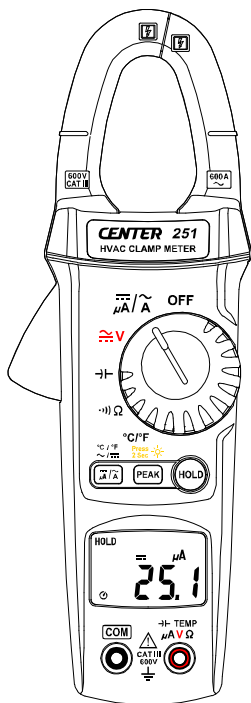


# CENTER<sup>®</sup> 251




## Instruction Manual



## HVAC CLAMP METER

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## 1. SAFETY INFORMATION


Do not operate the tester if the body of meter or the test lead look broken.

Check the main function dial and make sure it is at the correct position before each measurement.

Do not perform resistance and continuity test on a live power system.

Do not apply voltage between the test terminals and test terminal to ground that exceed the maximum limit record in this manual.

Keep the fingers after the protection ring when measuring through the test lead.

Chang the battery when the  symbol appears to avoid incorrect data.

### Environmental Conditions

Operation Temperature: 0°C to 40°C(32°F to 104°F); < 70 % RH

Storage Temperature: -10°C to 60°C(14°F to 140°F); < 80 % RH

### Explanation Symbols



Attention refer to operation Instructions.



Dangerous voltage may be present at terminals.



This instrument has double insulation.

Approvals:  EN61010 600V CAT III

## 2. GENERAL SPECIFICATION


### Digital Display:

4 digital liquid crystal (LCD), Maximum reading 6200.

### Polarity:

When a negative signal is applied, the  signal appears.

### Low Battery Indication:

When the battery is under the proper operation range,  will appear on the LCD display.

### Sample Rate:

2 times/sec for digital data.

**Power Source:**

1.5V size AAA battery X 2

Typical battery Life: 50 hours (without buzzer, backlight function)

**Auto Power Off:**

If there is no key or dial operation for 30 minutes, the meter will power itself off to save battery consumption. This function can be disabled by press and hold the "HOLD" button then power the unit on.

**Over Load:**

When the signal larger than the maximum will be show .

**Maximum jaw opening:**

Ø 25 mm

**Dimensions:**

210 x 62 x 36 mm

**Weight:**

Approx. 273g (with battery)

**Accessories:**

Carrying case, Batteries, Test Lead &amp; Instruction Manual.

**3. ELECTRICAL SPECIFICATION**

Accuracy is to within  $\pm$  [% of the reading + number of counts (dgts)] in the reference conditions indicated in the appendix.

**3-1 Direct Voltage**

Range	Resolution	Accuracy
600 V	0.1 V	$\pm 1\% + 2\text{dgts}$

Input impedance: 10 M $\Omega$ **3-2 Direct Voltage Peak**

Range	Resolution	Accuracy
600 V	0.1 V	$\pm 1.5\% + 10\text{dgts}$

Input impedance: 10 M $\Omega$ **3-3 Alternating Voltage**

Range	Resolution	Accuracy
600 V	0.1 V	$\pm 1.2\% + 8\text{dgts}$

Input impedance: 10 M $\Omega$ **3-4 Alternating Voltage Peak**

Range	Resolution	Accuracy
600 V	0.1 V	$\pm 2.0\% + 10\text{dgts}$

Input impedance: 10 M $\Omega$

**3-5 Direct Current**

Range	Resolution	Accuracy
600 $\mu$ A	0.1 $\mu$ A	$\pm 1\% + 2$ dgts

**3-6 Direct Current Peak**

Range	Resolution	Accuracy
600 $\mu$ A	0.1 $\mu$ A	$\pm 1.5\% + 10$ dgts

**3-7 Alternating Current**

Range	Resolution	Accuracy
60 A	0.01 A	$\pm 1.9\% + 10$ dgts
600 A	0.1 A	

**3-8 Alternating Current Peak**

Range	Resolution	Accuracy
60 A	0.1 A	$\pm 2.5\% + 10$ dgts
600 A	0.1 A	

**3-9 Resistance ( $\Omega$ )**

Range	Resolution	Accuracy
600 $\Omega$	0.1 $\Omega$	$\pm 1\% + 3$ dgts
6.000 K $\Omega$	0.001 K $\Omega$	

**3-10 Continuity  $\rightarrow$ )**

Range	Resolution	Accuracy
$\rightarrow$ )	Ohm function Buzzer<40 $\Omega$	

**3-11 Capacitance Measurement**

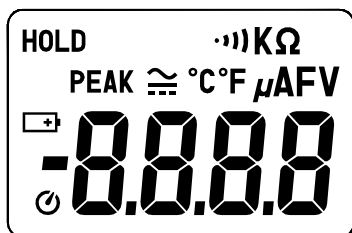
Range	Resolution	Accuracy
400.0 $\mu$ F	0.1 $\mu$ F	$\pm 2.5\% + 10$ dgts
4000 $\mu$ F	1 $\mu$ F	






