AX-C715N - Process Multimeter User's Manual

1. Chapter I

1.1. Introduction

⚠ **WARNING**

Please read the Operating Instruction carefully before using the multimeter.

1.2. General

It is a battery-powered industrial grade field process maintenance tool that integrates digital multimeter and process signal source.

In compliance with 600V CAT.IV standards specified in IEC 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use.

Dual-color plastic mold enclosure.

It features the following functions:

- Measurement function:
  AC voltage, DC voltage, resistance, DC current, continuity, diodes;
  Distorted voltage and converted voltage can be accurately measured by its built-in VFC lowpass filtering;
  Hold of data display;
- Output:
  Output DC voltage and DC current (constant output, manual stepping, and SIMULATE).
- Loop detection: simultaneous power supply and current measurement of 24V loop.

1.3. Unboxing inspection

Check if the goods are damaged during transportation. Check if the goods are complete and keep the packaging materials for future transportation.

The multimeter is available with the following standard accessories and optional accessories. Optional accessories can be purchased as needed.

Standard accessories

- Test lead: 1 pair
- Operating Instruction: 1
- 0.1A/250V Fast fuse: 2

1.4. Safety Warnings

The multimeter is designed, manufactured, and tested in compliance with IEC 61010-1 standard. The Operating Instruction contains warnings and safety regulations that must be followed by users to ensure the safe use and condition of the multimeter. Please read the instructions below before operating.

⚠ on the multimeter indicates that for safety operation, the user is required to operate as specified in relevant sections of the Instruction.

WARNING:

indicating any behaviors that pose a danger to the user;

CAUTION:

indicating any behaviors that may cause damage to the multimeter and tested equipment;

ATTENTION:

indicating symbols for understanding the operation and characteristics of the multimeter. International symbols related to the multimeter and Operating Instruction are detailed in Table 1-1.

⚠ **WARNING**

- Please ensure that the battery door is tightly closed before use.
- Remove the test lead from the multimeter before opening the battery door.
- Check the test lead insulation for damage or exposure.Check the connectivity of the test lead.If the lead is damaged, the multimeter can only be used after replacing the lead.
- A multimeter failure may indicate one damaged protective facility, please do not use.If there are any questions about the multimeter, send it for repair.
- Do not use the multimeter near explosive gases, steam, or dust.
- The multimeter only supports AA batteries, please ensure which are correctly mounted.
- Special attention should be paid to usage scenarios exceeding the AC effective value of 30 volts, peak value of 42 volts, or DC of 60 volts. Such voltages are prone to electric shock.
- When using a test probe, place your fingers behind its protective layer.
- Common test leads should be connected before live test leads. However, live tested leads should be first removed.
- Please read and understand this Instruction carefully before using the multimeter.
- Please comply with the requirements of the Instruction, and keep it available for reference at all times.
- Incorrect operation during testing can lead to accidents and damage to the multimeter.

⚠ **CAUTION**

To avoid damages to the tested equipment:

- The knob switch must be turned in the correct range gear during measurement. Before toggling the knob switch, the test lead must be disconnected to the tested circuit. Toggling in the process of measurement is strictly prohibited to avoid damage to the multimeter.
- Before conducting online resistance, diode, or continuity measurements, all power sources in the circuit must be turned off and all capacitors fully discharged.
- Check the fuse (refer to ”Replacement of Fuse” Section in Chapter V) before measuring the current. Power off the circuit before connecting the multimeter. Please note that the multimeter should be connected in series with the circuit when measuring the current. Do not cross-connect the test lead in parallel to any circuit.
- Do not use the multimeter when + is displayed on the screen.
- Do not store or use the multimeter in high temperature, high humidity, high dew, flammable, explosive, strong electromagnetic field environments, or in direct sunlight.
- Please do not clean the multimeter with abrasives or solvents, but with a damp cloth or neutral detergent.
- When the multimeter is damp, please dry it before storing.

1.5. Symbol

Explanations for the international symbols used in this multimeter and Instruction are detailed in Table 1-1.

Table 1-1. International Symbols

Symbol /// Meaning

~ /// AC

⎓ /// DC

≂ /// AC-DC

⚠ /// Notices

⏚ /// Grounded

⎓ /// Fuses

⧈ /// Double insulation

/// Battery

CE /// In compliance with EU regulations

CAT IV /// The overvoltage CAT IV and secondary pollution (according to IEC61010) refer to the level of protection provided for pulse withstand voltage. Typical mounting locations include: any outdoor power supply lines or equipment for three-phase public power supply units; Any outdoor transmission lines; Front end overcurrent protection equipment for electric power meters.

