V/mA calibrator

1 Introduction

V/mA calibrator (hereinafter referred to as calibrator) is a hand-held portable instrument powered by battery and capable of measuring and outputting electrical and physical parameters. Can be used for measuring DC voltage, DC current; And simulating output DC voltage, DC current.

2 Contact Us

To order parts, look for operational assistance, or to obtain a location closest to your dealer or service center, please call or visit the company website at: (See the back cover of the manual)

3 Standard Configuration

The items listed below are contained in your calibrator. If you notice that the calibrator is damaged or missing something, contacting the purchasing unit immediately is necessary. To order replacement parts or spare parts, refer to the list of user replaceable spare parts in 15.3 of this manual.

- Industrial test lead (H000001-00) 2 pairs
- Instruction Manual_Chinese (E1000248-10) 1 copy
- Fuse (D610027-00) 2 units
- Latch key (C110221-00) 1 unit
- AA alkaline battery 3 pieces

4 Safety Information

The user should use the calibrator by following the instructions in this manual, otherwise the protection provided by the calibrator may be damaged. The Company will not be liable for any damage caused by failure to follow the safety warning information given. "⚠**Warning"** indicates a situation or action that has the possibility to pose a hazard to the user; "Caution" indicates a condition or action that has the possibility to cause damage to the calibrator or equipment under test. Refer to Table 1 for an explanation of the calibrator and the international electrical symbols used in this manual.

Table 1. International Electrical Symbols

	Grounding		Warning message

⚠Warning

To avoid electric shock or personal injury:

- It's not allowed to apply a voltage between terminals or between any terminal and ground that exceeds the rated voltage marked on the calibrator.
- Before use, measure a known voltage to verify that the calibrator is working properly.
- Follow the safety procedures for all equipment.
- It's not allowed to use a damaged calibrator. Inspect the calibrator housing for breaks or missing plastic parts prior to use. Attention to the insulation around the joint is required.
- Select the correct function and range gear in line with the measurement requirements.

- Make sure the battery door is securely closed before using the calibrator.
- Remove the calibrator test line before opening the battery door.
- Inspect the test wire for damage or exposed metal. Check that the test leads are conducting. Replace the damaged test wire before employing the instrument.
- Avoid touching the metal contacts of the probe with your fingers when using the probe. Keep your finger behind the finger guard of the probe.
- When connecting wires, the common line shall be connected first and then the live test line. When removing the wire, the live test wire shall be removed first.
- Do not use the instrument if it is not working properly. Protective measures may have been compromised. If there is any doubt, the instrument should be sent for repair.
- It's not allowed to use the instrument near explosive gases, vapors or dust.
- The calibrator shall be powered by 3 AA LR6 batteries, which shall be properly mounted in the instrument housing.
- Remove the test line before switching between different measurement or output functions.
- Use the specified replacement parts when repairing the calibrator.
- Replace the battery immediately when the symbol “  ” appears on the display screen for low battery to avoid possible electric shock or personal injury due to incorrect readings

