AX-573 - Operation manual

1. SUMMARIZE

This meter is a stable multimeter with 28mm LCD display, driven by battery. It's widely used on measuring DCV, ACV, DCA, ACA, resistance, capacitance, frequency, diode, transistor, continuity test and with the function of auto power off and backlight . The meter takes integrated circuit as the core. It's an ideal tool for lab, factory, wireless lover and family.

2. OPEN PACKING FOR CHECKING

Open the box, take out the meter, check the items below if they are missing or damaging:
Manual * 1pc; Test lead * 1pair
Please contact with your supplier, if you find out any problems.

3. SAFETY NOTE

The meter meets the standards of IEC61010 (the safety standards or equal GB4793.1 standards request issued by IEC) Read the operation manual carefully before operation.
1.Do not input limit over-ranged.
2.The voltage below 36V is safety. To avoid electric shock, check whether the test leads connection is correct and insulation is fine when measuring over 36V DCV or 25V ACV. When input over 24V ACV or DCV, the warning symbol ϟ for high voltage will display
3.Remove the test leads when changing function and range.
4.To select correct function and range, beware of error operation; For your safety please note, although there is protective function of whole range for this series meters.
5.Do not operate the meter if the battery and back cover is not fixed.
6.Do not input voltage when measuring resistance, capacitance, diode, continuity test.
7.Remove test leads from test point and turn off the power before replacing battery and fuse.
8.SAFETY SYMBOL
" ⚠"EXISTS DANGEROUS VOLTAGE," ⏚" GND," ⧈"DUAL INSULATION
" ⚠"THE OPERATOR MUST REFER TO THE MANUAL ," 🔋"LOW BATTERY

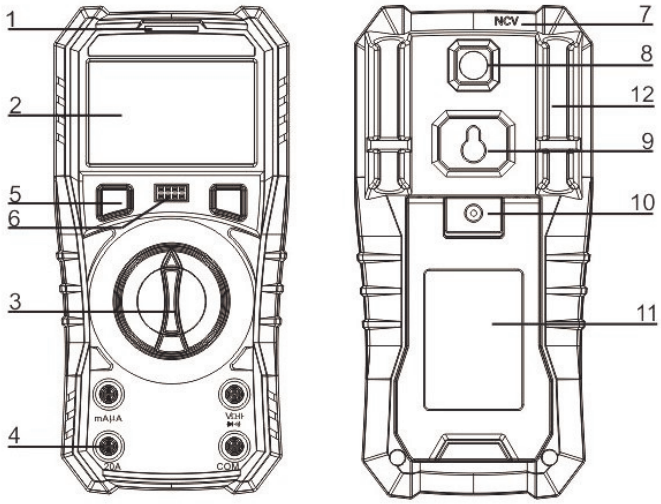
4. ELECTRIC SYMBOL

⚠ - Warning
⚠ - High voltage danger
⏚ - Ground
⧈ - Dual insulation
🪫 - Low battery voltage
⎓ - DC
~ - AC
≂ - AC abd DC
CE - Accord with order of the European Union
⎓ - Fuse

5. GENERAL CHARACTERISTIC

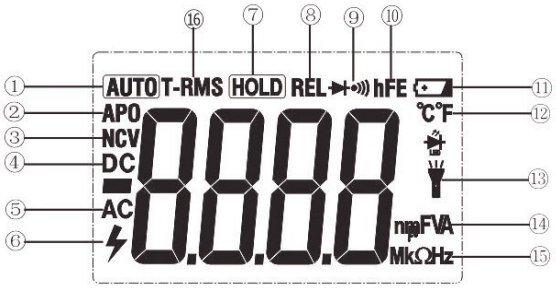
1.Display: LCD displaying
2.Max. displaying: 1999(3 1/2digit)auto polarity indication.
3.Measuring method: A/D conversion
4.Function of operation uninterruptable power.
5.Using panel calibrating technology
6.Sampling rate: approx. 3 times/second.
7.Over range indication: the MSD displays“OL”.
8.Low battery indication: “ 🪫” appears.
9.Operation environment: (0~40)℃,relative humidity < 75% R.H .
10. Storage environment: -20℃~60℃, relative humidity < 85% R.H .
11.Power:2 * 1.5V AA LR6 Battery;
12.Size: 178*86*52 mm (Length * Width * height)
13.Weight: approx. 358g(including battery).

