

# UT-CS07

## 1000A AC/DC Clamp Sensor

### User Manual



## **Preface**

Thank you for purchasing a new Uni-Trend meter, in order to use this meter correctly, please read the full text of the manual carefully before use, especially the section "Safety Information".

If you have read the full text of this manual, it is recommended that you keep it in a safe place, with the instrument or in a place where you can access it at any time, so that you can consult it in future use.

## **Limited warranties and liabilities**

Uni-Trend warrants that this product will be free from defects in materials and workmanship for a period of one year from the date of purchase. This warranty does not apply to fuses, disposable batteries, or damage caused by accident, negligence, misuse, modification, contamination, and abnormal operation or handling. The distributor is not entitled to any other warranties in the name of Uni-Trend. If you need warranty service during the warranty period, please contact your nearest Uni-Trend authorized service center to obtain the product return authorization information, then send the product to the service center with a description of the problem with the product.

This warranty is your sole remedy. Otherwise, Uni-Trend does not provide any express or implied warranties, such as implied warranties for a particular purpose. Uni-Trend shall not be liable for any special, indirect, incidental or consequential damages or losses arising from any cause or speculation. Because some states or countries do not allow limitations on implied warranties and incidental or consequential damages, the above limitations and provisions of liability may not apply to you.

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## 一、 Overview

The UT-CS07 is a highly reliable and safe AC/DC current sensor that can be used as an extension for multimeter current measurement up to 1000A. This current sensor is only suitable for use with 3 1/2 digit multimeter, the current is measured by the sensor and the current value is converted into a voltage value, and the converted voltage value is sent to the multimeter through the transmission cable, and the multimeter displays the corresponding voltage value (or current value). The unique design of the product makes it a practical auxiliary tool for current acquisition of electrical instruments.

## 二、 Features

- 1) Compact and lightweight design, which is convenient for one-handed and high-altitude operation.
- 2) Light indications for different ranges to quickly distinguish different current ranges
- 3) The maximum diameter of 35mm conductor or 65\*8mm copper busbar can be measured, which is suitable for most cable measurements.
- 4) Used with a multimeter, you can obtain accurate readings without interrupting the circuit.
- 5) Able to measure up to 1000A AC and DC current, and the frequency response of AC current is up to 45Hz~400Hz.
- 6) Output ratios of 1mV/A and 10mV/A for fast reading on the meter.
- 7) Measurement category: CAT IV 600V and CAT III 1500V

Please carefully read the contents of this manual regarding "safety" and "warning" and strictly follow all precautions.

 Warning:

Please read the "Safety Information" carefully before use.

## 三、 Unpack to check

This user manual includes relevant safety information and warnings, etc., please read the relevant contents carefully and strictly follow all warnings and precautions. Open the box, take out the Meter, and carefully inspect the following accessories for missing or damaged. Please contact your supplier immediately if any accessory is missing or damaged.

- |                |       |
|----------------|-------|
| 1. User manual | 1 pc  |
| 2. AAA battery | 2 pcs |

## 四、 Safety Information











Please pay attention to the warnings. A warning indicates a situation or action that poses a danger to the user and may cause damage to the meter or device under test.

This Meter is certified according to IEC/EN61010-1, 61010-031, 61010-2-032, electromagnetic radiation protection EN61326-1 safety standard, meets the safety standards of double insulation, overvoltage CAT III 1500V, CAT IV 600V, and pollution level 2, and is used indoors. Failure to follow the instructions may weaken or lose the protection provided to you.