5 Recognize the calibrator

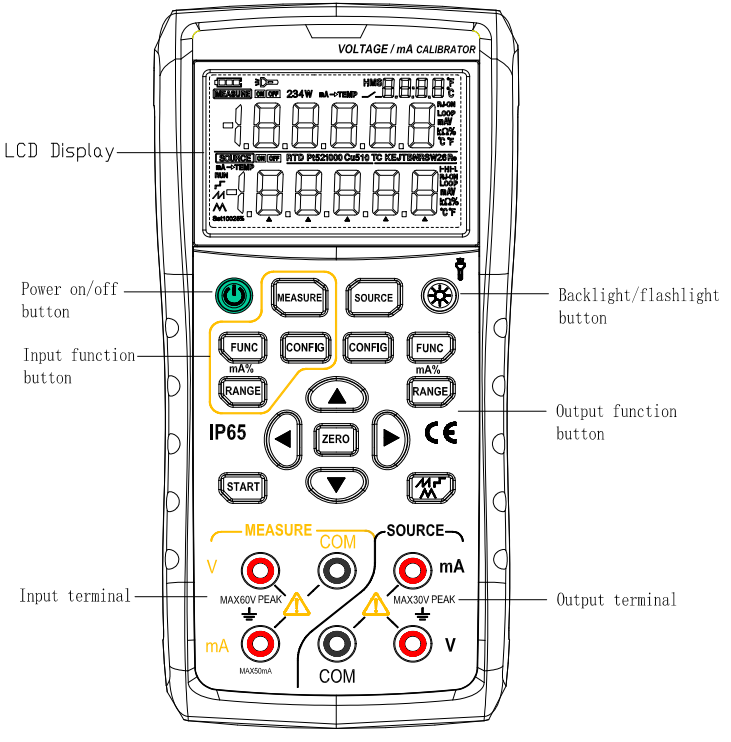


Figure 1. Overall Diagram

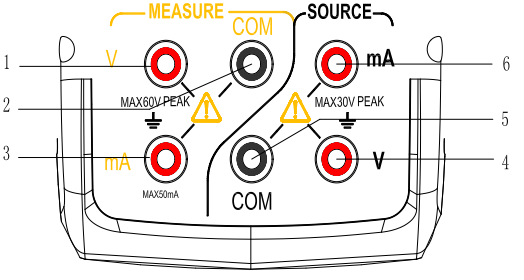


Figure 2. Input/Output Terminals

5.1 Input and output terminals

Figure 2 shows the input and output terminals of the calibrator. Table 2 explains their use.

2. Input/output terminal

Terminal	Functional description
1	V terminal: DCV measurement (+) input terminal
2	Common (-)(return) terminal for all inputs
3	mA terminal: DCI measurement (+) input terminal
4	V terminal: DCV Output (+)terminal
5	Common (-)(return) terminal for all Output
6	mA terminal: DCI Output (+)terminal

5.2 Button

The calibrator buttons are shown in Figure 3 and their functions are explained in Table 3.

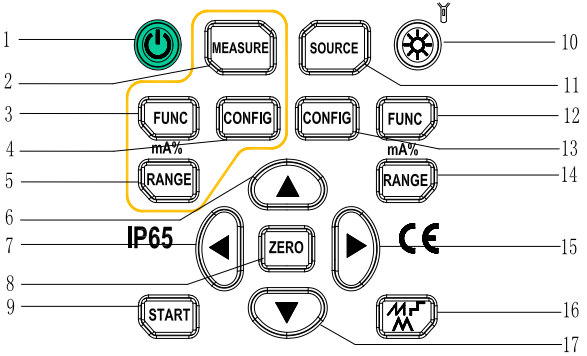


Figure 3. Button Functions

Table 3. Button Functions

Serial No.	Button name	Description
1	Power button	Power on/off
2	**MEASURE**	Open input
3	Input **FUNC**	Input function selection
4	Input **CONFIG**	Input function settings
5	Input **RANGE**	Input range selection; Switch display interface by pressing this button during current function
6, 17	Output setting button	Output setting position increase/decrease
7,15	Output setting button	Output setting position left/right
8	ZERO	Press this button to reset the output value to the default, and save settings during factory maintenance setup.
9	START	For the output current function, it serves as the start/stop button for automatic waveform output.
10	Backlight/flashlight button	Short press the backlight on/off, long press the flashlight on/off
11	**SOURCE**	Start output
12	Output **FUNC**	Output function selection
13	Output **CONFIG**	Output function setting
14	Output **RANGE**	Output range selection; Switch display interface by pressing this button during current function
17	Output waveform switching button	Current output automatic waveform output waveform selection, press this button to switch the display interface during TC and RTD functions.

5.3 Display screen

a: Battery status symbol

b: Input signal connected indicator

c: Input signal disconnected indicator

d: Input signal polarity flag

e: Input display value

f: Instrument output operating mode

g: Output signal on indicator

h: Output signal off indicator

i: Output current automatic waveform operation indicator

j: Output signal polarity flag

k: Automatic sawtooth wave flag for output current

l: Output current automatic step wave flag

m: Automatic triangular wave flag for output current

n: Output current spanindicator

o: Output display value

p: Output value units

q: Input value units

r: Flashlight indicator

s: Instrument measurement operating mode

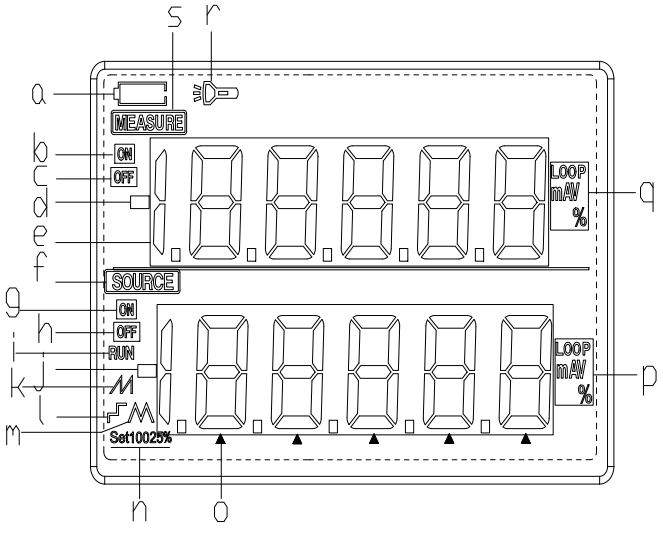


Figure 4. Typical display screen

6 Preparation

■ Precautions for operation

Safe use of the calibrator

- Always read the safety information listed in Section 4 when using the calibrator for the first time.
- Avoid opening the instrument housing.