6. FRONT PANEL DECRIPTION



1. Sound warning indicator
2. LCD
3. Function / range knob
4. Testing input terminal
5. Function key
6. Transistor test jack
7. NCV reaction position
8. Torch
9. Hook
10. Screw fixed for the battery case.
11. Holder
12. Rack for fixing the test leads

7. LCD Display



1 - Automatic range
2 - AUTO shutdown
3 - Non-contact ACV measurement
4 - DC measurement
5 - AC measurement
6 - High Voltage
7 - Data hold
8 - Relative value measurement
9 - Diode/continuity test
10 - Transistor
11 - Low battery voltage
12 - Centigrade / Fahrenheit
13 - Torch
14 - μA mA A
15 - Ω KΩ MΩ Frequency
16 - True RMS

8. KEY FUNCTION

8.1. Data hold displays:

Short press “HOLD B/L SELECT” key, LCD keeps present value, it will drop out of data hold function after pressing the key again; Except AC 750V and temperature measurement range.

⚠ Warning: to prevent possible electric shock, fire or personal injury, do not use the HOLD function to measure unknown potential. When HOLD is turned on, the display will not change when measuring the different potentials.

8.2. Backlight control:
Long press “HOLD B/L SELECT” key, LCD backlight opens, after long press it again, it closes.

8.3. Cancel the APO auto shutdown
Under power-off condition, press “HOLD B/L SELECT” key, meanwhile rotate the range knob, after the meter is in the normal measuring situation, then can cancel the auto shutdown function, APO symbol will not show on LCD. Rotate the range knob to turn the power on, and the auto shutdown function comes back.

8.4. Function conversion
It will display the present ACV frequency after press “HOLD B/L SELECT” key under the AC750V range, press it again then return to the voltage measurement function. It can also convert the unit of temperature by press “HOLD B/L SELECT” key under the temperature range.

8.5. REL measuring mode
Short press the REL/ key, open/close the REL (relative value) measuring mode; LCD will display the ‘ REL’ symbol (applicable for ACV, DCV, ACA, DCA, CAP, ℃/℉ range)

8.6. Torch
Long press the REL/ key, open/close the torch (the torch is at the bottom of the meter), there is no the function of auto turning off the torch.

9. OPERATION INSTRUCTIONS

9.0.
Firstly please check the battery, switch the range knob to the measured range in need, if it is out of power, LCD will show this symbol . Note the sign ⚠ beside the jack of test leads, it warns test voltage and current cannot exceed the indicated value.

9.1. ACV and DCV MEASUREMENT
1. Set the range knob to the proper ACV/DCV range, connect the test leads across to the circuit under tested. The polarity and the voltage of the point which connected with the red lead will display on LCD.
2. Insert the black test lead to “COM” jack, the red one to jack.
3. You can get the result from LCD.

⚠ **NOTE:**
1. If the measured voltage is unsure beforehand, should set the range knob to the highest range, then you can switch to a proper range according to the displayed value.
2. If LCD displays “OL”, it means over range, should set the range knob to a higher range.
3. When measuring high voltage (above 220V), it’s necessary to wear the personal protective equipment (approved rubber gloves, masks and flame-retardant clothes, etc.) to prevent the electric shock and arc damaged by the dangerous electric conductor exposes.

9.2. ACA and DCA MEASUREMENT

1. Set the range knob to a proper ACA/DCA range, connect the test leads across to the power supply or circuit under tested, the current value and polarity of the point which red lead connect to will display on LCD.
2. Insert the black test lead to “COM” jack and the red one to “mA μA” jack(max. 200mA),or to the “20A” jack(max. 20A).
3. You can get the result from display.

