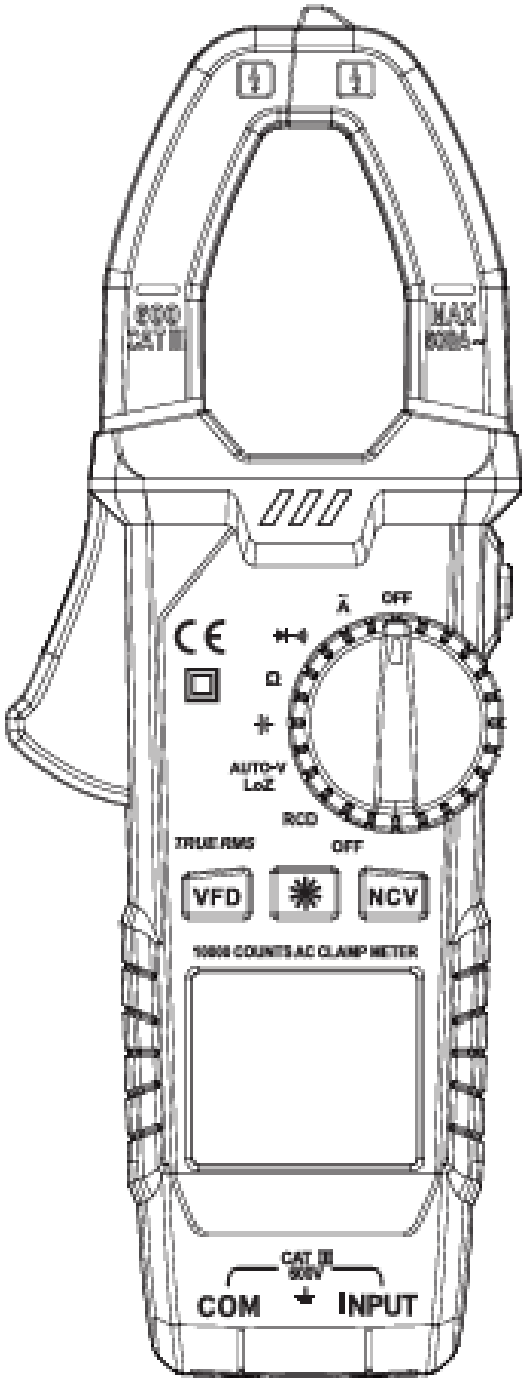
USER'S MANUAL



DIGITAL CLAMP METER

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

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1.Safety Information

⚠ Warning

Pay special attention to use of this instrument, for improper use may cause electric shock or damage to instrument. During use, observe usual safety regulations and observe safety measures regulated in use manual.

In order to make full use of instrument functions and guarantee safe operation, please carefully read and comply with use methods in this manual.

The instrument complies with general technical conditions of GB/T 13978-92 digital multimeter, complies with GB4793.1-1995 (IEC-61010) electronic measurement instrument safety requirements, level II pollution, and over-voltage standard is CAT III 600V.

Please observe safety operation guide, and guarantee to use in strument in a safe manner.

Proper use and protection will make the instrument deliver satisfying services to you.

1.1Preparation

1.1.1 When using this instrument, users must observe standard safety rules:

- General electric shock prevention.
- Prevention of misuse of instrument.

1.1.2 After receiving the instrument, check whether it is damaged during transportation.

1.1.3 After storing and shipping under adverse conditions, check whether the instrument has been damaged.

1.1.4 Pen of the instrument must be in good condition. Before use, check whether insulation of the pen is damaged, and whether metal wire is exposed.

1.1.5 The use of the pen randomly provided with the instrument can ensure safety, if required, it must be replaced with the same pen or the pen of the same level.

1.2 Use

1.2.1 During measurement, it is required to use correct function gear and range.

1.2.2 The measurement shall not be conducted when beyond the indicated value of the protection range.

1.2.3 When the instrument is connected to the measured circuit, do not touch the tip of the p(metal part).

1.2.5 If the voltage between the measuring terminal and the ground exceeds AC 600V, do not measure the voltage.
1.2.6 In the manual range, if the measured value is not known in advance, select the highest range.
1.2.7 Before rotating the change-over switch to change the measuring function, remove the pen from the measured circuit.
1.2.8 Do not measure the resistance, capacitance, diode and line on-off when electrified.
1.2.9 In the range of current, resistance, capacitance, diode and line on-off test, avoid connecting the instrument to the voltage source.
1.2.10 Do not measure the capacitance until the capacitor is completely discharged.
1.2.11 Do not use the instrument near explosive gas, steam or dust.
1.2.12 If any abnormality or malfunction of the instrument is noticed, stop using it.
1.2.13 The instrument shall not be used unless the instrument case and battery cover are fully fastened in place.
1.2.14 Do not store or use the instrument in a place exposed to direct sunlight, high temperature or high moisture.