  Contact the dealer from whom you purchased the product for checking or repairing the internal components of the instrument
- Faulty Conditions

  Immediately turn off the instrument and remove the battery once the instrument starts to smoke, emits a strange smell, or is otherwise abnormal. Then contact the dealer from whom you purchased the instrument.

■ Ordinary operation

- Turn off the power to the instrument under test and then the calibrator before moving the calibrator. Finally, unplug all test lines from the calibrator. Employ a professional shipping box for transporting the calibrator.
- Do not allow any live objects to approach the calibrator to prevent damage to the calibrator's internal circuitry.
- It's not allowed to employ any volatile chemicals on the calibrator housing and operating panel, and avoid the calibrator to be attached to any object made of rubber or vinyl for an extended period of time. Take care to prevent soldering iron solder or hot objects from coming into contact with the operation panel, which is made of thermoplastic resin.
- Refer to the “Installing or Replacing Batteries” section for safe operation of the battery.
- Avoid using the calibrator without the battery door installed.

■ Environmental Requirements

Use the instrument under the environmental requirements listed below

- Ambient temperature and humidity

  Ambient temperature: 0-50℃

  Ambient humidity: 20%-80%, employ the instrument under non-condensing conditions

- Use it in flat and horizontal places

■ Avoid using the instrument in the following environment

- In direct sunlight or near heat sources
- Near mechanical vibration
- Near any interference sources, such as high-voltage equipment or engine power supplies
- Near any electromagnetic fields or high-density power areas
- Places filled with large amounts of oil fume, heat flow, dust or corrosive gases
- In areas where there is instability or the presence of flammable gases that could cause explosions,

Note:

- If very accurate measurements or output results are required, use the calibrator under the environmental requirements listed below:
  Ambient temperature range: 23±5℃; Ambient humidity range: 20-80%(no condensation)
  Refer to the index section and add an additional error value for the temperature coefficient to achieve a given accuracy when using the calibrator at 0-18°C or 28-50°C.
- When the humidity of the surrounding environment where the instrument is located is lower than 30%, use an anti-static pad or take other effective measures to prevent the generation of static electricity.
- If moving the instrument from a place where the ambient temperature or humidity is relatively low to a place where the ambient temperature is relatively high is necessary, or if the instrument is to undergo a sudden change in temperature. In this case, preheat the instrument for at least one hour at the ambient temperature before use to ensure normal operation.

■ Install or replace the battery

Warning ⚠

- To avoid electric shock, the test wire must be removed from the calibrator before opening the battery door. The battery door must be closed tightly before using the calibrator.

Caution

- To prevent the danger of liquid leakage or battery explosion, the positive and negative poles of the battery shall be installed correctly.
- Avoid short-circuiting the battery.
- Do not disassemble or heat the battery, or throw the battery into a fire.
- Replace the battery with three identical batteries at the same time.
- Please remove the battery from the calibrator if the calibrator is not used for an extended period of time.

Step 1: Remove the test line and charger and turn off the calibrator before starting to replace the battery.

Step 2: Employ a flat-head screwdriver, rotate the battery compartment screw

counterclockwise by a quarter turn and remove the battery compartment cover.

Step 3: Properly install 3 AA LR6 alkaline batteries in the direction indicated in the battery compartment.

Step 4: Close the battery door again after replacing the battery.

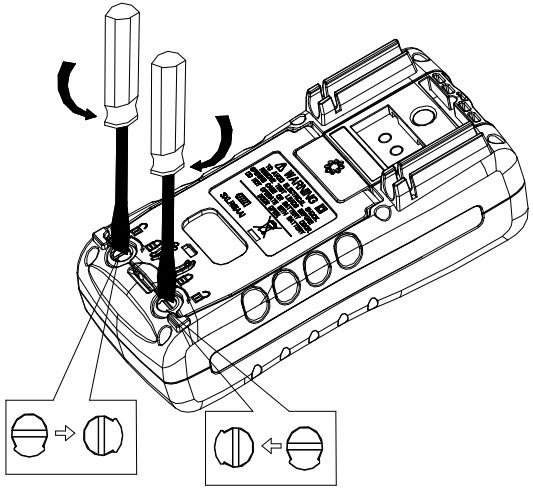


Figure 5

■ Power switching

Press the power button to turn on the calibrator when the power is off; Turn off the calibrator by pressing the power button for 2 seconds while the calibrator is on.

