



DIGITAL MULTIMETER

AX-101B

OPERATION MANUAL





I. GENERAL

The instrument is a featured , stable and security small hand-held 31/2 digital multimeter. The instrument has the function of measuring DCV, ACV, DCA, resistance, temperature, diode positive drop and continuity test, thus it is a portable and desirable tool for users. The operation manual includes the relevant safety information and warning notice , Please read it carefully and strictly follow all the precautions .

II. OPEN-CASE INSPECTION


Open the case and take out the instrument , Please carefully check the below accessories if damaged or missing .

- 1.Operation manual 1 pcs
- 2.Test leads 1 pair
- 3.Holster 1 pcs

Please immediately contact with suppliers if found any missing or damaged .











III.SAFETY PRECAUTIONS

Please note the safety symbols and warning notice. This series meter designed and produced strictly follow the electronic measurement safety requirement of GB4793.1 and safety standard of IEC61010 , meet the standard of double insulation ,overvoltage and pollution lever II . Please follow the instructions in this manual to operate the meter ,otherwise the performance of instruction protection may be weakened or lost .

- 1.Before operation , ensure that the insulation layer of test leads remains unwounded . Do not operate the meter if test leads cable or housing insulation is obviously damaged.
- 2.When operating the meter , should put the finger on the back of the protection ring on the test leads.
- 3.Do not input a voltage over 500V between instrument terminal and ground to avoid electronic shock and the damage of the meter .
- 4.Be carefully to operate when the measured voltage is higher than DC 60V and AC 42Vrms to prevent electronic shock .
- 5.Don't operate instrument if back-cover is not locked ,it has the risk of electronic shock .
- 6.The measured signal shouldn't exceed specified limited value to prevent electronic shock and instrument damage .
7. Do not change range when measuring to avoid instrument damage .
- 8.Do not test voltage in current terminal .
- 9.Use the same nominal specifications of fast fuse to replace the bad fuse .
- 10.Don't alter internal wiring of the instrument to prevent damage .
- 11.When the LCD displays  symbol, batteries should be replaced in time to ensure the accuracy of measurement .
- 12.Do not operate instrument in wet ,hot and high magnetic field. Especially don't storage instrument in damp environment.
- 13.Wipe the case with a damp cloth and detergent ,do not use abrasives and alcohol.



IV. ELECTRONIC SYMBOLS

	WARNING!		DC
	HIGH VOLTAGE !		AC
	GND		DC & AC
	DUAL INSULATION		CONFORMITE EUROPEENNE
	LOW BATTERY		FUSE

V.GENERAL SPECIFICATION

The maximum voltage is 500V rms between the voltage input terminal and ground .

10A terminal : without fuse .

MA terminal fuse : $\varnothing 5 \times 20$ mm 200mA/250V

Range selector : manual


Backlight function : manual put on & off

Maximum display : 1999, update 2~3 times per second.

Polarity display : negative polarity input display .

Over range display : 1 .

Data hold function : left bottom of LCD displays H .

Low battery: LCD displays  symbol.

Built-in battery : 9V NEDA1604 /6F22 /006P.

Operation temperature: 0° ~40° (32° ~104°)

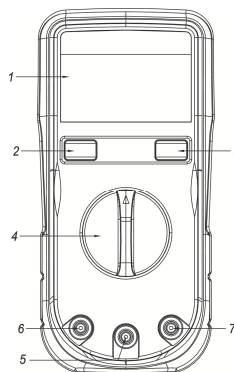
Storage temperature: - 10° ~50° (14° ~122°)

Dimensions : 150mm \times 73.5mm \times 35mm.

Gross weight: Approx:156g(include battery)

PANEL DESCRIPTION (FIG.1)

1. LCD Display
2. Data hold key
3. Backlight key
4. Range switch
5. GND input end
6. 10A current input terminal
7. Other measurement input end



VI.PANEL DESCRIPTION



1. Data hold display : Press the yellow colored "HOLD" key ,LCD display presents measured value . Press it again to exit the data hold function .
2. Backlight control : Press the yellow colored "B/L" key to turn on the backlight ,press it again to turn



off the backlight .

VII.MEASUREMENT OPERATION INSTRUCTION

Please check 9V battery first ,set the knob to a proper position ,When battery is running low ,the LCD displays

 symbol .Please pay attention to the  symbol beside the test leads jack .It's a warning that the voltage and current under test should not exceed prescribed value .

1.DCV MEASUREMENT (FIG.2)

1-1 Apply the red test lead to “VΩmA”terminal and the black one to “COM” terminal.


1-2 Set the knob to a proper DCV range , multiplied the test leads to the circuit under tested .

