

Auto-select & Auto-range TRUE-RMS SMART DIGITAL AC CLAMP METER OPERATOR'S MANUAL

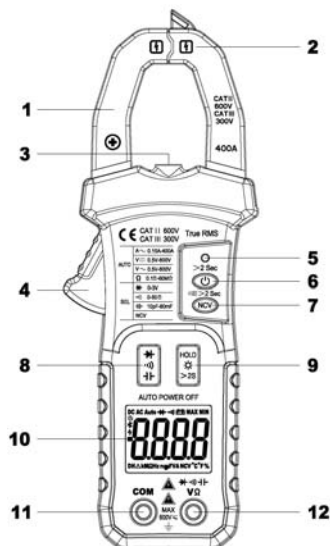
1. Overview

The Auto-select & Auto-range true-RMS smart digital AC clamp meter is characterized at slim size, portable, stable performance and anti-dropping capacity. Using 6000 counts digit LCD monitor with character 16mm high, they offer clear readings. With overall circuitry design centering on large-scale IC A/D converters in conjunction and over-load protection circuit, the meters give excellent performance and exquisite making as a handy utility instrument.

The meter can auto-select DC & AC voltage, AC current, resistance measurement.

The meter can be used to measure DC & AC voltage, AC current, resistance, capacitor, Non Contact AC Voltage (NCV) detection, positive diode voltage fall and audible continuity.

2. Panel Layout



1. Clamp jaws: Opens 26mm to enclose conductor.
2. NCV detection area (bottom) : Non Contact AC Voltage (NCV) detection area.
3. Lamp light: Press the "NCV" key over 2 seconds to light the lamp light.
4. Jaw-opening handle: Opens and closes the jaws.
5. Buzzer LED: The LED will light up when the built-in buzzer sounds.
6. key: POWER key, press the "" key more than 2 seconds to power on the meter, press it more than 2 seconds again to power off.
7. NCV key: Press the "NCV" key to select NCV measurement and the "EF" will appear on the display, press it again to exit. Press the "NCV" key over 2 seconds to light the lamp light, press it more than 2 seconds again, the lamp light will light off.
8. key: Press the "" key to select diode, continuity or capacitance measurement.
9. HOLD key: Press the "HOLD" key to lock display value, and the "DH" sign will appear on the display, press it again to exit. Press "HOLD" key more than 2 seconds, the back light will light up, press it more than 2 seconds again, the back light will light off.
10. LCD display: 6000 counts digit, full function symbol display.
11. COM jack: COM Input Jack.
12. VΩ Input Jack.

3. Safety Information

3-1 The meter is designed according to IEC-1010 concerning electronic measuring instruments with an over-voltage category 600V (CAT II) and pollution 2.

3-2 Follow all safety and operating instructions to ensure that the meter is used safely and is kept in good operating condition.

3-3 safety symbols:

Important safety information, refer to the operating manual.

Dangerous voltage may be presence.

Double insulation (protection Class II)

4. Special Cautions for Operation

4-1 The meters can be safe only according to standard procedures when used in conjunctions with the supplied test leads. To replace damaged test leads with only the same model or same electric specifications.

4-2 To avoid risk of electric shock, do not use the meters before the cover is in place.

4-3 The function key should be right for the testing.

4-4 To avoid electric shock and damaging the instruments, the input signals are forbidden to exceed the specified limits.

4-5 When measuring TV set or switched power, attention should be paid to the possible pulses that may bring destruction to the circuit.

4-6 The function key is forbidden to be changed at random during measurement.

4-7 Take caution against shock in the course of measuring voltage higher than DC 60V & AC 30V.

4-8 Before opening the cover of the battery cabinet to replace batteries, disconnect the test leads from any external circuit, power OFF the meter.

4-9 Keep the fingers after the protection ring when measuring through the instrument lead.

4-10 Keep the fingers after the protection ring when measuring through the clamp.

4-11 After operation is finished, power OFF the meter to save battery power.

4-12 If the meter is without usage for long time, take out battery to avoid damage by battery leakage.

5. GENERAL SPECIFICATIONS

5-1 Max Voltage between input terminal and Earth Ground:

CAT II 600V or CAT III 300V

5-2 Over-range Indication: display "OL" for the significant digit.

5-3 Automatic display of negative polarity "-" .

5-4 Low Battery Indication: "" displayed.

5-5 Max LCD display: 6000 counts digit.

5-6 Auto range control

5-7 Clamp opening size: 26mm.

5-7 Auto Power Off: When measurement exceeds 15 minutes without pressing any key, the meter will auto power off.