**3-12 Temperature Measurement**

Range	Resolution	Accuracy
-50 ~ 600 $^{\circ}$ C	0.1 $^{\circ}$ C	$\pm 1\% + 1.5$ $^{\circ}$ C
-58 ~ 999.8 $^{\circ}$ F	0.2 $^{\circ}$ F	$\pm 1\% + 2.8$ $^{\circ}$ F

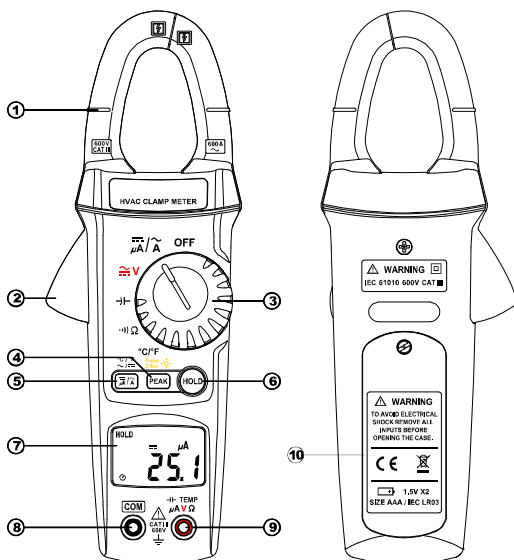
## 4. DESCRIPTION OF THE INSTRUMENT

### 4-1 Description Of The Display



	Auto power off indication
	Polarity indication
	Low battery indication
	Alternative source indication
	Direct source indication
<b>A</b>	Current measurement indication
<b>V</b>	Voltage measurement indication
<b>°C°F</b>	Temperature measurement indication
<b>F</b>	Capacitance measurement indication
<b>HOLD</b>	Data hold indication
<b>PEAK</b>	Peak data indication
<b>~) )</b>	Continuity test indication
<b>K</b>	Measurement unit
<b>Ω</b>	Resistance measurement indication
<b>μ</b>	Measurement unit

## 4-2 Description Of Front And Rear



- ① Current sensing Clamp
- ② Clamp opening handle
- ③ Function select dial
- ④ Peak button & Backlight button
- ⑤ AC/DC button & °C/°F button
- ⑥ Data hold button
- ⑦ LCD display
- ⑧ COM input terminal
- ⑨ Positive input terminal
- ⑩ Battery cabinet

## 5. BUTTON INSTRUCTION

### 5-1 HOLD Function

It is possible to freeze the value displayed by pressing on the "HOLD" button. To deactivate this function, press the "HOLD" button a second time.

### 5-2 PEAK Function

If you press on the "PEAK" button, the display will show "PEAK" symbol. When there is a value input that value will be indicated frozen in the display. If a bigger peak value is input, the peak value will be updated and indicated frozen in the display. When you press on the button again, the function will return to the normal mode.

### 5-3 BACKLIGHT Function

If you press and hold the "PEAK" button for 2 seconds or longer, it will turn on the backlight function. (When you turn on this function, it will light for 30 seconds).

If you press on the "PEAK" button for 2 seconds or longer again, the function will be turned off.

### 5-4 AC/DC or °C/°F Function

When you turn the rotary switch on the voltage/current measurement. Press the " $\overline{\mu A} / \tilde{A}$ " button to select ac/dc function.

When you turn the rotary switch on the temperature measurement. Press the " $\overline{\mu A} / \tilde{A}$ " button to select °C/°F function.

## 6. MEASURING INSTRUCTION

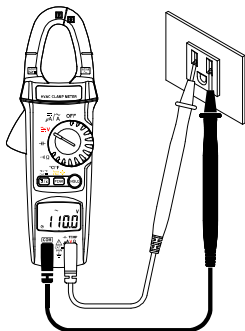
### 6-1 AC Voltage Measurement :

Switch the main function selector to  $\tilde{V}$  range.

Connect red test lead to "+" terminal and black one to the "COM" terminal.

Measure the voltage by touch the test lead tips to the test circuit where the value of voltage is needed.

Read the result from the LCD panel.





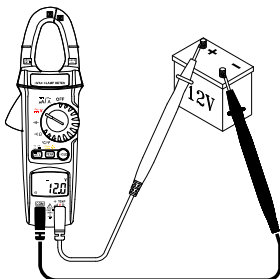
**6-2 DC Voltage Measurement :**

Switch the main function selector to  $\overline{V}$  range.

Connect red test lead to “+” terminal and black one to the “COM” terminal.

Measure the voltage by touch the test lead tips to the test circuit where the value of voltage is needed.

Read the result from the LCD panel.

**6-3 AC Current Measurement :**

Switch the main function selector to  $\tilde{A}$  range.