1. Check if there is any damage or abnormal phenomenon, stop use if the transmission cable is cracked or exposed, the housing is damaged and the component is loose, etc.
2. The plug of the transmission line is the output terminal of the voltage signal, and no voltage value (AC or DC) is allowed to be input.
3. Do not hold the current sensor over the protective guard.
4. Be cautious when working in an environment with exposed wires, as contact with wires may lead to electric shock.
5. It is forbidden to use the meter with the cover opened, otherwise there is a risk of electric shock.
6. When the meter is measuring, do not touch exposed wires, connectors, unused outputs, or circuits being measured.
7. If the range of the measured value cannot be determined, the meter must be operated at the maximum range.
8. Do not use the current sensor to measure current exceeding the specified value to prevent damage to the meter.
9. Do not use the current sensor on circuits with voltages higher than 1500V (CATIII 1500V) or frequencies higher than 400Hz.
10. Be cautious when measuring voltages above 60V DC, 30V AC or 42.4V peak.
11. Before taking measurement, make sure that the transmission line plug of the AC/DC current sensor is properly connected to the voltage input terminal of the multimeter or the input terminal with the mark of plug-in current sensor.
12. Do not store or use the meter in high temperature, high humidity, flammable, explosive and strong electromagnetic field environments.
13. Before opening the battery cover or back cover, make sure that the transmission cable plug is disconnected from the monitoring meter and that no any cable is clamped by the clamp jaws.
14. When the POWER indicator starts flashing, please replace the battery in time to ensure the measurement accuracy.
15. Turn off the power supply after completing measurement. When not in use for a long time, please remove the batteries.
16. Do not alter the internal wiring of the meter without authorization, so as not to damage the meter and endanger safety.
17. Please comply with the national safety regulations. In environments where hazardous live wires are exposed, personal protective equipment must be used to prevent injuries such as electric shock, arcing, etc.
18. Please measure the known intrinsic voltage of the meter before use to ensure that the meter works properly.

19. Use according to the instruction manual, otherwise the protection provided will be failed.
20. Do not use this tester on circuits with frequencies exceeding the rated frequency of this tester.
21. Clean the meter housing with a damp cloth and mild detergent. Do not use abrasives or solvents.

## 五、Electrical Symbols

	Warning		Double insulated
	High voltage warning		Battery
	AC (Alternating Current)		DC (Direct Current)
	Application around and removal from UNINSULATED HAZARDOUS LIVE conductors is permitted.		
CAT III	It is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.		
CAT IV	It is applicable to test and measuring circuits connected at the source of the building's low-voltage MAINS installation.		
	Conforms to UL STD 61010-1, 61010-2-032. 61010-031 Certified to CSA STD C22.2 NO.61010-1, 61010-2-032, 61010-031		
	Do not dispose of the device and its accessories in the trash, please dispose of them properly in accordance with local regulations.		
	Complies with European Union directives.		

## 六、General Characteristics

1. Maximum overload protection of the terminal of clamp jaw: 1000A
2. Test position error: When measuring current, the additional error of  $\pm 2.5\%$  of the reading will occur if the source to be measured is not placed at the center of the clamp jaws.
3. Impact resistance: Able to withstand the impact of landing at a height of 1m.
4. Operating temperature:  $0^{\circ}\text{C} \sim 40^{\circ}\text{C}$
5. Storage temperature:  $-10^{\circ}\text{C} \sim 50^{\circ}\text{C}$
6. Relative humidity:  $\leq 75\%$  ( $0^{\circ}\text{C} \sim 30^{\circ}\text{C}$  below);  $\leq 50\%$  ( $30^{\circ}\text{C} \sim 40^{\circ}\text{C}$ )
7. Operating altitude:  $\leq 2000\text{m}$
8. Dimension:  $255.7\text{mm} \times 73.5\text{mm} \times 46.5\text{mm}$
9. Jaw opening: 35mm
10. Length of transmission cable: 1.1mm
11. Weight: 425g
12. Safety standard: IEC 61010-1:CAT IV 600V/ CAT III 1500V
13. Pollution degree: 2
14. Electromagnetic compatibility: In the RF field of 1 V/m: total accuracy = specified accuracy + 5% of the range. No specified index for the RF field above 1 V/m.

## 七、 External Structure (Figure 1)

1. Clamp jaws
2. Indication mark of the geometric center of the clamp jaws
3. Protective guard
4. Trigger: Pull the trigger to open the clamp jaws
5. Zero knob
6. Functional buttons
7. Indicator light
8. Current signal output: The plug is the corresponding AC and DC voltage output signal port after the AC and DC current sensor has been converted.
9. Battery compartment

