

# User Manual

## A. Introduction

This product is a battery-powered, true-rms, auto-ranging digital multimeter with a 4000 counts, LCD display and backlight. It can be used to measure AC/DC voltage, resistance, capacitance, frequency, duty cycle, diode, and continuity.

## B. Safety Information

To avoid possible electrical shock, fire, or personal injury, please read all safety information before you use the product.

- Do **NOT** exceed the "maximum value" indicated in the Specification.
- Examine the connection of the test leads and the insulation of the product before measuring voltage higher than 36V DC or 25V AC.
- Disconnect the test leads from the circuit before changing the mode.
- Misuse of mode or range can lead to hazards, be cautious. "OL" will be shown on the display when the input is out of range.
- Safety symbols:

|  |  |  |             |
|--|--|--|-------------|
|  | Hazardous Voltage                      |  | Earth       |
|  | Double Insulated                       |  | Low Battery |
|  | Risk of Danger. Check the User Manual. |  |             |

## C. Specifications

| Electrical Specifications |         |            |           |           |           |
|---------------------------|---------|------------|-----------|-----------|-----------|
| Function                  | Range   | Resolution | Accuracy  | MAX.Value | Other     |
| DC Voltage                | 400.0mV | 0.1mV      | ±(0.5%+4) | 600V      |           |
|                           | 4.000V  | 0.001V     |           |           |           |
|                           | 40.00V  | 0.01V      |           |           |           |
|                           | 400.0V  | 0.1V       |           |           |           |
|                           | 600V    | 1V         |           |           |           |
| AC Voltage                | 400.0mV | 0.1mV      | ±(1.2%+4) | 600V      | 40Hz-1kHz |
|                           | 4.000V  | 0.001V     |           |           |           |
|                           | 40.00V  | 0.01V      |           |           |           |
|                           | 400.0V  | 0.1V       |           |           |           |
|                           | 600V    | 1V         |           |           |           |
| Resistance                | 400.0Ω  | 0.1Ω       | ±(0.8%+4) | 40MΩ      |           |
|                           | 4.000kΩ | 0.001kΩ    |           |           |           |
|                           | 40.00kΩ | 0.01kΩ     |           |           |           |
|                           | 400.0kΩ | 0.1kΩ      |           |           |           |
|                           | 4.000MΩ | 0.001MΩ    |           |           |           |
|                           | 40.00MΩ | 0.01MΩ     |           |           |           |

| Function    | Range    | Resolution | Accuracy   | MAX.Value | Other |
|-------------|----------|------------|------------|-----------|-------|
| Capacitance | 9.999nF  | 0.001nF    | ±(5.0%+20) | 9.999mF   |       |
|             | 99.99nF  | 0.01nF     |            |           |       |
|             | 999.9nF  | 0.1nF      |            |           |       |
|             | 9.999μF  | 0.001μF    | ±(2.0%+5)  |           |       |
|             | 99.99μF  | 0.01μF     |            |           |       |
|             | 999.9μF  | 0.1μF      |            |           |       |
| 9.999mF     | 0.001mF  | ±(5.0%+5)  |            |           |       |
| Frequency   | 99.99Hz  | 0.01Hz     | ±(0.1%+2)  | 9.999MHz  |       |
|             | 999.9Hz  | 0.1Hz      |            |           |       |
|             | 9.999kHz | 0.001kHz   |            |           |       |
|             | 99.99kHz | 0.01kHz    |            |           |       |
|             | 999.9kHz | 0.1kHz     |            |           |       |
|             | 9.999MHz | 0.001MHz   |            |           |       |
| Duty Cycle  | 1%~99%   | 0.1%       | ±(0.1%+2)  |           |       |
| Diode       | ✓        |            |            |           |       |
| Continuity  | ✓        |            |            |           |       |

| General Specifications |                |
|------------------------|----------------|
| Display (LCD)          | 4000 counts    |
| Ranging                | Auto/Manual    |
| Material               | ABS            |
| Update Rate            | 3 times/second |
| Ture RMS               | ✓              |
| Data Hold              | ✓              |
| Low Battery Indication | ✓              |
| Auto Power Off         | ✓              |

| Mechanical Specifications |                         |
|---------------------------|-------------------------|
| Dimension                 | 125*80*19.5mm           |
| Weight                    | 107g/122g(w/ batteries) |
| Battery Type              | 1.5V AAA Battery * 2    |
| Warranty                  | One year                |

| Environmental Specifications |             |         |
|------------------------------|-------------|---------|
| Operating                    | Temperature | 0~40℃   |
|                              | Humidity    | <75%    |
| Storage                      | Temperature | -20~60℃ |
|                              | Humidity    | <80%    |

| Standard Accessories |  |
|----------------------|--|
| Battery * 2pcs;      | English User Manual; Gift Box; Wrist Strap * 1pc |

## D. Instruction

### (1) Front Panel ( see the picture on the right )

- LCD display
- Buttons
  - RANGE: press this button to enter the manual range; each push increases the range; when the highest range is reached, next push will go back to the lowest range; to exit the manual range mode, press the button for 2 seconds.
  - REL: the product allows relative measurements for the Modes of Voltage, Resistance, and Capacitance; press this button to enter the relative measurements mode; press again to exit. To toggle between Frequency/Duty Cycle, press this button at the Hz/DUTY Mode.
- Rotary Switch: To change mode or range (from OFF, clockwise)
  - OFF
  - AC Voltage
  - DC Voltage
  - Resistance
  - Diode
  - Continuity
  - Capacitance
  - Frequency/Duty Cycle
  - OFF

### (2) Measure AC Voltage

- Turn the rotary switch to the AC Voltage Mode;
- Touch the probes to the correct test points of the circuit to measure the voltage;
- Read the measured voltage on the display.

