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I. Overview

This digital AC/DC clamp meter is an instrument with stable performance and high safety reliability. The entire circuit is centered on an integrated circuit with a full-range overload protection circuit. This versatile electrical tester features a sleek design and excels in measuring AC/DC current, AC/DC voltage, frequency, temperature, resistance, capacitance, diodes, and circuit continuity, as well as non-contact voltage detection and live wire detection, making it a high-performance professional instrument for electricians.

II. Safety Standards

This instrument is designed and manufactured in accordance with the safety standards IEC 61010-1 and IEC 61010-2-032 for electronic measuring instruments and handheld current clamp meters. It complies with the safety standards for Double Insulation (CAT III 600V) and Pollution Degree 2.

III. Safety Signs

	Warning sign, cautious operation is required
	Can be used on live conductors
	Double insulation protection (Class II)
	Comply with European Community (EU) standard
	Ground connection

IV .Precautions

 **When using this instrument, please strictly follow the instructions below to avoid personal injury.**

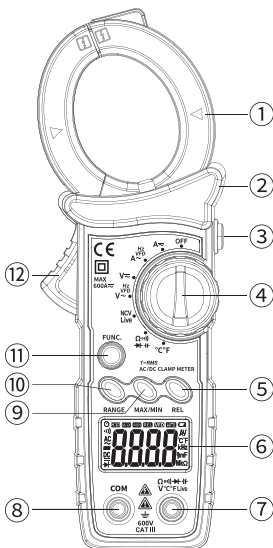
- Please read the user manual before operation, paying special attention to the contents marked “”. Follow the instructions of user manual to ensure safe use of the instrument;
- This is a clamp meter designed for low-voltage circuits. Do not use it for voltages exceeding 600V DC or RMS to ground;
- To ensure that the instrument and its equipped test leads meet safety standards, inspect them before use. If the probe is exposed, the housing is damaged, and the display is abnormal, do not measure;
- Do not use the instrument when its case or battery cover is open;
- When measuring, do not tap the unused input terminal;
- When the measuring voltage is higher than 60V DC or 30V AC, be careful and remember to keep your fingers behind the hand shelter of the probe;
- Do not use the meter if it is damp or your hands are wet;
- When the range of to-be-measured value is uncertain, set the function range to the maximum range position. Do not exceed the input limits specified for each range;
- Do not measure a voltage higher than the allowable input value;
- Before switching the function range switch, the probe shall leave the circuit under test;
- Before starting a measurement, ensure that the function and range are correctly set;

- Do not change the function range knob during measurement;
- Before conducting in-circuit resistance measurement, cut off the power supply and release all charges at both ends of all capacitors;
- Do not expose the instrument to strong light, high temperature or humidity;
- Do not tap bare wires, connectors or circuits being measured with bare hands;
- Do not use the instrument near equipment that generates strong electromagnetic fields or is electrified;
- Do not disassemble, repair or modify the instrument by yourself, except for battery replacement;
- Always conduct start-up checks and inspect the instruments at least once a year.

V. Accessories

- | | |
|---|-----|
| ● User Manual | x 1 |
| ● Test Leads | x 1 |
| ● K-Type Thermocouple Temperature Probe | x 1 |
| ● Packaging Box | x 1 |
| ● 1.5V AAA Batteries | x 2 |

VI. Meter Diagram



1. AC/DC Current Clamp

It is used to measure AC and DC current.

2. Safety guardrail

Effectively prevent the operator from accidentally touching the live conductor during the current measurement.

3. Data retention key/display backlight key

- Gently touch the "/☀" key, the final reading of the measurement will be kept on the meter display, and " " symbol will be displayed. Gently touch "/☀" key again, and the meter will return to the normal measurement state;
- Press "/☀" key for more than 2s to turn on or off the backlight of the LED display, and it will automatically turn off about 60s after turning on.

4. Functional range switch

Used to select various functions and range gears.

5.Relative measurement key

Gently touch the "REL" button to turn on or off the relative measurement function.

6.LCD display

Max display value: 6000 counts.

7." " input jack

Except for the AC/DC current, non-contact voltage, and live wire detection ranges, the red test lead is inserted into the positive input terminal.

8.COM Input jack

Except for the AC/DC current, non-contact voltage, and live wire detection ranges, the black test lead is inserted into the negative input terminal.

