AX-7020 User's Manual

1. Overview

This is an analog multimeter with high accuracy. The safety performance has been improved greatly. It reaches CAT III 600V standard. It has 21 ranges, and can measure DC voltage, AC voltage, DC current, resistance and it has the continuity buzzer function.
(1) ⚠ Warning
To avoid electric shock, personal injury, instrument damage, please read relevant information of the warning and safety notes carefully before using this meter.
(2) ⚠ Safety Notes
This analog multimeter meets the EN61010 standard, CAT III 600V super-voltage standard. Please operate the meter according to the operation manual, otherwise the meter will be damaged.

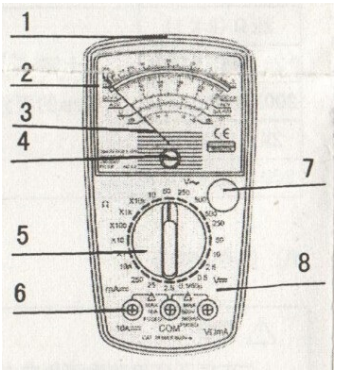
2. Safety Rules

- Check the meter cover before using. The meter does not work if broken or missing rubber part. Do not use this meter when meet these situation.
- Check the insulation of the test leads, whether it is damaged or its plain conductor is exposed and whether the test leads is regular. If the test leads is broken, please change a new one first and then use this meter.
- Check the meter if it works well by measuring the voltage. If the meter does not work, do not use it and send it to a professional staff for repairing.
- Do not input the voltage which excesses the rated voltage of the meter on the input terminal.
- Be careful to operate the meter when it is under 60V DCV or 30V ACV, it may bring electric shock danger .
- Do choose a correct input terminal and range.
- Do not measure voltage , current which is over range. When not sure about the range, turn to the MAX range and test. Before continuity measurement (online), cut off the power of the circuit which is under test, and keep all the capacitance out of power.
- When using test leads, you should keep your fingers behind the ring guard.
- Do not using or stocking the meter under high temperature, high humidity, flammable and combustible and strong electromagnetic field.
- When doing maintenance, please use soft cloth and neutral detergent clean the surface, do not use any abrasive or solvent, or it will corrodes the cover and bring damage.

3. Safety symbols

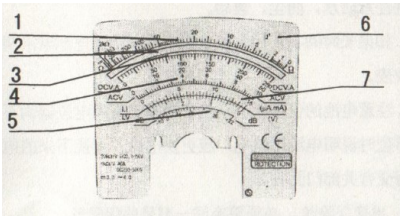
”⧈” - dual insulation
”⏚” - GND
”~” - AC
”⏛” - diode
”CE” - EURO STANDARD
”⚠” - must refer to manual
”⚠” - exists high voltage
”⎓ - DC
”⎓ - fuse
”⎓ - battery

4. Instrument Structure



1. Protection Holster
2. Meter Cover
3. Pointer
4.Mechanical Zero Regulator
5.Function Keys
6.Input Jack
7.Resistance Zero Regulator
8.Function Panel

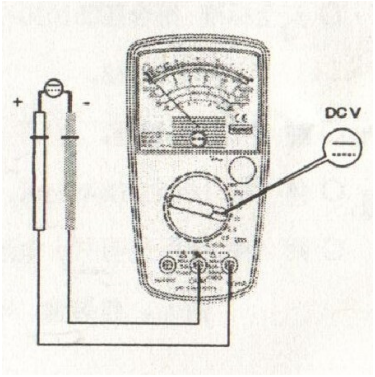
5. Dial Scale



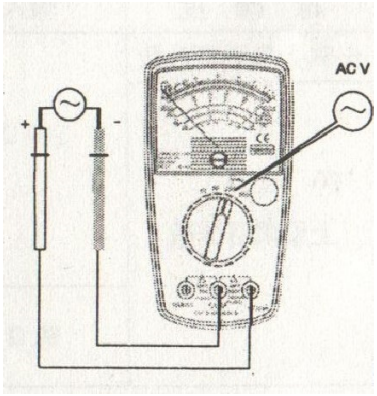
1. Resistance scale marks
2. Mirror slot
3. DC/AC scale marks
4. ACV scale marks, battery and resistance scale marks
5. DB scale marks
6. Diode positive current scale marks

6. Measuring Operation Instruction

⚠ Warning
Input terminal might has dangerous voltage, Operators should read the manual carefully before to use, and keep their fingers behind the ring guard when measuring.
1. DC voltage: (DCV)
Please switch to DCV range, and put the black and red test leads insert into the black jack and red jack correspondingly in the tested circuit, you can get DCV value. Operator can select DCV 500V, 250V, 50V, 10V, 2.5V, 0.5V, 0.1V, and read indicated value in the second scale mark on the dial.



2. AC voltage: (ACV)
Please switch to ACV range, and put the black and red test leads insert into the tested circuit, you can get ACV value. Operator can select ACV 500V, 250V, 50V, and read indicated value in the third scale mark on the dial.

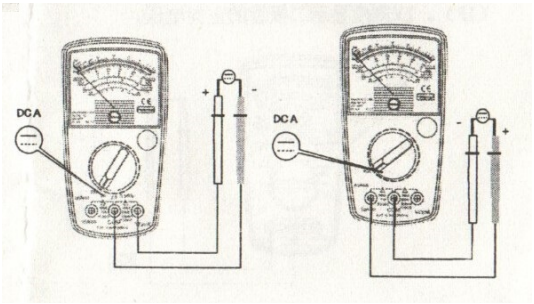


3. DC mA:

⚠ Warning

On DC mA range, the test leads can not test DCV and ACV, otherwise it might bring damge.

