



User manual

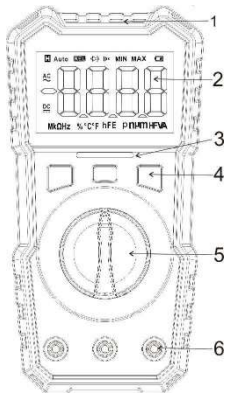
AX-104A Compact Digital Multimeter





Introduction

This multimeter has been designed as a higher stable, reliable & robust digital electronic measuring tool, with and inbuilt 31.5mm font height LCD display to show readings clearly. Inbuilt into the circuitry is an accurate Analogue to Digital converter, allowing this multimeter to measure AC/DC Voltage, AC/DC current, Resistance, Temperature Test, Diode Test, Continuity, NCV, Live Wire and Battery Test. With an inbuilt backlight and flashlight allowing the user to read values in dark environment. To fully understand the safe usage & features of this meter, please read this manual carefully & keep it in a safe for future reference.



Panel Description

1. NCV induction position
2. LCD display: font height 31.5mm
3. NCV indicator
4. Function button
MIN
MAX
REL Slight press to shift MAX/MIN, holding press to exit MAX/MIN; activate or exit REL measuring mode in same method
5. Function selection rotary switch
Flash light
H slight press to activate data hold, holding press to activate back light display
6. Input jacks

Safety Information

This multimeter has been designed according to IEC1010 concerning electronic measuring instruments with 600V CAT III and pollution 2.

This symbol indicates that the operator must refer to an explanation in the operating instruction to avoid personal injury or damage to the meter.

Grounding High Voltage Double insulation

Cautions:

- Improper use of this meter can cause damage, shock, injury or death. Read and understand this user manual before operating the meter.
- Always remove the test leads before replacing the battery or fuses.
- Inspect the condition of the test leads and the meter itself for any damage before operating the meter.
- Use great care when making measurements if the voltages are greater 30VAC RMS or 60V DC, these voltages are considered a shock hazard.
- Always discharge capacitors and remove power from the device under test before performing Diode, Resistance or Continuity tests.
- To avoid damages to the meter, do not exceed the maximum limits of the input values shown in the specification.
- In case the device is going to be unused for an extended period of time, remove the batteries to prevent them from draining.

Maintenance

- To avoid electric shock, disconnect the test leads from any source of voltage before removing the back cover or the battery or fuse covers.
- To avoid electric shock, do not operate the meter until the battery and fuse covers are in place and fastened securely.
- To protect circuit, replace the fuse must be in same specification.
- Do not use clean the housing case of meter by using chemical solvent

Technical Specifications

- Accuracy: \pm (%readings + digit), warranty period: 12 months





- Environment temperature: 18°C~28°C; humidity: ≤80%
- Maximum between voltage input and grounding: CATIII 600V
- Fuse: F200mA/250V, F10A/250V
- Battery: 1.5V AAA x 2 (not included)
- Auto power off: automatically power off about 15 minutes after meter switched on
- Max display: 2000 count
- Overload display: "OL"
- Polarity display: negative "-"
- Operating temperature: 0°C-40°C
- Storage temperature: -10°C-50°C
- Low battery indication:
- Dimension: 150x75x47mm
- Weight: about 300g (include batteries)

DC & AC Voltage

Range	Resolution	DCV Accuracy	ACV Accuracy
20mV	10μV	±1.0%±5	±1.0%±10
200mV	100μV	±0.5%±3	±1.0%±10
2V	1mV	±0.5%±3	±1.0%±10
20V	10mV	±0.8%±3	±1.0%±10
200V	100mV	±0.8%±3	±1.0%±10
600V	1V	±0.8%±5	±1.0%±10

Input impedance:10MΩ

Overload protection:200mV range at 250V DC or 250V AC RMS;
other ranges at 600V DC or 600V AC RMS

Frequency range: 40Hz - 1000Hz,

Display: TRUE RMS

DC & AC Current

Range	Resolution	DCA Accuracy	ACA Accuracy
200uA	0.1μA	±1.0%±5	±1.8%±5
2000uA	1μA	±1.0%±5	±1.8%±5
20mA	10μA	±1.0%±5	±1.8%±5
200mA	100μA	±2.0%±5	±2.5%±5
2A	1mA	±3.0%±5	±3.0%±5
10A	10mA	±3.0%±5	±3.0%±5

Overload protection: fuse F200mA/250V for mA range

fuse F10A/250V for 10A range

Frequency range: 40Hz - 1000Hz, Display: TRUE RMS

Resistance

Range	Resolution	Accuracy
200Ω	0.1Ω	±1.0%±5
2kΩ	1Ω	±1.0%±5
20kΩ	10Ω	±1.0%±5
200kΩ	100Ω	±1.0%±5
2MΩ	1kΩ	±1.0%±5
20MΩ	10kΩ	±1.2%±8

Overload protection:250V DC or 250V AC RMS





Diode and Continuity

Range	Description
Buzzer	Built-in buzzer will be sounded if resistance is less than $50\Omega \pm 30\Omega$
Diode	Display approximate forward voltage of diode

Overload protection: 250V DC or 250V AC RMS

Temperature

Unit	Range	Resolution	Accuracy
°C	-20°C~0°C	1°C	±4°C
	0°C~400°C		±(2.0%+3d)
	400°C~1000°C		±(3.0%+3d)
°F	-4°F~50°F	1°F	±5°F
	50°F~750°F		±(2.0%+5d)
	750°F~1832°F		±(3.0%+5d)

Overload protection: 250V DC or 250V AC RMS

Battery Test

Range	Display Value	Resolution
1.5V	1.5V	0.001V
3V	3V	0.01V
9V	9V	0.01V

Overload protection: 250V DC or 250V AC RMS

Non-Contact Voltage Detection


AC Voltage range > 30V - 1000V (50Hz-60Hz)

Live Wire Recognition

AC Voltage range > 100V - 250V (50Hz-60Hz)

Operation Instruction

Tips before operation:

- power on the meter and check the battery status, if  displays in LCD, please change the new batteries.
- To avoid damage to the meter, do not attempt to take any voltage or current exceed the rating values.
- Before the measurement, put the rotary switch to the desired range.

