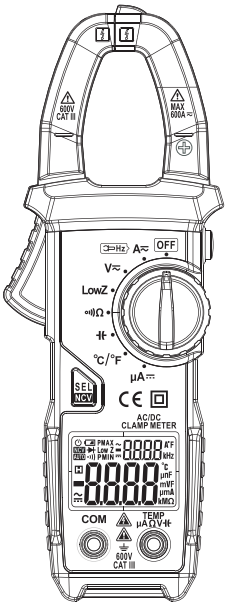
# USERS MANUAL

## AC/DC CLAMP METER




EMC&LVD

Designed and Conforms to
IEC61010-1
CAT.III 600V

RoHS

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IEC61010-1
CAT.III 600V

Y01-04-0140 A0

Before using the instrument,please read this manual carefully,and save it well for future using.

size:125x85mm

## Table of Contents

# 1. Safety Information

**Warnings**

**Special attention shall be paid when using the meter, improper use might cause an electric shock or damage the meter. General safety procedures shall be followed during the use and safety measures regulated by the instruction manual shall be completely respected.**

**To fully make use of the functions of the meter and ensure safe operation, please carefully read and follow the use method of this manual.**

The meter meets IEC-61010-1, IEC-61010-2-030, IEC-61010-2-032 ) Safety Requirements for Electronic Measuring Instruments, of the secondary pollution, over-voltage standard is CATIII 600V。

Please follow the safe operation guidance and ensure to use the meter in safe.

## 1.1 Preparations

⇨ When use the meter, users must comply with the standard safety rules:

- General protection against electric shock
- Prevent misuse of the meter

⇨ After received the meter, check if it has been damaged during the delivery.

⇨ After been kept and delivered in shoddy conditions, check and confirm if the meter is damaged or not.

⇨ The pen-shape meter must be in good condition.

⇨ Before use, check the pen-shape meter see if any damage to the insulation, if the metal wire of the cable is bare.

## 1.2 Marks

| | |
|---|---|
|  | Note (important security information, see the Instruction Manual) |
|  | It can be used on hazardous live conductors. |
|  | Double insulation protection (Category II) |
| CAT III | follows the over-voltage (Setup) level III of IEC-61010-1 standard and pollution degree 2 means the impulse withstand voltage level of protection provided. |
| CE | In line with the European Union (EU) Standard |
|  | Grounding |

## 1.3 Maintenance

⇨ Please do not attempt to open the bottom case to adjust or repair the meter, such operation could only be performed by technicians fully aware of the meter and the risk of electric shock.

⇨ Before opening the meter case or battery cover at the end, the pen-shape meter should be removed from the circuit being measured.

⇨ To avoid electric shock that might be caused by erroneous readings, when the meter displays "  " symbol, the battery should be replaced immediately.

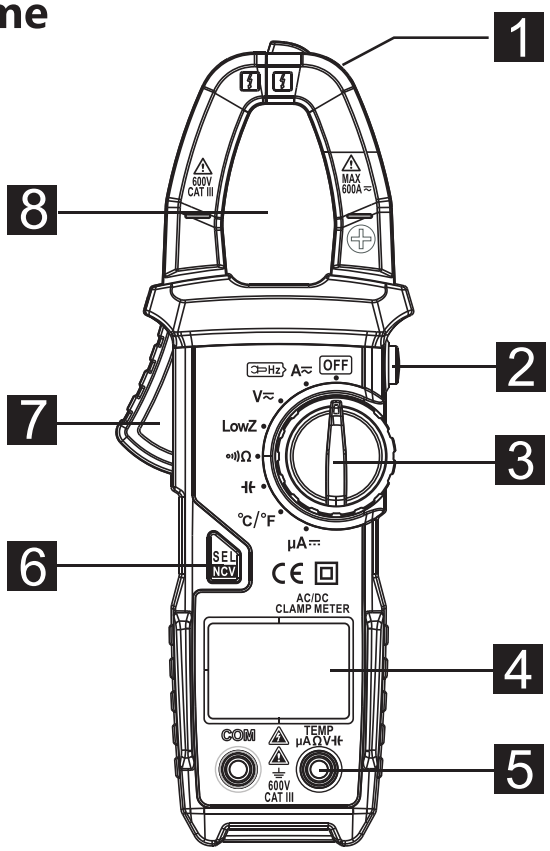
⇨ Use a damp cloth and mild detergent to clean the meter, do not use abrasive cleaning agents or solvents.

