

# Digital Clamp Meter Manual

## 1. SUMMARIZE

This instrument is a new hand-held pocket clamp digital meter with 2000 digits display, low power consumption, automatic range. It can be used to measure AC/DC voltage, AC/DC current, resistance, diode, continuity test, live wire judgment and other functions.

The meter has automatic shutdown (AUTO POWER), overload protection and low current ( $\mu\text{A}/\text{mA}$ ) port input measurement function. and it is safe and reliable, easy to operate, easy to carry; thus it is a desirable tool for engineering design, labs, schools, field operations, home appliances servicing, etc.

## 2. OPEN PACKING FOR CHECKING

Open the box, take out the meter, checking the items below if they are missing or damaging:

Manual	1pc
Test lead	1pair
1.5VAAA battery	2pcs
Carrying bag	1pc

Please contact with your supplier if you find out any problems.

## 3. SAFETY NOTES

The meter's design is in accordance with the CE certification, IEC61010 related terms, in conformity with double insulation, Safety standard for over voltage CAT III 600V. If you fail to use the clamp meter in accordance with the relevant operating instructions, the protection provided by the clamp meter will be weakened or lost.

1. Check the clamp meter and test lead before use to prevent any damage or abnormal phenomenon. If you find test lead and housing insulation is obviously damaged, and the LCD has no display, etc., or you think the clamp meter cannot work properly, please do not use it again.
2. Do not use clamp meter before the back cover and battery cover are not properly covered to avoid electric shock.
3. Remember that the fingers do not exceed the hand part of the test lead range when measuring, do not contact exposed electricity wires, connectors, unused inputs or measured circuits to prevent electric shock.
4. The function switch must be placed in the correct position before measurement. It is strictly forbidden to change range during measurement to prevent damage to the clamp meter.
5. Do not apply more than DC/AC600V voltage between the terminal of the clamp meter and the ground to avoid electric shock and damage to the clamp meter.
6. Be careful when measuring voltage higher than 36V DC, 25V AC to avoid electric shock.
7. Use the clamp meter according to the instructions of manual, and it is forbidden to measure the voltage or current higher than the allowable input value. Before making

online resistance, capacitance, diode, or circuit on-off measurements, you must first cut off all power supplies in the circuit and discharge all capacitors to avoid the measurement results is not accurate.

8. When the LCD displays the "🔋" sign, please replace the battery in time to ensure the measurement accuracy. When you not plan to use this clamp meter for a long time, you should remove the battery.

9. Do not change the internal wiring of the clamp meter to avoid damage of the instrument and hidden danger of the user.

10. Do not store or use the clamp meter in a high temperature, high humidity, flammable, explosive and strong electromagnetic field environment.

11. Please use a soft cloth and neutral detergent to clean the case of the clamp meter for maintenance, do not use abrasive and solvent to prevent the case from being corroded, damaging the instrument and endangering safety.

## 4. ELECTRIC SYMBOL

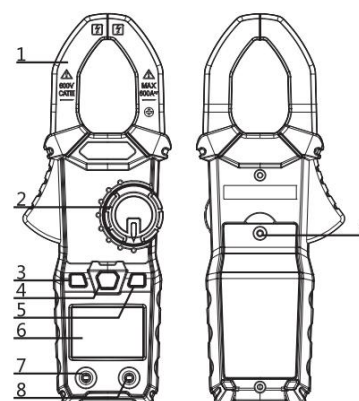
⚠	Warning	— — —	DC
⚠	High voltage damage	~	AC
⚡	Ground	⌚	AC and DC
⊞	Dual insulation	CE	Accord with the order of European Union
🔋	Low battery	⚡	Fuse

