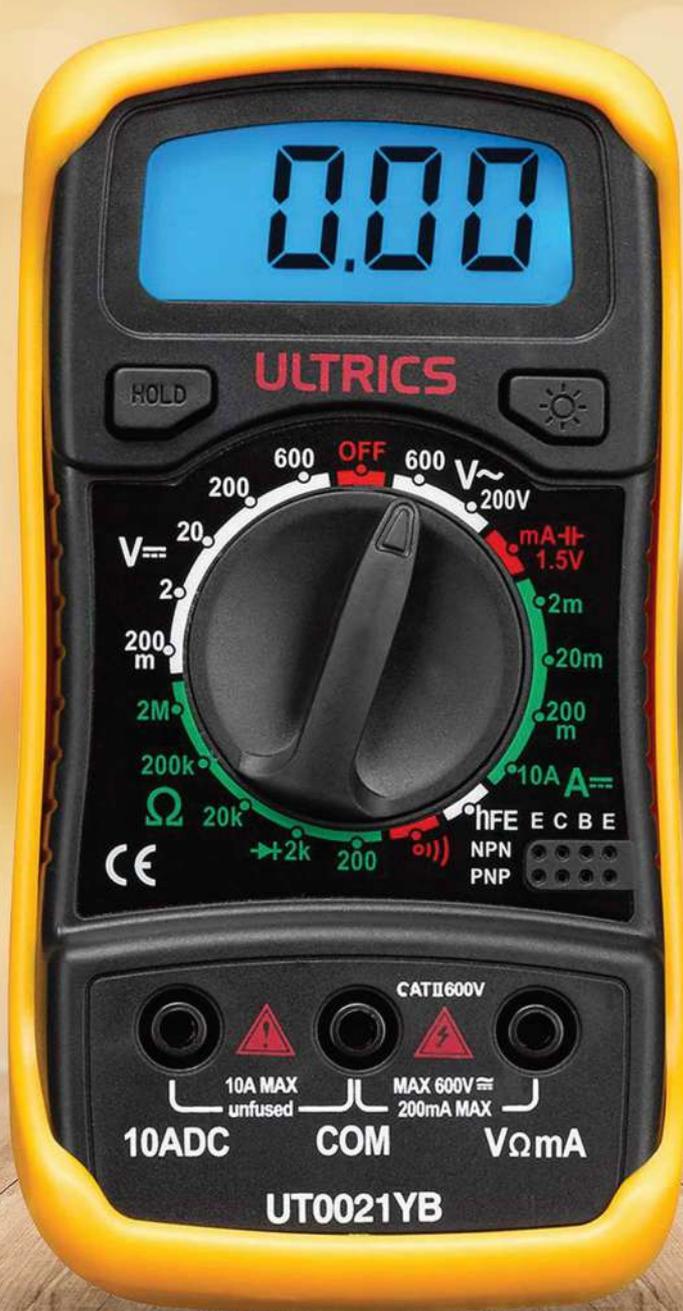


Digital Multimeter

USER GUIDE



Safety Precautions and Procedures

This multimeter is designed according to relevant clauses of IEC1010. To avoid possible electrical shock, fire, or personal injury, please read all safety information on this manual before you use the product.

- Do NOT exceed the "maximum value" indicated on the Panel.
- Examine the connection of the test leads and the insulation of the product before measuring a voltage higher than 36V DC or 25V AC.
- Disconnect the test leads from the circuit before changing the mode.
- Should check and confirm there is no damage in the instrument, the insulating barrier of test lead is intact before using.
- While holding the test leads, should pay special attention that your hands do not exceed the plastic of the testing needle root, otherwise there is danger of getting electric shocks.
- Before opening the back cover, must pull out the test leads. After closing the back cover and screwing it back, it can carry on measuring. Be sure that it is done properly.
- Before rotating the range selector to change functions, disconnect test leads from the circuit under test.
- Never input signal electronic voltage exceeding the limited value to avoid dangers and damages.
- The potential difference between the measurement public terminal COM and earth cannot exceed 600V.
- If there is a symbol  on the LCD display, it indicates low battery. Replace the battery to ensure measurement accuracy.
- For the fuse, it must be replaced with an identical model if necessary. For the concrete specification, please see the clause of maintenance or label on the instrument board.

Safety Symbols

 AC voltage/current

 DC voltage/current

 Diode

 Hazardous Voltage

 Ground connection

 Buzzer

 Double insulation

 Low battery indication

 Risk Of danger

General Description and Function Panel



Display: Max 1999 (3 1/2 digits)

Automatic polarity display, range instruction and battery changing indicator.

Power supply: 9V battery (NEDA 1604; 6F22 type or equivalent type)

Environment condition:

Working temperature: 0° C - 40° C;

The relative humidity: <85 %

Store temperature: -10° C - 50° C;

The relative humidity: <85 %

Temperature of precision: 23° C ± 5° C;

The relative humidity: <75 %

Specification

1. DC Voltage

| Range | Accuracy | Resolution |
|-------|-----------|------------|
| 200mV | ±(0.5%+2) | 100uV |
| 2V | | 1mV |
| 20V | | 10mV |
| 200V | | 100mV |
| 600V | ±(0.8%+2) | 1V |

Input impedance: 1MΩ

Specification

2. DC Current

| Range | Accuracy | Resolution |
|----------|------------------------------------|-------------|
| mA 1.5 V | Only can test 1.5V battery current | |
| 2 mA | $\pm(1.2\%+2)$ | 1 μ A |
| 20 mA | | 10 μ A |
| 200 mA | $2\pm(1.4\%+2)$ | 100 μ A |
| 10 A | $\pm(2.0\%+2)$ | 10 mA |

10A range does not guarantee fuse protection, 10s at most.

