

UT200A/B

Operating Instruction

I. Introduction

UT200A/B is a kind of 3 1/2 digital clamp ammeter (hereinafter called clamp meter) which is safe and reliable and has stable performance. The circuit design of the whole device takes large-scale integrated circuit double integral A/D transducer as its center; fully overload protecting circuit and unique appearance design make it a special electric meter with superior performance.

The clamp meter can be used to measure AC/DC voltage, alternate current, resistance, diode, make-and-break of circuit, etc.

This Instruction contains relevant safety messages and warnings. Please read all the contents and abide by all the warnings and points for attention.


II. Unpacking inspection

Open the packing box and take the meter out. Please check whether the following items are lost or damaged:

- | | |
|--------------------------|----------|
| 1. Operating Instruction | One copy |
| 2. Instrument pen | One |

If anyone is lost or damaged, please contact with your supplier immediately.

III. Safe working rules

Please pay attention to the warning sign  and warning messages. Warnings include the situation or actions which might threaten the user, or damage the meter or equipment tested.

This meter is designed and produced in strict accordance with GB4793 safety requirement to electronic measuring instrument as well as EN 61010-1, 61010-2-032, 61010-2-033, criterion, and meets the safety criterion of double insulation, measurement category CAT II 600V, CAT III 300V and pollution degree 2. If it's not used in accordance with relevant operating instructions, protective capability of the meter might be lost or weakened.

CAT II (MEASUREMENT CATEGORY II): Applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation.

Examples are measurements on MAINS CIRCUITS of household appliances, portable tools and similar equipment.

CAT III (MEASUREMENT CATEGORY): Applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation.

Examples are measurements on distribution boards (including secondary electricity meters), circuitbreakers, wiring, including cables, bus-bars, junction boxes, switches, socket-outlets in the fixed installation, and equipment for industrial use and some other equipment such as stationary motors with permanent connection to the fixed installation.

1. Check the clamp meter and instrument pen before use, in case they are damaged or abnormally used. If the instrument pen and case insulation of the clamp meter are damaged, or LCD shows nothing, or if you think the clamp meter can no longer work normally, please stop using it.

2. The clamp meter can't be used if the back cap and battery cover are not well fixed; otherwise, there will be shock hazard.


3. In measuring, remember the finger shall not forereach the handle of the instrument pen, or touch the exposed wire, connector, input end not used, and the circuit measured, in case of electric shock.

4. Make sure the functional switch is in a right position before measuring; do not switch during measuring in case the meter is damaged.

5. Do not impose 600V-or-above voltage in between the terminal of clamp meter and grounding, in case of electric shock and damage to the clamp meter.

6. If the meter is working with 42V DC voltage or 30V AC available value voltage, the operator shall be very careful, because there might be electric shock at that time.

7. Do not measure the voltage or electric current which is higher than the allowable input value. If the range of value measured can't be determined, the functional range switch shall be placed at the maximum range. Before measuring on-line resistance, diode or make-and-break of circuit, cut off the power in the circuits and discharge all the capacitors. After the measuring, disconnect the instrument pen and circuit-under-test, and take off the instrument pen from the input end of the clamp meter and cut off the power of the clamp meter.

8. When LCD shows , change the battery in time to guarantee the measurement accuracy. Take the battery out if the clamp meter is not used for a long time.












9. Please do not change the jointing internal lead of the clamp meter randomly, so as not to damage the meter or endanger the operator.

10. Do not use or place the clamp meter in very humid, inflammable, and explosive environment and environment with strong electromagnetic field environment or high temperature.


11. Please use soft cloth and neutral detergent to clean the meter case, but not abrasive materials and solvent, so as not to erode the case, damage the meter or endanger the safety.

12. Probe assemblies to be used for MAINS measurements shall be RATED as appropriate for measurement category III according to IEC 61010-031 and shall have a voltage RATING of at least the voltage of the circuit to be measured.

IV. International electric symbol

	Double insulation		Grounding
	Warning		AC (Alternate current)
	DC (Direct current)		Buzzing make-and-break
	Diode		Insufficiency of battery in the meter
	AC or DC (Alternate current or direct current)		
	Meeting the standard of European union		
	Application around and removal from HAZARDOUS LIVE conductors is permitted		

V. Composite indicator

- Maximum display: 1999 automatic polarity display
- Measuring method: double integral A/D transducer
- Overrange prompting: most significant bit of LCD shows "1"
- Sampling rate: two to three times per second
- Display of polarity: automatic
- Prompting of undervoltage battery: 
- Maximum size for opening the clamp heads: diameter: 28mm
- Predicted maximum size of the current lead: diameter: 26mm
- Error of test position: there might be $\pm 1\%$ error in reading the value when measuring the current because the part to be tested is not placed in an appropriate position.
- Type of sensor: AC measuring clamp transformer
- Working temperature: 0~40°C (32°F~104°F)
- Storage temperature: -10~50°C (14°F~122°F)
- Relative humidity: $\leq 75\%$ below 0°C~30°C; $\leq 50\%$ at 30°C~40°C
- Electromagnetic compatibility: at 1V/m radio-frequency field: overall accuracy = appointed accuracy + 5% of the measurement range; no appointed indicator at the radio-frequency field exceeding 1V/m

- Electric power supply: 9V battery (6F22)
- Overall dimension: 208x76x30mm
- Weight: about 260g (including the battery)

VI. Outside structure figure (see Figure 1)

- Clamp head
- LCD display window
- Keys
- Input port
- Head trigger
- Functional measuring turnplate
- Hand Guards: to protect user's hand from touching dangerous area.

