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1. Statement

Unless otherwise permitted and agreed in writing, no part of this Operation Manual shall be copied in any forms (including storing and retrieving this manual or translating it into any other languages) in accordance with International Copyright Law. This Operation Manual is subject to change without notice from time to time in its future versions.

1.1 Safety statement

Caution



The symbol "**Caution**" implies that the current condition and operation may damage the meter or equipment.

It requires the operator to operate the meter or device with great care. Any misoperation or any inconformity with these operational steps may lead to the damaged meter or equipment. The operator shall not continue to implement any operations indicated by the symbol "Caution" if he fails to meet all these conditions or understand fully the operational guidelines.

Warning



The symbol "**Warning**" implies that the current condition and operation will place the operator in danger.

It requires the operator to operate the meter or device with great care. Any misoperation or any inconformity with these operational steps may lead to personal injuries or deaths. The operator shall not continue to implement any operations indicated by the symbol "Warning" if he fails to meet all these conditions or understand fully the operational guidelines.

Please read carefully this Operation Manual and pay attention to warning information before operating this meter.

1.2 Safety information

This meter can only be installed and operated by qualified specialists in accordance with the safety precautions and regulations and the required technical specifications. At the same time, the use of this meter requires stringent compliance with all laws and safety regulations for specific applications. Bear in mind that some parts of electrical equipment may carry hazardous voltages when the equipment is in operation. Ignorance of any warnings can result in serious personal injuries and damage to the equipment.

"Qualified person" refers to the one who is familiar with the meter's configuration, installation, startup and operation and has the required qualifications to implement the aforesaid work.

Warning:

- ⇒ To avoid electric shock or personal injury, please operate this meter in strict accordance with the Operation Manual.
- ⇒ Do not attempt to input the voltage of more than 30V between any two input terminals.
- ⇒ The meter is prohibited from being used in the vicinity of any explosive gas, vapor or dust.
- ⇒ Don't attempt a measurement when the battery cover is left open.
- ⇒ Do not attempt a measurement in any of abnormal conditions, including the circumstances when the meter is damaged or the metal parts of the meter or measurement lines are exposed.
- ⇒ Do not mount replacement parts on the meter or modify the meter. Return the meter to local dealer for repair when it is damaged.

Warning:

- ⇒ Please remove the batteries and put them away when they are left idle or preserved.

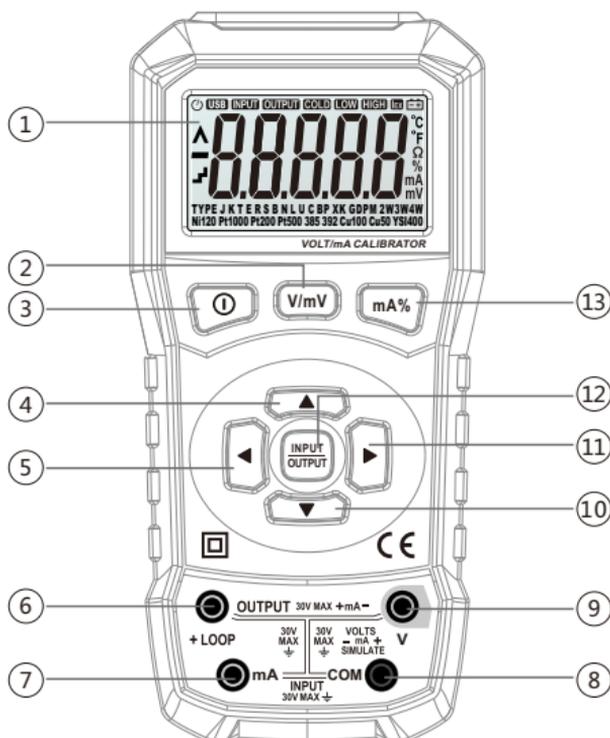
- ⇒ Do not attempt cleaning with abrasives or solvents. Instead, you may use a mild detergent or a damp cloth.
- ⇒ Confirm that the testing terminals to be used, functions and measuring ranges are correct, when using the meter for measurement or output.

2. General information

Voltage current signal source (Volt/mA Calibrator) is a Volt/mA source and measuring tool used in tests on 0-24 milliampere current circuit and 10 V DC voltage. This calibrator can not be used for measurement and output simultaneously.