⇨ Power supply of the meter should be turned off when not in use, range switch to the OFF position.

⇨ If the meter is not used for a long time, batteries should be removed to prevent damage to the meter.

## 2. Descriptions

### 2.1 Part Name




1 Non-contact voltage detection sensing area

2 Data hold /BackLight button

3 Rotary switch

4 Display screen

5 Input socket

6 Function Selecting/Non-contact voltage detection button

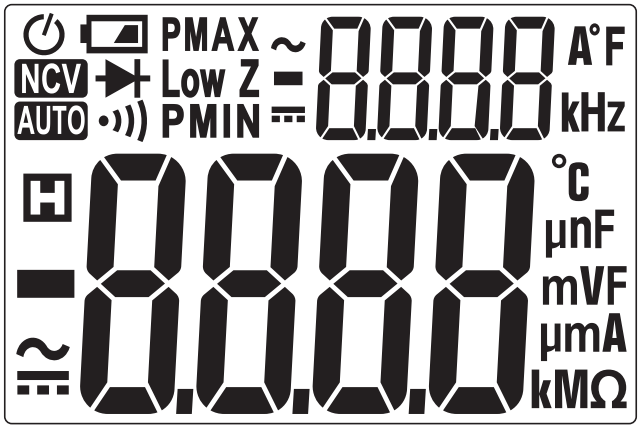
7 Trigger

8 Current clamp head: used for measuring current

## 2.2 Instructions to rotary switch and key as well as input socket

| | |
|---|---|
| OFF: | Shutdown position |
| A~ | AC/DC current measurement |
| V≂ | AC/DC voltage measurement |
| Low Z | Low resistance voltage measurement |
| Ω | Electric resistance measurement |
| •)) | ON/OFF measurement |
| ⊣⊢ | Capacitance measurement |
| ℃/℉ | Temperature measurement |
| μA⎓ | Measurements of microampere direct current |

## 2.3 LCD Display Unit



| | |
|---|---|
| ~ ⎓ | AC &DC |
| •)) | On/Off indication |
| AUTO | Automatic range measurement mode |
| | Auto shutdown indication |
| | LOW BATTERY |
| H | Hold status |
| V;A,uA | Volt ( Voltage);Ampere ( Current ) |
| Ω; kΩ; MΩ | Ohm, kilohm and megohm (Resistance) |
| Hz, kHz, | Hz, kHz |
| NCV | Non-contact voltage detection |
| uF | uF |
| ℃℉ | ℃℉ |
| LowZ | Low resistance measurement mode |

## 3. Specifications

The meter should specify one year as a cycle to re-calibrate in the conditions of 18℃ ~ 28℃ and relative humidity less than 75.

### 3.1 Overview

- Automatically select measurement function and range.
- Overload protection for the whole measurement range.

- Maximum allowable voltage between the measuring terminal and the Earth: 600V DC or 600V AC
- Work height: maximum 2000m
- Display: LCD
- Maximum display value: 6000 digits.
- Polar indication: automatically indicate, '-' means negative polarity.
- Over range Indication: '0L' or '-0L'.
- Sampling time: about 3 times/s
- Unit display: with function and quantity of electricity unit display
- Automatic Power off time: 10 minutes
- Power supply: 1.5V AAA battery ×2
- Battery low voltage indication: LCD display symbol.
- Temperature coefficient: < 0.1×accuracy degree/℃
- Working temperature: 18℃ ~ 28℃
- Storage temperature: -10℃ ~ 50℃

## 3.2 Technical Index

### 3.2.1 AC Current

| Measurement range | Distinguishability | Accuracy degree |
|---|---|---|
| 60A | 0.01A | ±( 2.5% reading + 8 word ) |
| 400A | 0.1A | |
| 400A~600A | 0.1A | ± ( 3% reading + 10 word ) |