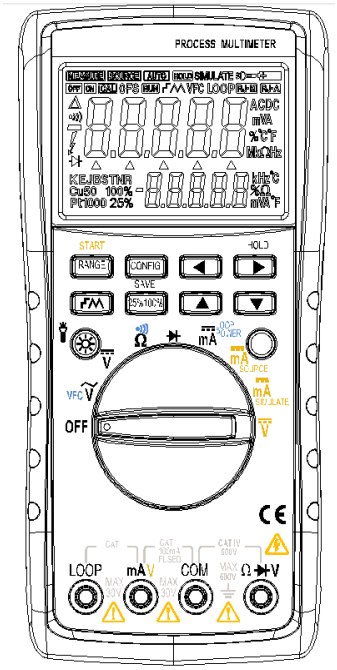
2. Chapter II

2.1. Understand the multimeter

Study this chapter first before familiarizing yourself with the characteristics and functions of the multimeter.

2.2. Panel

Fig. 2-1 Panel



2.3. Power-On

To turn on the multimeter, turn the knob switch to any function gear.
When powering on, the multimeter starts internal self diagnosis and displays in full screen, and then performs corresponding operations.
⚠ **ATTENTION**
Power-on: For correct power-on operations, powering off the multimeter for 5 seconds before restarting.

2.4. Automatic Power-off

The multimeter is set to power off automatically by default if it is in idle for 5 minutes.
If the multimeter is automatically powered off, it can only be restarted after toggling the knob switch to OFF.
Whether to use Auto Power-Off can be set by the user themselves (refer to Chapter IV ”Settings of Functions”).
Note: The multimeter still consumes about 1mA of current after automatic power-off. It is recommended to turn the knob switch to OFF when the multimeter is not in use.

2.5. Display of low battery level

Displaying of + on the screen indicates low battery level, during which the battery should be replaced as soon as possible.

⚠ **WARNING**
In order to avoid electric shock or personal injury due to incorrect readings, the battery should be replaced immediately when is displayed on the screen.

2.6. Turn on backlight
Press once to turn on the backlight,twice to turn it off.

2.7. Automatically turn off backlight
The multimeter is set by default to automatically turn off the backlight if the user fails to turn it off within 60 seconds. Whether to use Automatically Turn Off Backlight can be set by the user themselves (refer to Chapter IV ”Settings of Functions”).

2.8. Turn on flashlight
Long press (more than two seconds) to turn on the flashlight, during which will be displayed on the screen.
Long press (more than two seconds) again to turn off the flashlight.

2.9. Automatically turn off flashlight
The multimeter is set by default to automatically turn off the flashlight if the user fails to turn it off within 5 minutes. Whether to use Automatically Turn Off Flashlight can be set by the user themselves (refer to Chapter IV ”Settings of Functions”).

2.10. Knob switch
Turn the knob switch to any gear to turn on the multimeter. This function’s standard display will appear on the screen.
The measurement function is marked with white characters, while the output function is marked with yellow characters.
Select blue function on the knob switch by pressing blue key.
When the knob switch is turned to another function gear, the display screen will show information about the new function gear. Settings for one function gear will not apply to another.
The knob switch is shown in Fig. 2-2. The description of the switch position is detailed in Table 2-1.
Fig. 2-2 Knob Switch

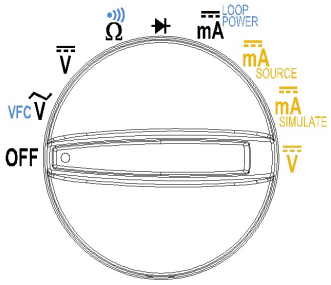


Table 2-1. Knob Switch

Location /// Functions of knob switch /// Functions of blue key

VFC V /// ACV measurement /// VFC measurement

V /// DCV measurement /// No

Ω /// Resistance measurement /// Continuity

⇻ /// Diode measurement /// No

mA LOOP POWER /// DCmA measurement /// Loop current measurement (loop power supply)

mA SOURCE /// Current output /// No

mA SIMULATE /// Analog transmitter /// No

V /// DC voltage output /// No

2.11. Keys

Keys are shown in Fig. 2-3. The description of keys is detailed in Table 2-2.