9.Max/Min key

- When in the voltage, current, resistance or temperature gear, gently touch the "MIN/MAX" key to switch between the

max and min values;

- Press the "MIN/MAX" key for more than 2s to exit the max and min measurement.

10. Manual range change

- Gently touch the "RANGE" key to enter the manual range mode, and touch again to the switch range;
- Press the "RANGE" key for more than 2s to exit the manual range mode.

11. Function Selection Key (FUNC Key)

- In the $A \sim$ mode, short press the FUNC key to switch between AC current and DC current measurement. A long press has no response;
- In the $A \sim \overset{Hz}{VFD}$ mode, short press the FUNC key to switch between VFD mode and frequency measurement. A long press has no response;
- In the $V \sim$ mode, short press the FUNC key to switch between AC and DC voltage measurement. A Long press returns to auto-detection measurement;
- In the $V \sim \overset{Hz}{VFD}$ mode, short press the FUNC key to switch between voltage, VFD mode and frequency measurement. A long press has no response;
- In the NCV/Live mode, short press the FUNC key to switch between NCV (non-contact voltage) and Live (live wire) detection. A long press has no response;
- In the $\Omega \rightarrow \rightarrow \rightarrow$ mode, short press the FUNC key to switch between resistance, continuity, diode, and capacitance measurement. A long press has no response;
- In the $^{\circ}C/^{\circ}F$ mode, short press the FUNC key to switch between temperature units $^{\circ}C$ (Celsius) and $^{\circ}F$ (Fahrenheit). A long press has no response.

12.Trigger

Press the trigger to open the clamp. Release the trigger to close the clamp automatically.

VII. Operation Instructions



WARNING

Do not measure any voltage higher than 600V DC or 600V AC RMS to avoid electric shock and/or damage to the instrument. Do not apply voltage exceeding 600V DC or 600V AC RMS between the common terminal and the ground to prevent electric shock and/or damage to the instrument.

AC/DC Current Measurement

1. Switch the functional range knob to **A $\approx$** . Short press the FUNC key to switch between AC current and DC current measurement;
2. Press the trigger to open the clamp. Place one wire of the measured circuit in the center of the clamp. Release the trigger, and the measured current value will be displayed.
3. Short press the RANGE key to manually switch current ranges. Press and hold for over 2 seconds to exit the manual range switching mode.

Notes:

△It is not possible to measure multiple wires clamped at the same time.

△ When measuring AC current, please place the conductor to be measured in the center of the clamp head. If the conductor to be measured is not in the center, the max position error can be increased by 1.5%.

△ Before measurement, the probe should be removed from the input socket to avoid electric shock.

AC Current VFD and Frequency Measurement

1. Switch the function range knob to the $A \sim^{Hz}_{VFD}$ position, then short press the FUNC key to switch between AC current VFD and frequency measurement;
2. Press the trigger to open the clamp. Press the trigger to open the clamp. Place one wire of the measured circuit in the center of the clamp. Release the trigger, and the instrument will display the measured current value or frequency value;
3. Short press the RANGE key to manually switch AC current VFD ranges. Press and hold for over 2 seconds to exit the manual range switching mode.

Notes:

△ It is impossible to measure when multiple wires are clamped at the same time;

△ When measuring current, place the measured conductor in the center of the clamp. If the measured conductor is not centered, the positional error can be increased by up to 1.5%;

△ Remove all test leads from the input terminals before measurement to avoid electric shock.

AC/DC Voltage Measurement

1. Insert the red test lead into the $\Omega \sim \text{V} \sim \text{C} \sim \text{FLive}$ jack and the black test lead into the COM jack;

2. Switch the function range knob to the **V_~** position. The meter automatically detects AC and DC voltages by default, identifying DC voltages above 0.5V and AC voltage RMS values;
3. Short press the FUNC key to switch between AC and DC voltage measurement. Press and hold to return to automatic detection mode;
4. Short press the RANGE key to manually switch between AC/DC voltage ranges. Press and hold for over 2 seconds to exit the manual range switching mode;
5. Connect the test leads to the measured signal and read the measurement result. When measuring DC voltage, the polarity of the red test lead connection is displayed on the screen.

Notes:

- △ Before voltage measurement, use a known power source to check whether the instrument works normally;
- △ During measurement, do not hold the meter beyond the protective guard at any position;
- △ Even if no voltage is detected, do not touch the conductor or instrument, as voltages below the detection threshold may exist - always be cautious;
- △ When measuring high voltages, pay special attention to avoid electric shock.