- Minimum input current: 0.2A AC current
- Maximum input current: 600A AC current
- Frequency range: 45 ~ 65Hz;

### 3.2.2 DC Current

| Measurement range | Distinguishability | Accuracy degree |
|---|---|---|
| 60A | 0.01A | ± ( 3% reading +10 word ) |
| 600A | 0.1A | |

- Minimum input current: 0.01A DC current
- Maximum input current: 600A DC current

### 3.2.3 DC Voltage

| Measurement range | Distinguishability | Accuracy degree |
|---|---|---|
| 6V | 0.001V | ±(0.5% reading +5 word) |
| 60V | 0.01V | |
| 600V | 0.1V | |

- Minimum input voltage: 0.001V DC
- Maximum input voltage: 600V DC

### 3.2.4 AC Voltage

| Measurement range | Distinguishability | Accuracy degree |
|---|---|---|
| 6V | 0.001V | ±(0.8% reading +5 word) |
| 60V | 0.01V | |
| 600V | 0.1V | |

- Minimum input voltage: 0.001V AC
- Maximum input voltage: 600V AC (effective value)
- Frequency range: 45 ~ 65Hz

### 3.2.5 Frequency

### 3.2.5.1 Clamp head frequency measurement (Pass A position):

| Measurement range | Distinguishability | Accuracy degree |
|---|---|---|
| 60.0Hz | 0.1Hz | ±( 1.0% reading + 5 word ) |
| 1000Hz | 1Hz | |

-Measurement range: 40Hz ~ 1000Hz

-Input signal range: ≥2A AC current (effective value)

### 3.2.5.2 Pass V position:

| Measurement range | Distinguishability | Accuracy degree |
|---|---|---|
| 60.0Hz | 0.1Hz | ±( 1.0% reading + 5 word ) |
| 1000Hz | 1Hz | |

- Measurement range: 40Hz ~ 1000Hz

- Input signal range: ≥0.8V AC voltage (effective value)

### 3.2.6 Resistance

| Measurement range | Distinguishability | Accuracy degree |
|---|---|---|
| 6kΩ | 0.001kΩ | ± ( 0.8% reading +3 word ) |
| 60kΩ | 0.01kΩ | |
| 600kΩ | 0.1kΩ | |
| 6MΩ | 0.001MΩ | |
| 60MΩ | 0.01MΩ | |

- Overload protection: 250V DC or AC (effective value)

### 3.2.7 Line on-off test

| Measurement range | Distinguishability | Functions |
|---|---|---|
|  | 1Ω | If the resistance of circuit being measured is less than 50Ω, then the beeper in the meter may sound. |

- Overload protection: 250V DC or AC (effective value)

### 3.2.8 Capacitance

| Measuring range | Resolution | Accuracy |
|---|---|---|
| 600uF | 0.1uF | ±(4%Reading+3 digits) |
| 6000uF | 1uF | |

- Overload protection:250V DC or AC ( valid value )

### 3.2.9 Temperature

| Measuring range | Resolution | Accuracy |
|---|---|---|
| -20~1000℃ ( -4~1832℉ ) | 1℃/2℉ | ±(1% Reading+2 digits) |

- Overload protection:250V DC or AC ( valid value )

### 3.2.10 uA Current measurement

| Measuring range | Resolution | Accuracy |
|---|---|---|
| 200.0uA | 0.1uA | ±(0.8% Reading+3digits) |

- Overload protection:250V DC or AC ( valid value )

# 4. Operation Guide

## 4.1 Readings Hold

During the measuring process, if the readings are required to hold, slightly touch H/☼ key ,the display value will be locked, slight press H/☼ key again to cancel readings hold.

## 4.2 BackLight

1 )In the process of measurement, if the ambient light is too dim, causing reading difficulties, press H/☼ key for more than 2s, open BackLight and it will automatically off after about 1 minute.

2 ) During the process if press H/☼ key for more than 2s, then the BackLight will be turned off.

