Introduction

The instrument of this series is a small hand-held 3 1/2 digital multimeter featuring stable, highly reliable and anti-drop performance. It is provided with a LCD display of 15 mm height for clear reading. The circuit design takes LSI double integral A/D converter as its core under the protection of an overload protection circuit, making it a superior and handy instrument. It can be used to measure DC and AC voltage, DC current resistance, diodes and for in-circuit continuity test.

Front Panel

1. Display

3 1/2 digital, 15 mm height, 7 sections LCD display.

2. Function and range switch

Select different functions and range.

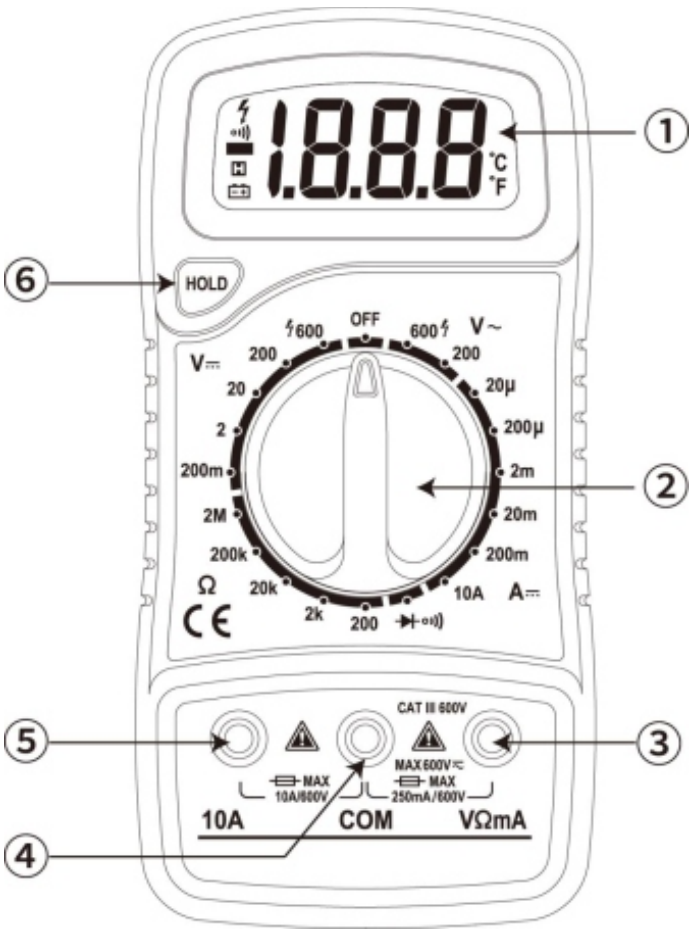
3. V.Ω.mA Jack

4. COM Jack

5. 10A Jack

6. Data hold button

Press the HOLD button. The LCD will hold the last reading measured and display the H symbol. When the button is released, the instrument will return to normal.



Safety Information

Digital multimeters are designed based on IEC61010 600V (CATIII) and pollution degree 2.

To ensure the safe and accurate use, please read the instruction manual carefully.

Safety Signs

Important safety information. Read the manual.

High voltage with danger.

Earth ground.

Double insulation(Class II safety equipment).

Fuse must be replaced as per the specification herein.

The product must not be disposed with household waste. Dispose of the product appropriately in accordance with the national regulations in force in your country.

Notices

- The instrument can only be used in conjunction with the probe for the compliance with safety standards. If the probe needs replacing due to damage, the replacement must be of the same type or the same electrical specifications.
- Do not exceed the input limits specified for each range. When the instrument is measuring, do not touch the input terminal not in use.
- When a measurement range is uncertain, turn the function/range switch to the maximum range position.
- Before turning the function/range switch, make sure the probe is open with the circuit being measured.
- Before on-line resistance measurement, turn off all power and discharge all capacitors.
- Be careful when taking measurement of voltage higher than 60V DC/30V AC. Remember to keep your fingers behind the hand shield of the probe.
- When measuring a TV set or switch power supply, watch for pulse

in the circuit that may damage the multimeter.

Maintenance

Before opening the case, always disconnect test leads from all energized circuits.

For continue protection against fire; replace fuse only with the specified voltage and current ratings:

F250mA/600V(Quick Acting);

F10A/600V(Quick Acting);

Never use the meter unless the back cover is in place and fastened completely.

Do not use abrasives or solvents on the meter. To clean it using a damp cloth and mild detergent only.

Technical data

Accuracy： ± % of reading 5 digits, one year warranty.

Ambient temperature：18°C to 28°C.

Ambient humidity：80%.

General features

Maximum voltage between terminals and earth ground	CAT III 600V
Fuse protection	F250mA/600V; F10A/600V
Power	9V battery, NEDA 1604 or 6F22
Display	LCD, 1999 counts, updates 2-3 sec.

Measuring method	Dual-slope integration A/D converter
Over range Indication	Only figure “OL” on the display
Polarity indication	“-”displayed for negative polarity
Operating Environment	0 to 40℃
Storage temperature	-10℃ to 50℃.
Low battery indication	“ ”appears on the display
IP	20
Size	138mm×69mm×31mm
Weight	Approx.170g.

DC Voltage

Range	Resolution	Accuracy
200mV	100μV	±0.5% of rdg ± 3 digits
2V	1mV	±0.5% of rdg ± 3 digits
20V	10mV	±0.5% of rdg ± 3 digits
200V	100mV	±0.5% of rdg ± 3 digits
600V	1V	±0.8% of rdg ± 3 digits

Overload Protection: 200mV range: 250V DC or AC RMS.

The rest ranges: 600V DC or AC RMS.