■ Automatic shutdown

The calibrator automatically shuts down when there is no button operation within the default 5 minutes of factory settings. The automatic shutdown time can be set in the factory settings, refer to Chapter 9 “Factory Settings” section for details.

■ Turn the backlight on and off

Press the Backlight button to turn on the backlight, and press it again to turn off the backlight. This makes it easier to see what is on the display in a dark place, or when performing an output or measurement. Turning on the backlight will reduce battery life when the calibrator is operating on a battery.

Note

The backlight is automatically turned off after about 60 seconds by default, and the backlight is turned on again by pressing the backlight button.

The backlight activation time can be set in the factory settings, refer to Chapter 9 “Factory Settings” section for details.

7 Use output mode

Use the calibrator to output DC voltage signal and current signal.

⚠Warning

To avoid electric shock, it's not allowed to apply a voltage between the calibrator's terminals or between any terminal and ground that exceeds the rated voltage marked on the calibrator, use the calibrator in any terminal-to-ground voltage situation where the peak voltage does not exceed 30V.

7.1 Connect the leads to the output terminals

Connection method for DC Voltage outputs (Figure 6)

Step 1: Connect the black lead to the ‘COM’ side of the output and the red lead to the ‘V' terminal of the output.

Step 2: Connect the other ends of the two leads to the input of the device being controlled, ensuring the correct polarity of the terminals.

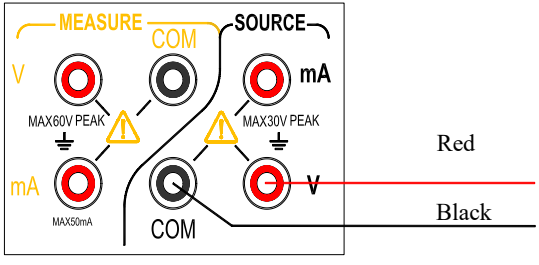


Figure 6. DC Voltage outputs

Connection method for DC Current outputs (Figure 7)

Step 1: Connect the black lead to the ‘COM’ side of the output and the red lead to the ‘mA' terminal of the output.

Step 2: Connect the other ends of the two leads to the input of the device being controlled, ensuring the correct polarity of the terminals.

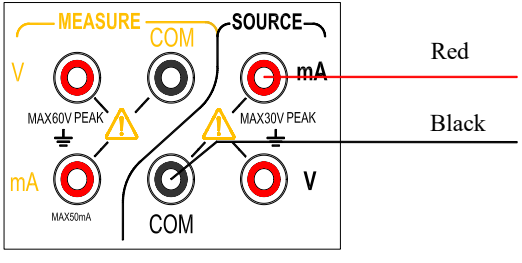


Figure 7. DC Current outputs

7.2 Output DC Voltage

Step 1: Switch the function to DC voltage function (the default startup function is DCV) by pressing the **[FUNC]** button of the output function buttonboard, and the V character in the lower half display area of the display screen is on.

Step 2: Use the Output Set button to set the output value.

Change the output setting position: [◄]/[►]

Change the output value: [▲]/[▼]

Set the output set value to the default initial value (0) by pressing the **[ZERO]** button.

Step 3: Press the **[SOURCE]** button, and the currently set voltage signal will be output between the output terminals,at which point the display's output signal on indicator **[ON]** will light up.

Step 3: When ending the output, press the **[SOURCE]** button to turn off the output,

at which point the display output signal off indicator **[OFF]** lights up.

7.3 Output DC current (active)

Step 1: Switch the function to the DC current function by pressing the **[FUNC]** button of the output function buttonboard, and both the'LOOP'and'mA'characters in the lower display area will light up simultaneously.

Step 2: Use the Output Set button to set the output value.

Change the output setting position: [◄]/[►]

Change the output value: [▲]/[▼]

Step 3: Press the **[SOURCE]** button, and the current set current signal will be output between the output terminals, at which point the display's output signal on indicator **[ON]** will light up.

Step 4: When ending the output, press the **[SOURCE]** button to turn off the output, at which point the display output signal off indicator **[OFF]** lights up.

7.3.1 Output current automatic step output mode

Step 1: Press the **[FUNC]** button of the output function buttonboard to switch the function to the DC current function

Step 2: Switch the function to DC current step mode by pressing the [] button of the output function buttonboard, and the symbol of the display screen is on.