\*Caution:

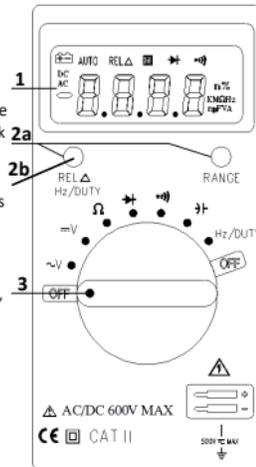
- Do not measure voltage that exceeds the MAX Value as indicated in the Specifications;
- Do not touch high voltage circuit during measurements.

### (3) Measure DC Voltage

- Turn the rotary switch to the DC Voltage Mode;
- Touch the probes to the correct test points of the circuit to measure the voltage;
- Read the measured voltage on the display.

\*Caution:

- Do not measure voltage that exceeds the MAX Value as indicated in the Specifications;
- Do not touch high voltage circuit during measurements.



(4) Measure Resistance

1. Turn the rotary switch to the Resistance Mode, and the display will show "OL";
2. Touch the probes to the desired test points of the circuit to measure the resistance;
3. 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.

(5) Measure Diode

1. Turn the rotary switch to the Diode Mode;
2. Connect the red probe to the anode side and the black probe to the cathode side of the diode being tested;
3. Read the forward bias voltage value on the display;
4. If the polarity of the test leads is reversed with diode polarity or the diode is broken, the display reading shows "OL".

\*Caution:

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

(6) Measure Continuity

1. Turn the rotary switch to the Continuity Mode;
2. Touch the probes to the desired test points of the circuit;
3. The built-in beeper will beep when the resistance is lower than 50Ω, which indicates a short circuit.

\*Caution:

- a. Do not input voltage at the Continuity Mode.

(7) Measure Capacitance

1. Turn the rotary switch to the Capacitance Mode;
2. Connect the red probe to the anode side and the black probe to the cathode side of the capacitor being tested;
3. Read the measured capacitance value on the display once the reading is stabilized.

\*Caution:

- a. Disconnect circuit power and discharge all capacitors before you test capacitance.

(8) Measure Frequency and Duty Cycle

1. Turn the rotary switch to the Frequency Mode; press REL once to toggle to the Duty Cycle Mode if you want to measure duty cycle;
2. Touch the probes to the desired test points of the circuit;
3. Read the measured frequency/duty cycle value on the display.

\*Caution:

- a. The Frequency Mode only applies to measure high frequency with low voltage.

(9) Auto Power Off

1. The product automatically powers off after 15 minutes of inactivity;
2. The built-in beeper beeps 5 times 1 minute before power off;
3. To restart the product, press SELECT button;
4. To disable the Auto Power Off function, hold down the SELECT button when turning on the product, you will hear five beeps if you have successfully disabled the function.

E. General Maintenance

Beyond replacing batteries and fuses, do not attempt to repair or service the product unless you are qualified to do so and have the relevant calibration, performance test, and service instructions.

- (1) Do not operate the product around hot, wet, flammable, explosive or magnetic environments.
- (2) Clean the product with damp cloth and mild detergent; do not use abrasives or solvents.
- (3) Remove the input signals before you clean the product.
- (4) Remove the batteries if you will not use the product for a long time to prevent possible battery leak.
- (5) When "⚠" is shown on the display, batteries shall be replaced as below:
  1. Loosen the screw and remove the battery cover;
  2. Replace the used batteries with new batteries of the same type;
  3. Place the battery cover back and fasten the screw.
- (6) Replace fuses as above steps. Use only fuses of the same type as the original ones.

**Warning:**

1. Do NOT exceed the "maximum value" indicated in the Specification;
2. Do NOT input voltage at the the Resistance Mode, the Diode Mode, or the Continuity Mode;
3. Do NOT use the product when the batteries or the battery cover is not placed properly;
4. Turn off the product and remove the test leads from the test points before changing batteries or fuses.

F. Troubleshooting

If your product do not function as normal, the following steps may help you. If the problem still cannot be solved, please contact your dealer.

| Problem               | Possible Reason                |
|-----------------------|--------------------------------|
| Display Multifunction | Low battery; replace batteries |
| ⚠ Symbol              | Replace batteries              |
| No current input      | Replace fuse                   |

### LIMITED WARRANTY AND LIMITATION OF LIABILITY

Customers enjoy one-year warranty from the date of purchase. This warranty does not cover fuses, disposable batteries, or damage from accident, neglect, misuse, alternation, contamination, or abnormal conditions of operation or handling.

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