1.3 Signage

 Warn.danger.

 Warn.dangerous voltage. The danger of electric shock.

 Dual-insulation protection (Category II)

CAT Ⅲ Over-voltage according to IEC-61010-1 standard (installation), level III, pollution degree 2 refers to protection level of pulse withstand voltage provided.

CE Comply with EU standard.

 Ground

1.4 Maintenance

1.4.1 Do not try to open bottom case to adjust or repair instrument, for such operation could only be conducted by technicians fully understanding the instrument and electric shock danger.

1.4.2 Before opening instrument bottom case or battery cover, remove the pen from the wire being measured.

1.4.3 In order to avoid electric shock possibly caused by error reading, when symbol "  " displays on instrument, replace battery immediately.

1.4.4 Use wet cloth and gentle detergent to clean the instrument, and do no use any abrasive or solvent.

1.4.5 Power off when the instrument is not used, and rotate change-over switch to OFF position.

1.4.6 If the instrument is not used for a long time, take out the battery to avoid any damage to the instrument.

2. Description

- The instrument is a portable and professional measuring device, with LCD digital display, and backlight, so it is easy for the user to read. The range switch (one-hand operation) is convenient for measurement, with overload protection and low battery indication. No matter for professional personnel, factories, schools, fans or family use, it is an ideal multi-function instrument.
- The instrument is used for AC current, AC voltage, VFD, DC voltage, resistance, capacitance measurement and continuity test, diode test, non-contact voltage detection and RCD measurement.
- The instrument has automatic range function.
- The instrument has reading hold function.
- The instrument has automatic shutdown function.

3. Specification

The instrument specifies one year as a cycle, and shall be re-calibrated under18°C ~ 28°C, with relative humidity less than 75%.

3.1 Overview

- Automatic range.
- Overload protection throughout the range.
- Max. voltage between measurement terminal and ground: 600V DC or 600V AC
- Operating height: Max. 2000m
- Display: LCD
- Max. display value: 9999 digit.
- Polarity indication: Automatic indication, and '-' indicates negative.
- Over range display: '0L' or '-0L'.
- Sampling time: About 3 times/second.
- Unit display: Function and electricity quantity unit display.
- Automatic shutdown time: 15 minutes.
- Power supply: 1.5V*2Battery.
- Battery undervoltage indication: Symbol  is displayed.
- Temperature coefficient: Less thanAccuracy℃
- Operating temperature:0℃~40℃
- Storage temperature: -10℃ ~ 50℃.
- Dimension:20x7.5cm
- Weight:226g

3.2 Technical indexes

Ambient temperature: 23 5°C Relative humidity: <75%

3.2.1 AC current

Range	Resolution	Accuracy
1A	0.001A	± (2.5% reading + 6 characters)
10A	0.01A	±(3.0% reading + 6 characters)
100A	0.1A	
600A	0.1A	

- Max. input current: 600A AC
- Frequency range: 40 ~ 100Hz

3.2.2 DC voltage

Range	Resolution	Accuracy
100V	0.1V	± (0.7% reading + 3 characters)
600V	1V	± (0.8% reading + 3 characters)

- Input impedance: 1MΩ
- Maximum input voltage: 600V AC (RMS) or 600V DC

Note:

In the small voltage range, the pen is not connected to the measured circuit, and the instrument may have a runout reading.
This is normal because of the high sensitivity of the instrument, and this will not affect the actual measurement results.

3.2.3 AC voltage

Range	Resolution	Accuracy
100V	0.1V	± (0.8% reading + 4 characters)
600V	1V	± (1.0% reading + 4 characters)

- Input impedance: 1MΩ
- Maximum input voltage: 600V AC (RMS) or 600V DC
- Frequency range: 40 ~ 100Hz

3.2.4 Resistance

Range	Resolution	Accuracy
1kΩ	1Ω	±(1.0% reading + 3 characters)
10kΩ	10Ω	
100kΩ	0.1kΩ	
1MΩ	1kΩ	
10MΩ	10kΩ	± (1.2% reading + 3 characters)

- Overload protection: 250V DC or AC (RMS)

3.2.5 Continuity test

Range	Resolution	Function
•))	0.1Ω	If resistance of the line being measured is less than 50Ω, buzzer attached in the instrument may sound.