Fig. 2-3 Keys

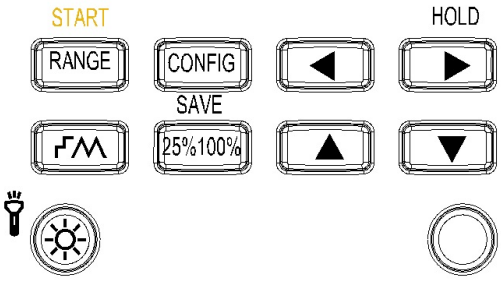


Table 2-2. Keys

Keys /// Description

START RANGE	1
CONFIG	2
SAVE 25%100%	3
⌐M	4
◀	5
HOLD ▶	6
▲	7
▼	8
●	9

1 - In resistance measurement mode: Press this key to select the range.
In current output mode: The start and stop of automatic waveform output of current.
2 - In current output mode: Press this key in non-automatic waveform to set the current range;
Press this key in automatic stepping waveform to set the starting point, ending point, and step size of stepping waveform;
Press this key in automatic ramp waveform to set the starting point, ending point, and cycle of ramp waveform;
3 - In current output mode: Select non-automatic waveform in non-automatic waveform output of current to output in 25%, 100%, and bit setting output modes.
In CONFIG mode, press this key to save selected settings
4 - In current output mode: Press this key to output in auto ramp ⩘ , auto stepping ⌐, or bit setting mode.
5 - Select the output setting bit to the left;
6 - In measurement mode: Press this key to hold the current measurement value in the main display area, and display the real-time value in the secondary display area.
In output mode: Select the output setting bit to the right;
7 - Bit setting output: Increase the set bit value;
Stepping output: Each time the key is pressed, the output increases linearly in steps of 25% or 100% (applicable only to current output).
8 - Bit setting output: Decrease the set bit value;
Stepping output: Each time the key is pressed, the output decreases linearly in steps of 25% or 100% (applicable only to current output).
9 - Select the function of the blue key

2.12. Display screen

Fig. 2-4 and Table 2-3 illustrate the display screen.
Fig. 2-4 Display Screen

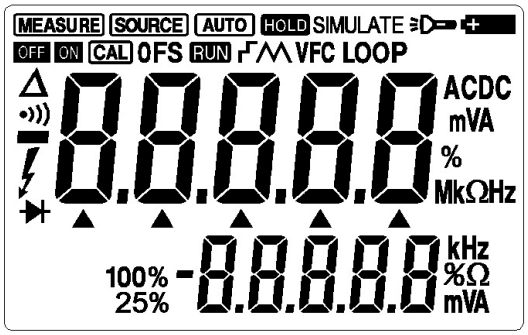


Table 2-3. Display Screen
Displayed /// Description

MEASURE	1
SOURCE	2
HOLD	3
SIMULATE	4
	5
	6
ON	7
RUN	8
	9
VFC	10
LOOP	11
	12
	13
AC DC	14
Ω, kΩ	15
mA	16
V	17
%	18
	19
▲▲▲▲▲	20
25% 100%	21
	22

1 - The multimeter is in measurement mode
2 - The multimeter is in output mode
3 - The measurement data is displayed to be held
4 - The multimeter is in analog transmitter mode
5 - Turn on flashlight
6 - Low battery level
7 - In output mode, it indicates ON, output
8 - Activate automatic waveform output
19 - Automatic stepping, automatic ramp outputs of current
10 - Lowpass filtering
11 - Power on of 24V loop
12 - In measurement mode, it indicates continuity test; In measurement mode, it indicates diode test
13 - In measurement mode, it indicates that the input voltage is greater than 30V
14 - AC, DC
15 - Unit of resistance: Ω, kΩ
16 - Unit of current: mA
17 - Unit of voltage: V
18 - When outputting current, it displays relative percentage
19 - Main display
20 - Output setting bit
21 - When outputting current, it indicates 25% and 100% stepping output of DCmA
22 - Secondary display

2.13. I/O jack

Fig. 2-5 and Table 2-4 illustrate the I/O jack.