## 4.3 Auto Power Off

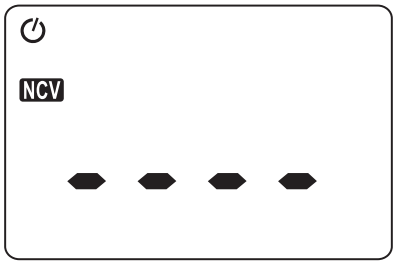
1 ) If after 10 minutes when the meter is on without any operation, it will go into hibernation and automatically shut down to save power. Before the meter off, there will be one sound of the buzzer to remind every 1 minute.

2 ) Press any key after auto power off to wake the meter into working status.

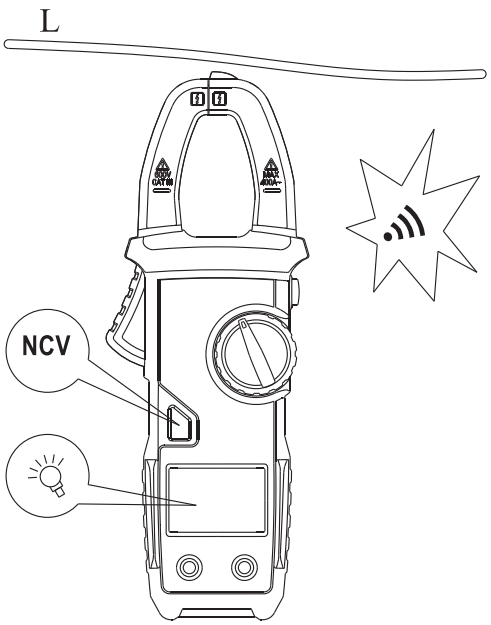
3 ) When turn the meter on, hold the " SEL/NCV" key at the same time, then the auto power off function is canceled.

## 4.4 Non-contact Voltage Detection (NCV)

1)Press NCV key for 2s, enable NCV function, the meter displays




2) Press NCV key, put the NCV sensor close to the measured cable, the meter could detect if the measured cable is >90V AC voltage or not. When the meter detects AC voltage, the meter buzzer alarms and the backlight flashes.




**Note:**

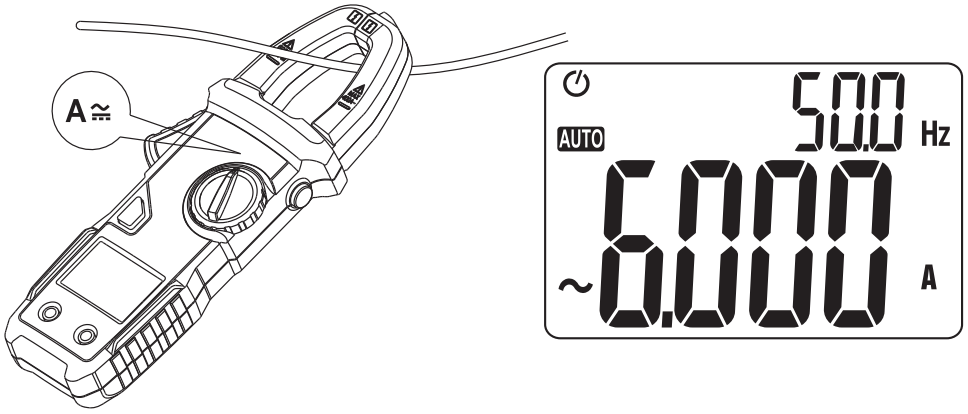
1 ) Even there is no alarm indication, the voltage might still exist. Do not judge if there exist voltage or not in the cable relying on non-contact voltage detector. The detection operation might be affected by various

factors such as the socket design and insulation thickness types are different and so on.