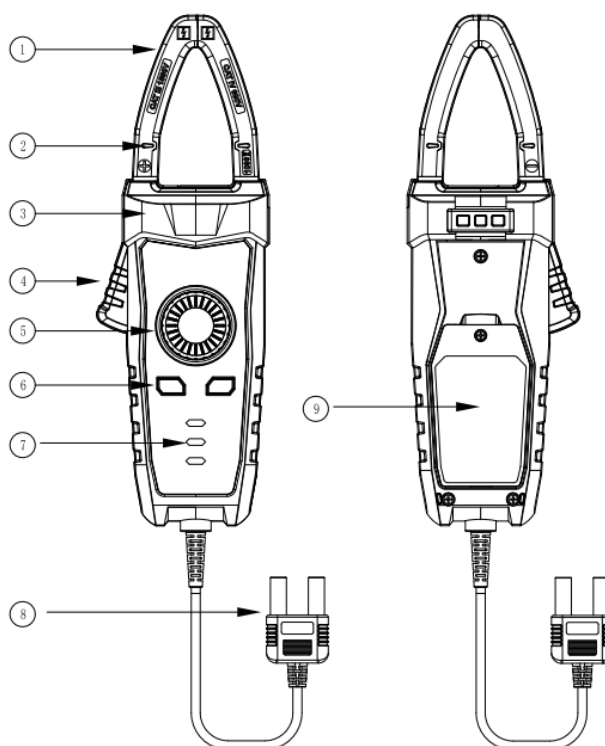
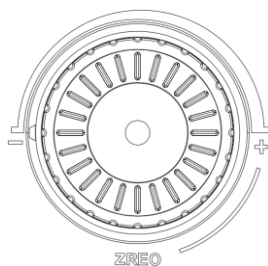


Figure 1

## 八、 Rotary Switch and Functions of Buttons

1. Zero knob

Before DC current measurement, please turn the zero knob so that the DC voltage displayed by the multimeter is close to 0 volt or the DC current displayed by the plug-in current sensor is close to 0 ampere.



## 2. Buttons:

Short press: Press the button for  $<2s$ .

Long press: Press the button for  $\geq 2s$ .



: Long press to power on/off.



: Short press to switch current ranges.

## 3. Indicator light:

After the meter is turned on, the POWER indicator lights up, and the 100.0A range indicator lights up by default. When pressing the RANGE button to switch between different ranges, the corresponding 100.0A and 1000A ranges indicators light up.

# 九、 Operating Instructions

Please pay attention to check the 1.5V AAA×2 battery. If the battery is low when the meter is turned on, the POWER indicator will flash, and the batteries must be replaced in time before use. Also pay attention to the symbol " $\triangle$ " next to the terminal of the test lead, which is a warning that you should pay attention to the voltage being tested not to exceed the indicated value to ensure safe measurement!

## 1. AC/DC current measurement (Figure 2)



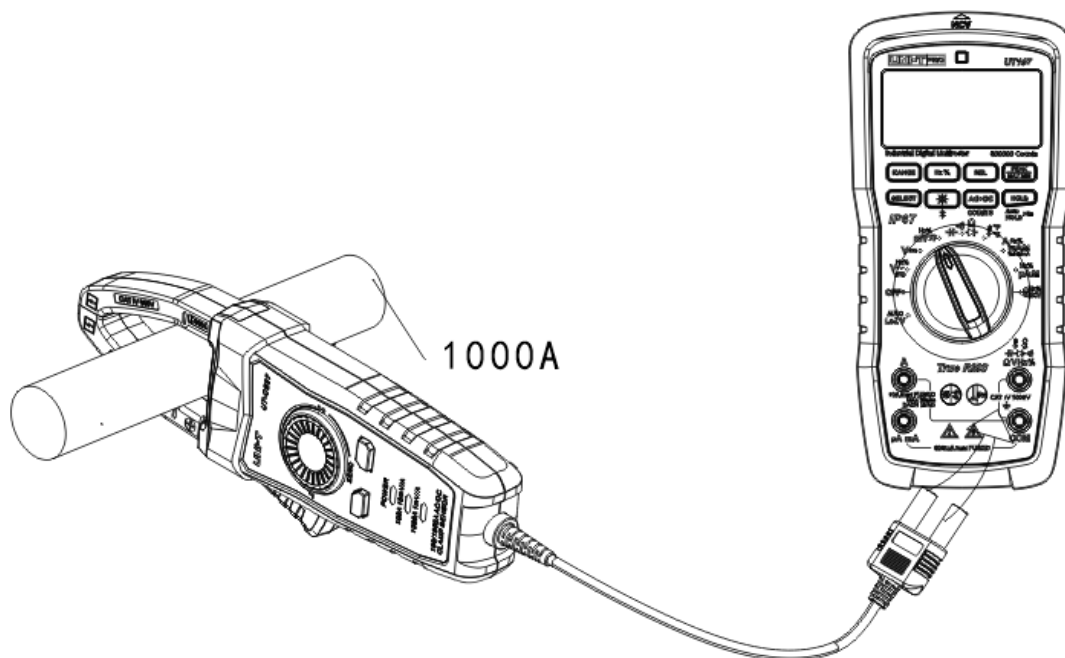


Figure 2

- 1) Connect the plug of the transmission line of the AC/DC current sensor into the AC/DC voltage measurement position of the monitoring meter or the measurement position with the mark of plug-in current sensor, then the monitoring meter selects corresponding voltage or current measurement position according to the different terminals where the plug of the transmission line of the current sensor.
- 2) Open the clamp jaws, clamp the cable (a single conductor), and set the cable at the geometric center of the clamp jaws. Note: Make sure the clamp jaws are closed completely.
- 3) The meter can only measure one current conductor at a time. An incorrect reading will be obtained if two or more current conductors are measured at the same time.