Please switch to DC mA range, and put the black and red test leads insert into the black jack and red jack correspondingly in the tested circuit, and then you can get the DC mA value from the second DC mA scale mark on the dial. When selecting DC 10A range, put the red test leads insert into 10A jack. It is in accordance with the principle of red positive and black negative.



4. Resistance: (Ω)

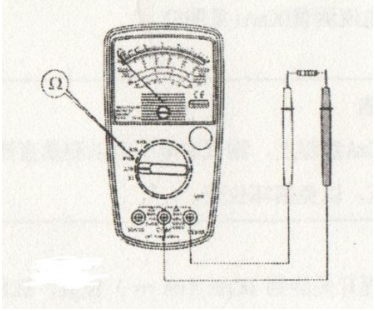
⚠ Warning

When measuring resistance, make sure the power of tested circuit already turned off, and keep all the capacitance out of power, then you can do the test. Or it will bring damage and electric shock danger.

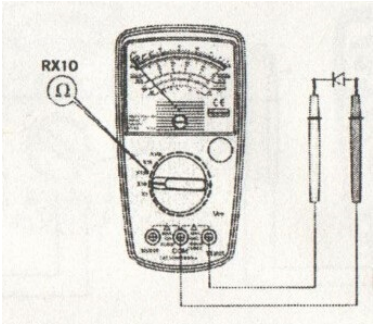
Please switch to Ω range, and adjust the pointer to be zero before measurement. Observe the pointer and check if it is in the zero position on the Ω scale mark. If not, rotate the zero regulator to make the point be zero. Then connect the testleads to the circuit and measure the resistance, you can get the value on the dial at the first scale mark.

When test leads is in short circuit, rotate Ω regulator and the pointer still can not point to zero. It indicates that the battery is low, you need to replace the battery with a new one.

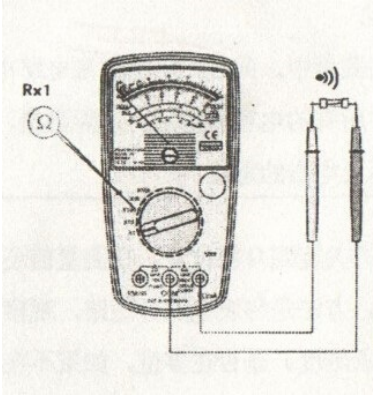
Pay attention to every range of resistance, and use above structures to set the pointer every time before use it. The value you get from different range should multiply by each multiplicand. The unit is Ω



5. LED Measurement
Please switch to Ω*10 range, the test leads connects the two terminals of the LED. The fourth LI scale mark will show diode positive current (IF), LV scale mark will show diode positive voltage.



6. Continuity Test
Please switch to BUZZ(Rx1) range, connect the testleads to the tested resistance. When the resistance value is below 100 Ω, the buzzer alarms.



7. Audio level measurement dB
The measurement way is like ACV measurement. When tested circuit contains DC part, it should series connect a blocking capacitor which capacitance is 0.1uF and withstand voltage is more than 500. Turn to range AC 10V, the fourth scale mark shows -10~22dB, and under other ACV range, the actual dBV should follow below ADD, dB form to conversion.

ACV	ADD	dB
10	0	-10~22
50	14	4~36
250	28	18~50
500	34	24~56

7. Technical index

1. General Features:
- Function: ACV, DCV, DCA, Ω, dB, Continuity test, Diode test.
- Power: UM-3(AA), 1.5V*2, 6F22, 9V*1
- Fuse: F0.5A/250V, Φ5*20mm
- Fuse: F10A/250V, Φ5*20mm
- Working environment:0℃-40℃ Humidity<70%RH
- Storage environment: -10℃-50℃ Humidity<70%RH
- Applicable altitude: below 2000m
- Safety standard: IEC61010-1 Cat III 600V

- Pollution grade: 2 level
- Net weight: Approx. 320g
- Dimension:168*95*46mm
- Accessories: User manual, color box. Battery not included

2. Electric property

Accuracy: DC ±3%, AC±4%, one year calibration period.

High accuracy working environment: 18℃-28℃, Humidity<75%RH

1 - Range

2 - Accuracy

3 - Input Impedance

4 - Voltage drop

5 - Center Value

DC voltage: (DCV)

1	2	3
0.1V	±5%	20KΩ/DCV
0.5V	±3%	
2.5V		
10V		
50V		
250V		9KΩ/DCV
500V		

AC voltage: (ACV)

1	2	3
10V	±4%	9KΩ/ACV
50V		
250V		
500V		

DC current: (DCA)

1	2	4
50uA	±3%	≤0.6V
2.5mA		
25mA		
250mA		
10A		≤0.12V

Resistance: (Ω)

1	2	5
2k Ω(RX1)	±3%	20
20k Ω(RX10)		
200k Ω(RX100)		
2M Ω(RX1k)		
20M Ω(RX10k)		

8. Maintenance

⚠ Warning
To avoid electric shock, the test leads must depart from the tested point before opening back cover.
1. It is a precision meter, so the operator should not change the circuit, and pay attention to waterproof, dustproof and vibration.
2. If you will not use the meter for a long time, please remember to take out the battery in case of the battery leakage and damage the meter.
3. Pay attention to the battery, when under Ωrange, the testleads short circuit and the potentiometer can not be set back to zero, that means it is under low battery, you should replace a new battery now.
4. You must replace the fuse with a new one in the same size.
5. If any issues with the meter, it must be repaired by the qualified professional staff.