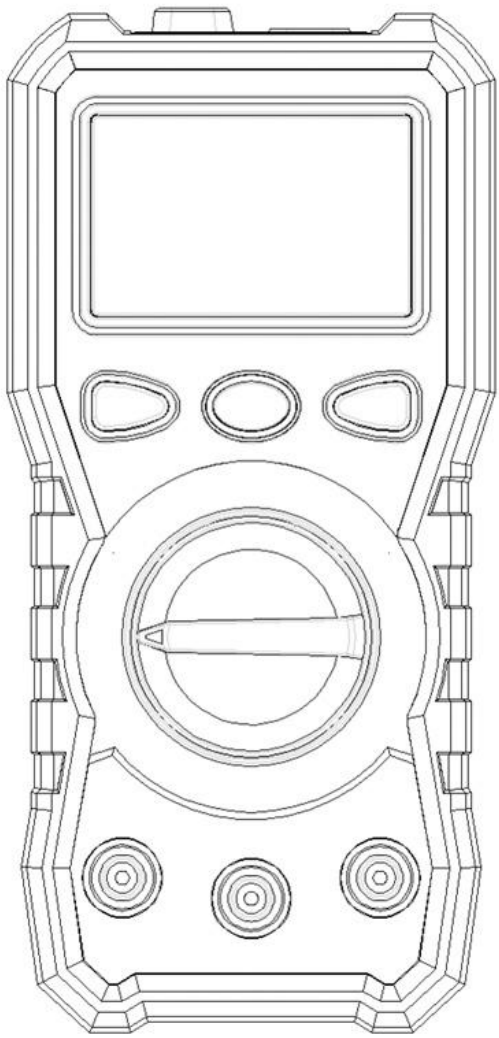
BACK LIGHT

DIGITAL MULTIMETER



OPERATOR'S MANUAL

LIMITED WARRANTY AND LIMITATION OF LIABILITY

This product will be free from defects in material and workmanship for one year from the date of purchase. This warranty does not cover fuses, disposable batteries, or damage from accident, neglect, misuse, alteration, contamination, or abnormal conditions of operation or handling. Resellers are not authorized to extend any other warranty on our behalf. To obtain service during the warranty period, return the unit to point of purchase or to Service Center by freight prepare with a description of the problem.

THIS WARRANTY IS YOUR ONLY REMEDY. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. WE ARE NOT LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, ARISING FROM ANY CAUSE OR THEORY. Since some states or countries do not allow the exclusion or limitation of an implied warranty or of incidental or consequential damages, this limitation of liability may not apply to you.



WARNING AND PRECAUTIONS

To avoid possible electric shock or personal injury, and to avoid possible damage to the meter or to the equipment under test, comply with the follow practices:

- ✧ Do not use the meter if it is damaged. Before you use the meter, inspect the case. Pay particular attention to the insulation surrounding the connectors.
- ✧ Inspect the test leads for damaged insulation or exposed metal. Check the test leads for continuity. Replace damaged test leads before you use the meter.
- ✧ Do not use the meter if it operates abnormally. Protection may be impaired. When in doubt, have the meter serviced.
- ✧ Do not operate the meter around explosive gas, vapor, or dust.
- ✧ Do not apply more than the rated voltage, as marked on the meter, between terminals or between any terminal and earth ground.
- ✧ Before use, verify the meter's operation by measuring a known voltage.
- ✧ When measuring current, turn off circuit power before connecting the meter in the circuit.

- ✧ When servicing the meter, use only specified replacement parts. Do not use the Meter in a manner not specified by this manual or the safety features of the Meter may be impaired.
- ✧ Use with caution when working above 30V ac rms, 42V ac peak, or 60V dc. Such voltages pose a shock hazard.
- ✧ When using the probes, keep your fingers behind the finger guards on the probes.
- ✧ Connect the common test lead before you connect the live test lead. When you disconnect test leads, disconnect the live test lead first.
- ✧ Remove the test leads from the meter before you open the battery door.
- ✧ Do not operate the meter with the battery door or portions of the cover removed or loosened.
- ✧ To avoid false readings, which could lead to possible electric shock or personal injury, replace the batteries as soon as the low battery indicator (“ ”) appears.
- ✧ International symbols used on the Meter and in this manual are explained Table1.

Table 1. International Electrical Symbols

	AC (Alternating Current)
	DC (Direct Current)
	AC or DC
	Battery
	Safety information. Refer to the manual
	Dangerous voltage may be present
	Earth ground
	Fuse
	Conforms to European Union directive
	Double insulated

- ✧ Safety Compliance: EN 61010-1, 2000 CAT II 500V overvoltage standards. Do not measure voltages above 500V in Category II installations, but for professional engineer can measure upto DC1000V and AC 750V within CAT I.