## 5. GENERALSPECIFICATION

- Display: 3 1/2 digits LCD, max. display 1999
- Polarity indication: The positive and negative polarities automatically display.
- Over range indication: LCD displays OL
- Low battery indication: "🔋" symbol displays
- Operation temperature: 0~40℃, relative humidity <75%
- Storage environment: -10℃~50℃, relative humidity <80%RH;
- Power: Two 1.5V AAA battery LR03
- The Max. opening size of the clamp head: Diameter 26mm
- Max. measuring current wire: Diameter 24mm
- Size: 172×65×29 mm
- Weight: approx.160g (including batteries)
- Auto power off: idle for 15min
- Other:Key tone; Full-range overload protection;Reverse-battery protection

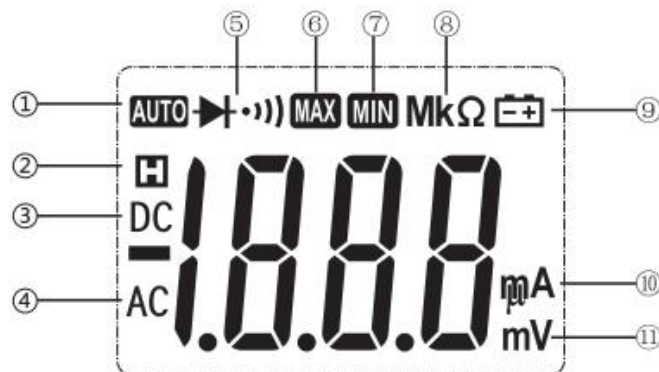
## 6. APPEARANCESTRUCTURE

1. Clamp jaw
2. Range knob
3. Max./Min
4. Select key
5. Data hold
6. LCD display



- 7. GND
- 8. Input terminal
- 9. Battery cover screw

## 7. DISPLAY SCREEN



①	Auto range	②	Minimum measurement
③	Data hold	④	Ohm, Kilo ohm, Mega ohm
⑤	DC measurement	⑥	Low battery
⑦	AC measurement	⑧	μA, mA, A
⑨	Diode, continuity test	⑩	mV, V
⑪	Maximum measurement		

## 8. BUTTON FUNCTION

Button Introduction: short press <2 seconds, long press ≥ 2 seconds

### ● Data hold button (HOLD)

Press the HOLD key to enter the reading hold measurement mode, and press the HOLD button again to exit it.

### ● Select button (SELECT)

Short press the select key to select the function, it can perform switch at resistance / diode / continuity range, switch at AC and DC current/voltage range.

### ● MAX/MIN key (only applicable to the present range)

Short press the MAX/MIN key, the LCD will display the "MAX" symbol and enter the maximum measurement mode, then short press the MAX/MIN key, the LCD will display the "MIN" symbol and enter the minimum measurement mode. Short press can perform switch each other.

After entering the minimum measurement mode, long press the MAX/MIN key to exit the maximum/minimum measurement mode. MAX/MIN tests are only available for AC/DCV.ACA, resistance range. and other keys are invalid when start this function, if you want to use other keys, you can long press this key to exit the MAX/MIN measurement mode or switch other range firstly.

## 9. OPERATE INSTRUCTIONS

### 9.1. AC current measurement

- Estimate the current to be tested. If it is below 200mA, insert the black test lead into the "COM" jack and the red test lead into the "V/Ω" jack.
- Turn the knob to 200mA range. If the tested current is less than 2mA, turn the knob to 2000uA range
- Switch ACA or DCA with SELECT key.
- For uA/mA test (less than 200mA), connect the test lead in series to the power supply or load to be measured and display the measurement results. If it is DC current, the current polarity of the red test lead will be displayed at the same time.
- If the ACA to be measured is above 200mA, measure it with clamp (which cannot be used for DC measurement). During measurement, press the trigger to open the clamp to bite the load to be tested or one conductor of the power supply; if two or more than two conductors are bitten, the measurement will become invalid. In order to ensure accuracy, the measured conductor shall be located in the middle of the clamp.
- The display shows the measurement result. (It is True rms)
- If the current is unknown before measurement, set the function switch in 600A position and then gradually lower it.