3. AC Voltage

| Range | Accuracy | Resolution |
|-------|----------------|------------|
| 200V | $\pm(1.5\%+8)$ | 100 mA |
| 600V | | 1 V |

Input impedance: 450k Ω

Frequency range: 40HZ-400HZ

Overload protection: peak value 600V for AC virtual value

Reveal: Average (the average of the virtual value of sine)

4. Resistance

| Range | Accuracy | Resolution |
|---------------|----------------|--------------|
| 200 Ω | $\pm(0.8\%+5)$ | 0.1 Ω |
| 2k Ω | | 1 Ω |
| 20k Ω | | 10 Ω |
| 200k Ω | | 100 Ω |
| 2M Ω | $\pm(1.0\%+2)$ | 1 k Ω |

5. Diode Test

Test voltage approx 2.8V, current 1.5mA

Indicate forward voltage drop of diode unit: k Ω

6. Transistor hFE Test

| Range | Test Range | Test Current | Test Voltage |
|-----------|------------|---------------|--------------|
| NPN & PNP | 0-10000 | 1b=10 μ A | Vce=3V |

7. Continuity test

Test voltage approximate 2.8V, current 1.5mA

The buzzer will beep when conductance resistance approximate<30

Operating Instructions

Front Panel (Please see the panel)

1. LCD display, 1999digits
2. Buttons
 - i. Hold: To hold the current reading, press this button and you will see "H" on the display, press again to cancel.
 - ii. Display Backlight: To turn on the display light.
3. Rotary switch: To change mode or range.
4. V/ Ω /mA: Input terminal for Voltage resistance, current (mA) diode, continuity measurements.
5. COM: Common Terminal for all Measurements.
6. 10A: Input terminal for related current measurements.

(1) Measure AC/ DC voltage

1. Insert the red test lead to the "V Ω mA" terminal, and the black test lead to the "COM" terminal;
2. Turn the rotary switch to the DC voltage mode, or the AC voltage mode, choose the suitable range if can't sure, choose the highest range.
3. Connect the probes to the correct test points of the circuit to measure the voltage;
4. Read the measured voltage on the display.

Caution:

- a. Do not measure voltage exceeding the MAX value as indicated on the panel.
- b. Do not touch the high voltage circuits during measurements.

(2) Measure DC current

1. For current less than 200mA, insert the red test lead to the "V Ω mA" terminal, if current is more than 200mA, insert the red test lead into "10A" terminal, and the black test lead to the "COM" terminal.
2. Turn the rotary switch to the DC current related Mode.
3. Break the circuit path to be measured. Then connect the test leads across the break and apply power.
4. Read the measured current on the display

Caution:

- a. Do not measure current that exceeds the MAX value as indicated in the specifications;
- b. Do not input voltage exceeds 36V DC or 25V AC when you are at the setting of measuring current.

Operating Instructions

(3) Measure Resistance

1. Insert the red test lead to the "VΩmA" terminal, and the black test lead to the "COM" terminal;
2. Turn the rotary switch to the resistance, choose the suitable range;
3. Connect the probes to the desired test points of the circuit to measure the resistance;
4. Read the measured resistance on the display.

Caution:

- a. Disconnect circuit power and discharge all capacitors before you test resistance.
- b. Do not input voltage at the resistance mode.

(4) Measure Diode

1. Insert the red test lead to the "VΩmA" terminal, and the black test lead to the "COM" terminal;
2. Turn the rotary switch to ;
3. When test leads connect with resistance, instrument is in the ultra-range state (only reveal high position 1);
4. Read the forward bias voltage value on the display.

Caution:

- a. Do not input voltage at the diode mode.
- b. Disconnect circuit power and discharge all capacitors before you test diode.

(5) Measure Continuity

1. Insert the red test lead to the "VΩmA" terminal, and the black test lead to the "COM" terminal;
2. Turn the rotary switch to  position ;
3. Touch the probes to the desired test points of the circuit;
4. If the resistance examined between the two ends is less than 300, the instrument will send out bee sound of chirping.

Caution:

- a. Do not input voltage at the continuity mode.

(6) Transistor Test

1. Set the rotary switch at "hFE" position;
2. Determine whether the transistor under testing is NPN or PNP, and locate the emitter, base and collectors leads. Insert the leads into proper sockets on the panel.
3. Read the approximate hFE value at the test condition of base current 10uA and Vce 3V.

(7) Replacing the Battery

The  sign displayed on the screen indicates requirement for battery replacement. Be careful to observe battery polarity.

Accessories Included

1. Multimeter
2. One pair of test leads
3. Manual
4. 9V 6F22 battery

Warning and Caution

- Be cautious about the condition of the meter and the testing leads before using.
- Please turn off the item when it is not in use in order to prolong its working life. Remove the battery and put it in a dry, ventilating and less dusty place if the instrument is not used for a long time.
- Disconnect the test leads from the circuit before changing the mode.

This user manual is also available in these languages

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