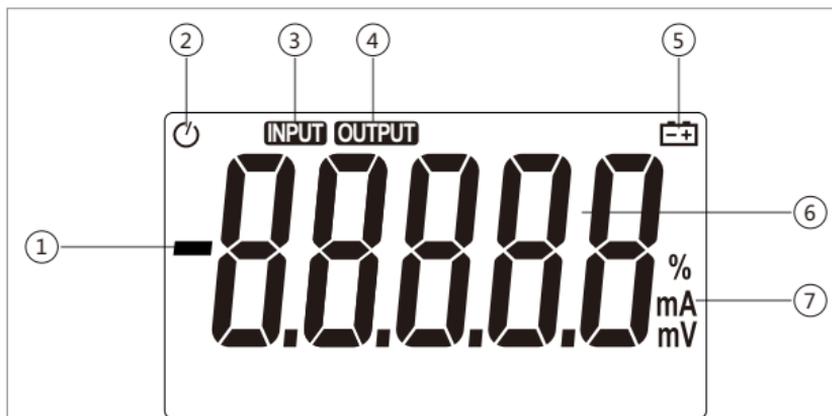
Measurement/output	0-100mV
Measurement/output V	0-10V
Measuring output mA/ (% of span)	0 to 24 mA (-25% to 125%)
Loop power	24 V DC

2.1 Description of the meter's panel



1	Display screen	8	COM jack
2	V, mV switchover key	9	V Jack
3	Power key	10	Integer digit down key
4	Integer digit up key	11	Decimal digit down key
5	Decimal digit up key	12	Measurement/output switchover key
6	LOOP jack	13	mA/mA% switchover key
7	mA jack		

2.2 LCD screen



1	Negative sign	5	Battery Low indicator
2	Auto power off indicator	6	Data display area
3	Measurement status indicator	7	Displayed unit
4	Output status indicator		

3. Operating instructions

3.1 Auto shutdown

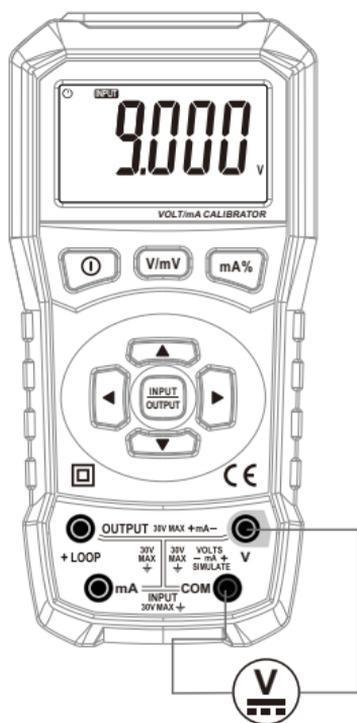
When the meter is left idle for five minutes, the meter will automatically be shut down to extend the batteries' service life.

To disable auto power off function, please follow the steps below:

1. When the meter is powered off, press the key  and hold it, then press the key  to start up. When the meter has been started up, release the press on the key  and then on the key .

2.The auto power off indication ⏻ on the display screen will disappear.

3.The reboot after shutdown will resume the function of auto power off, and the auto power off indication ⏻ will appear on the display screen.



3.2 DC voltage measurement

1.Power on the meter.

2.Press the key INPUT/OUTPUT to switch to measurement status and the word "INPUT" will appear on the display screen.

3.Press the key V/mV in accordance with the measuring range and switch to "V" or "mV" measuring range.

4. Connect test lines as shown in the figure on the right hand.
5. Capture measurement results on the display screen.

3.3 DC voltage output

1. Power on the meter.
2. Press the key  to switch to output status and the word "OUTPUT" will appear on the display screen.
3. Press the key  in accordance with the measuring range and switch to "V" or "mV" measuring range.
4. Connect test lines as shown in the figure on the right hand.
5. Press the key "Data Adjustment" and adjust the displayed value in accordance with the voltage value desired to be output.
6. Output voltage of the meter



3.4 DC measurement (milliampere)

When external power is supplied to the circuit to be measured, please choose this method to measure current.

1.Power on the meter.

2.Press the key  to switch to measurement status and the word "INPUT" will appear on the display screen.

3.Press the key  in accordance with the measuring range and switch to "MA" or "mA%" measuring range.

4.Connect test lines as shown in the figure on the right hand.

5.Capture measurement results on the display screen.



3.5 DC measurement (milliampere) with loop power supply

When no power is supplied to the circuit to be measured, let the meter provide loop power supply. Select this mode to measure current.

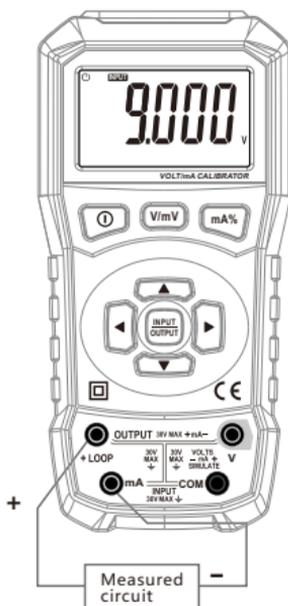
1.Power on the meter.