⚠ **NOTE:**
1. If the measured current is unsure beforehand, should set the range knob to a higher range, then, switch to a proper range according to the displayed value. Do not test voltage at this jack.
2. If LCD displays “OL” , it means over range, should set the range knob to a higher range.
3. When measuring 20A, continuously measuring large current may heat the circuit, affect the accuracy, and even damage the meter.
4. When measuring huge current (above 10A), it’s necessary to wear the personal protective equipment (approved rubber gloves, masks and flame-retardant clothes, etc.) to prevent the electric shock and arc damaged by the dangerous electric conductor exposes.

9.3. RESISTANCE MEASUREMENT

1. Set the range knob to a proper resistance range, connect the test leads across to the resistance under measured.
2. Insert the black test lead to“COM” jack and the red one to VΩ⊣◀)) jack.
3. You can get the result from the LCD.

NOTE:
1. If the resistance value being measured exceeds the max value of the range selected, LCD displays ”OL”, thus should set the range knob to a higher range. When the resistance is over 1MΩ, the meter may take a few seconds to stabilize. This is normal for high resistance.
2. When input terminal is in open circuit, displays ”OL”.
3. When measuring in-line resistance, be sure that power under tested is off and all capacitors are released completely.

9.4. CAPACITANCE MEASUREMENT

1 Set the range knob to a proper capacitance range, connect the test leads with proper polarity (note: the polarity of red test lead is "+") to the capacitor under measured.
2. Insert the red test lead to jack and the black one to "COM" jack.
3. You can get the result from the LCD.

NOTE:

1. Capacitance range auto convert, if LCD displays"OL" , it means over range, max. 20mF
2. When measuring capacitance, because the impact of lead wire and the distributed capacitance, there may be some residual reading without connection to capacitance under measured. It will be clearer when measuring small capacitance. Measuring result should minus the residual reading for getting accurate readings, This will not affect the measuring accuracy. Short press the REL key to clear the remained value, and then you can measure the relative value.
3. When measuring large capacitance, if leak the current seriously or break capacitance, LCD will display some unstable value.
4. Discharge all capacitors completely before capacitance measurement to avoid damage.
5. UNIT: 1mF =1000uF 1uF=1000nF 1nF=1000pF

9.5. DIODE AND CONTINUITY TEST

1. Set the range knob to range, diode range is default when turning on the meter, diode auto convert with buzzer range; connect the test leads to the diode under measured, reading is the approximation of the diode positive volt drop. It will auto convert to continuity test function when measured voltage is less than 50mV
2. Insert the black test lead to "COM" terminal and the red one to jack (Note: the polarity of red test lead is"+").
3. Connect the test leads to two points of the measured circuit, the screen shows and buzzer sounds if the resistance is lower than approx. 50Ω. It will auto convert into diode test function when the resistance is higher than 200Ω.

9.6. TRIODE hFE

1. Set the range knob to hFE.
2. Verify the type of the transistor is NPN or PNP, insert the emitter, basic and collector to the proper jack on transistor socket.

9.7. AUTO POWER-OFF

In order to save power and increase battery of service life, the meter is in APO automatic power off mode after meter power on, if no any operation within 14 minutes, the meter will sound three times for instruc-

tion. If still no any operation on it, it will auto power off after long peal 1 minute later. Power on again, switch the range knob to the OFF range then switch to function range in need again. If cancel the APO function, please refer to instruction of "key function"

9.8. TEMPERATURE MEASUREMENT

When measuring the temperature, insert the cathode of thermocouple sensor to "COM" jack and anode to "VΩ⊣⊢" terminal, put the working end on or in the object under tested, temperature value can be read on LCD in Celsius. Convert the unit by pressing "HOLD B/L SELECT" key.