- Overload protection: 250V DC or AC (RMS)

3.2.6 Capacitance

Range	Resolution	Accuracy
600μF	0.1μF	±(4.0% reading + 5 characters)
6000μF	1μF	

- Overload protection: 250V DC or AC (RMS)

3.2.7 Diode test

Range	Resolution	Function
▶|	0.001v	Display approximate diode forward voltage value

- Forward DC current is about 1mA
- Reverse DC voltage is about 2.0V
- Overload protection: 250V DC or AC (RMS)

4. Operation Guide

4.1 Reading hold/clamp lighting

During measurement, if it is required to hold the reading, short press the "HOLD/ " key, the displayed value on display will be locked,short press the "HOLD/ " key again, to release the readinghold.

Long press the "HOLD/ " key for 2 seconds, to turn on the clamp lighting lamp, and then long press the "HOLD/ " key for 2 seconds, to turn off the clamp lighting lamp.

4.2 NCV key

The NCV key is used for non-contact voltage detection, long press the NCV key for above 2 seconds, to switch to NCV for measurement, close NCV induction area to the detected conductor, if greater than AC 90V, the NCV indicator flashes and the buzzer sounds at interval. Long press the NCV key for above 2 seconds to exit NCV measurement.

4.3 Backlight

(1) During the measurement process, if the environmental light is too dark, making the reading difficult, press the "☀" key, to turn on the backlight.

(2) During this period, press the "☀" key again to turn off the backlight.

Note:

When battery voltage ⩽ 2.4V, the display shows "🔋" (under voltage) symbol. However, if backlight is used, when battery voltage ⩾ 2.6 V, for its large working current, battery voltage drops, and the "🔋" symbol may display (when the "🔋" symbol displays, measurement accuracy could not be guaranteed), in this case, it is not required to replace the battery, and use normally without using backlight till the "🔋" symbol displays again, and then replace.

4.4 VFDmeasurement

When in the AC gear, press the VFD key, to enter the VFD (AC current frequency conversion measurement) function, press again to exit the VFD measurement function.

4.5 Automatic shutdown

(1) If there's no operation within 15 minutes after start, the instrument will enter standby state, and shut down to save energy. Within 1 minute before shutdown, the buzzer will prompt once, and enter the standby state after making a long sound once before shutdown.

(2) After automatic shutdown, press any key to restore the instrument to work.

(3) Press the "VFD" button during start, to cancel the automatic shutdown function.

4.6 Current measurement

⚠ Warning

Electric shock hazard.

Before using the current clamp for measurement, take off the pen from the instrument first.

(1) Set the range switch to the A range position. In this case, it is AC measurement state, select the proper range, if the measured current cannot be determined, please select the maximum range first, and then select the proper range according to actual situation.
(2) Hold trigger, and open clamp, to clip one lead of the line being measured.
(3) Read the current value on LCD.

Note:

(1): No correct measurement results can be obtained by clamping two or more conductors of the measured line.
(2): In order to obtain an accurate reading, try to make the measured conductor in the center position of the clamp.
(3): "⚠" indicates that the maximum input AC current is 600 A.

4.7 AUTO-V LOZ voltage measurement

⚠ Warning

Electric shock hazard.
During measurement of high voltage, be careful, to avoid electric shock.
Do not input a voltage higher than the RMS of AC 600V.

(1) Insert the black pen into COM jack, insert the red pen into INPUT jack, and select the proper range.
(2) Set the change-over switch to voltage position. In this case, the instrument is under DC voltage measurement status.
(3) Connect the pen to the voltage source or both ends of the load for measurement.
(4) Read the voltage value on LCD.

Note:

(1) In small voltage range, the pen is not connected to the measured circuit, LCD will have a runout reading, this is normal because of the high sensitivity of the instrument, when the instrument is connected to the measured circuit, the real measured value will be obtained.
(2) The voltage measurement is a low resistance automatic recognition DC/AC voltage measurement function.

4.8 Resistance measurement

⚠ Warning

Electric shock hazard.
When measuring the resistance on the line, make sure that the circuit power supply is disconnected, and the capacitor on the circuit is fully discharged.

