

UT201+/UT202+/UT202A+ AC Clamp Meter User Manual

Preface

Thank you for purchasing the new AC clamp meter. In order to use this product safely and correctly, please read this manual thoroughly, especially the *Safety Instructions* part. After reading this manual, it is recommended to keep the manual at an easily accessible place, preferably close to the device, for future reference.

Limited Warranty and Liability

Uni-Trend guarantees that the product is free from any defect in material and workmanship within one year from the purchase date. This warranty does not apply to damages caused by accident, negligence, misuse, modification, contamination or improper handling. The dealer shall not be entitled to give any other warranty on behalf of Uni-Trend. If you need warranty service within the warranty period, please contact your seller directly.

Uni-Trend will not be responsible for any special, indirect, incidental or subsequent damage or loss caused by using this device. As some countries or regions do not allow limitations on implied warranties and incidental or subsequent damages, the above limitation of liability may not apply to you.

I. Overview

The UT201+, UT202+, and UT202A+ are true RMS AC clamp meters. They are designed according to EN61010-1 CAT II 600V/ CAT III 300V safety standards. These meters come with full-featured protection which ensures users a safe and reliable measurement experience. Aside from all the normal features of AC clamp meter, these meters also include high voltage frequency measurement, fast capacitance measurement, audio visual NCV detection, and plenty of additional safety features. UT202A+ also comes with live/neutral wire detection.

II. Features

- True RMS measurement
- Audio visual NCV detection
- Maximum measurable voltage: 600V;
- High voltage frequency range: 10Hz~10kHz
- Current (UT201+/UT202+: 400A, UT202A+: 600A) frequency response: 50Hz~100Hz; current frequency measurement function
- Large capacitance (4mF) and temperature measurement (UT202+ only)
- Very large capacitance (60mF), low voltage frequency (10MHz), and live/neutral wire measurement functions (UT202A+ only)
- Large LCD and fast refresh rate (3 times/s)
- Response time for capacitance measurement: less than 3s for $\leq 1\text{mF}$; about 6s for $\leq 10\text{mF}$; about 8s for $\leq 60\text{mF}$
- Full-featured false detection protection for up to 600V (30kVA) energy surge; overvoltage and overcurrent alarm functions
- The power consumption of the meter is about 1.8 mA. The circuit has an automatic power saving function. The consumption in sleep state is $<11\mu\text{A}$, which effectively extends the battery life to 400 hours.

Warning: Before using the meter, please read the *Safety Instructions* carefully.

III. Accessories

Open the package box and take out the meter. Please double check whether the following items are missing or damaged.

- a) User manual ----- 1 pc
- b) Test leads ----- 1 pair
- c) K-type temperature probe (UT202+ only) ----- 1 pc
- d) Cloth bag ----- 1 pc

If any of the above is missing or damaged, please contact your supplier immediately.

IV. Safety Instructions

The meter is designed according to EN61010-1, 61010-2-032/033 and electromagnetic radiation protection EN61326-1 safety standards, and conforms to CAT II 600V, CAT III 300V, double insulation and pollution grade II.

Note: In case the meter is not used in accordance with the operating instructions, the protection provided by the meter may be weakened or lost.

- Before use, please check if there is any item which is damaged or behaving abnormally. If any abnormal item (such as bare test lead, damaged meter casing, broken LCD, etc.) is found, or if the meter is considered to be malfunctioning, please do not use the meter.
- Do not use the meter if the rear cover or the battery cover is not covered up, or it will pose a shock hazard!
- When using the meter, keep fingers behind the finger guards of the test leads, and do not touch exposed wires, connectors, unused inputs, or circuits being measured to prevent electric shock.
- The function switch should be placed in the correct position before measurement. It is forbidden to change the position during measurement to avoid damage to the meter!
- Do not apply voltage over 600V between any meter terminal and earth ground to prevent electric shock or damage to the meter.
- Be cautious when the measured voltage is higher than 60V (DC) or 30Vrms (AC) to avoid electric shock!
- Never input voltage or current which exceeds the specified limit. If the range of the measured value is unknown, the maximum range should be selected.
- Before measuring the resistance, diode and continuity online, switch off the power supply of the circuit, and fully discharge all capacitors to avoid inaccurate measurement.