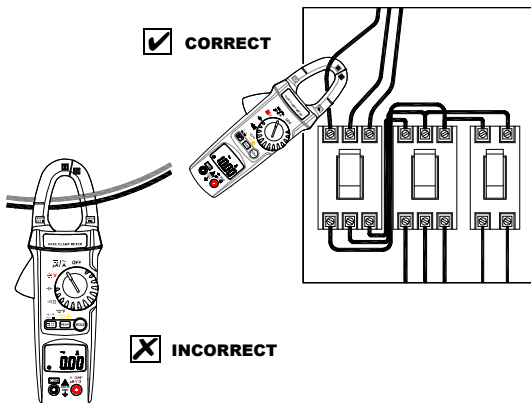
Open the clamp by pressing the jaw-opening handle and insert the cable to be measured into the jaw.

Close the clamp and get the reading from the LCD panel.

Note :

Before this measurement, disconnect the test lead with the meter for safety.

In some occasion that the reading is hard to read, push the HOLD button and read the result later.



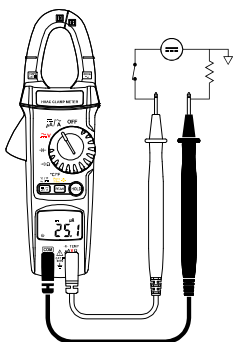
**6-4 DC Micro Ampere Measurement :**

Switch the main function selector to  $\mu A / A$  range.

Connect red test lead to “+” Terminal and black one to the “COM” terminal.

Cut the power to the circuit to be tested and connect the instrument in series with the circuit with the black test lead on the negative “-” side and the red lead on the positive “+” side being measured.

Apply power and read the ampere value on LCD.

**6-5 Resistance Measurement**

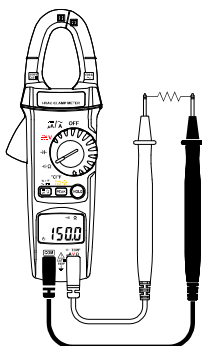
Switch the main function selector to  $\Omega$  range. Connect red test lead to “+” terminal and black one to the “COM” terminal.

Connect tip of the test leads to the points where the value of the resistance is needed.

Read the result from the LCD panel.

Note :

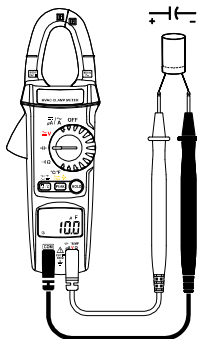
When take resistance value from a circuit system, make sure the power is cut off and all capacitors need to be discharged.

**6-6 Capacitance Measurement :**

Switch the main function selector to  $\mu F$  range. Connect red test lead to “+” terminal and black one to the “COM” terminal.

Connect tips of the test leads to the capacitor being tested.

Read the capacitance value on LCD.



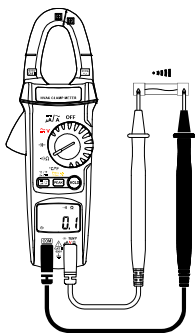
### 6-7 Continuity Test With Buzzer :

Switch the main function to  $\Omega$  range.

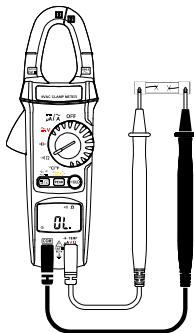
Connect red test lead to “+” terminal and black one to the “COM” terminal.

Connect tip of the test leads to the points where the conduction condition needed.

If the resistance is under  $40\Omega$ , the beeper will sound continuously.



Short circuit



Open circuit

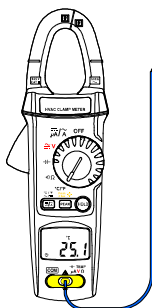
### 6-8 Temperature Measurement :

Switch the main function selector to  $^{\circ}\text{C}/^{\circ}\text{F}$  range.

Connect the K-type temperature probe to the input jacks noting correct polarity of the probe.

Press the button to select  $^{\circ}\text{C}$  or  $^{\circ}\text{F}$ .

Read the temperature value on the LCD.

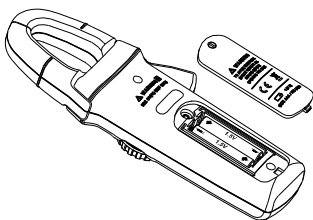


## 7. BATTERY CHANGING

When the battery voltage drop below proper operation range the symbol will appear on the LCD display and the battery needs to be changed. Before changing the battery, switch the main dial to "OFF" and disconnect test leads.

Open the back cover by a screwdriver.

Replace the old batteries with two new 1.5V(AAA Size) battery. Close the back cover and fasten the screw.



## 8. MAINTENANCE

### **⚠ WARNING!**

Before open the meter, disconnect both test lead and never uses the meter before the cover is closed.

### **CAUTION!**

To avoid contamination or static damage, do not touch the circuit board without proper static protection.

### 8-1 REMARK:

- If the meter is not going to be used for a long time, take out the battery and do not store the meter in high temperature or high humidity environment.
- When take current measurement, keep the cable at the center of the clamp will get more accurate test result.
- Repairs or servicing not covered in this manual should be performed only by qualified personal.

### 8-2 CLEANING:

Periodically wipe the case with a dry cloth. Do not use abrasives or solvents on these instruments.

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