DC Current

Range	Resolution	Accuracy
20μA	0.01μA	±1% of rdg ± 3 digits
200μA	0.1μA	±1% of rdg ± 3 digits

2mA	1μA	± 1% of rdg ± 3 digits
20mA	10μA	± 1% of rdg ± 5 digits
200mA	100μA	± 1.5% of rdg ± 5 digits
10A	10mA	± 3% of rdg ± 10 digits

Overload Protection: F250mA/600V fuse; F10A/600V fuse.

AC Voltage

Range	Resolution	Accuracy
200V	100mV	± 1.2 % of rdg ± 10 digits
600V	1V	± 1.2 % of rdg ± 10 digits

Overload Protection: 600V DC or AC RMS.

Frequency range: 40Hz to 400Hz.

Display: Average(effective value of sinusoid).

Resistance

Range	Resolution	Accuracy
200Ω	0.1Ω	±0.8% of rdg ± 5 digits
2kΩ	1Ω	±0.8% of rdg ± 2 digits
20kΩ	10Ω	±0.8% of rdg ± 2 digits
200kΩ	100Ω	±0.8% of rdg ± 2 digits
2MΩ	1kΩ	±1.0% of rdg ± 5 digits

Maximum Open Circuit Voltage: 3.2V

Overload Protection: 600V DC or AC RMS.

Diode/Connectivity

Range	Description
	Displays the approximate diode positive voltage.

	When the on-resistance is smaller than (70±30)Ω, the built the-in buzzer will beep.

Overload Protection: 600V DC or AC RMS.

Instructions

Notices before operation:

1. Plug the instrument in. check the 9V battery. If it is low, the symbol will display, requiring battery replacement; otherwise follow the steps below.
2. The besides the probe jack indicates that the input voltage or current should not exceed the specif1edlimits to protect the internal circuit.
3. Before measurement, turn the function/range switch to the desired range.

DC Voltage Measurement

1. Insert the red probe into the **V.Ω.mA** jack and the black one into the **COM** jack.
2. Turn the function/range switch to the range of and connect the probe to the power supply or load to be measured. The polarity touched by the red probe will be on the display.

Notice

1. **If you do not know the measured voltage range in advance, set the function/range switch to the maximum range, and then gradually turn to smaller ranges until satisfactory resolution.**
2. **If the display shows "OL", this indicates an over-range measurement, and the switch should be set to a higher range.**
3. **Do not input a voltage of more than 600V, it is capable of indicating a higher voltage, but with the risk of damaging the inside circuit.**
4. **When taking the measurement of high voltage. Pay special attention to avoid an electric shock.**

DC Current Measurement

1. Place the black probe into the **COM** jack. For current to be measured not exceeding 200mA, put the red one into the **V. Ω.mA** jack. For current to be measured between 200mA and 10A, insert the red probe into the **10A** jack.
2. Set the function/range switch to the desired A⎓ range, and connect the probe in series with the load to be measured. The current value and the polarity connected to the red probe will be shown on the display.

Notice

1. **If you do not know the measured voltage range in advance, set the function/range switch to the maximum range, and then gradually turn to smaller ranges until satisfactory resolution.**
2. **If the display shows "OL", this indicates an over-range measurement, and the switch should be set to a higher range.**
3. **The symbol ⚠ beside the probe indicates the maximum input current is 200mA or 10A, depending on the inserted jack. Overcurrent will blow the fuse.**

AC Voltage Measurement

1. Place the red probe into the **V.Ω.mA** jack and the black one into the **COM** jack.
2. Turn the switch to **V~** and connect the probe to the power supply to be measured.

Note:

Refer to point 1, 2, 3, and 4 for DC Voltage Measurement.

Resistance Measurement

1. Place the black probe into the **COM** jack and the red one into the **V.Ω.mA** jack.
2. Turn the switch to the **COM** jack, and connect the probe to the resistor being measured and read the results on the display.

Notice

1. If the resistor being measured is greater than the maximum value of the selected range, the display will show "OL", requiring the selection of a higher range. It normally takes a few seconds for the reading to get stable when measuring a resistor larger than 1 MΩ.
2. In default of input, for instance, open circuit, the display shows "OL".
3. When measuring an online resistor, de-energized the circuit being measured and discharge all capacitors.

Diode Test

1. Insert the black probe into the **COM** socket and the red one into the **V.Ω.mA**, then the red probe will be of positive polarity.
2. Tum the switch to the range, and connect the red probe to the positive pole of the diode being measured and the black one to the negative pole. Read the approximate forward voltage drop of the diode on the display.

Connectivity Measurement

1. Insert the black probe into the **COM** jack and the red one into the **V.Ω.mA** jack.
2. Turn the switch to the position and connect the probes in parallel with two points of the circuit being measured. If the resistance between the two points is less than 100Ω, the built-in buzzer will beep to indicate the continuity between the two points.

Replacement of battery and fuse

1. Under normal conditions, it is unnecessary to replace the fuse. Don't replace it until the probes are unplugged and the power is shut down. Take out the two screws of the rear cover to remove the housing.
2. The specification of the fuse is:
   F1 250mA/600V;
   F2 10A/600V.
   The replacement should be of the same specification.
3. The battery for this multimeter is 9V NEDA 1604 or 6F22. The replacement should be of the same specification.
4. Don't put the instrument into use until the rear cover is screwed after replacing battery or fuse.

⚠ WARNING

To avoid electric shock, make sure the probes are disconnected from the measured circuit before removing the rear cover.

Make sure the rear cover is tightly screwed before using the instrument.

Attachments

- Instruction Manual: one copy
- Probe: one pair
- Package: one piece
- 9V battery NEDA 1604 or 6F22: one provided(in the multimeter)
- Rubber case (Optional)