Overvoltage installation categories per EN 61010-1, 2000: The Meter is designed to protect against transients in these categories:

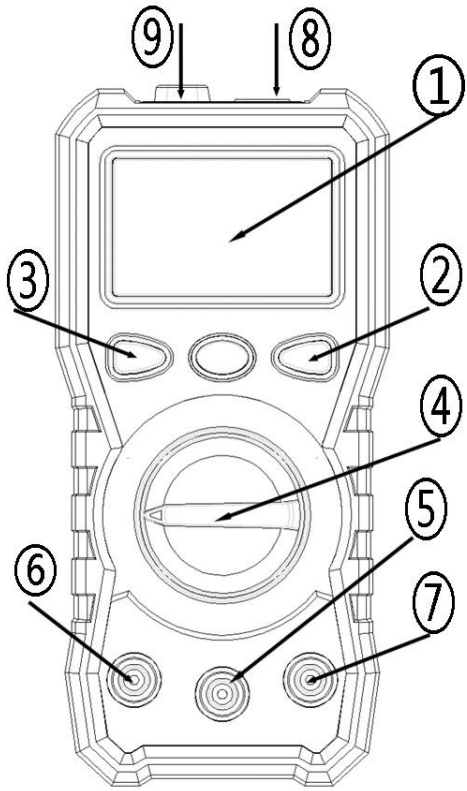
CAT I From high-voltage low-energy sources, e.g., electronic circuits or a copy machine.

CAT II From equipment supplied from the fixed installation, e.g., TVs,

PCs, portable tools and household appliances.
CAT III From equipment in fixed equipment installations, e.g., installation panels, feeders and short branch circuits, and lighting systems in large buildings.

General Specifications

- ✓ Maximum Voltage between any Terminal and Earth Ground: 600V
- ✓ Measurement rate: updates 2-3/sec.
- ✓ Over range indication: "1" figure only in the display
- ✓ Automatic negative polarity indication.
- ✓ The " " is displayed when the battery voltage drops below the operating voltage.
- ✓ Operating temperature: 0°C~40°C, 0~75% R.H.
  Storage temperature: -10°C~50°C, 0~75% R.H.
- ✓ Power supply: two standard 1.5v AAA batteries.
- ✓ Dimensions: 148L*74W*45Hmm.
- ✓ Weight: approx 140g (including battery)



FRONT PANEL DESCRIPTION

1. **LCD Display**
2. **HOLD /BACKGROUND LIGHT button**
3. **FUNCTION SWITCH button**
4. **FUNCTION AND RANGE SWITCH**

5. **“COM” JACK**
6. **“10A” JACK**
7. **“VΩmA⏚” JACK**
8. **Flashlight lighting**
9. **Non - contact voltage sensor**

SPECIFICATIONS

Accuracies are guaranteed for 1 year, 23℃±5℃, less than 80%RH

DC VOLTAGE

Range	Resolution	Accurate
200mV	0.1mV	±（1%+5）
2V	1mV	±（0.8%+2）
20V	10mV	±（0.8%+2）
200V	100mV	±（0.8%+2）
600V	1V	±（0.8%+5）

OVERLOAD PROTECTION: 220V rms AC for 200mV range and 600V DC or 600V rms for all ranges.

DC CURRENT

Range	Resolution	Accurate
2mA	1uA	±（1.5%+5）
20mA	10uA	±（1.5%+5）
200mA	0.1mA	±（1.5%+5）
10A	0.1A	±（2.5%+5）

OVERLOAD PROTECTION: 200mA 250V fuse (10A range unfused).

MEASURING VOLTAGE DROP: 200mV

AC VOLTAGE

Range	Resolution	Accurate
200V	100mV	±（2.0%+10）
600V	1V	

RESPONSE: Average responding, calibrated in rms of a sine wave.

FREQUENCY RANGE: 40Hz ~ 400Hz

OVERLOAD PROTECTION: 600V DC or 600V rms for all ranges.

CAPACITANCE

Range	Resolution	Accurate
20nF	10pF	±（3%+5）
200nF	100pF	±（3%+4）
20uF	10nF	±（3%+8）
2000uF	1uF	±（5%+10）

RESISTANCE

Range	Resolution	Accurate
200Ω	0.1Ω	±（1.5%+5）
20KΩ	10Ω	±（1.0%+4）
200KΩ	100Ω	±（1.0%+4）
2MΩ	1KΩ	±（1.0%+4）
200MΩ	100KΩ	±（4.0%+10）

MAXIMUM OPEN CIRCUIT VOLTAGE: 3.0V.