- When the " " symbol appears on the LCD, please replace the batteries in time to ensure measurement accuracy. If the meter is not in use for a long time, please remove the batteries.
- Do not change the internal circuit of the meter to avoid damage to the meter and user!
- Do not use or store the meter in high temperature, high humidity, flammable, explosive or strong magnetic field environments.
- Clean the meter casing with a soft cloth and mild detergent. Do not use abrasives or solvents!

V. Electrical Symbols

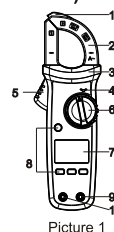
Symbol	Description
	Caution, possibility of electric shock
	Alternating current
	Direct current
	Equipment protected throughout by DOUBLE INSULATION or REINFORCED INSULATION
	Earth (ground) TERMINAL
	Warning or Caution

VI. General Specifications

- Max display: 4099 (UT201+/UT202+), 6099 (UT202A+)
- Polarity display: Auto
- Overload display: "OL" or "-OL"
- Low battery indication: The " " symbol is displayed.
- Low battery shutdown prompt: The "Lo.Bt" interface appears on the LCD and lasts for about 10s, the buzzer beeps three times, and the meter automatically shuts down.
- Test position error: If the source under test is not placed at the center of the clamp jaws when measuring current, $\pm 1.0\%$ additional error in reading will be produced.
- Drop protection: 1m
- The maximum size of jaw opening: 28mm in diameter
- Battery: AAA battery 1.5V \times 2
- Auto power off: If there is no operation of the function switch or any button for 15 minutes, the meter will automatically power off. This function can be turned off as needed.
- Dimensions: 215mm \times 63.5mm \times 36mm
- Weight: About 248g (including batteries)
- Altitude: 2000m
- Operating temperature and humidity: 0 $^{\circ}$ C~30 $^{\circ}$ C ($\leq 80\%$ RH), 30 $^{\circ}$ C~40 $^{\circ}$ C ($\leq 75\%$ RH), 40 $^{\circ}$ C~50 $^{\circ}$ C ($\leq 45\%$ RH)
- Storage temperature and humidity: -20 $^{\circ}$ C~60 $^{\circ}$ C ($\leq 80\%$ RH)
- Electromagnetic compatibility: RF=1V/m, overall accuracy \pm specified accuracy + 5% of range RF>1V/m, no specified calculation

VII. External Structure (Picture 1)

- NCV sensing end
- Clamp jaws
- Hand guard
- LED indicator
- Jaw opening trigger
- Function switch
- LCD display
- Function buttons
- Positive (+) input jack
- COM (negative -) input jack



VIII. Button Description

1.SELECT Button

In the composite function position, press this button to switch between the corresponding measurement functions; in the AC/DC/Hz position (UT202+/UT202A+), short press this button to switch between the AC and DC functions, and long press (about 2s) this button to enter/exit the Hz measurement function.

In the NCV/LIVE position (UT202A+ only), short press this button to switch between the EFH1 and EFL0 ranges, and long press (about 2s) this button to enter/exit the LIVE measurement function.

2.HOLD/BACKLIGHT Button

Short press this button to enter/exit the data hold mode, and long press (about 2s) this button to turn on/off the backlight (the backlight will automatically turn off after 60s).

3.MAX/MIN Button

Short press this button to enter the maximum/minimum measurement mode and long press this button to exit (only valid for AC/DC voltage, AC current, resistance and temperature measurement).

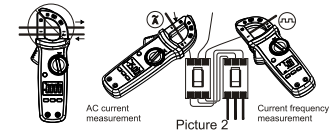
4.REL Button (UT202+/UT202A+)

In the capacitance and voltage positions, press this button to store the current reading as a reference for future readings. When the LCD display value is reset to zero, the stored reading will be subtracted from the future readings. Press this button again to exit the relative value mode.