5-8 Power supply: 1.5V×2 "AAA" R03P battery

5-9 Operating Temp.: 0℃ to 40℃ (relative humidity <85%)

5-10 Storage Temp.: -10℃ to 50℃ (relative humidity <85%)

5-11 Guaranteed precision Temp.: 23±5℃ (relative humidity <70%)

5-12 Dimension: 207(H)×75(W)×37(D)mm.

5-13 Weight: Approx. 280g (including battery).

6. Testing Specifications

Accuracy is specified for a period of year after calibration and at 18℃ to 28℃ (64°F to 82°F) with relative humidity to 70%.

6-1 DC Voltage

Range	Resolution	Accuracy
0.5V~6V	1mV	±(0.5% of rdg + 2 digits)
60V	10mV	
600V	100mV	±(0.8% of rdg + 2 digits)

-- Impedance: 10MΩ

-- The measured DC voltage must be above 0.5V

-- Overload protection: 600V DC or AC rms

6-2 AC Voltage (True RMS)

Range	Resolution	Accuracy
0.5V~6V	1mV	±(1.0% of rdg + 3 digits)
60V	10mV	
600V	100mV	±(1.5% of rdg + 3 digits)

-- Impedance: 10MΩ

-- The measured AC voltage must be above 0.5V rms

-- Overload protection: 600V DC or AC rms

-- Frequency Range: 40 to 2kHz

6-3 AC Current (True RMS)

Range	Resolution	Accuracy
0.15A~60A	10mA	±(2.5% of rdg + 10 digits)
400A	100mA	±(3.0% of rdg + 10 digits)

-- Overload protection: 400A DC or AC rms

-- The measured AC current must be above 0.15A rms

-- Frequency Range: 40 to 100Hz

6-4 Resistance

Range	Resolution	Accuracy
600Ω	0.1Ω	±(1.0% of rdg + 3 digits)
6kΩ	1Ω	
60kΩ	10Ω	
600kΩ	100Ω	
6MΩ	1kΩ	±(1.5% of rdg + 3 digits)
60MΩ	10kΩ	



-- Overload protection: 250V DC or AC rms

6-5 Capacitance

Range	Accuracy	Resolution
6nF	$\pm(5.0\% \text{ of rdg} + 10 \text{ digits})$	1pF
60nF		10pF
600nF		100pF
6 μ F	$\pm(3.0\% \text{ of rdg} + 10 \text{ digits})$	1nF
60 μ F		10nF
600 μ F		100nF
6mF	$\pm(10.0\% \text{ of rdg} + 20 \text{ digits})$	1 μ F
60mF		10 μ F

-- Overload protection: 250V DC or AC rms

6-6 Diode and Audible continuity test

Range	Description	Test Condition
	Display read approximately forward voltage of diode	Forward DC current approx. 1.5mA Reversed DC voltage approx. 4V
	Built-in buzzer sounds and the buzzer LED will light up if resistance is less than 50 Ω	Open circuit voltage approx. 2V

Overload protection: 250V DC or AC rms

6-7 Non Contact AC Voltage (NCV) detection

Test voltage range: 90V~1000V AC rms

The buzzer LED will light up together with sound.

7. OPERATING INSTRUCTIONS

7-1 Attention before operation

7-1-1 Check battery. When the battery voltage drop below proper operation range, the "E" symbol will appear on the LCD display and the battery need to be changed.

7-1-2 Pay attention to the "A" besides the input jack which shows that the input voltage or current should be within the specified value.

7-1-3 The function key should be set to desired function for measurement before operation.

7-2 Measuring DC Voltage

7-2-1 Connect the black test lead to COM jack and the red to V Ω  jack.

7-2-2 Press the "ON" key to power on the meter, it will enter "Auto" measure mode.

7-2-3 Connect the test lead tips to the test circuit where the value of voltage is needed, when the DC Volts is above 0.5V, the meter enters DC voltage measure mode automatically.

7-2-4 You can get reading from LCD. The polarity of the red lead connection will be indicated along with the DC voltage value.

NOTE:

1. "A" means you can't input the voltage more than 600V, it's possible to show higher voltage, but it may destroy the inner circuit or pose a shock.

2. Be cautious against shock when measuring high Voltage.

7-3 Measuring AC Voltage

7-3-1 Connect the black test lead to COM jack and the red to V Ω  jack.

7-3-2 Press the "ON" key to power on the meter, it will enter "Auto" measure mode.

7-3-3 Connect the test lead tips to the test circuit where the value of voltage is needed, when the AC Volts is above 0.5V rms, the meter enters AC voltage measure mode automatically.