2. Press the key  to switch to measurement status and the word "INPUT" will appear on the display screen.

3. Press the key  in accordance with the measuring range and switch to "MA" or "mA%" measuring range.

4. Connect test lines as shown in the figure on the right hand.

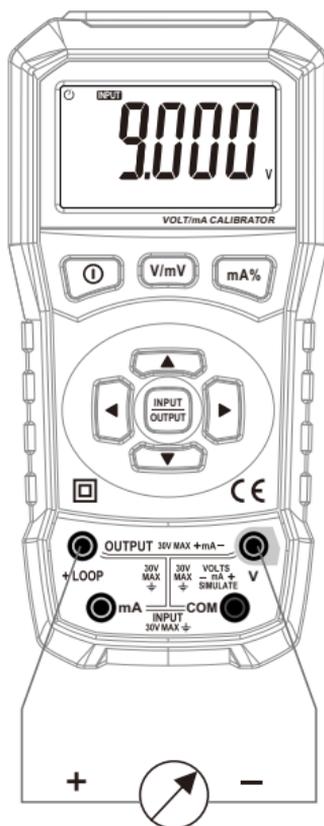
5. Capture measurement results on the display screen.



3.6 DC output (milliampere) with loop power supply

The calibrator can provide current output in accordance with milliampere value or percentage displayed. Percentage range is from -25.00 to 125.00%. 0% corresponds to 4 milliampere and 100% 20 milliampere. In the current source mode, the calibrator provides current. In the analog mode, the calibrator simulates a group of two-wire transmitters using external current loop.

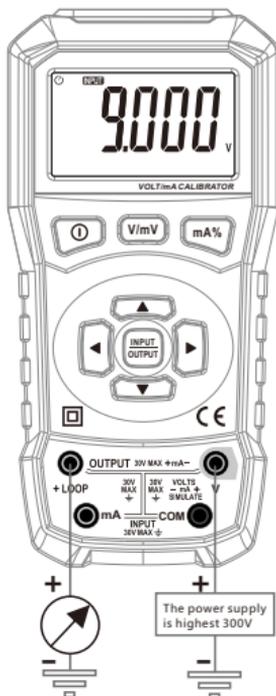
1. Power on the meter.
2. Press the key  to switch to output status and the word "OUTPUT" will appear on the display screen.
3. Press the key  in accordance with the measuring range and switch to "MA" or "mA%" measuring range.
4. Connect test lines as shown in the figure on the right hand.
5. Press the key "Data Adjustment" and adjust the displayed value in accordance with the voltage value desired to be output.
6. Output current.



3.7 DC (milliampere) analog output with Ma analog output current

If the external loop power of 24 to 30V is used, current analog mode shall be used.

- 1.Power on the meter.
- 2.Press the key  to switch to output status and the word "OUTPUT" will appear on the display screen.
- 3.Press the key  in accordance with the measuring range and switch to "MA" or "mA%" measuring range.
- 4.Connect test lines as shown in the figure on the right hand.
- 5.Press the key "Data Adjustment" and adjust the displayed value in accordance with the voltage value desired to be output.
- 6.Output current.



4. Technical parameters

Accuracy: \pm (% reading+ digit) Ambient temperature: 18°C ~ 28°C

Relative humidity: 80%.

4.1 DC voltage measurement/output

Measuring range	Resolution	Precision \pm (% reading + digit)
100 mV	0.01 mV	0.02 % + 2
10 V	0.001 V	0.02 % + 2

Input resistance: 1M Ω (nominal value), < 100pF

Over-voltage protection: 30 V

Voltage driver capacity: 1 mA

4.2 DC current input/output

Measuring range	Resolution	Precision \pm (% reading + digit)
24 mA	0.001mA	0.015 % + 4

Overload protection: 250 mA, 250V fast-acting fuse

Percentage: 0%=4mA, 100%=20mA

Analog mode: the nominal value of external loop voltage is 24V.

The value of external loop voltage ranges from 12V to 30V.

4.3 Circuit power

24 V \pm 10%

5. General specification

- The maximum voltage imposed between any input terminal and the ground or between two input terminals: 30V
- Storage temperature: -40 °C to 60 °C
- Operating temperature: -10 °C to 55 °C

- Operating altitude: up to 2000 m
- Temperature coefficient: -10°C to 18 °C and 28 °C to 55°C; measuring range $\pm 0.005 \%/^{\circ}\text{C}$
- Relative humidity: 95% (up to 30°C), 75% (up to 40°C), 45% (up to 50°C), and 35% (up to 55°C)
- Power requirements: 4X1.5V AA batteries
- Dimensions: 194mm X 94mm X 54mm
- Weight: 360g (exclusive of batteries)

6. Maintenance

6.1 Cleaning

Regularly clean housing with a damp cloth and any of detergents rather than corrosives or solvents.

6.2 Calibration

The calibrator needs to be calibrated annually to maintain its compliance with performance specification.

6.3 Battery replacement



Warning



To avoid electric shock or personal injury as a result of incorrect reading, promptly replace the battery when the battery low indicator appears.

Before replacing batteries, turn off the meter, unscrew the bolts at the back of battery cover and remove battery cover. Fuse replacement

6.4 Fuse replacement

 **Warning**



To avoid personal injury or damage to the calibrator, you must use the 125mA/250V fast-acting fuse.

Voltage current signal source Operation Manual Before replacing fuse, turn off the meter, unscrew the bolts at the back of battery cover and remove battery cover.