AC Voltage, VFD and Frequency Test

1. Insert the red test lead into the $\Omega \rightarrow \text{V} \rightarrow \text{Hz}$ jack and the black test lead into the COM jack;
2. Switch the function range knob to the **V_~^{Hz}** position. Short press the FUNC key to switch between AC voltage, VFD and frequency measurement modes;

3. Short press the RANGE key to manually switch AC voltage ranges. Press and hold for over 2 seconds to exit the manual range switching mode;
4. Connect the test leads to the measured signal and read the measurement result.

Notes:

- △ **Before voltage measurement, use a known power source to check whether the instrument works normally;**
- △ **During measurement, do not hold the meter beyond the protective guard at any position;**
- △ **Even if no voltage is detected, do not touch the conductor or instrument, as voltages below the detection threshold may exist - always be cautious;**
- △ **When measuring high voltages, pay special attention to avoid electric shock.**

Non-Contact Voltage & Live Wire Detection

1. Non-Contact Voltage Detection

- 1.1. Switch the function range knob to the NCV/Live position. The LCD will display “EF” for non-contact voltage detection;
 - 1.2. Bring the NCV sensing area of the instrument close to the measured wire. When the measured wire carries AC voltage, the “EF” on the display will change to the “-” symbol, and the buzzer will sound. If the measured wire is grounded or the voltage is too low, the display remains “EF” and the buzzer will not sound;
 - 1.3. The higher the voltage on the measured wire, the more “-” symbols will be displayed on the screen, and the faster the buzzer will sound.
- △ **Detection can be affected by factors such as the design of the measured object, insulation thickness and**

insulation type. The absence of an alarm does not guarantee the absence of voltage;

△ Do not rely solely on NCV detection to determine if a circuit is live;

△ Always exercise extreme caution during use to avoid electric shock.

2. Live Wire Detection

2.1. Switch the function range knob to the NCV/Live position. Short press the FUNC key to activate live wire detection. The LCD will display “LE” .

2.2. Insert the red test lead into the $\Omega \rightarrow \text{V}^{\circ}\text{C}^{\circ}\text{F}$ jack, and touch the test lead to the measured wire. When the measured wire is live, the “LE” on the display screen will change to the “-” symbol, and the buzzer will sound. If the wire is grounded or the voltage is too low, the display remains “LE” and the buzzer will not sound;

2.3. The higher the voltage on the measured wire, the more “-” symbols will be displayed on the screen, and the faster the buzzer will sound.

Notes:

△ Do not rely on live-wire detection to determine the presence of voltage in the object being tested.

△ Always exercise extreme caution during use to avoid electric shock.

Resistance Measurement

1. Insert the red test lead into the $\Omega \rightarrow \text{V}^{\circ}\text{C}^{\circ}\text{F}$ jack and the black test lead into the COM jack;

2. Switch the function range knob to the $\Omega \rightarrow \text{V}^{\circ}\text{C}^{\circ}\text{F}$ position. Short press the FUNC key to switch to the Ω option;

3. Short press the RANGE key to manually switch the resistance range. Press and hold for over 2 seconds to exit the manual range switching mode;
4. Connect the test leads to the measured resistance. Read the measurement result after the reading is stable.

Notes:

△ When the measured resistance value exceeds the maximum range, use an instrument with a higher range capability;

△ When measuring resistances above $1\text{M}\Omega$, it may take several seconds for the reading to stabilize, which is normal for high-resistance measurements;

⚠ Do not apply voltage to the input terminals.

Continuity Measurement

1. Insert the red test lead into the $\Omega \rightarrow \text{V}^{\circ}\text{C}^{\circ}\text{FLive}$ jack and the black test lead into the COM jack;
2. Switch the function range knob to the $\Omega \rightarrow \text{V}^{\circ}\text{C}^{\circ}\text{FLive}$ position. Short press the FUNC key to switch to the $\rightarrow$ option;
3. Connect the test leads to two points of the measured circuit. A continuous beep from the built-in buzzer indicates that the resistance between the two points is 60Ω or less, confirming continuity. If the resistance exceeds 600Ω , “OL” will be displayed.