IX. Operating Instructions

1.AC Current/Current Frequency Measurement (Picture 2)

- Select the AC current range (4A/6A, 40A/60A or 400A/600A)
- Press the trigger to open the clamp jaws, and fully enclose one conductor.
- Only one conductor can be measured at a time, otherwise the measurement reading will be wrong.

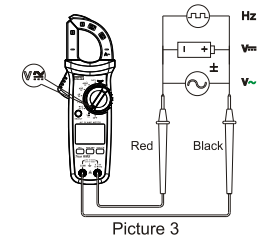


Note:

- The current measurement must be taken within 0 $^{\circ}$ C~40 $^{\circ}$ C. Do not suddenly release the trigger, as the impact will change the reading for a short time.
- To ensure measurement accuracy, center the conductor in the jaws. Otherwise, $\pm 1.0\%$ additional error in reading will be produced.
- When the measured current is $\geq 400\text{A}$ (UT201+/UT202+) or $\geq 600\text{A}$ (UT202A+), the meter will automatically sound an alarm and the high voltage alarm prompt " " will automatically flash.
- If the LCD displays "OL", it indicates that the current is over range and there is a danger of damage to the meter.

2.AC/DC Voltage and Voltage Frequency Measurement (Picture 3)

- Insert the red test lead into the "V \overline{C} \overline{H} Ω Hz" jack, black into the "COM" jack.
- Turn the function switch to the AC/DC voltage position, and connect the test leads with the measured load or power supply in parallel.

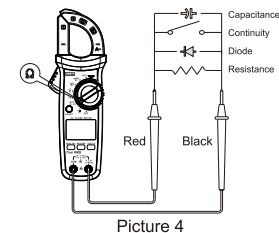


Note:

- Do not input voltage above 600V. Although it is possible to measure higher voltage, it may damage the meter.
- Be cautious to avoid electric shock when measuring high voltage.
- When the measured voltage is $\geq 30\text{V}$ (AC) or $\geq 60\text{V}$ (DC), the LCD will display the high voltage alarm prompt " "

3.Resistance Measurement (Picture 4)

- Insert the red test lead into the "V \overline{C} \overline{H} Ω Hz" jack, black into the "COM" jack.
- Turn the function switch to the " " position, press the SELECT button to select resistance measurement, and connect the test leads with both ends of the measured resistance in parallel.



Note:

- If the measured resistor is open or the resistance exceeds the maximum range, the LCD will display "OL".
- Before measuring the resistance online, switch off the power supply of the circuit, and fully discharge all capacitors to avoid inaccurate measurement.
- If the resistance is not less than 0.5 Ω when the test leads are short-circuited, please check the test leads for looseness or other abnormalities.
- Do not input voltage higher than 30V to avoid personal injury.

4.Continuity Test (Picture 4)

- Insert the red test lead into the "V \overline{C} \overline{H} Ω Hz" jack, black into the " " jack.
- Turn the function switch to the " " position, press the SELECT button to select continuity measurement, and connect the test leads with both ends of the measured load in parallel.
- Measured resistance $<10\Omega$: The circuit is in good conduction status; the buzzer beeps continuously. Measured resistance $>31\Omega$: The buzzer makes no sound.

Note:

- Before measuring the continuity online, switch off the power supply of the circuit, and fully discharge all capacitors.
- Do not input voltage higher than 30V to avoid personal injury.

5.Diode Test (Picture 4)

- Insert the red test lead into the "V \overline{C} \overline{H} Ω Hz" jack, black into the "COM" jack. The polarity of the red test lead is "+" and that of the black test lead is "-".
- Turn the function switch to the " " position, press the SELECT button to select diode measurement, and connect the test leads with the positive and negative poles of the measured diode.
- 0.08V \leq reading $<1.2\text{V}$: The buzzer makes one beep indicating the normality of the diode. Reading $<0.08\text{V}$: The buzzer beeps continuously indicating the damage of the diode. For the silicon PN junction, the normal value is generally about 500~800 mV.

Note:

- If the diode is open or its polarity is reversed, the LCD will display "OL".
- Before measuring the diode online, switch off the power supply of the circuit, and fully discharge all capacitors.
- Do not input voltage higher than 30V to avoid personal injury.