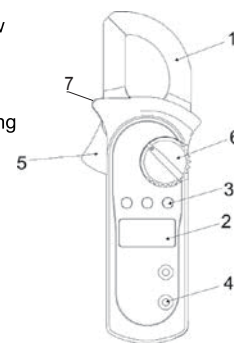




Figure 1


VII. Key functions

Switch position	Functional specification
POWER	Power key
	Back lighting key
HOLD	Data hold key

VIII. Measuring instructions

1. Points for attention before operation:

1) Press POWER and check 9V battery; if the battery voltage is insufficient,  will be shown in the display, and the battery needs to be changed.

2)  beside the plug hole of the test pen means the input voltage or electric current shall not exceed the indicating value in order to protect the internal wiring from being damaged.

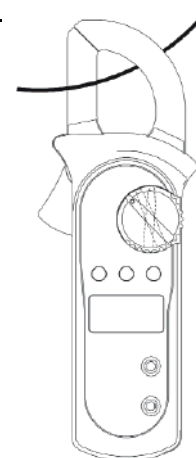
3) Before the test, the functional switch shall be placed at the required measurement range.

2. Measuring of alternate current (see Figure 2)

1) Place the turnplate's functional switch at appropriate position: 2A/20A/200A (UT200A) 20A/200A/600A (UT200B). If the tested value is not sure, please choose the maximum measurement range.

2) Seize a single measured lead wire with clamp heads; adjust the measured lead wire to make it vertical to the clamp head and in the geometric centre of the clamp head, and then make sure the clamp heads are well closed. If two or more conductors are measured at the same time, the indication might be wrong.

3) Then, LCD shows the value of alternate current measured.



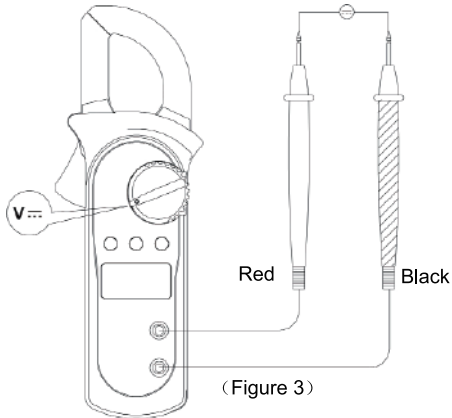
(Figure 2)

3. Shelf of direct voltage (see Figure 3)

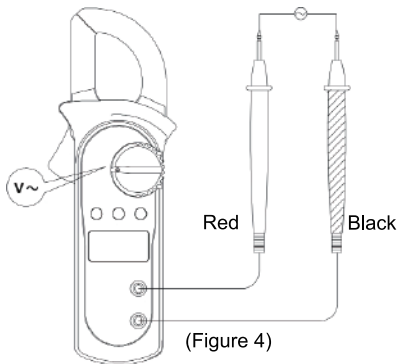
1) Place the turnplate's functional switch at 600V.

2) Insert the red instrument pen to "V" plug hole, and insert the black instrument pen to "COM" plug hole, and then connect the instrument pen

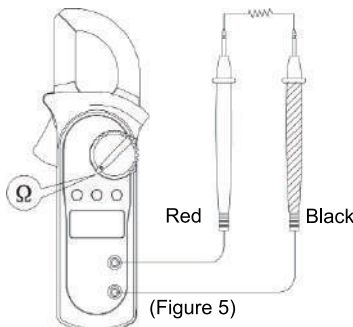
- to the load to be measured in parallel.
- Then, the value shown by LCD is the value of direct voltage measured, and the end connected to the red instrument pen is positive.
 - If LCD shows "-", then the end connected to the red instrument pen is negative.



- Shelve of alternating voltage (see Figure 4)
- Place the turnplate's functional switch at 600V.
- Insert the red instrument pen to "V" plug hole, and insert the black instrument pen to "COM" plug hole, and then connect the instrument pen to the load to be measured in parallel.
- Then, LCD shows the value of alternating voltage measured.

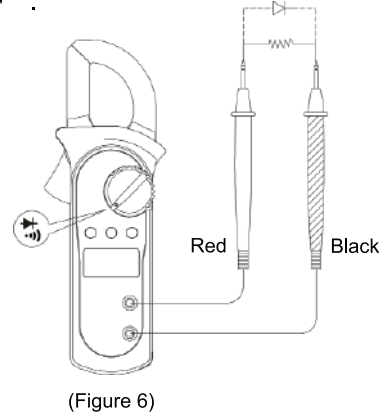


- Resistance measurement (see Figure 5)
- Place the turnplate's functional switch at 20kΩ.
- Insert the red instrument pen to "Ω" plug hole, and insert the black instrument pen to "COM" plug hole, and then connect the instrument pen to the load to be measured in parallel.
- Then, LCD shows the ohmic value measured. When the resistance measured is greater than 20kΩ or in open circuit, the most significant bit of LCD shows "1".



