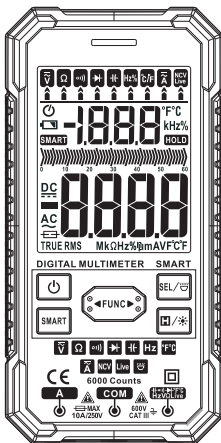


USERS MANUAL

SMART DIGITAL MULTIMETER



Before using the instrument, please read this manual carefully, and save it well for future using.

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Safety statement



Caution:

operation that may cause damage to meter or equipment.



"Warning":

operation that may cause danger to users.

Safety Instructions

The meter conforms to IEC61010-1 CAT.III 600V overvoltage safety standard and pollution level 2.

Safety specification



Warning

To avoid possible electric shock or personal injury, please observe the following specifications:

- Please read this manual carefully and pay special attention to safety warning information before using the meter.
- Operate the meter according to the manual, otherwise the protection function provided by the instrument may be damaged or weakened.
- Take special care when measuring values that exceed 60VDC, 30vac RMS, or 42V. This kind of voltage has the danger of electric shock.
- Do not measure voltage higher than the rated value between terminals or between terminals and ground.
- Measure the known voltage to check whether the meter works normally. If

it is not normal or damaged, please do not use it again.

- Before using the meter, please check whether there are cracks or damaged plastic parts in the instrument shell. If so, please do not use it again.
- Before using the meter, please check whether the probe is cracked or damaged. If so, please replace the probe with the same model and the same electrical specification.
- Please use the meter according to the measurement category, voltage or current rating specified in the meter or manual.
- Please observe local and national

safety regulations. Wear personal protective equipment (such as approved rubber gloves, masks and flame retardant clothing, etc.) to prevent injury caused by electric shock and electric arc when dangerous live conductors are exposed.

- When the "" symbol is displayed on the meter, please replace the battery in time to prevent measurement error.
- Do not use the meter in the environment with explosive gas or steam or humid environment.
- When using the probe, please hold your fingers behind the probe finger

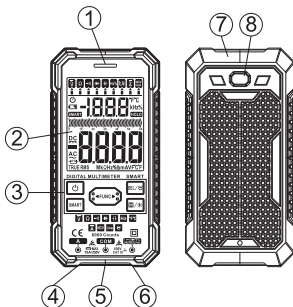
guard.

- When measuring, please connect the null or ground wire first, then the live wire; when disconnected, please disconnect the live wire first, and then the null or ground wire.
- Remove the probe from the meter before opening the case or battery cover. Do not use the meter when the meter is disassembled or the battery cover is opened.
- The meter can only be used together with the probe provided to meet the requirements of the safety standard. If the probe is damaged and needs to be replaced, the probe of the same model and electrical specification

must be replaced.

Overview

This meter is an intelligent true RMS digital multimeter. It has intelligent and professional measurement function. Full function, with gear display, analog bar multiple display.



- ① Alarm indicator
- ② Display
- ③ Function key
- ④ Current input jack
- ⑤ COM input jack
- ⑥ Input jack for other functions except current
- ⑦ NCV Sensor area
- ⑧ Flashlight

Power on / off

Press and hold the "  " key for about 2 seconds to turn on or off.

Gear selection

Press the "" key to manual mode;

Press the "" key again to select the gear to the left or right ; press the "" key to return to the intelligent (AUTO) measurement mode. Power on is in intelligent measurement mode by default.

Data hold

Press "" key to turn on or off data holding.

Flashlight

Press and hold "" key for about 2 seconds to turn on or off flashlight.

Backlight

Press "" key to turn on or off

backlight.

Note: VA display does not have this function

Warning of fuse burning out

If the fuse is burnt out, the symbol " " will be displayed. When the current gear is selected, the symbol "FUSE " will be displayed at the same time. It is not allowed to measure the current. Please replace the fuse in time.

Input jack indicator

When the gear is changed, the corresponding input light will flash for 5 times to prompt to insert the probe into

the corresponding jack.

Automatic current identification function

When the "A" jack is inserted into the probe, the meter will automatically jump to the " $\tilde{A}$ " gear and enter the current measurement function

Auto power off

After power on, auto power off will be on by default and "⏻" symbol will be displayed. Without any key operation in about 15 minutes, the meter will automatically shut down to save battery energy.