#### Note:

- The current measurement function must be operated between 0°C~40°C. Press the trigger and do not suddenly loosen, otherwise it is easy to produce measurement error.
- In order to ensure the accuracy of the measurement data, the measured conductor must be placed in the center of the clamp head. Otherwise, ± 1.0% additional error of the reading will occur.
- When the test lead is used for measurement, do not input DCA or ACA above 200mA. When the clamp is used to measure the ACA about 500A, do not last more than 30s. In addition, do not measure ACA above 600A; otherwise, the meter may be damaged.
- Disconnect the test lead with the circuit to be test after all measurement operations are completed.
- When measuring the voltage above 36V, pay attention to wear safety protection equipment

### 9.2. ACV measurement

- Turn the knob to ACV range, insert the black test lead into the "COM" jack and the red test lead into the "V/Ω" jack.
- Connect the red and black test lead to the measured line and directly read the reading on the LCD screen

#### Note:

- Do not input a voltage higher than 600V DC/AC to avoid damage to the meter.
- Be careful when measuring high voltage to avoid electric shock.

### 9. 3. Resistance measurement

- Turn the knob to " $\Omega$ " range. the meter defaults to the resistance range when turn it on.
- Insert the black test lead into the "COM" jack and the red test lead into the  $V \Omega^*$  jack.
- Connect the test lead wire to both ends of the measured resistance.
- Read the measured resistance directly on the LCD

#### Note:

- If the tested resistor is under open circuit or the resistance of the measured resistor exceeds the maximum range of the meter, the display will show "OL"
- When measuring on-line resistance, all power supplies in the measured circuit must be turned off before measurement, and all capacitors are released completely. In order to ensure the measurement is correct.
- When measuring low resistance, the test leads will have about  $0.1 \Omega$  -  $0.2 \Omega$  measurement error. In order to obtain accurate readings, you can perform relative value measurement. First, subtract the short-circuit display value of the test lead, then perform low resistance measurement.
- If the resistance value is higher than  $0.5 \Omega$  when the test leads are short-circuited, you need to check whether the test leads are loose or other reasons.
- When measuring resistance above  $1M \Omega$ , it may take a few seconds for the reading to stabilize. It is normal for high resistance measurements. In order to obtain stable readings, you can buy an extra short alligator clip test line instead of our standard test leads to do the measurement.
- Disconnect the test lead from the measured circuit after all measurement operations are completed.

### 9. 4. Diode and continuity test


- Insert the red test lead into the " $V \Omega$ " jack and the black test lead into the COM jack.
- Turn the knob to " $\Omega$ " jack, short press "SELECT" key to switch diode or continuity measurement mode.
- When under continuity test, if the resistance of the tested circuit is less than  $50 \Omega$ , the built-in buzzer will sound.
- In the diode measurement mode, connect the red test lead and black test lead to the positive and negative pole of the diode respectively, and the LCD will display the forward voltage drop of the diode.

#### Note:

- If the open circuit or polarity of the measured diode is reversely connected, the display will show "OL".
- When measuring on-line diode, all power supplies in the measured circuit must be turned off before measurement, and all capacitors are released completely.
- Do not input voltage higher than DC or AC 30V to avoid to damage the meter.
- Disconnect the test lead from the measured circuit after all measurement operations

are completed.

## 9. 5. Live Wire Recognition Live

- Turn the knob to the Live range, and the LCD displays Live.
- Insert the red test lead into the "V  $\Omega$ " jack, and touch the measured position with the red test lead.
- If meter has audible and visual alarm, the tested wire connected to the red test lead is a live wire. If it is no change, the tested wire is not a live line.
-  Note:
- The range must be operated in accordance with safety rules.
- This function only detects AC standard main live wire (AC 110V~AC 380V).

## 9. 6. Automatic shutdown function

- In order to save power consumption and prolong battery life, the meter will turn on automatic shutdown function by default after it is turned on. If the user does not operate the meter within 15 minutes, it will enter the low-power sleep mode. If you want to wake it up, you can press the select key to turn it on.
- Press the SELECT button to turn it on, the automatic shutdown function will cancel, After cancel the automatic shutdown function, the meter will not automatically shut down, but there will have prompt sound every 15 minutes.