Fig. 2-5 I/O Jack

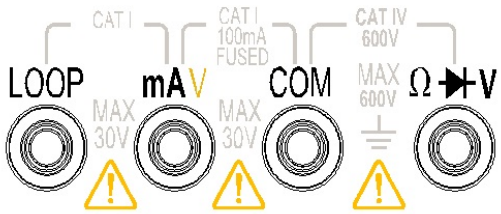


Table 2-4 I/O Jack

Jack /// Description

- LOOP /// Output point of loop power supply
- mAV /// Input for current measurement;
  Common point of loop power supply;
  DC output +;
  Simulate the output of a set of transmitters (in series with an external power supply);
  DC voltage output +;
  With a 100mA fuse protection.
- COM /// All tested common points;
  Common points of analog transmitter output;
- Ω⏭V /// Input for voltage measurement;
  Input for resistance measurement;
  Input for continuity measurement;
  Input for diode measurement;

3. Chapter III

3.1. Usage

This chapter introduces how to use this multimeter.

Most functions can be selected through the knob switch.

The white characters next to the knob switch indicate the main function, while the blue characters indicate the optional functions. These optional functions can be activated by pressing the blue keys.

3.2. Measuring functions

⚠ **WARNINGS**

- Do not input voltages higher than DC60V or AC 510V rms, otherwise the multimeter will be damaged.
- When the input voltage is higher than 30V, ϟ appears on the display screen, reminding attention to safety.

If MEASURE appears in the upper left corner of the screen, the multimeter is in measurement mode.
In measurement mode, press to enter the HOLD mode of the display screen, during which current readings (HOLD appears on the screen) on the main display area will be held, and the secondary display area will be activated to display the real-time reading of the measurement. Press again to exit HOLD mode.

3.3. AC voltage measurement

1. Turn the knob switch to the ;
2. Insert the black jack into the COM jack, and the red probe into the jack;
3. Connecting the probe to the circuit to be tested, read the stable measurement value.

3.4. VFC measurement

1. Turn the knob switch to the , and press the blue key to select VFC AC voltage measurement function;
2. Insert the black jack into the COM jack, and the red probe into the jack;
3. Connecting the probe to the circuit to be tested, read the stable measurement value.

3.5. DC voltage measurement

1. Turn the knob switch to the ;
2. Insert the black jack into the COM jack, and the red probe into the jack;
3. Connecting the probe to the circuit to be tested, read the stable measurement value.

3.6. Resistance measurement

⚠ **ATTENTION**

- If the measured resistance is open or exceeds the maximum range of the multimeter, the display will show OL .
- Considering that the test current output by the multimeter passes through all possible channels between the probes, the resistance value measured on the circuit usually differs from the rated value of the resistance.

1. Turn the knob switch to the ;
2. Insert the black jack into the COM jack, and the red probe into the jack;
3. Connecting the probe to the circuit to be tested, read the stable measurement value.

3.7. Continuity test

⚠ **WARNING**

In order to avoid damages to the multimeter or tested equipment, the continuity test should be conducted after turning off all power sources in the circuit and fully discharging all capacitors.

1. Turn the knob switch to the , and press the blue key to select continuity measurement function;
2. Insert the black jack into the COM jack, and the red probe into the jack;
3. Connecting the probe to the circuit under test, if the circuit is connected (with a resistance below about 50 Ω), the buzzer will sound.

3.8. Diode test

⚠ **WARNING**

In order to avoid damages to the multimeter or tested equipment, the continuity test should be conducted after turning off all power sources in the circuit and fully discharging all capacitors.

1. Turn the knob switch to the ⊣◂ ;
2. Insert the black jack into the COM jack, and the red probe into the Ω⊣◂V jack;
3. Connecting the probe to the diode to be tested, read the stable measurement value.

Forward test: Connecting the red probe to the positive terminal of the tested diode, and the black probe to the negative terminal of the diode, the display screen will show the approximate forward voltage drop of the diode, which is generally around 0.5-0.8V.

Backward test: Connecting the red probe to the negative terminal of the tested diode, and the black probe to the positive terminal of the diode, the display screen will generally show OL .

3.9. DC measurement

⚠ **WARNING**

In order to avoid damages to the multimeter or tested equipment, make sure that the knob switch is turned and the input terminal connected to the probe is located in accordance with the required measurement mode.

1. Turn the knob switch to the mA⎓ ;
2. Insert the black jack into the COM jack, and the red probe into the mAV jack;
3. Connecting the probe to the circuit to be tested, read the stable measurement value.

3.10. Loop current measurement

This function can be used to measure the current under 24VDC constant voltage.