Press and hold “SEL/” key to turn on meter, the auto power off function will be canceled. The “” symbol is not displayed.

Measurement operation

Warning

- Do not measure the voltage higher than 600V; otherwise the meter may be damaged.
- Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.
- Before use, test the known voltage with the meter to confirm that the meter is in good condition.

Smart (AUTO) measurement

This measurement mode is default when power on. In this mode, DC voltage, AC voltage, resistance, continuity can be measured, and the meter can automatically identify the measurement signal.

- 1) Press  key to power on, display  and enter the intelligent measurement mode.
- 2) Insert the red probe into “  ” jack and the black probe into the “**COM**” jack.
- 3) Contact the probe of the probe with

both ends of the measured power supply or resistance (parallel), and the meter will automatically recognize the measured signal.

- 4) When measuring the resistance, the resistance value is less than about 50 Ω The buzzer sounds and the indicator light is on.
- 5) Read the results from the display.

NOTE : The minimum measurable voltage of this mode: 0.8V

Professional measurement

AC/DC voltage measurement

- 1) Press  key to power on, display

Auto and enter the intelligent measurement mode.

- 2) Press "" key to select " $\tilde{V}$ " gear.
- 3) Press the "" key to select AC voltage or DC voltage. Display "AC" symbol is AC voltage; Display "DC" symbol is the DC voltage.
- 4) Insert the red probe into " °C " jack and the black probe into the "**COM**" jack.
- 5) Contact the probe with both ends of the measured power supply (parallel).
- 6) Read the results from the display.

Resistance measurement

- 1) Press  key to power on, display **Auto** and enter the intelligent measurement mode.
- 2) Press  key to select " Ω " gear.
- 3) Insert the red probe into " °F °C Hz V Ω Live "
 jack and the black probe into the "**COM**" jack.- 4) Contact the probe with both ends of the measured resistance (parallel).
- 5) Read the results from the display.

Continuity test

- 1) Press  key to power on, display

Auto and enter the intelligent measurement mode.

- 2) Press  key to select "o1)" gear.
- 3) Insert the red probe into " HzVΩLive " jack and the black probe into the "**COM**" jack.
- 4) Contact the probe with both ends of the measured resistance or Circuit (parallel).
- 5) When the resistance value is less than about 50 Ω The buzzer sounds and the indicator light is on.
- 6) Read the results from the display.

Frequency/Duty measurement

- 1) Press  key to power on, display **Auto** and enter the intelligent measurement mode.
- 2) Press  key to select "Hz%" gear.
- 3) Insert the red probe into " F^{°C} " jack and the black probe into the **COM** jack.
- 4) Contact the probe with both ends of the measured power supply
- 5) Read the results from the display.

Capacitance measurement

- 1) Press  key to power on, display **Auto** and enter the intelligent

measurement mode.

- 2) Press  key to select "" gear.
- 3) Insert the red probe into " HzVΩLive °C "
- jack and the black probe into the **COM** jack.
- 4) Contact the probe with both ends of the measured capacitance (parallel).
- 5) Read the results from the display.

Diode test

- 1) Press  key to power on, display **Auto** and enter the intelligent measurement mode.

- 2) Press  key to select "" gear.
- 3) Insert the red probe into " F^{°C} ” jack and the black probe into the **COM** jack.
- 4) The red probe contacts the anode of the diode and the black probe contacts the cathode of the diode.
- 5) If the probe polarity is opposite to the diode polarity, the display will display "OL".
- 6) Read the results from the display.

Temperature measurement

- 1) Press  key to power on, display

Auto and enter the intelligent measurement mode.

- 2) Press  key to select "C/F" gear.
- 3) Insert the positive pole of the K-type thermocouple into the "HzVΩLive" jack and the negative pole into the **COM** jack.
- 4) The thermocouple probe contacts the measured object.
- 5) Read the results from the display.

Non-contact AC voltage detection

- 1) Press  key to power on, display **Auto** and enter the intelligent

measurement mode.

- 2) Press  key to select "NCV_{Live}" gear.

Display the "**NCV**" symbol.