# 10. TECHNICAL CHARACTERISTIC

Accuracy calibration, ambient temperature 23°C  $\pm$  5°C, humidity less than 75%RH

## 10. 1. DCA

Range	Accuracy	Resolution	Overload protection
200uA	$\pm(1.2\%+3)$	0.1uA	200mA
2000uA		1uA	
20mA	$\pm(1.5\%+3)$	0.01mA	
200mA		0.1mA	

## 10. 2. ACA

Range	Accuracy	Resolution	Overload protection
200uA	$\pm(1.8\%+3)$	0.1uA	200mA
2000uA		1uA	
20mA	$\pm(2.0\%+3)$	0.01mA	
200mA		0.1mA	
2A	$\pm(4.0\%+50)$	0.001A	600A
20A	$\pm(4.0\%+35)$	0.01A	
200A	$\pm(4.0\%+15)$	0.1A	
600A		1A	

 Frequency response: 50Hz~60Hz;

Display: the current True RMS; Suitable for 10% to 100% of the range.

When the measured current is higher than 500A, the continuous test time cannot exceed

30 seconds.

### 10. 3. ACV (True RMS)

Range	Accuracy	Resolution	Overload protection
2V	$\pm(0.8\%+10)$	0.001V	600VDC/AC
20V		0.01V	
200V	$\pm(1.2\%+25)$	0.1V	
600V	$\pm(1.5\%+25)$	1V	

Input impedance:  $\geq 10M\Omega$ ;

Frequency response: 40Hz~1k Hz

Display: the voltage True RMS; Suitable for 10% to 100% of the range.

Range	Accuracy	Resolution	Overload protection
200mV	$\pm(0.5\%+7)$	0.1mV	600VDC/AC
2V		0.001V	
20V		0.01V	
200V	$\pm(1.0\%+20)$	0.1V	
600V	$\pm(1.2\%+20)$	1V	

Input impedance:  $\geq 10M\Omega$ ;

Display: the voltage True RMS; Suitable for 10% to 100% of the range.

### 10. 4. Resistance ( $\Omega$ )

Range	Accuracy	Resolution	Overload protection
200 $\Omega$	$\pm(1.0\%+5)$	0.1 $\Omega$	250V DC/AC
2k $\Omega$		0.001k $\Omega$	
20k $\Omega$		0.01k $\Omega$	
200k $\Omega$		0.1k $\Omega$	
2M $\Omega$		0.001M $\Omega$	
20M $\Omega$	$\pm(1.5\%+15)$	0.01M $\Omega$	

$\Delta$ Open circuit voltage: about 1V;

The accuracy is 5% to 100% of the range.

### 10. 5. Continuity test

Range	Accuracy	Resolution	Open circuit voltage	Overload protection
200 $\Omega$	The resistance value $\leq 50 \Omega$ , the buzzer will have sound.	0.1 $\Omega$	About 2V	250V DC/AC

### 10. 6. Diode test

Range	Accuracy	Resolution	Overload protection
2V	The open circuit voltage is about 2.3V, The short circuit $\leq 2mA$	0.001V	250V DC/AC

## **11. INSTRUMENT MAINTENANCE**

1. The power supply of this product is 2 AAA batteries, if the meter meets following conditions, please replace the batteries.

- (1). When LCD displays low battery "🔋" symbol.
- (2). When the brightness of the LCD back light decreases.
- (3). When the buzzer sound of the meter becomes smaller.

### **2. General maintenance**

- (1). The maintenance and service of this instrument must be completed by professional maintenance personnel or designated maintenance service department.
- (2). Please take out the battery when it is not used for a long time to avoid corrosion of the instrument caused by battery leakage.
- (3) Pay attention to waterproof, dustproof and anti-fall.