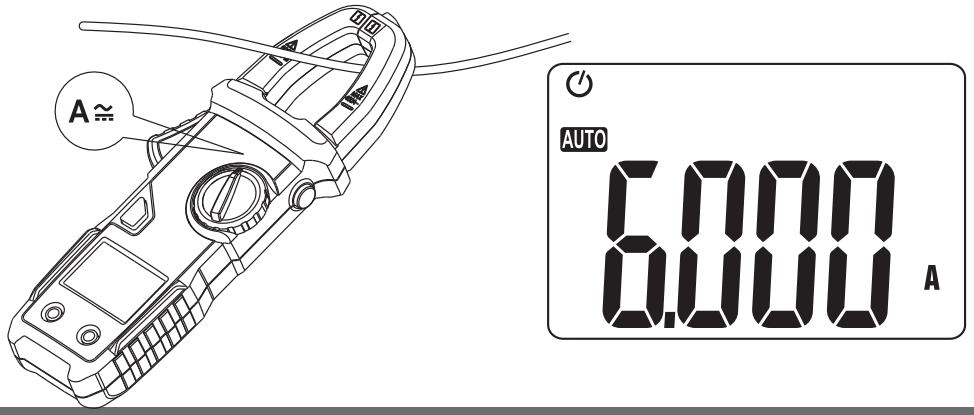
2 ) In NCV detection mode, the meter will not measure the voltage, resistance and current at the same time.

## 4.5 AC/DC Current Measurement

1) Turn the selector switch to **A~** position , Hold the trigger, open the clamp head and clamp one cable of the measured circuit.The main LCD of the meter displays the measured current value, the vice LCD displays current frequency value .

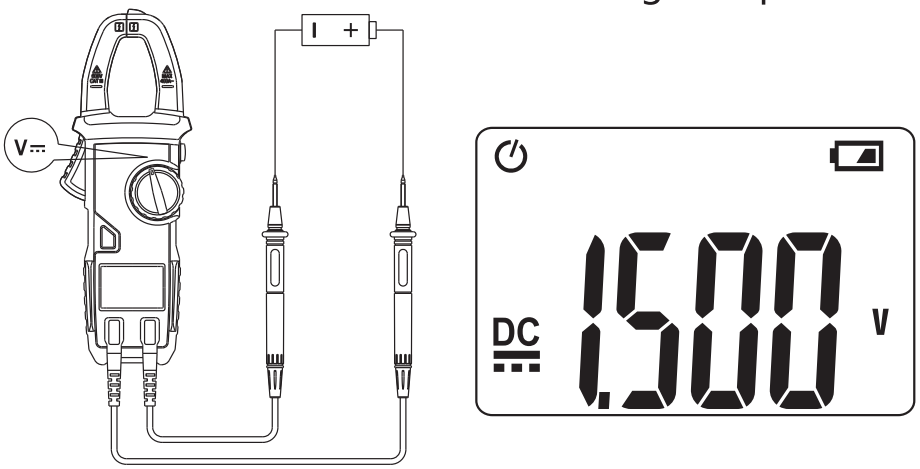



2) Turn the selector switch to **A~** position, press "SEL" key to switch to DC current measurement mode. Hold the trigger, open the clamp head and clamp one cable of the measured circuit.The main LCD of the meter displays the measured current value



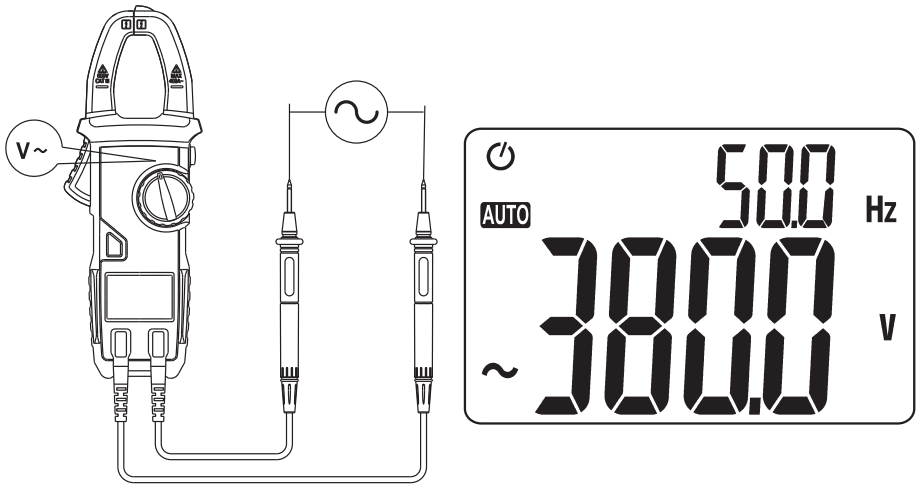
## 4.6 DC Voltage Measurement

Turn the selector switch to V≂ position,press "SEL" key to switch to DC voltage measurement mode , and connect the pen-shaped meter to the measured signal. The red pen-shaped meter is connected to the positive pole of the signal to be measured and the black meter to its negative pole.




