperature.
- 1-2. Please DO NOT change temperature sensors randomly, otherwise the accuracy can not be guaranteed.

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- 1-3.Input Voltage at Temperature range is PROHIBITED.

### Automatic shutdown

During the measurement process, the meter will enter sleep state when the function button and the rotary switch will not be operated within 15 minutes. In the sleep state, pressing the function key will resume the working mode. Press SELECT button in shutdown state and then turn on the meter, the auto power off function is canceled. Shut down the meter and restart it , Auto-power off function will be resumed.

## 6. MAINTENANCE

The meter is a precise instrument. Random changes to the circuit are not allowed.

#### Attention :

- 1-1.Do not input voltage higher than DC 1000V or AC 750V RMS.
- 1-2.Do not measure the voltage value when the range switch is at the Ω range.
- 1-3.Don't make any measurements when the battery isn't installed or the back cover isn't fixed.
- 1-4.Before replacing battery, please remove the test leads from the measuring point and turn off the power.
- 1-5.Keep the meter away from water, dust and shock.
- 1-6.Do not use the meter under high temperature, high humidity, combustible, explosive and strong magnetic environments.
- 1-7.Clean the Case with a damp cloth and mild detergent only. Do not use abrasives and alcohol to clean the meter.

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- 1-8.To avoid leakage damage, please take out the battery if the meter will not be used for a long time.

- 1-9.When "BAT" symbol is displayed, please replace the battery according to the following steps: Unscrew the screw on the battery door, and take off the cover. Replace the old battery with a new one (for long life, it's better to use alkaline battery). Replace the battery door, and tighten the screw.

## 7. TROUBLE SHOOTING

If the meter does not work properly, please check the meter as following steps:

(If the problems still Persists, please contact the repairing center or the local dealer.)

Fault	Solution
No reading on LCD	<ul style="list-style-type: none"> <li>■ Turn on the power;</li> <li>■ Replace battery;</li> <li>■ Release HOLD key.</li> </ul>
BAT signal appears	<ul style="list-style-type: none"> <li>■ Replace battery</li> </ul>
Error Value	<ul style="list-style-type: none"> <li>■ Replace battery</li> </ul>

The specifications are subject to changes without prior notice;

The content of this manual is regarded as correct.

If users find out any mistakes or omissions,

please kindly contact the manufacturer;

The manufacturer will not be responsible for

accidents and damages caused by improper

operations;

The operations described in this Manual shall not

be considered as the reason for any special usages.

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