9.9. NON-CONTACT VOLTAGE REACTION MEASUREMENT NCV

1. Turn the knob to the NCV range;
2. NCV reaction voltage range is 48V~220V, put the upper part of the meter close to the electric AC power line under test. When AC voltage is sensed, the red indicator on the upper part will flash and the buzzer alarm sounds. The closer the AC power line is, the stronger the AC voltage induces, and the faster the indicator flashes and buzzer alarm sounds.

10. TECHNICAL CHARACTERISTIC

10.0.

Accuracy:±(a% rdg+digits) ; Environment Temperature: (23±5)℃; Relative humidity: <75%RH

10.1. DCV

Range /// Accuracy /// Resolution /// Input Impedance /// Overload Protection
200mV /// ±(0.5%+3) /// 100uV /// Approx.10MΩ /// 1000V DC/AC RMS
2V /// ±(0.5%+3) /// 1mV /// Approx.10MΩ /// 1000V DC/AC RMS
20V /// ±(0.5%+3) /// 10mV /// Approx.10MΩ /// 1000V DC/AC RMS
200V /// ±(0.5%+3) /// 100mV /// Approx.10MΩ /// 1000V DC/AC RMS
1000V /// ±(0.8%+10) /// 1V /// Approx.10MΩ /// 1000V DC/AC RMS

10.2. ACV

Range /// Accuracy /// Resolution /// Input Impedance /// Overload Voltage
2V /// ±(0.8%+5) /// 1mV /// Approx.10MΩ /// 1000V DC/AC RMS
20V /// ±(0.8%+5) /// 10mV /// Approx.10MΩ /// 1000V DC/AC RMS

200V /// ±(0.8%+5) /// 100mV /// Approx.10MΩ /// 1000V DC/AC RMS
750V /// ±(1.2%+10) /// 1V /// Approx.10MΩ /// 1000V DC/AC RMS
Range with good accuracy: 10%-100% of the range; Frequency response: 40Hz-1kHz
Measuring method (sine wave): True RMS Measurement;
Crest factor: CF≤3, add reading 1% of additional error when CF≥2
Measured range with frequency: 40Hz-1kHz; Error of AC frequency: 0.2%+0.02Hz
Input sensitivity with frequency: 80V-600V

10.3. DCA

Range /// Accuracy /// Resolution /// Load Voltage /// Overload Protection
200uA /// ±(0.8%+10) /// 0.1uA /// 0.125 mV/uA /// FUSE 200mA/ 250V
2mA /// ±(0.8%+10) /// 1uA /// 125 mV/mA /// FUSE 200mA/ 250V
20mA /// ±(0.8%+10) /// 10uA /// 3.75 mV/mA /// FUSE 200mA/ 250V
200mA /// ±(1.2%+8) /// 100uA /// 3.75 mV/mA /// FUSE 200mA/ 250V
20A /// ±(2.0%+5) /// 10mA /// 37.5 mV/A /// FUSE 20A/250V
⚠ 20A(the test time should be within 10 seconds); Recovery time is 15 minutes

10.4. ACA

Range /// Accuracy /// Resolution /// Load Voltage /// Overload Protection
20mA /// ±(1.0%+15) /// 10uA 3.75mV/mA /// FUSE 200mA/250V
200mA /// ±(2.0%+5) /// 100uA /// 3.75mV/mA /// FUSE 200mA/250V
20A /// ±(3.0%+10) /// 10mA /// 37.5mV/A /// FUSE 20A/250V
Measuring Range for accuracy: the range of 10%-100%; Frequency response: 40Hz~400Hz
Measuring way (sine wave): Ture RMS measurement
Crest factor: CF≤3, add reading 1% of additional error when CF≥2
Max. input current: 20A(the test time should be within 10 seconds)Recovery time is 15 minutes