Voltage Measurement

1. Insert the red test lead into "VΩmA" jack and insert black test lead into "COM" jack.
2. Set the rotary switch to "mV" or "V" range, touch the test lead probe tips to the circuit under test, and the voltage value will be displayed in LCD.

Note:

- Set the rotary switch to higher range if not known the voltage range under test, and then lower down till the best accuracy.
- To avoid electrical shock and/or damage to the instrument, do not attempt to take any voltage measurement that might exceed 600VRMS.
- It is normal situation and no effect on measurement, once at mV or V range, even without input or connect with test lead, meter shows value in LCD.

Current Measurement

1. Insert black test lead into COM jack, for the current measurement lower 200mA, insert the red test lead into "VΩmA" jack; for current measurement between 200mA to 10A; insert the red test lead into 10A jack.





2. Set the rotary switch to the "DCA" or "ACA" range, touch the test lead probe tips to the circuit under test, the current value and the red test lead polarity will be displayed in LCD.

Note:

- Set the rotary switch to higher range if not known the current range under test, and then lower down till the best accuracy.
- If display "OL" for over range, set the rotary switch to higher range.
- Δ indicates the max current is 200mA or 10A based on jacks the red test lead to be inserted, fuse will be blown out at over-range current.

Resistance Measurement

1. Insert black test lead into "COM" jack, and red test lead into "V Ω mA" jack.
2. Set the rotary switch to Ω range and touch the test lead to under-tested resistance and read the value from LCD.

Note:

- For measuring over 1M Ω high resistance, the meter may take a few seconds to stabilize the readings.
- In the open circuit, the meter display **OL** to indicate no input value
- To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements.

Diode Test

1. Insert black test lead into "COM" jack, and red test lead into "V Ω mA" jack, the polarity of red test lead is "+".
2. Set the rotary switch to $\rightarrow +$ range, place the red test lead on the anode of diode and black test lead on the cathode of diode, the meter will show the approx. forward voltage of diode.

Continuity Check

1. Insert black test lead into "COM" jack, and red test lead into "V Ω mA" jack.
2. Set the rotary switch to $\rightarrow \text{buzzer}$ range, touch the test leads to both points of circuit, if the resistance between two points less than 50 $\Omega \pm 30\Omega$, the inbuilt buzzer will be sounded

Temperature Measurement

1. Set the rotary switch to $^{\circ}\text{C}/^{\circ}\text{F}$ range, the value of environmental temperature shows in LCD display
2. Insert the red terminal of temperature probe (K Type) into the $^{\circ}\text{C}/^{\circ}\text{F}$ jack, black terminal into **COM** jack, place the temperature probe tip where needed to measure.
3. Read the temperature value in LCD display.

Note:

Since cold-junction compensating circuit stalled inside meter, due to good sealing of meter, it takes long time to reach the thermal balance with the measuring environment, the meter needs to be placed in the measuring environments for a longer time to get the more accurate readings.

Battery Test

1. Insert black test lead into "COM" jack, and red test lead into "V Ω mA" jack. The polarity of the red test lead is "+".
2. Set the rotary switch to "BAT" range.
3. Put the red test lead tip to positive of battery and black test lead tip to negative of battery.

Non-Contact Voltage(NCV) Detection

1. Set the rotary switch to **NCV** range and LCD display "EF".
2. Contact the top part of meter with the circuit under test, the audible alert signal will be sounded once voltage exists.

Note:

- The detection result is for reference, do not determine the voltage by NCV detection ONLY.
- Detection may interfere by socket design, insulation thickness and other variable conditions.
- The external interference sources, such as flashlight, motor, etc, may cause the wrong detection.

Live Wire Recognition(Live)

1. Set the rotary switch to **Live** range and LCD display "LIVE".
2. Insert red test lead into V Ω jack and place the red test lead tip to contact AC Voltage. Once meter makes alarm sound and LCD shows "LIVE", means the wire under test is live wire.






Note:

- When the circuit is in serious leakage, the red test lead even contact earth line, the buzzer of meter will be sounded.
- Detection may interfere by socket design, insulation thickness and other variable conditions.
- The external interference sources, such as flashlight, motor, etc, may cause the wrong detection.

Battery and Fuse Replacement

1. To avoid electric shock, disconnect the test leads from any source of voltage before removing the back cover or the battery or fuse covers.
2. To avoid electric shock, do not operate the meter until the battery and fuse covers are in place and fastened securely.
3. Once battery indicator  appears, please open the battery cover and replace the same type battery into battery holder, after that put the battery cover back in place and secure with the screws.
4. If change the fuse, gently remove the old fuse and install the new fuse into fuse holder, and ensure the fuse specification is the same as original fuse, after that, replace and secure the rear cover.