Step 3: DC current step mode parameter setting

- Enter the parameter setting interface of DC current step mode by pressing the **[CONFIG]** button of the output function buttonboard, at which point the upper part of the display will show the character STEP, indicating step size setting, and the lower part of the display will show the parameters to be set;
- Set the required step time (1-200S) by using the button **[▲]/[▼]/[◄]/[►]**;
- Press the **[ZERO]** button to save the setting.
- Press the **[CONFIG]** button to exit the setting interface.

Step 4: Press the **[SOURCE]** button of the output function buttonboard to turn on the output, at which point the display output signal on indicator **[ON]** lights up.

Step 5: Start the automatic step output of current by pressing the **[START]** button, at which point the display's [**RUN**] indicator will light up.

Step 6: To end the automatic stepping output current, first press the **[START]** button to stop the automatic stepping output current, at which point the display's [**RUN**] indicator will turn off; Press **[SOURCE]** button surface to turn off the output, at which point the display's output signal off indicator **[OFF]** will light up.

7.3.2 Output current automatic sawtooth output mode

Step 1: Press the **[FUNC]** button of the output function buttonboard to switch the function to the DC current function

Step 2: Press the [] button of the output function buttonboard to switch the function to DC current automatic sawtooth wave mode, at which point the display's symbol will light up.

Step 3: DC current sawtooth mode parameter setting

- Press the **[CONFIG]** button of the output function buttonboard to enter the parameter setting interface of DC current sawtooth mode, at which point the upper part of the display will show the character START, indicating the setting of the starting current value, and the lower part of the display will show the parameters to be set;
- Set the required starting point current using the **[▲]/[▼]/[◄]/[►]** buttons;
- Press the **[ZERO]** button to save the setting and automatically switch to the next setting item, at which point the upper part of the display will show the character STOP, indicating the setting of the ending current value, and the lower part of the display will show the parameters to be set;
- Set the desired end current using the **[▲]/[▼]/[◄]/[►]** buttons;
- Press the **[ZERO]** button to save the setting and automatically switch to the next setting item, at which point the upper part of the display will show the character CYC, indicating the cycle setting, and the lower part of the display will show the parameters to be set;
- Set the required period (5-200s) with the **[▲]/[▼]/[◄]/[►]**buttons, and press the **[ZERO]** button to save the setting.
- Press the **[CONFIG]** button to exit the setting interface.

Step 4: Press the **[SOURCE]** button of the output function buttonboard to turn on the output, at which point the display output signal on i ndicator **[ON]** lights up.

Step 5: Start automatically stepping current output by pressing the **[START]** button again, at which point the display's [**RUN**] indicator will light up.

Step 6: To end the automatic stepping output current, first press the **[START]** button to stop the automatic stepping output current, at which point the display's [**RUN**] indicator will turn off; Press **[SOURCE]** button surface to turn off the output, at which point the display's output signal off indicator **[OFF]** will light up.

7.3.3 Output current automatic triangular wave output mode

Step 1: Press the **[FUNC]** button of the output function buttonboard to switch the function to the DC current function

Step 2: Press the [] button of the output function buttonboard to switch the function to DC current automatic sawtooth wave mode, at

which point the display's symbol ⩚ will light up.

Step 3: DC current sawtooth mode parameter setting

- Press the **[CONFIG]** button of the output function buttonboard to enter the parameter setting interface of DC current sawtooth mode, at which point the upper part of the display will show the character START, indicating the setting of the starting current value, and the lower part of the display will show the parameters to be set;
- Set the required starting point current using the **[▲]/[▼]/[◄]/[►]** buttons;
- Press the **[ZERO]** button to save the setting and automatically switch to the next setting item, at which point the upper part of the display will show the character STOP, indicating the setting of the ending current value, and the lower part of the display will show the parameters to be set;
- Set the desired end current using the **[▲]/[▼]/[◄]/[►]** buttons;
- Press the **[ZERO]** button to save the setting and automatically switch to the next setting item, at which point the upper part of the display will show the character CYC, indicating the cycle setting, and the lower part of the display will show the parameters to be set;
- Set the required period (5-200s) by using the button **[▲]/[▼]/[◄]/[►]**;
- Press the **[ZERO]** button to save the setting.
- Press the **[CONFIG]** button to exit the setting interface.

Step 4: Press the **[SOURCE]** button of the output function buttonboard to turn on the output, at which point the display output signal on indicator **[ON]** lights up.

Step 5: Start automatically stepping current output by pressing the **[START]** button again, at which point the display's [**RUN**] indicator will light up.

Step 6: To end the automatic stepping output current, first press the **[START]** button to stop the automatic stepping output current, at which point the display's [**RUN**] indicator will turn off; Press **[SOURCE]** button surface to turn off the output, at which point the display's output signal off indicator **[OFF]** will light up.