7-3-4 You can get reading from LCD.

NOTE:

1. "A" means you can't input the voltage more than 600V, it's possible to show higher voltage, but it may destroy the inner circuit or pose a shock.

2. Be cautious against shock when measuring high Voltage.

7-3 Measuring AC Current

7-3-1 Press the "ON" key to power on the meter, it will enter "Auto" measure mode.

7-3-2 Disconnect the test leads from the Meter.

7-3-3 Clamp the Jaws around the one conductor to be measured. Center the conductor within the Jaw using the Centering Marks as guides.

7-3-4 When the AC current is above 0.15A rms, the meter enters AC current measure mode automatically.

7-3-5 You can get reading from LCD.

7-4 Measuring Resistance

7-5-1 Connect the black test lead to COM jack and the red to V Ω  jack.

7-5-2 Press the "ON" key to power on the meter, it will enter "Auto" measure mode.

7-5-3 Connect test leads across the resistance under measurement, the meter enters resistance measure mode automatically.

7-5-4 You can get reading from LCD.

NOTE:

1. Max. input overload: 250V rms < 10sec


2. For measuring resistance above 1M Ω , the meter may take a few seconds to get stable reading.

3. When checking in-circuit resistance, be sure the circuit under test has all power removed and that all capacitors have been discharged fully.

7-5 Measuring Capacitance

7-6-1 Connect the black test lead to COM jack and the red to V Ω  jack.

7-6-2 Press the "ON" key to power on the meter, it will enter "Auto" measure mode.

7-6-3 Press the "ON"  key to choose capacitance measurement.

7-6-4 Connect test leads across the capacitance under measurement.

7-6-5 You can get reading from LCD.

NOTE: Max. input overload: 250V rms < 10sec

1. Capacitors should be discharged before being tested.


2. When testing large capacitance, it will take longer time before the final indication (For 100 μ F~99.99mF range, it will take about 10 seconds).

7-6 Diode & Audible continuity Testing

7-7-1 Connect the black test lead to COM jack and the red to V Ω  jack.

7-7-2 Press the "ON" key to power on the meter, it will enter "Auto" measure mode.

7-7-3 Connect the test leads to two point of circuit, if the resistance is lower than approx. 50 Ω , the meter enters Audible continuity measure mode automatically, the buzzer LED will light up together with sound.

7-7-4 Press the "ON"  key to choose diode measurement, connect the test leads across the diode under measurement, display shows the approx. forward voltage of this diode.

NOTE: Make sure the power is cut off and all capacitors need to be discharged under this measurement.

7-7 Non Contact AC Voltage detection

7-8-1 Press the "ON" key to power on the meter, it will enter "Auto" measure mode.

7-8-2 Press the "NCV" key to select NCV measurement.

7-8-3 Hold the Meter so that the meter's top is vertically and horizontally centered and contacting the conductor, when the live voltage \geq 90V AC rms, the NCV red LED light will light up together with sound.

NOTE:

1. Even without LED indication, the voltage may still exist. Do not rely on non-contact voltage detector to determine the presence of voltage wire. Detection operation may be subject to socket design, insulation thickness and different type and other factors.

2. When the meter input terminals presence voltage, due to the influence of presence voltage, voltage sensing indicator may also be bright.

3. Keep the meter away from electrical noise sources during the tests, i.e., florescent lights, dimmable lights, motors, etc.. These sources can trigger Non-Contact AC Voltage detection function and invalidate the test.

8. Battery replacement

8-1 When the battery voltage drop below proper operation range the "E" symbol will appear on the LCD display and the battery need to be changed.

8-2 Before changing the battery, power off the meter and remove the test leads from the terminals. Open the cover of the battery cabinet by a screwdriver.

8-3 Replace the old battery with the same type battery (AAA R03P 1.5V \times 2).

8-4 Close the cover of the battery cabinet and fasten the screw.

9. Maintenance

9-1 You must replace the test leads if the lead is exposed, and should adopt the leads with the same specifications as origin.

9-2 Use only moist fabric or small amount of detergent but not chemical solution for cleaning.

9-3 Do not use the meter before the back cover is properly closed and screw secured. Upon any abnormality, stop operation immediately and send the meter for maintenance.

9-4 Please take out the battery when not using for a long time.

10. Accessories

[1] Test Leads: electric rating CATIII 600V, 10A or better

[2] Operator's Manual

Above picture and content just for your reference. Please be subject to the actual products if anything different or updated. Please pardon for not informing in advance.