## 4.7 AC Voltage Measurement

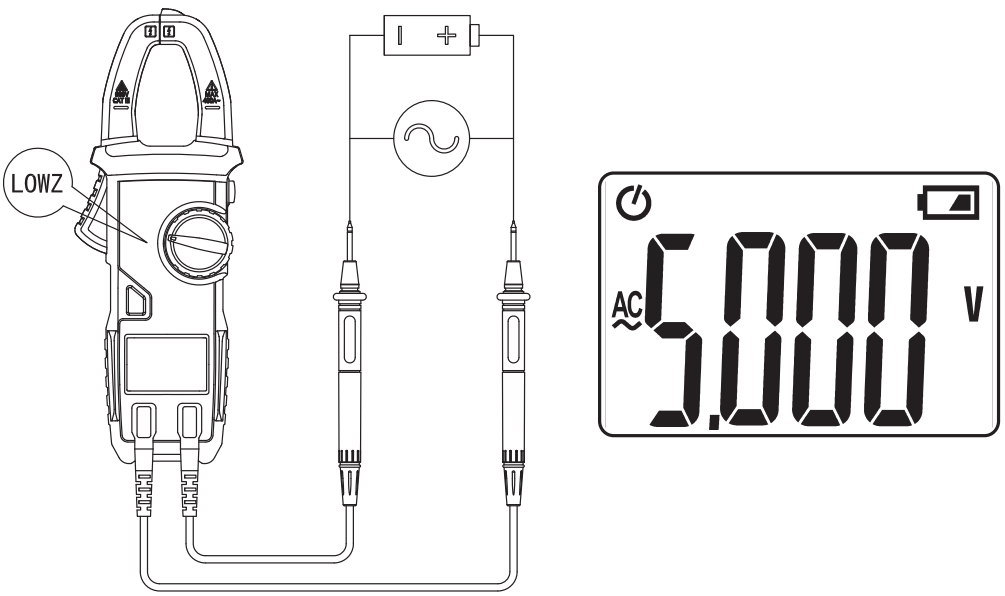
Turn the selector switch to V≂ position,press "SEL" key to switch to AC voltage measurement mode,and connect the pen-shaped meter to the measured signal. The main LCD of the meter displays the measured voltage value, the vice LCD of the meter displays voltage frequency value.



## 4.8 Low resistance measurement

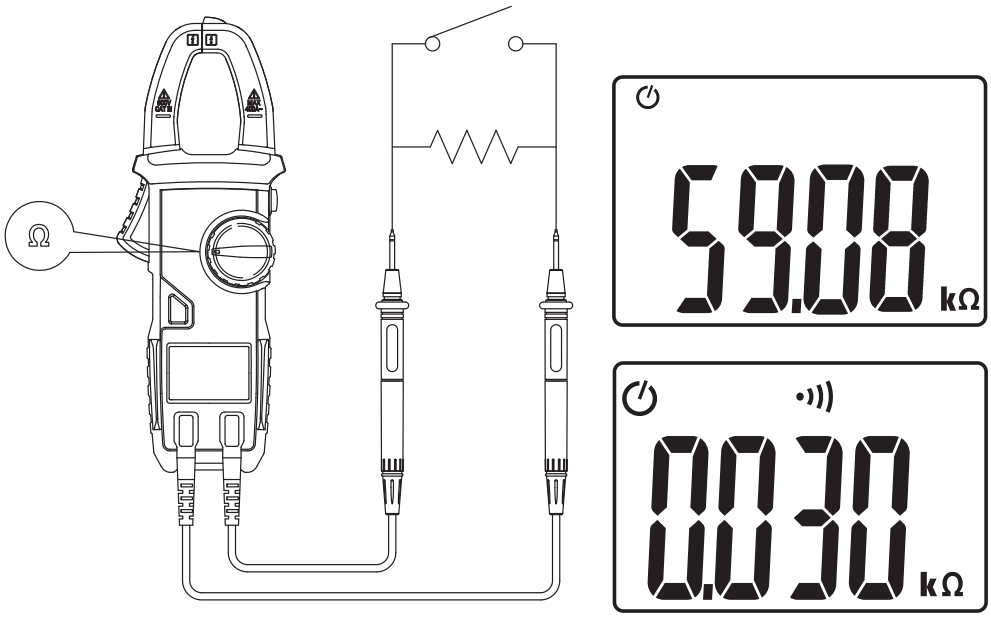
Turn the selector switch to LowZ position and connect the pen-shaped meter to the signal to be measured. The primary display panel shows the measured voltage value. The instrument will automatically recognize whether the measured signal is DC voltage or AC voltage.