- Diode and make-and-break test (see Figure 6)
- Place the turnplate's functional switch at $\rightarrow \rightarrow \rightarrow$.
- Insert the red instrument pen to $\rightarrow \rightarrow \rightarrow$, and the black instrument pen to "COM".
- When measuring the diode, connect the red instrument pen to the positive terminal of the diode, and connect the black instrument pen to the negative terminal of the diode; then LCD shows the forward drop approximate value of the diode measured; silicon diode: 0.5-0.7v; germanium diode: 0.2-0.3v; inversely,

- the most significant bit of LCD shows "1".
- When the resistance of the component measured or the loop resistance is less than 10Ω, the buzzer will sound; when in the open circuit, the most significant bit of LCD shows "1".



IX. Technical index

Limit of error: $\pm(\text{a\% indication} + \text{word count})$;
guarantee period: 1 year
Ambient temperature: 18~28°C
Ambient humidity: not greater than 75%RH

1.Measuring of direct voltage

Measurement range	Resolution	Limit of error
600V	1V	$\pm(1\%+3)$

Input impedance: 10MΩ
Overload protection: 600Vp

2.Measuring of alternating voltage

Measurement range	Resolution	Limit of error
600V	1V	$\pm(1.5\%+5)$

Input impedance: the input impedance is about is about 10MΩ
Overload protection: 600Vp
Display: effective value of sine wave (response of mean value)
Frequency response: 50~400Hz

3.Measuring of alternate current UT200A

Measurement range	Resolution	Accuracy
2A	0.001A	$\pm(2.5\%+12)$
20A	0.01A	$\pm(2\%+5)$
200A	0.1A	$\pm(1.5\%+5)$

UT200B

Measurement range	Resolution	Accuracy
20A	0.01A	$\pm(2\%+5)$
200A	0.1A	$\pm(1.5\%+5)$
600A	1A	$\pm(2\%+8)$

Display: effective value of sine wave (response of mean value)
Frequency response: 50~60Hz

4.Resistance measurement

Measurement range	Resolution	Accuracy
20kΩ	10Ω	$\pm(1.0\%+4)$

Overload protection: 600Vp

5. Make-and-break test

Measurement range	Resolution	Note
$\rightarrow \rightarrow \rightarrow$	1mV	Showing forward voltage drop
$\rightarrow \rightarrow \rightarrow$	1Ω	When R_{on} is $\leq 10\Omega$, the buzzer in the machine sounds; when it is $> 10\Omega$, it might sound or not and will show the approximate value of the resistance, with the unit being "Ω"

Overload protection: 600Vp

X. Maintenance and repair

Warning: before opening the back cap of the meter, make sure the power has been cut off, and the instrument pen has been away from the input port and circuit-under-test.

1. Ordinary maintenance and repair

- The meter can only be cleaned with damping cloth and a little detergent, and chemical solvent is prohibited to be used to wipe the meter case.
- If the meter goes wrong, stop using it immediately and send it for maintenance.
- If it's necessary to calibrate or repair the meter, invite qualified professional maintenance man or appointed maintenance departments to take charge of it.

* When the meter is not used, cut off the power; if it will not be used for a long time, take the battery out.

* The meter shall not be stored in places with humidity, high temperature and strong electromagnetic field.

2. Change the battery

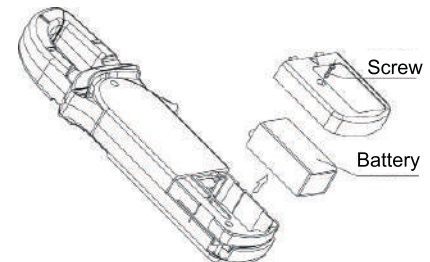
Warnings:

- If it displays nothing when powers on, it's suggested that the battery be changed first.
- When the battery voltage is $<7.5V$ or LCD shows the undervoltage sign $\rightarrow \rightarrow \rightarrow$, change the battery immediately; otherwise, it might affect the measurement accuracy.

c. Specification of the battery: 9V battery(6F22)

Operational procedures: (see Figure 7)

- When the meter powers off, please move away the test prod at the input end.
- Place the faceplate of the meter downward and unscrew the screws of battery case; unplug the battery cover, and take the battery out.
- Place a new battery and fix the battery cover, and screw it tightly.



Contents of the manual are subject to change without notice.

ETL ETL/ cETL: Conforms to UL STD 61010-1, 61010-2-032 and 61010-2-033;
Intertek Certified to CSA STD C22.2 NO.61010-1, 4007682 IEC STD 61010-2-032, IEC STD 61010-2-033

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