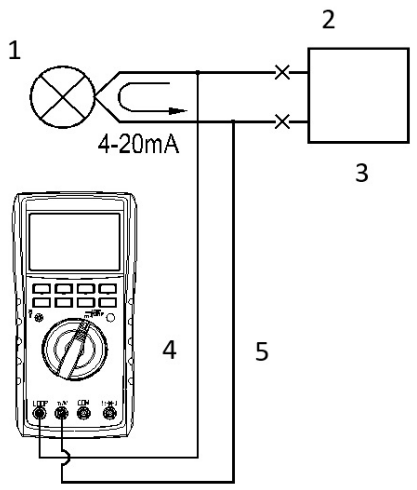
The 24V loop measurement function is also applicable to the transmitter loop.

(The multimeter can be connected to the transmitter without connecting the transmitter or signal conditioner.)

⚠ **WARNING**

The typical value for loop power supply is 24VDC. The voltage between terminals may exceed 24V, depending on different conditions such as loop current value, and whether there is internal series resistance.

Fig. 3-1 Loop Current Measurement



1 - Two-wire transmitter
2 - Transmitter (Signal conditioner)
3 - Distributor
4 - Red
5 - Black
1. Turning the knob switch to the , pressing the blue key to select loop current measurement function, "LOOP" will be displayed on the screen;
2. Insert the black jack into the mAV jack, and the red probe into the LOOP jack;
3. Connecting the probe to the circuit to be tested, read the stable measurement value.

3.11. Output functions

The multimeter output generates DC voltage and current output set by the user.
SOURCE is displayed in the upper left corner of the screen.

⚠ **WARNING**

Do not apply voltage to the output terminal. If an inappropriate voltage is applied to the output terminal, it will cause damage to the internal circuit.

3.12. Use the current output function

The multimeter is available with 0-22mA DC output.
Two output modes:
SOURCE mode: The multimeter supplies power;
SIMULATE mode: External voltage source supplies power to the multimeter.
When you need to supply current to passive circuits (such as current circuits without power), use the SOURCE mode. Using the multimeter as a current source (SOURCE) consumes more battery energy than using it in SIMULATE mode, so it is recommended to use SIMULATE mode as much as possible.

⚠ **WARNING**

Do not apply a voltage of 30V or higher to the output terminal. Otherwise, it may cause electric shock.
Keep the voltage between the circuit and ground below 30V. Be sure to use the accompanying probes and leads (check if they are suitable for the corresponding measurement category).

⚠ **WARNING**

Do not apply voltage to the output terminal except in SIMULATE mode
Incorrect application of voltage to the output terminal may damage the internal circuit.

3.13. Current (active) output (SOURCE mode)

1. Turning the knob switch to mA SOURCE, the output is set to 0mA;
2. Insert the black jack into the COM jack, and the red probe into the mAV jack;
3. Connect the lead to the circuit under test;
4. Setting of current output range:

- Press the [CONFIG] key to enter the DC parameter setting interface. At this time, the 8-character tube in the secondary display area of the screen displays 'SCALE', indicating the output range setting; The main display area of the screen displays the parameters to be set;
- Press [▲]/[▼] key to set the desired range;
- Use SAVE to save settings;
- Press [CONFIG] to exit setting.

5. Setting of current output span:

Press SAVE to select the output span of current in non-automatic waveform output. The current span will be displayed on the left side of the 8-character tube in the secondary display area

'Blank' indicates that when the [▲]/[▼] key is pressed, the corresponding set value of the bit increases / decreases by 1;
'25%' indicates that when the [▲]/[▼] key is pressed, the output set value increases / decreases in steps of 25% of the range;
'100%' indicates that when the [▲]/[▼] key is pressed, the output set value increases / decreases in steps of 100% of the range;

6. Set the output value by using the output setting key.

Change the output setting bit: [◄] / [►]. This step is only valid when the span is 'Blank';
Change the output set value: [▲]/[▼]

3.14. Current (passive) output (SIMULATE mode)

The SIMULATE mode is to simulate a set of current loop transmitters using the multimeter. In case of an external DC voltage (5-28V) and the tested current loop connected in series, use the SIMULATE mode of the multimeter.

⚠ **ATTENTION**

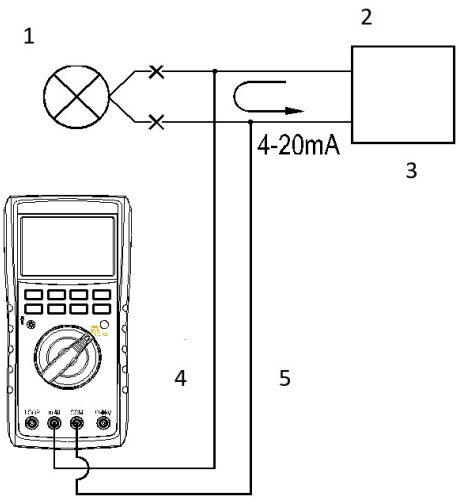
You can connect the multimeter to test the transmitter or signal conditioner instead of connecting the transmitter. When receiving 20mA current from an external power source, keep the voltage within the range of 5-28V.