Note: In the low resistance measurement mode, the longest duration for measurement shall not exceed 1 minute.



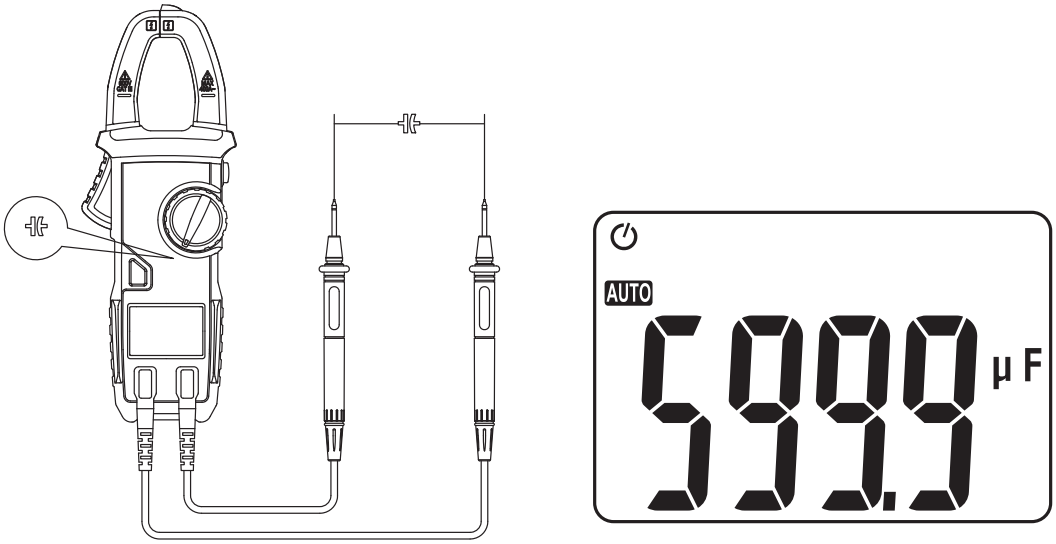

## 4.9 Electric resistance/buzzer measurement

Connect the pen-shaped meter to the grounding resistance to be measured. The instrument will display the measured resistance value. When the measured resistance is less than 50Ω and the rotary switch is switched to buzzer position, the instrument's buzzer will sound alarms.



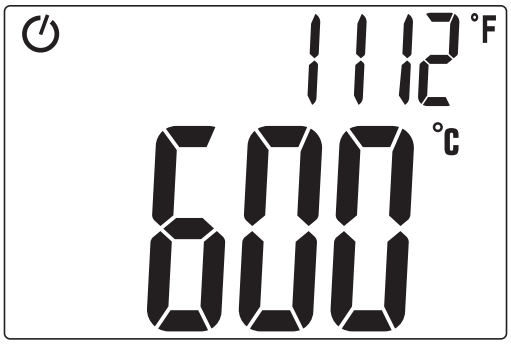

## 4.10 Capacitance measurement

Turn the selector switch to capacitance position and connect the pen-shaped meter to the signal to be measured. The primary display panel will display the measured capacitance.