10.5. RESISTANCE(Ω)

Range /// Accuracy /// Resolution /// Short-circuit current
200Ω /// ±(0.8%+5) /// 0.1Ω /// About 0.4 mA
2kΩ /// ±(0.8%+3) /// 1Ω /// About 100uA
20kΩ /// ±(0.8%+3) /// 10Ω /// About 10uA
200kΩ /// ±(0.8%+3) /// 100Ω /// About 1uA
2MΩ /// ±(0.8%+3) /// 1kΩ /// About 0.2uA
20MΩ /// ±(1.0%+25) /// 10kΩ /// About 0.2uA

⚠ NOTE: measuring error is not including lead resistance. Open-circuit voltage: About 1V Overload Protection: 250V DC/AC rms

10.6. CAPACITANCE (C)

Range /// Accuracy /// Resolution /// Overload Protection
6nF /// ±(5.0%+40) /// 1pF /// 250V DC/ AC RMS
60nF /// ±(3.5%+20) /// 10pF /// 250V DC/ AC RMS
600nF /// ±(3.5%+20) /// 100pF /// 250V DC/ AC RMS
6uF /// ±(3.5%+20) /// 1nF /// 250V DC/ AC RMS
60uF /// ±(3.5%+20) /// 10nF /// 250V DC/ AC RMS
600uF /// ±(5.0%+10) /// 100nF /// 250V DC/ AC RMS
6mF /// ±(5.0%+10) /// 1uF /// 250V DC/ AC RMS
20mF /// ±(5.0%+10) /// 10uF /// 250V DC/ AC RMS
⚠ Measuring Range of Accuracy: 10%~100%; Large capacitance response time: ≥1mF about 8s; Measured error is not including lead distributed capacitance

10.7. DIODE AND CONTINUITY TEST

Range /// Displaying value /// Test condition /// Error /// Overload Protection
⊣◦)) /// Positive voltage drop of diode /// Tested current: about 0.4mA; Open-circuit voltage: about 3.3V /// 5% /// 250V DC/ AC rms
⊣◦)) /// Buzzer sounds long, the resistance is less than (50±20)Ω /// Tested current: about 0.4mA /// 5% /// 250V DC/ AC rms

10.8. Triode hFE test

Range /// Display range /// Test condition
hFE NPN or PNP /// 0~1000 /// Basic current is approx.10uA,Vce is approx.1.5V

11. Replace the battery or fuse

If LCD appears ⊟ symbol, indicates the battery need to be changed. Please operate with it according to the following steps:
1.Test lead removed from circuit under tested, then take out the test lead from the input jack, and turn the range knob to the OFF gear so that turn off the power.
2.To twist off the screw on the battery door with screwdriver, move the battery case and the holder away.
3. Take out the old battery or damaged fuse, replace new 1.5V battery or new fuse.

4. Cover the battery door, tighten the screw on the battery door with screwdriver
5. Fuse Specification:
Fuse FS1 for mA input terminal:φ5X20 mm 200mA 250V;
Fuse FS2 for 20A input terminal:φ5X20 mm 20A 250V;
NOTE: When the low battery symbol displays on the LCD, please replace the new batteries immediately, otherwise it may affect the accuracy

12. MAINTENANCE

DO NOT try to verify the circuit for it's a precision meter.
1. Beware of waterproof, dustproof and shockproof
2. Do not operate and store the meter in the circumstance of high temperature, high humidity, and flammability, explosive and strong magnetic field.
3. Use the damp cloth and soft solvent to clean the meter, do not use abrasive and alcohol.
4. If do not operate it for a long time, should take out the battery to avoid leakage.
5. When replacing the fuse, please use the one with same specification and model.

13. TROUBLE SHOOTING

If the meter does not work properly, check the meter as following:
CONDITIONS /// WAY TO SOLVE
No displaying /// Power on; Replace battery; Press the HOLD key again
🔋 symbol displays /// Replace battery
No current input /// Replace fuse
Big error /// Replace battery
Back light displays weak /// Replace battery
This user's manual is subject to any change without further notice.
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