(1) Insert the black pen into COM jack, and insert the red pen into INPUT jack.
(2) Set the range switch to resistance position, in this case, the instrument is in the resistance measurement state.
(3) Connect the pen to both ends of the measured resistance or the line for measurement.

Note:
(1) When the input is open circuit, LCD will display the "0L" outrange state.
(2) If the value of the measured resistance is higher than 1MΩ, it may take a few seconds for the instrument to read stably, which is normal for a high resistance reading.

4.9 Diode test/continuity test

⚠ Warning

Electric shock hazard.
During the line on-off test, make sure that the circuit power supply is disconnected, and the capacitor on the circuit is fully discharged.

(1) Insert the black pen into COM jack, and insert the red pen into INPUT jack.
(2) Set the range switch to Range.
(3) Press SEL button, set the range switch to the  position.
(4) Connect the pen to both ends of the line for measurement.
(5) If the resistance of the measured circuit is less than 50, the buzzer inside the instrument may sound, if a diode is measured, the voltage drop value corresponding to the diode will be displayed.
(6) Read the resistance value of the line on LCD.

Note:
(1) The instrument displays the approximate value of the diode forward voltage drop.
(2) If the pen is connected reversely or the pen is open circuit, "0L" will be displayed on LCD.
(3) The diode and line on-off test is of automatic recognition, and it is not required to press any key to switch.
(4) If the pen is open circuit or the measured line resistance is greater than 100, "  " may be displayed.

4.10 Measurement capacitance

⚠ Warning

Electric shock hazard.
In order to avoid electronic shock, before measuring capacitance, fully discharge the capacitor first.

(1) Insert the black pen into COM jack, and insert the red pen into INPUT jack.
(2) Set the range switch to the capacitance position.
(3) After the capacitor is fully discharged, connect the pen to both ends of the measured resistance for measurement.
(4) Read the capacitance value on LCD.

Note:
When measuring large capacitance, a period of time is required to achieve a stable reading (6000 F gear).

4.11 RCD measurement (leakage protection disconnection test)

⚠ Warning

Electric shock hazard.
During measurement of high voltage, be careful, to avoid electric shock.
Do not input a voltage higher than the RMS of AC 250V.

(1) Insert the black pen into COM jack, and insert the red pen into INPUT jack.
(2) Set the change-over switch to voltage RCD position. In this case, the instrument is in the RCD measurement state.
(3) Connect the pen to both ports of the measured leakage switch, within the 3s of contact, the normal leakage switch will trip, otherwise, it indicates the leakage switch has a problem, and needs to be repaired.

Note:
(1): For the line without such leakage switch, the measurement at the gear cannot be conducted, to avoid accidents.
(2): The measurement time at the gear shall be controlled within 5 seconds, and long time measurement is not allowed.
(3): The measured voltage cannot be higher than RMS of 250V AC/DC.

4.12 NCV measurement

(1) Press the NCV key.

(2) Close the instrument NCV induction area to the conductor, when the detected voltage is greater than AC 110V (RMS), when the instrument is close to the conductor, the induced voltage indicator of the instrument will light up and the buzzer will make a Beep alarm.

Note:

(1) Even if there's no indication, voltage may still exist. Do not judge whether there's voltage in lead depending on non-contact voltage detector. Detection may be impacted by factors such as different socket designs, and insulation thickness types etc.

(2) When inputting voltage at instrument input terminal, for the existence of induced voltage, the voltage sensing indicator may also light up.

(3) Interference sources from external environment (i.e. flash light, motor etc.), may trigger non-contact voltage detection by mistake.

Detection.

5. Maintenance

5.1 Change battery

⚠ Warning

Before opening battery cover of the instrument, remove the pen from the circuit being measured, to avoid electric shock.

(1) If symbol " " appears, it indicates to change the battery.

(2) Unfasten bolts on battery cover of instrument and remove the cover.

(3) Change the old battery.

(4) Place the battery cover.

Note

The polarity of the battery cannot be reversed. When replacing the battery, the instrument is strictly prohibited from being in the measuring state.

5.2 Change Probe

⚠ Warning

When changing the probe, it is required to replace with an identical probe or a probe of the same level. The pen must be in good condition, and level of the pen is: 1000V 10A.

If insulation layer of the pen is damaged, or metal wire of the lead exposes, it is required to change the pen.

6. Accessories

User Manual, 1PCS, Carrying Bag 1PCS, Probe, 1 Pair

USER'S MANUAL

MADE IN CHINA

CE RoHS