Diode Test

1. Insert the red test lead into the $\Omega \rightarrow \text{V}^{\circ}\text{C}^{\circ}\text{FLive}$ jack and the black test lead into the COM jack. At this point, the polarity of the red test lead is “+”, and the polarity of the black test lead is “-” ;
2. Switch the function range knob to the $\Omega \rightarrow \text{V}^{\circ}\text{C}^{\circ}\text{FLive}$ position. Short

press the FUNC key to switch to the  option;

3. Connect the red test lead to the anode of the measured diode and the black test lead to the cathode of the diode;
4. Read the approximate forward voltage drop value of the measured diode.

Capacitance Measurement

1. Insert the red test lead into the  jack and the black test lead into the COM jack.
2. Switch the function range knob to the  position. Short press the FUNC key to switch to the  option;
3. Connect the test leads to both terminals of the measured capacitor. When measuring polarized capacitors, connect the red test lead to the positive terminal of the capacitor;
4. Read the measurement result after the reading is stable.

Notes:

- △ When the measured capacitance value exceeds the maximum range, use an instrument with a higher measurement range;
- △ When measuring capacitance above 100μF, it may take several seconds for the reading to stabilize, which is normal for large capacitance measurements;
- ⚠ Do not apply voltage to the input terminals.

Temperature Measurement

1. Switch the function range knob to the °C/°F position. The LCD displays the current ambient temperature;
2. Short press the FUNC key to switch between temperature units °C (Celsius) and °F (Fahrenheit);
3. When measuring temperature with a thermocouple, insert the red test lead of a K-type thermocouple into the  jack.

jack and the black test lead into the COM jack. Use the thermocouple probe to connect the measured object or area for measurement;

4. Read the measured temperature value.

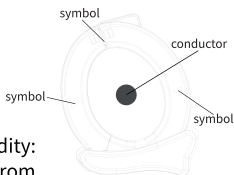
Caution: Do not apply voltage to the input terminals.

VIII. Automatic shutdown

When there is no operation within 15min after turning on, the meter will enter a dormant state and automatically shut down to save power. After automatic shutdown, touch any key or rotate the functional range switch to restart the meter.

IX. Accuracy

- Accuracy: $\pm$ (% reading+digit);
- Warranty period: one year from the date of manufacture;
- Working environment temperature: 18°C~28°C;
- Working environment humidity: less than 80%, and shall be free from condensation.
- Temperature coefficient: $0.1 \times \text{accuracy} / 1^{\circ}\text{C}$.



Notes: When measuring current, please place the conductor to be measured in the center of the clamp head. If the conductor to be measured is not in the center, the max position error can be increased by 1.5%.

AC Current

Range	Resolution	Accuracy
60A	0.01A	$> 2A: \pm(2.5\% \text{ reading} + 5 \text{ digits})$ $\geq 2A: \pm(2.5\% \text{ reading} + 8 \text{ digits})$
600A	0.1A	

Minimum AC current input: 0.1A (RMS);

Maximum AC current input: 600A (RMS);

Frequency range: 40Hz~1kHz.

DC Current

Range	Resolution	Accuracy
60A	0.01A	$\pm(2.5\% \text{ reading} + 5 \text{ digits})$
600A	0.1A	

Minimum DC current input: 0.1A;

Maximum DC current input: 600A.

AC Current Frequency

Range	Resolution	Accuracy
9.999Hz	0.001Hz	$\pm(1\% \text{ reading} + 5 \text{ digits})$
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	

Minimum input range: More than 30A RMS.

AC Voltage

Range	Resolution	Accuracy
6V	0.001V	$\pm(0.8\% \text{ reading} + 5 \text{ digits})$
60V	0.01V	
600V	0.1V	

Input impedance: Approx. 10M Ω ;

Measurement frequency range: 40Hz~1kHz;

Maximum allowable input voltage: 600V DC or 600V AC RMS.

DC Voltage

Range	Resolution	Accuracy
6V	0.001V	$\pm(0.5\% \text{ reading} + 3 \text{ digits})$
60V	0.01V	
600V	0.1V	

Input impedance: Approx. 10M Ω ;

Maximum allowable input voltage: 600V DC or 600V AC RMS.

AC Voltage Frequency

Range	Resolution	Accuracy
9.999Hz	0.001Hz	$\pm(1\% \text{ reading} + 5 \text{ digits})$
99.99Hz	0.01Hz	
999.9Hz	0.1Hz	
9.999kHz	0.001kHz	
99.99kHz	0.01kHz	
999.9kHz	0.1kHz	

Signal input range: 200mVAC~10VAC (RMS);

Overload protection: 600V DC or 600V AC RMS.