Tip: During the current output function, switch to the percentage display mode by pressing the **[RANGE]** button on the output function buttonboard. In this interface, only the percentage of the current output value in the range can be viewed, and output setting cannot be performed; Press the **[RANGE]** button on the output function buttonboard to switch back to the current display interface for performing output setting.

7.4 Output DC current (passive)

Step 1: Switch the function to the passive DC current function by pressing the **[FUNC]** button of the output function buttonboard. The mA character displayed in the lower display area of the display screen is lit.

See Active DC current function for other operations.

Tip: The wiring of the passive DC current function is the same as that of the active DC current, but the passive DC current needs to be externally connected with 5-28V DC power supply.

7.5 Zero function

- In any range of DC voltage, DC current, resistance, thermocouple, thermal resistance and current linear conversion temperature output function, pressing the **[ZERO]** button to perform a zero operation is allowed, setting the output set value to the default initial value, making it convenient for users to reset the output value.

8 Use Measurement Mode

With the calibrator, DC voltage and DC current can be measured.

⚠Warning

- The measurement function of the calibrator is used where a lead connection is required for measurement. The maximum voltage allowed for any input terminal to ground is 60V peak. To avoid electric shock, avoid applying any voltage from the terminal to ground that exceeds the maximum voltage.

Tip:

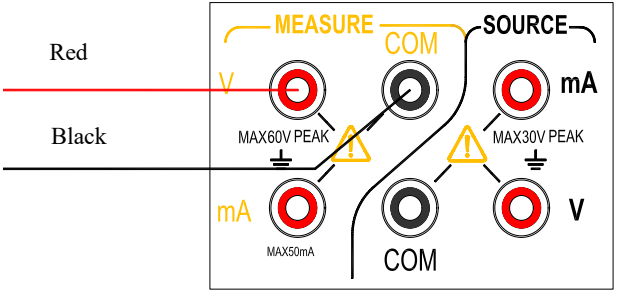
- The symbol “OL” is displayed in the upper part of the display screen when the measured value exceeds the measuring range of this range.

8.1 Connect leads to input terminals

Connection method for measurement of DC voltage(Figure 8)

Step 1: Connect the black lead to the input's' COM'terminal and the red lead to the input's' V 'terminal.

Step 2: Connect the other ends of the two leads to the measurement terminals of the device under test, ensuring the correct polarity of the terminals.

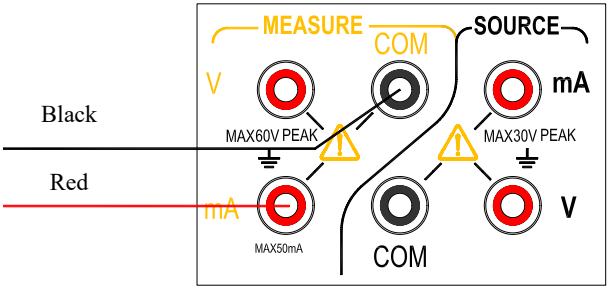


gure 8. Measurement of DC voltage

Connection method of DC current (Figure 9)

Step 1: Connect the black lead to the input's 'COM' terminal and the red lead to the input's 'mA ' terminal.

Step 2: Connect the other ends of the two leads to the measurement terminals of the device under test, ensuring the correct polarity of the terminals.



gure 9. Measurement of DC current

⚠Warning

- Power off the equipment before connecting the calibrator to the equipment under test.

⚠Warning

If wrong operation is performed on the circuit or during the measurement, the instrument may be damaged or personnel injury may be caused. Therefore, it is necessary to pay attention to the measurement operation as much as possible.

8.2 Measure DC voltage

Step 1: Ensure that the measurement leads are disconnected from the DUT.

Step 2: Press the **[MENSURE]** button to activate the measurement function, at which point the display's input signal on indicator **[ON]** will light up.

Step 3: Switch the function to the DC voltage function (the default function is DCV when the measurement is opened) by pressing the

[FUNC] button of the input function buttonboard. At this time, the mV character in the upper part of the display screen is on; Switch to the required range (100mV, 1V, 30V) by pressing the **[RANGE]** button on the input function buttonpad.

Step 4: Connect the measurement lead to the measurement end of the equipment under test, at which point the main display area at the top of the measurement area on the display will show the measurement value.

Step 5: After the measurement is finished, press the **[MENSURE]** button to turn off the measurement function, at which point the display's input signal off indicator **[OFF]** will light up..

8.3 Measure DC current

Step 1: Ensure that the measurement leads are disconnected from the DUT.

Step 2: Press the **[MENSURE]** button to activate the measurement function, at which point the display's input signal on indicator **[ON]** will light up.