1-3 Read the measured value from the LCD .

NOTE:

Do not measure a voltage over 500V, or the circuit might be damaged .If the voltage range is unknown beforehand , set the knob to the highest range ,then select a proper range according to the displaying value.If LCD displays “1”,it means over range , set the knob to a higher range . On each range ,the input impedance of instrument is 10M Ω, such load effect may lead to measurement error when measuring high impedance circuit . If the circuit impedance under tested is lower than 10kΩ,error can be ignored .(0.1% or lower)

2.AC V MEASUREMENT

 Note and operation instruction are the same with DCV measurement .

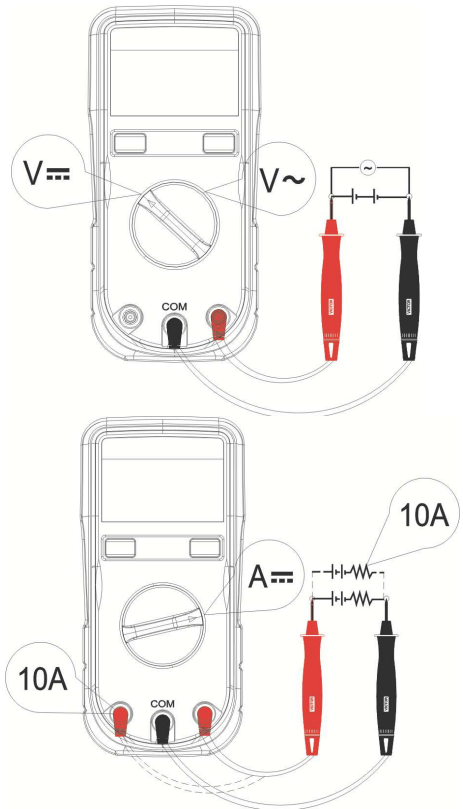
3.DCA MEASUREMENT (FIG.3)

3-1.Apply the red test lead to “VΩmA” terminal or “10A ” terminal ,the black one to “COM” terminal .

3-2.Set the knob to proper DCA range ,connect the meter to the circuit under tested .

3-3. Read the measured value from the LCD .

NOTE:Even it have overvoltage protection when measure current lower than 200mA. Do not measure DCA if the voltage between input impedance and ground is over 60V ,otherwise it may damage instrument and measuring



equipment ,and even bring the risk of electronic shock. Be sure to cut off power and check input terminal and the position of range knob.After confirmation, that there isn't any error, turn on power .If the current range under test is unknown beforehand , set the knob to the highest range ,select a proper range according to the displaying value.

mA input jack ,too large current will blow the fuse ,should replace the fuse .

The dimension of fuse is $\Phi 5 \times 20$ mm,electric dimension : 200mA250v ;

Have no fuse internal for10A input jack .

In order to operate safely, measurement time should be within 10sec.and next measurement should be after 15 minutes .

4.RESISTANCE MEASUREMENT (FIG.4)

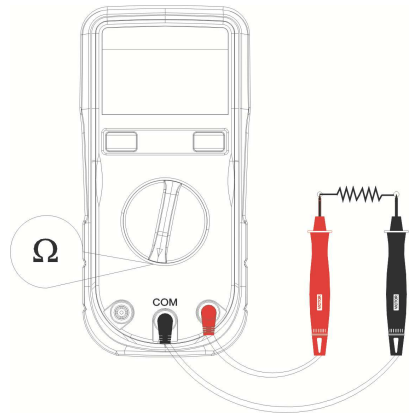
4-1.Apply the red test lead to “V Ω mA” terminal and the black one to “COM” terminal.

4-2.Set the fuction range knob to resistance range, multiplied the test leads to the resistance under tested .

4-3. Read the measured value from the LCD .

NOTE:To avoid the damage of the instrument, before measurement ensure that power is turned off and capacitors are released completely.

At 200 Ω range,it should make the test leads short to measure the wire resistance , then subtract from the real measurement. When the measured resistance is over 1M Ω ,the instrument needs a few seconds to make reading stable ,it's normal .



5.DIODE AND CONTINUITY TEST (FIG.5)

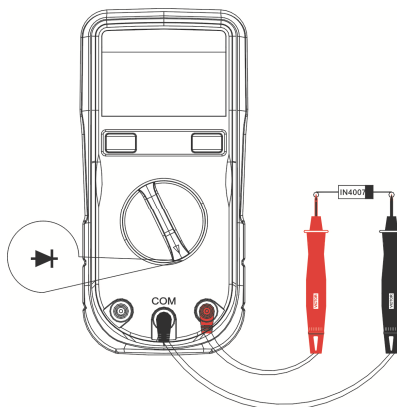
5-1.Apply the red test lead to “V Ω mA” terminal , the black one to “COM” terminal.