OVERLOAD PROTECTION: 15 seconds maximum 220Vrms.

OPERATING INSTRUCTIONS

WARNING

- **To avoid electrical shock hazard and or damage of the instrument, do not measure voltages that might exceed 600V above earth ground.**
- **Before the use of instrument, inspect test leads, connectors and probes for cracks, breaks, or crazes in the insulation.**
- **Dangerous voltages may be present at the input terminals and may not be displayed.**
- **To avoid electrical shock or damage to the Meter when measuring resistance or continuity in a circuit, make sure the power to the circuit is turned off and all capacitors are discharged.**

DC & AC VOLTAGE MEASUREMENT

1. Connect red test lead to “VΩmA⊣⊢” jack, Black lead to “COM” jack.
2. Set RANGE switch to desired VOLTAGE position, if the voltage to be measured is not known before hand, set switch to the highest range and reduce it until satisfactory reading is obtained.

3. Connect test leads to device or circuit being measured.
4. Turn on power of the device or circuit being measured voltage value will appear on Digital Display along with the voltage polarity.

DC CURRENT MEASUREMENT

1. Red lead to “VΩmA ⊣⊢ ”. Black lead to “COM” (for measurements between 200mA and 10A connect red lead to “10A” jack with fully depressed.)
2. RANGE switch to desired DCA position.
3. Open the circuit to be measured, and connected test leads INSERIES with the load in with current is to measure.
4. Read current value on Digital Display.
5. Additionally, “10A” function is designed for intermittent use only. Maximum contact time of the test leads with the circuit is 15 seconds, with a minimum intermission time of seconds between tests.

RESISTANCE MEASUREMENT

1. Red lead to “VΩmA⊣⊢”. Black lead to “COM”.
2. RANGE switch to desired OHM position.
3. If the resistance being measured is connected to a circuit, turn off power and discharge all capacitors before measurement.
4. Connect test leads to circuit being measured.
5. Read resistance value on Digital Display.

DIODE MEASUREMENT

1. Red lead to “VΩmA⊣⊢”, Black lead to “COM”.
2. RANGE switch to “⊣◀•))) ” position.And press "SEL" to select the (⊣◀⊢) function.
3. Connect the red test lead to the anode of the diode to be measured and black test lead to cathode.
4. The forward voltage drop in mV will be displayed. If the diode is reversed, f “OL” will be shown.

AUDIBLE CONTINUITY TEST

1. Red lead to “VΩmA⊣⊢”, Black lead to “COM”.
2. RANGE switch to “⊣◀•))) ” position.And press "SEL" to select the (•))) function.

Connect test leads to two points of circuit to be tested. If the resistance is lower than 30Ω±20Ω, the buzzer will sound.

CAPACITANCE MEASUREMENT

1. Red lead to “VΩmA⊣⊢”, Black lead to “COM”.
2. RANGE switch to desired Capacitance position.
3. Turn off power and discharge all capacitors before measurement.
4. Connect the test lead to both ends of the capacitance under test.
5. Read Capacitance value on Digital Display.

INDUCED VOLTAGE TEST

1. RANGE switch to desired “**NCV**” position.
2. The induced voltage sensor above the table is close to the ac charged body.
3. When the sensor detects the presence of ac voltage, the buzzer will sound and the display screen will display the intensity of the corresponding induced voltage.

MAINTENANCE

To clean the terminals

a) Turn the Meter OFF and remove the test leads.

b) Shake out any dirt that may be in the terminals.

c) Soak a new swab with isopropyl alcohol and work around the inside of each input terminal.

d) Use a new swab to apply a light coat of fine machine oil to the inside of each terminal.

BATTERY REPLACEMENT

1)Battery replacement should only be done after the test leads have been disconnected and power is off.

2)Remove the battery cover at the bottom.

3)The meter is powered by two single 1.5V battery.Remove the old battery from the battery bin at the bottom of the meter and reload the new battery.And cover the battery cover.

Button function

1. “SEL” : Function selection button .

2.“☼/H”: Short press this button to hold/release the value;

Long press this button for 2 seconds to turn the screen backlight and lighting on/off.

ACCESSORIES

- ✓ Operator’s instruction manual
- ✓ Set of test leads(CAT II 600V 10A ⧈, work)
- ✓ 1.5v AAA battery X 2