⚠ Note:

- \*. Due to the influence of the geomagnetic environment, a certain offset will occur at the reading in the DCA measurement position when current signal is not measured, please turn the zero knob to adjust the offset to 0 (generally adjusted to less than 1mV or 0.1A)!
- \*. The current measurement function must be operated between 0°C~40°C. Do not release the trigger suddenly, the meter is sensitive to mechanical stress to varying degrees, and the impact will cause a change in the reading for a short time.
- \*. To ensure accurate measurement, the conductor to be measured must be placed in the center of the clamp jaws, and failure to place it in the center of the clamp jaws will result in an additional error of  $\pm 2.5\%$  of the reading.
- \*. When measuring the current, keep away from other live wires, and keep the wire to be measured in the center of the clamp jaws perpendicular.
- \*. The output ratios of the AC/DC sensor are 1mV/A and 10mV/A, that is, when measuring 1A current, the multimeter displays the voltage values of 1mV and 10mV. According to different measured current values, the corresponding current range is selected.
- \*. The current measurement range of the current sensor is 1A~1000A, and the measured

value cannot be guaranteed when it is used to measure the current of  $<1\text{A}$ .

- \*.When the measured current is  $>1000\text{A}$ , please do not continue the test, otherwise there is a risk of damaging the meter. Then, please replace a meter with larger range.
- \*.Please hold the current sensor behind the protective guard during measurement to avoid electric shock or personal injury.
- \*.The plug of the transmission line is the output terminal of the voltage signal, please do not input any voltage (AC or DC).
- \*. Monitoring meters (e.g. multimeters or other AC/DC voltage measurement devices) used with the AC/DC sensor need to meet:
  - a.The AC/DC voltage measurement range is  $1\text{V}$  or higher (the current measurement range of the measurement position with the function of plug-in current sensor is  $100\text{A}/1000\text{A}$  or higher).
  - b.The input accuracy is  $1.5\%$  or higher, so as to give full play to the accuracy of the current sensor.
  - c.Standard voltage input terminal for easy connection of the transmission cable.
  - d.Output impedance:  $>1\text{M}\Omega$

## 2. Other functions

- 1) Auto-off: If the functional buttons are not operated for about 20 minutes after the meter is turned on, the meter will automatically shut down and enter the energy-saving state. To turn on the meter in auto-off state, please press and hold the POWER button.
- 2) Low battery indication: When the battery voltage is lower than about  $2.4\text{V}$ , the POWER indicator starts flashing.
- 3) Undervoltage shutdown: When the battery voltage is lower than about  $2.2\text{V}$ , the meter will be shut down.

## 十、Technical Specifications

Accuracy:  $\pm (a\% \text{ reading} + b \text{ digits})$ , one year warranty

Ambient temperature:  $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$

Relative humidity:  $\leq 75\text{RH}$

### ⚠ Note:

Temperature condition of accuracy: For  $18^{\circ}\text{C}$  to  $28^{\circ}\text{C}$ , the fluctuation range of the ambient temperature is stable within  $\pm 1^{\circ}\text{C}$ . At a temperature  $< 18^{\circ}\text{C}$  or  $> 28^{\circ}\text{C}$ , a temperature coefficient error of  $0.1 \times (\text{specified accuracy})/^{\circ}\text{C}$  is added.