⚠ **WARNING**

Before connecting the test lead to the current loop, set the knob switch to one of the milliampere outputs. Otherwise, the loop is prone to low impedance from other positions of the knob switch, causing up to 26mA of current to flow in the loop.

Set the polarity of the applied voltage as shown in Figure 3-2, and be careful not to reverse the polarity.

Fig. 3-2 Ouput Current in SIMULATE Mode



1 - Two-wire transmitter
2 - Transmitter (Signal conditioner)
3 - Distributor
4 - Red
5 - Black
1. Turning the knob switch to mA, "SIMULATE" is displayed on the screen, and the output is set to 0mA;
2. Insert the black jack into the COM jack, and the red probe into the mAV jack;
3. Connect the lead to the circuit under test;
4. The operation of other keys is the same as current (active) output.

3.15. Use the voltage output function

1. Turn the knob switch to the V ;
2. Insert the black jack into the COM jack, and the red probe into the mAV jack;
3. Connect the probe to the input terminal of the user meter;
4. Set the output value by using the output setting key.
Change the output setting bit: [◄] / [►];
Change the output set value: [▲]/[▼].

4. Chapter IV

4.1. Change of Settings

4.1.1. Introduction

The multimeter's factory set value can be changed by changing its settings.
There are many general settings options that can be applied to all function gears. Some other options are only applicable to a certain function or group of functions.

4.1.2. Setting options

The process multimeter can change the default factory settings.
Entry method: Press and hold the backlight key, then press the POWER key to turn on the multimeter. After entering the settings interface, release the backlight key.

- Setting of auto power-off time
  Step 1: If the display screen shows "APOF" after entering the settings interface, it is in auto power-off mode.
  Step 2: Set the desired parameters by pressing [▲]/[▼] / [◄] / [►] key, the auto power-off time is displayed in minutes.

Setting range: 0-60 minutes; 0 represents canceling Auto Power-Off, while other values represent multimeter power-off after the corresponding time
Step 3: Pressing the [25%100%] key, the display screen will show ”SAVE” symbol, saving the setting.

- Setting of backlight time
  Step 1: Pressing the [RANGE] key, the display screen will show ”BLOF” symbol, indicating the backlight time setting.
  Step 2: Set the desired parameters by pressing [▲]/[▼] / [◄] / [►] key, the backlight time is displayed in seconds.
  Setting range: 0-3600 seconds; 0 represents canceling Auto Backlight-Off, while other values represent multimeter backlight-off after the corresponding time.
  Step 3: Pressing the [25%100%] key, the display screen will show ”SAVE” symbol, saving the setting.
- Flashlight setting
  Step 1: Pressing the [RANGE] key, the display screen will show ”LTOF” symbol, indicating the backlight time setting.
  Set the desired parameters by pressing [▲]/[▼] / [◄] / [►] key, the flashlight time is displayed in minutes.
  Setting range: 0-30 minutes; 0 represents canceling Auto Backlight-Off, while other values represent multimeter backlight-off after the corresponding time.
  Step 3: Pressing the [25%100%] key, the display screen will show ”SAVE” symbol, saving the setting.
- Buzzer setting
  Step 1: Pressing the [RANGE] key, the display screen will show ”BEEP” symbol, indicating the buzzer setting.
  Press the [▲]/[▼] key to set the desired parameters
  ’ON’ means that the buzzer is turned on;
  ’OFF” means that the buzzer is turned off;
- Factory default
  Step 1: Pressing the [RANGE] key, the display screen will show ”BEEP” symbol, indicating the buzzer setting.
  Step 2: Press the [▲]/[▼] key to set the desired parameters;
  NO means that all settings will not be restored to factory default;
  YES means that all settings will be restored to factory default.
  Step 3: Pressing the [25%100%] key, the display screen will show ”SAVE” symbol, saving the setting.
  All factory default parameters are as follows:
  APOF: 5 minutes.
  BLOF: 60 seconds.
  LTOF: 5 minutes.
  BEEP: ON
  Tip: Only if the settings of any items are changed, set values should be saved by pressing the [25%100%] key. Any press of the [25%100%] key will only save the most recent set value.