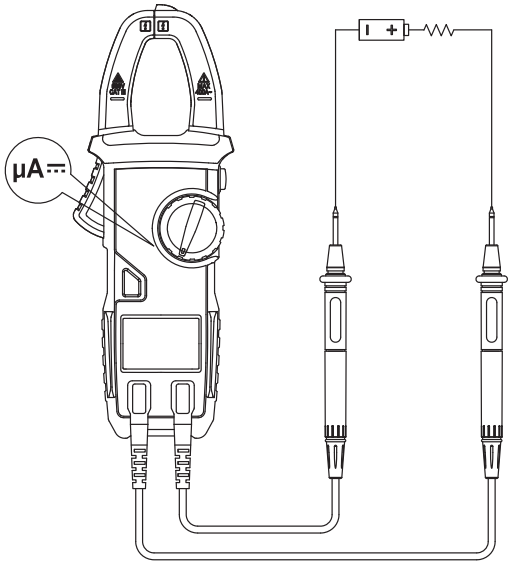
## 4.11 Temperature measurement

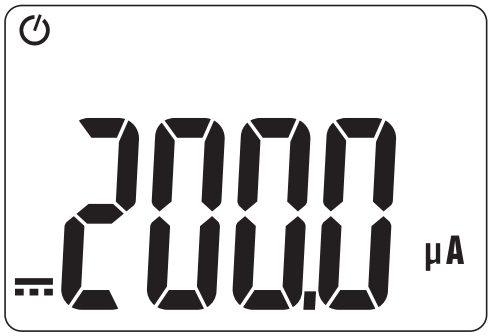
1 ) Turn the selector switch to ℃/℉ position, insert thermocouple probe into input socket, with the positive pole of the probe being connected to red input terminal. The primary display panel will show the measured temperature marked in ℃ and secondary display panel the measured temperature marked in ℉.




## 4.12 uA current measurement

1 ) Turn the selector switch to uA position,the test leads connect with tested circuit in series connection to measure the signal. The main display screen displays the measured current value



# 5. Maintenance

## 5.1 Replace Battery

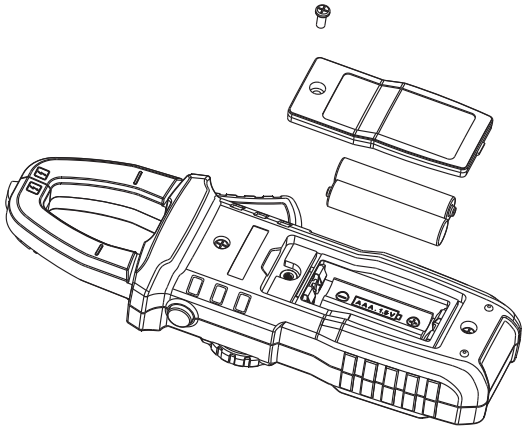
**Warnings**

**Before opening the battery cover of the meter, the pen-shape meter shall be moved from the measuring circuit first to prevent the risk of electric shock.**

1) If " " symbol appears, it means the battery shall be replaced.
2) Screw the fastening screws of the meter battery cover and move away.
3) Replace the old battery.
4) Install the battery cover as previous.

**Note:**

Do not violate the battery polarity.



## 5.2 Replace Pen-shaped Meter

**Warnings**

**When replacing the pen-shaped meter, the new ones shall be of the same or in eqaul level. The pen-shaped meter shall be in good condition, pen-shaped meter level: 1000V 10A.**

If the insulation layer of the pen-shaped meter is damaged, such as the metal wire of the cable is exposed, then it shall be replaced.

## 6. Accessories

| | | | |
|---|---|---|---|
| ❶ | Pen-shaped meter | Level:1000V 10A | A pair |
| ❷ | Operation Manual | | one |
| ❸ | battery | 1.5V AAA battery | 2 |
| ❹ | Cloth bag | | 1 |
| ❺ | Thermocouple probe | | 1 |