### 1. DC current

Range	Resolution	Output ratio	Accuracy
$100.0\text{A}$	$0.1\text{A}$	$10\text{mV/A}$	$\pm(1.5\%+0.5\text{A})$
$1000\text{A}$	$1\text{A}$	$1\text{mV/A}$	$\pm(2.0\%+0.5\text{A})$

\*.Input impedance  $>1\text{M}\Omega$ ,  $\leq 100\text{pF}$

\*.Overload protection:  $1000\text{A}$

- \*.Current range: 1A~1000A
- \*.Accuracy guarantee range: 5~100% of range
- \*.For measuring current, please place the conductor to be measured at the geometric center of the clamp jaws.
- \*.Influence of the position of the conductor in clamp jaws:  $\pm 2.5\%$
- \*.Influence of adjacent conductors:  $<6\text{mA}$  (variable affected per A)

## 2. AC current

Range	Resolution	Output ratio	Accuracy
100.0A	0.1A	10mV/A	$\pm (1.5 \% + 0.5 \text{ A})$ , 45 Hz ~ 200 Hz $\pm (2.0 \% + 0.5 \text{ A})$ , 200 Hz ~ 400 Hz
1000A	1A	1mV/A	$\pm (2.0\% + 0.5 \text{ A})$ , 45 Hz ~ 200 Hz $\pm (2.5 \% + 0.5 \text{ A})$ , 200 Hz ~ 400 Hz

- \*.Input impedance  $> 1\text{M}\Omega$ ,  $\leq 100\text{pF}$
- \*.Overload protection: 1000A
- \*.AC sinusoidal wave
- \*.Current range: 1A~1000A
- \*.Accuracy guarantee range: 5~100% of range
- \*. For testing at a frequency of  $\geq 300\text{Hz}$ , 10 counts are added to the accuracy of the specification.
- \*.For measuring current, please place the conductor to be measured at the geometric center of the clamp jaws.
- \*.Effect of the position of the conductor in clamp jaws:  $\pm 2.5\%$
- \*.Effect of adjacent conductors:  $<6\text{mA}$  (variable affected per A)

## 十一、Maintenance and Repair

⚠ Warning: Before opening the back cover and battery cover of the Meter, please remove the plug of the transmission line from the input terminal of the multimeter.

### 1. General maintenance and repair

- Use a damp cloth and mild detergent to clean the meter housing, do not use abrasives or solvents.
- If there is any abnormality in the meter, stop use immediately and sent for maintenance.
- The meter shall be calibrated or repaired by a qualified professional maintenance personnel or designated service center.

### 2. Battery installation and replacement (Figure 3)

The specification of the built-in battery:  $2 \times 1.5\text{V}$  AAA battery

When the POWER indicator starts flashing, it means that the battery is low and the battery shall be replaced immediately, otherwise the measurement accuracy will be affected.

Install or replace the batteries in the following order:

- a. Turn off the meter and disconnect the plug of the transmission line from the meter.
- b. Turn the meter panel down, loosen the screw at the battery compartment, remove the battery cover, take out the battery, and install new batteries according to the polarity.
- c. Install the battery cover and tighten the screws.

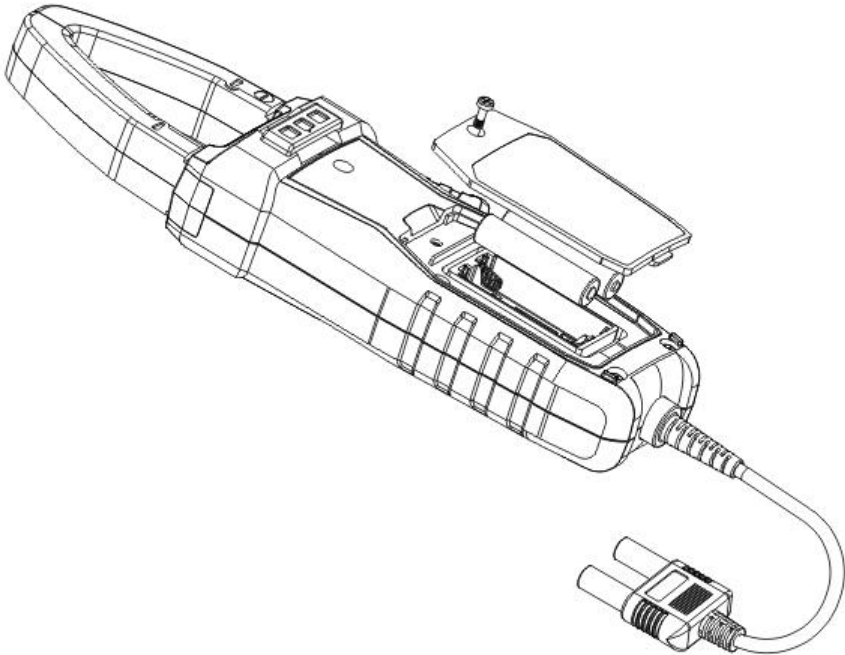


Figure 3