5. Chapter V

5.1. Maintenance

This section is only available with some basic maintenance steps. The repair, calibration, and maintenance excluded in the Instruction shall be conducted by experienced personnel. In terms of maintenance steps not mentioned in this Instruction, please contact our authorized service center.

5.2. General Maintenance

- Please regularly clean the enclosure of the multimeter with a damp cloth and mild detergent, instead of abrasives or solvents.
- If the multimeter leaves unused for a long time, please remove the battery.
- Dirt or moisture on the jack can affect the reading.
  Please follow the steps below to clean the wiring ports:
  (1) Turn off the multimeter and remove all test leads.
  (2) Remove the dirt on the wiring ports.
  (3) Rub several new cotton swabs with alcohol to clean each wiring port.

5.3. Changing the battery

The multimeter requires three LR6(AA) alkaline batteries.

⚠ **WARNING**

In order to avoid eletric shock or personal injury:

- Remove the test lead from the multimeter before opening the battery cover.
- Tighten the screws on the battery cover before using the multimeter.

⚠ **ATTENTION**

- Do not mix new and old batteries.
- The battery must be mounted in the polarity direction marked inside the battery holder.
- Please remove the battery if the multimeter leaves unused for a long time.
- Waste batteries shall be disposed of in accordance with relevant local regulations.

Replace the battery in the following steps
(refer to Fig. 4-1, Fig. 4-2);
1. Turn off the multimeter and disconnect all test leads;
2. Lift the support to remove the lock key, and turn the screws on the left side of the battery cover counterclockwise by 1/4 turn, screws on the right side clockwise by 1/4 turn to remove the battery cover;
3. Re-mount three new batteries into the battery holder;
4. Mount the battery cover, and lock it tightly by turning the screws on the left side of the battery cover clockwise by 1/4 turn, and screws on the right side counterclockwise by 1/4 turn.
5. Put the lock key in the support to prevent loss.

change fuse

⚠ **WARNING**

To avoid personal injury and multimeter damage, it is necessary to use the specified fuse, i.e. 100mA/250V fast fuses.

1. Turn off the multimeter and disconnect all test leads;
2. Lift the support to remove the lock key, and turn the screws on the left side of the battery cover counterclockwise by 1/4 turn, screws on the right side clockwise by 1/4 turn to remove the battery cover;
3. Gently pry up one end of the fuse, and remove it from the clip.

Note: The fuses must be replaced with those with same ratings such as amperage, voltage and fusing speed.

4. Mount the battery cover, and lock it tightly by turning the screws on the left side of the battery cover clockwise by 1/4 turn, and screws on the right side counterclockwise by 1/4 turn
5. Put the lock key in the support to prevent loss.

Fig. 4-1 Removal of Lock Key Fig.

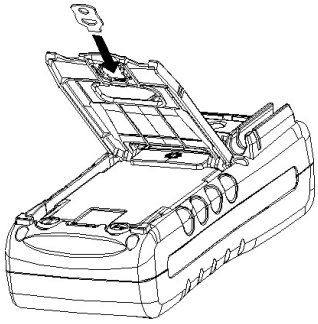


Fig. 4-2 Removal of Battery Cover Fig.

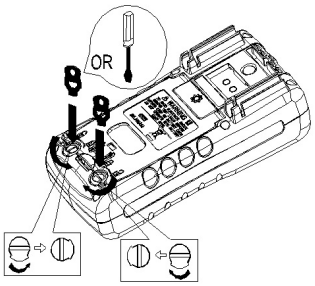
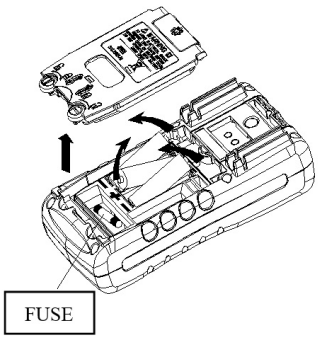


Fig. 4-3 Replacement of Battery and Fuse



6. Chapter VI

6.1. Technical specifications

6.1.1. Safety and Compliance

Overload protection - V~COM terminal: AC600V/10s; mAV port: 630mA/250V fast fuse
Regulatory compliance - IEC61010-1 (CAT IV 600V, Grade II pollution)
Electromagnetic Compatibility - In compliance with IEC61326-1, Group 1, Class B
Surge protection - 8kV (In compliance with IEC61010.1-2001)
Identification mark - CE
Quality standard - Developed, designed and manufactured in accordance with ISO 9001