5-2.Set the knob “diode” range ,connect the red test lead to diode positive polarity,the black one to cathod polarity.

5-3.Read the measured value from the LCD.

5-4.Connect the test leads to both ends of the wire under tested .Built-in buzzer sounds when resistance between the two ends is lower than approx.70 Ω .

NOTE: To avoid the damage of the instrument, when online measure the diode, be sure that power is turned off and capacitors are released completely. Diode knob can be used to measure voltage drop of diode or even other semiconductor devices. The forward voltage drop reading should be 0.5V ~0.8V to a semiconductor devices with normal structure, it's open circuit when reverse voltage drop displays "1", The corresponding pole of black test leads is "+" and the red one is "-" .



6. SQUARE WAVE SIGNAL OUTPUT

Set the knob to square wave range, the instrument output square wave between

"VΩmA" and "COM".

NOTE: Square wave experiment signal with its rich harmonics can be used as a simple source repair equipment. The frequency is approx. 50Hz, the output amplitude is over 3V under 1MΩ load. The output terminal of red test lead should not touch voltage over 10V .

TECHNICAL FEATURES :

Accuracy : $\pm(\text{reading} * a\% + b * \text{digits})$

Environmental temperature $(23 \pm 5)^\circ$,

Relative humidity $< 75\%$,

Calibration warranty: one year from date of production

FUNCTION ("▲" indicates that this function is available)

FUNCTION	
DCV	▲
ACV	▲
DCA	▲
Ω	▲
CONTINUITY	▲
DIODE	▲
SQUARE WAVE OUTPUT	▲
BACKLIGHT	▲
DATA HOLD	▲





1.DCV

RANGE	ACCURACY	RESOLUTION
200mV	±(0.5%+2)	100µV
2V		1mV
20V		10mV
200V		100mV
500V	±(0.8%+2)	1V

Input impedance :all ranges :10MΩ;Overload protection:200mV range :250V DC or AC peak value,other range: 500V DC or AC peak value .

2.AC V

RANGE	ACCURACY	RESOLUTION
200V	±(1.2%+10)	100mV
500V		1V

Input impedance :Approx 5MΩ;
 Overload protection:500 V DC or AC peak value ;
 Frequency response: (40~400)Hz;
 Display:sine wave RMS

3.DCA

RANGE	ACCURACY	RESOLUTION
2mA	±(1.0%+2)	1µA
20mA		10µA
200mA	±(1.2%+2)	100µA
10A	±(2.0%+5)	10mA

Max.input current :10A(less than 10 sec.); overload protection:200mA/250V fast-melt fuse,no fuse on 10A range ,measuring time within 10 sec. , time interval over 15 minutes.


4.RESISTANCE

RANGE	ACCURACY	RESOLUTION
200 Ω	±(0.8%+5)	0.1 Ω
2K Ω		1 Ω
20K Ω		10 Ω
200K Ω	±(1.0%+5)	100 Ω
20M Ω		10k Ω
200M Ω		±[5.0%(reading-10)+20]

Overload protection: 250V DC or AC peak value;





5.SINE WAVE OUTPUT

RANGE	INSTRUCTION
	output value of sine wave signal is approx 50Hz.as a simple signal source ,output value of resistance is 47k Ω .

This instrument has no overload protection , the calibrated equipment input level should be less than 10V ,to avoid the damage of the instrument.

6.DIODE AND CONTINUITY MEASUREMENT

FUNCTION	RANGE	ACCURACY	REMARK
DIODE		1mV	display approximate value of forward voltage drop
CONTINUITY		1 Ω	If the resistance is less than 70 Ω ,buzzer sounds.

VIII.REPLACE BATTERY

When “” signal displays ,should replace the battery, following the steps:

- 1.Take away the test leads from circuit under tested and input jack . Set the knob to off gears and turn off the power .
- 2.Loosen the screws on battery case by screwdriver and remove the battery case.
- 3.Take out the old battery and replace the new one .
- 4.Fit on the battery case and tighten the screws .

IX.INSTRUMENT MAINTENANCE

This series of products is a kind of precise instrument ,do not try to modify the circuit.

1. Keep the meter away from water ,dust and shock .
- 2.Do not store and operate the meter under the condition of high temperature ,high humidity,combustible,explosive and strong magnetic place.
- 3.Wipe the case with a damp cloth and detergent ,do not use abrasives and alcohol.
- 4.If the meter is not in use for a long time , battery should be taken out to avoid leakage.
- 5.Fuse replacement

Use the same type fuse as specified .