Step 3: Switch the function to the DC current function by pressing the **[FUNC]** button of the input function buttonboard. At this time, the mA character in the upper part of the display screen is on.

Step 4: Connect the measurement lead to the measurement end of the equipment under test, at which point the main display area at the top of the measurement area on the display will show the measurement value.

Step 5: After the measurement is finished, press the **[MENSURE]** button to turn off the measurement function, at which point the display's input signal off indicator **[OFF]** will light up..

8.4 External 24V for current measurement

Step 1: Ensure that the measurement leads are disconnected from the DUT.

Step 2: Press the **[MENSURE]** button to activate the measurement function, at which point the display's input signal on indicator **[ON]** will light up.

Step 3: Switch the function to the DC current function by pressing the **[FUNC]** button of the input function buttonboard, at which point both the mA and LOOP characters in the upper part of the display screen light up simultaneously.

Step 4: Connect the measurement lead to the measurement terminal of the equipment under test, at which point the measurement value

appears in the upper part of the measurement area display screen.

Step 5: After the measurement is finished, press the **[MENSURE]** button to turn off the measurement function, at which point the display's input signal off indicator **[OFF]** will light up..

Tip: This function provides 24V power to the external device loop and measures the current in the loop.

9 Factory settings

The calibrator can change the default factory settings.

Entry method: Press and hold the backlight button, then press the power button to start the machine, and release the backlight button after the instrument enters the setting interface.

9.1 Set automatic shutdown time

Step 1: After entering the setting interface, the display screen shows “APOF”, indicating the automatic shutdown setting.

Step 2: Set the required parameters with the setting buttons **[▲]/[▼]/[◄]/[►]**, and the display value of the automatic shutdown time is minute.

Setting range: 0 to 60 minutes; 0 refers to cancellation of automatic shutdown, and other values represent instrument shutdown after corresponding time

Step 3: Press the **[ZERO]** button to make the display display the “SAVE” mark and save the setting.

9.2 Set backlight time

Step 1: Make the display screen show “BLOF” by pressing the **[MEASURE]** button, indicating the backlight time setting.

Step 2: Set the required parameters with **[▲]/[▼]/[◄]/[►]**, and the display value of backlight time is in seconds.

Setting range: 0-3600 seconds; 0 represents cancellation of automatic backlight shutdown, and other values stand for instrument backlight shutdown after corresponding time.

Step 3: Press the **[ZERO]** button to make the display display the “SAVE” mark and save the setting.

9.3 Set flashlight time

Step 1: Make the display screen show “LTOF” by pressing the **[MEASURE]** button, indicating the time setting of the flashlight.

Step 2: Set the required parameters with **[▲]/[▼]/[◄]/[►]**, and the display value of the flashlight time is in minutes.

Setting range: 0-30 minutes; 0 represents cancellation of automatic backlight shutdown, and other values stand for instrument backlight shutdown after corresponding time.

Step 3: Press the **[ZERO]** button to make the display display the “SAVE” mark and save the setting.

9.4 Default factory settings

Step 1: Make the display screen show “FACT” by pressing the **[MEASURE]** button, indicating the factory default setting.

Step 2: Use **[▲]/[▼]** to set the required parameters;

Where NO indicates that all settings do not restore factory parameters, and YES indicates that all settings restore factory parameters.

Step 2: Press the **[ZERO]** button to make the display display the “SAVE” mark and save the setting.

All set factory parameters are as follows:

APOF: 5 minutes.

BLOF: 60 seconds.

LTOF: 5 minutes.

Tip: As long as the setting of any item is changed, save the setting value by pressing the **[ZERO]** button. Pressing the **[ZERO]** button at any time will save only the latest setting value.

10 Replace battery or fuse

⚠Warning

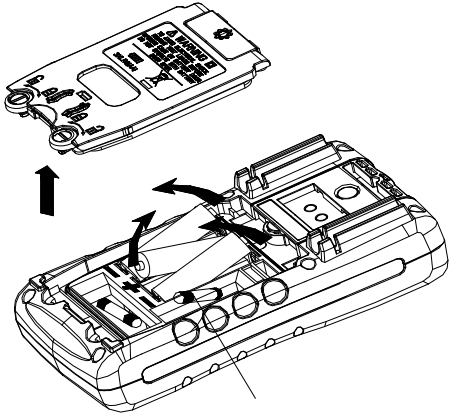
To avoid electric shock, the test leads must be removed from the calibrator before opening the battery door. The battery door must be closed tightly before using the calibrator.