6.1.2. General characteristics

Display - Digital: 4-bit display of measurement, 4-bit display of output
Refreshing measurement display - 2.5 times/second
Range of working temperature and humidity - 0-40 ºC, relative humidity ≤85% (no condensation)
Range of storage temperature and humidity - -20 ºC~60 ºC, relative humidity <90% (no condensation)
Range of accuracy-guaranteed temperature and humidity - 23±5ºC, relative humidity <75% (no condensation)
Temperature factor - 0.1 × basic accuracy / ℃ (temperature range: <18℃ or >28℃)
Environmental conditions of use - Indoor and outdoor use (non waterproof), altitude: 0-2000 meters
Outrange indication - OL
Continuity / open circuit test - The buzzer sounds to indicate that the resistance reading is below the threshold, or an open circuit
Battery Type - Alkaline battery 1.5V (LR6): 3
Power consumption - When applying alkaline batteries; Measure any parameters: approx. 80mVA; Loop detection function: approx. 200mVA; DC output (SIMULATE): approx. 80mVA; DC output (SOURCE) 20mA (1000Ω load): approx. 800mVA
Low battery level - Display battery marker
Auto power-off - It is approx. 5 minutes by default for no operation, but is adjustable
Pre-heat time - 10 minutes
Turn off enclosure calibration - No internal adjustment required
Battery cover - Replacement of batteries will not fail the calibration
Size - 185(L)×90(W)×54(D)mm
Weight - Approx. 500g
Calibration cycle - 1 year

6.1.3. Detailed accuracy index

The accuracy is determined within one year after calibration at a working temperature of 23 ± 5ºC and a relative humidity of 75%.
The range of accuracy can be indicated as: ± ([% of reading]+count) (Note: ”count” represents the number of increases or decreases in the least significant digit).

6.1.4. Detailed measurement accuracy index

Function /// Measurement range /// Measuring range /// Resolution /// Precision

DC Voltage DCV /// 50V /// -51.00V-51.00V /// 10mV /// 0.1%+0.04V
AC voltage ACV /// 500V /// 0.0V-510.0V /// 100mV /// 1%+1V
VFC /// 500V /// 0.0V-510.0V /// 100mV 4%+1V
Ohm OHM /// 5kΩ /// 0-5.100kΩ /// 0.001kΩ /// 0.1%+0.004 kΩ
Ohm OHM /// 500Ω /// 0-510.0Ω /// 0.1Ω /// 0.1%+0.4Ω
DC current DCI /// 50mA /// -50.00mA-50.00mA /// 0.01mA /// 0.1%+0.04mA
Diode /// 2V /// 0.000V-2.100V /// 0.001V /// 1%+0.02V ≤1VBB
Continuity test /// 500Ω /// 0.0-510.0Ω /// 0.1Ω /// ≤50ΩBB
1. Input common-mode rejection: 50Hz /60 Hz > 100dB; Input series-mode rejection: 50Hz /60 Hz > 40dB
2. Temperature coefficient: 0.1 × basic accuracy / ℃ (temperature range: <18℃ or >28℃)

6.1.5. Detailed output accuracy index

Function /// Measurement range /// Setting range of output /// Resolution /// Accuracy /// Remarks
DC Voltage DCV /// 10V /// -1.00V-11.00V /// 10mV /// 0.2%+0.04V /// Max. output current: 5mA
DC current DCI /// 20mA /// 0.00-22.00mA /// 0.01mA /// 0.2%+0.04 mA /// 20mA max. load 1KΩ
Analog transmitter SIMULATE /// -20mA /// 0.00~-22.00mA /// 0.01mA /// 0.2%+0.04 mA /// External supply voltage: 5-28V
Loop PS LOOP /// 24V /// /// /// ±10% /// Maximum output current: 25mA
1. Load characteristics: Capacitive load ≥ 0.01uF.
2. Temperature coefficient: 0.1 × basic accuracy / ℃ (temperature range: <18℃ or >28℃)

Notices to Usage

- The Instruction is subject to revisions without prior notices.
- The Instruction is considered to be correctly prepared. In case of any errors, omissions, etc., please contact the manufacturer.
- The company is held harmless from any accidents and hazards due to error operation of the user.
- Functions detailed in the Instruction constitute no basis of the product for special purposes.