Resistance

Range	Resolution	Accuracy
600Ω	0.1Ω	±(1.0% reading +3 digits)
6kΩ	0.001kΩ	
60kΩ	0.01kΩ	
600kΩ	0.1kΩ	
6MΩ	0.001MΩ	
60MΩ	0.01MΩ	±(1.2% reading + 30 digits)

Overload protection: 600V DC or 600V AC RMS;

Open-circuit voltage: Approx. 1V.

Continuity Test

Function	Range	Resolution	Description	Test Conditions
	600Ω	0.1Ω	Buzzer will sound, when the measured resistance is less than 60Ω; “OL” will be displayed, when the resistance is more than 600Ω	Open-circuit voltage: approx. 1V

Overload protection: 600V DC or 600V AC RMS.

Diode Test

Function	Range	Resolution	Test Conditions
	3V	0.001	Forward DC current: approx. 1mA; Open-circuit voltage: approx. 3.0V; Displays the approximate forward voltage drop value of the diode.

Overload protection: 600V DC or 600V AC RMS.

Capacitance

Range	Resolution	Accuracy
60nF	0.01nF	$\pm(4.0\% \text{ reading} + 3 \text{ digits})$
600nF	0.1nF	
6 μ F	0.001 μ F	
60 μ F	0.01 μ F	
600 μ F	0.1 μ F	
6mF	0.001m F	$\pm(5.0\% \text{ reading} + 5 \text{ digits})$
60mF	0.01mF	

Overload protection: 600V DC or 600V AC RMS.

Temperature

Range	Resolution	Accuracy
-20°C~1000°C	1°C	$\pm(2.0\% \text{ reading} + 2 \text{ digits})$
-4°F~1832°F	1°F	$\pm(2.0\% \text{ reading} + 2 \text{ digits})$

Overload protection: 600V DC or 600V AC RMS.

X. Technical Indicators

- Automatically select the range of measurement functions;
- Full range overload protection;
- Max voltage allowed between the measuring terminal and the ground: 600VDC or 600VAC;
- Working height: max altitude of 2,000m;
- Display: LCD;
- Max display value: 6000 counts;
- Polarity indication: automatic display, "-" indicates negative polarity;
- Over-range display: "OL" or "-OL";
- Conversion rate: about 3 times/s;
- Unit display: with function and electric quantity unit display;
- Automatic shutdown time: about 15min;
- Power supply: 1.5V AAA battery × 2;
- Data retention display: "  ";
- Battery under-voltage indication: LCD display "  " sign;
- Temperature coefficient: less than $0.1 \times \text{accuracy}/^{\circ}\text{C}$;
- Dimension: 195mm × 66mm × 33mm.
- Weight: about 213g (no battery).
- Max jaw opening size: 31mm;
- Working temperature: $0^{\circ}\text{C} \sim 40^{\circ}\text{C}$;
- Storage temperature: $-10^{\circ}\text{C} \sim 60^{\circ}\text{C}$ (<70%RH, without battery).

XI. Maintenance

- Before opening the back cover of the instrument, the probes should be disconnected from the measuring circuit.

- Only a damp cloth and a small amount of detergent can be used to clean the instrument. Do not use chemical solvents or abrasives to wipe the case.
- To avoid electric shock caused by false readings, replace the battery immediately when the instrument displays "".
- Turn off the power when the instrument is not in use, and turn the function range switch to the "OFF" position.
- If the instrument is not used for a long time, take out the battery to prevent damage to the instrument.
- In case of any abnormality, stop using immediately and send for repair.
- Perform a startup inspection and a full calibration at least once a year;
- Calibration or maintenance must be performed by professional personnel.

XII. Battery Replacement

WARNING

To avoid electric shock, disconnect the probes before opening the battery cover and do not connect to any circuit under test or input signal. Only replace it with a battery of the same model or identical electrical specifications.

If the under-voltage symbol, "", appears, it means that the battery is low (the deviation of the measured value in this state is greater) and needs to be replaced. Please follow the

Battery Replacement

steps below:

1. Disconnect the probe from the circuit under test.
2. Turn the function range switch to "OFF" and remove the probes from the input jack.
3. Unscrew the screws on the battery cover with a screwdriver and remove the battery cover.
4. Take out the 2 used batteries and replace them with 2 new 1.5V SIZE AAA batteries.
5. Cover the battery cover and tighten the screws.