Caution

- To prevent the danger of liquid leakage or battery explosion, the battery shall be installed correctly. Positive and negative polarity
- Avoid short-circuiting the battery.
- Do not disassemble or heat the battery, or throw the battery into a fire.
- Replace the battery with 3 identical batteries at the same time.
- Please remove the battery from the calibrator if the calibrator is not used for an extended period of time.igure 12. Replace the battery and fuse

Step 1: Remove the test line and charger and turn off the calibrator before starting to replace the battery or fuse.

Step 2: As shown in Figure 16, use a flat-head screwdriver to rotate the battery compartment screw counterclockwise by a quarter turn and remove the battery compartment cover.



FUSE

Step 3: Correctly install 3 identical AA LR6 batteries in the direction indicated in the battery compartment. Or replace the fuse of the same model (100mA/250V).

Step 4: After replacing the battery, re-close the battery door and lock the buckle.

11 Maintenance

11.1 Clean the calibrator

⚠Warning

To avoid personal injury or damage to the calibrator, use the specified replacement parts without allowing water to enter the housing.

Caution

To avoid damage to plastic lenses and housings, avoid employing solvents or abrasive cleaners. Clean the calibrator with a soft cloth dipped in water or mild soapy water.

11.2 Calibration or Repair Service Center

Calibration, repair or maintenance of instruments should only be performed by experienced service personnel. If the calibrator is malfunctioning, first check the battery and replace it if necessary.

Confirm that the calibrator is operating in line with the instructions in this manual. If the calibrator is faulty, include a description of the fault and send it back with the calibrator. If the original packaging is still available, pack the calibrator securely and send it to the nearest service center (please pay for postage and insurance). We do not accept liability for damage in transit.

Calibrators that are guaranteed by our company can be quickly repaired or replaced (at our discretion) and sent back free of charge. Please refer to the warranty clauses in this specification. If the warranty period has expired, there will be a charge for repairing the calibrator. If the calibrator is not covered by warranty, please contact our authorized service center for repair and charges. Please refer to the “Contact us” section at the front of the manual to find an authorized service center.

12 Index

Input measurement function [Applicable within one year after calibration, 23°C±5°C, 20 ～ 70%RH, Accuracy=±(%Setting Value+Digit)]

Measurement function	Range	Measuring range	Resolution	Accuracy	Remarks
DC Voltage DCV	100mV	-110.000mV~110.000mV	0.001mV	0.05%+0.03mV	Input resistance: Approximately 1MΩ
	1V	-1.1000V~1.1000V	0.0001V	0.05%+0.3mV	
	35V	-35.000V～35.000V	0.001V	0.02%+2mV	
DC current DCI	30mA	-35.000mA~35.000mA	0.001mA	0.02%+4uA	Shunt resistance: Approximately 10Ω Input resistance: Approximately 20Ω
Loop power supply	24 V			10%	

Other features:

- Standard uncertainty, hysteresis, non-linearity, repeatability, and typical long-term stability are covered in uncertainty over the period mentioned (K=2).
- Display refresh rate: 2-3 times per second.
- Maximum applied voltage at input terminal: 60Vpk。
- Input terminal protection: 100mA fuse.
- Input common-mode rejection: 50Hz/60Hz >80dB; Input differential-mode rejection: 50Hz/60Hz >40dB
- Temperature coefficient: 0.1×Basic accuracy/°C (Temperature range <18°C or >28°C)

Analog output function [Applicable within one year after calibration, 23° C±5° C, 20～70%RH, Accuracy=±（%Setting Value+Digit）]

Output function	Range	Output range	Resolution	Accuracy	Remarks
DC Voltage DCV	10V	-1.000V～11.000V	0.001V	0.05%+2mV	Maximum output current: 5mA
DC current DCI	20mA	0.000mA~22.000mA	0.001mA	0.05%+4uA	Max load of 1000Ω at 20 mA When used as an analog transmitter, the external loop power supply is 5～28V.
Loop power supply	24V			±10%	Maximum output current 25mA

Other features:

- Standard uncertainty, hysteresis, non-linearity, repeatability, and typical long-term stability are covered in uncertainty over the period mentioned (K=2).
- Maximum applied voltage at output terminal: Approximately 30Vpk; Maximum applied current at output terminal: Approximately 25mA
- Output protection: 100mA fuse.
- Temperature coefficient: 0.1×Basic accuracy/°C (Temperature range <18°C or >28°C)

13 Notes on Using This Manual

- This manual is subject to change without notice.
- The contents of this manual are considered to be correct. In case of any error or omission found by the user, please contact the manufacturer.
- The Company shall not be liable for the accidents and hazards caused by the wrong operation of the user.
- Taking functions described in this manual as the reason for using the product for special purpose is not allowed.