- 3) The NCV sensor area is gradually close to the conductor.
- 4) When the weak electric field signal is detected, it will display "---L"; the buzzer will sound slowly and the green light on.
- 5) When the strong electric field signal is detected, it will display "---H"; the buzzer will sound quickly and the red light on.

Live wire detecting

- 1) Press  key to power on, display **Auto** and enter the intelligent measurement mode.
- 2) Press  key to select “**NCV_{Live}**” gear.
Press the  key to display the “**LIVE**” symbol.
- 3) Insert the red probe into “” jack and remove the black probe.
- 4) Use the red probe contact the conductor.
- 5) When the weak electric field signal is detected, it will display “---L”; the buzzer will sound slowly and the

green light on.

- 6) When the strong electric field signal is detected, it will display "---H"; the buzzer will sound quickly and the red light on.

AC/DC current measurement

- 1) Press  key to power on, display **Auto** and enter the intelligent measurement mode.
- 2) Press  key to select " $\tilde{A}$ " gear.
Or insert the red probe into the **A** jack to automatically select the " $\tilde{A}$ " gear.
- 3) Display "**DC**" symbol is DC current

measurement; press " " key,
display "**AC**" symbol is AC current
measurement.

- 4) Insert the red probe into **A** jack and
the black probe into the **COM** jack.
- 5) Disconnect the measured power
supply, connect the meter in series
with the power supply, and then turn
on the measured power supply.
- 6) Read the results from the display.

 Caution

**Do not measure current greater than
10A, otherwise fuse will be burnt out**

General Technical Specifications

- Environment condition of using:

CAT. III 600V;

Pollution level 2, Altitude < 2000m

Working temperature and humidity:

0~40°C(<80% RH, <10°C non condensing)

Storage temperature and humidity:

-10~60°C(<70% RH, remove the battery)

- Temperature coefficient:
0.1× accuracy /°C (<18°C or >28°C)。
- MAX. Voltage between terminals and earth ground: DC/AC 600V
- Fuse protection: F10A/250V fuse
- Sampling rate:
approx. 3 times/second.
- Display: 6000 counts
- Over range indication: “OL”.
- Low battery indication: “” will be

displayed.

- Input polarity indication: display “-”.
- Power requirement: 4 x 1.5V AAA batteries.

Accuracy Specifications

The accuracy applies within one year after the calibration.

Reference condition: the environment temperature 18°C to 28°C, the relative humidity is no more than 80%,

DC voltage

Range	Resolution	Accuracy
600mV	0.1mV	±(0.5% +3) Impedance: Approx.10MΩ
6V	0.001V	
60V	0.01V	
600V	1V	

AC voltage

Range	Resolution	Accuracy
6V	0.001V	±(0.8%+3)
60V	0.01V	
600V	1V	
Impedance:Approx.10MΩ		
Frequency Response: 40Hz~1kHz; TRMS		

Resistance

Range	Resolution	Accuracy
600 Ω	0.1 Ω	$\pm(1.0\%+5)$
6K Ω	0.001 K Ω	
60 K Ω	0.01 K Ω	
600 K Ω	0.1 K Ω	
6M Ω	0.001 M Ω	
60 M Ω	0.01 M Ω	$\pm(1.5\%+10)$
Overload protection: 250V		

AC/DC current

Range	Resolution	Accuracy
600mA	0.1mA	±(1.2%+3)
6A	0.001A	
10A	0.01A	
Overload protection:F10A/250V fuse		
Frequency Response:40Hz~1kHz; TRMS		

Capacitance

Range	Resolution	Accuracy
6nF	0.001nF	±(4.0%+5)
60nF	0.01nF	
600nF	0.1nF	
6μF	0.001μF	
60μF	0.01μF	
600μF	0.1μF	
6mF	0.001mF	±(5.0%+5)
60mF	0.01mF	
Overload protection: 250V		

Frequency/Duty

Range	Resolution	Accuracy
6Hz	0.001Hz	$\pm(1.0\%+3)$
60Hz	0.01Hz	
600Hz	0.1Hz	
6KHz	0.001KHz	
60kHz	0.01kHz	
600kHz	0.1kHz	
6MHz	0.001MHz	
10MHz	0.01MHz	
1.0~99.0%	0.1%	$\pm(1.0\%+3)$
Overload protection: 250V		

Diode/ Continuity

	Display diode voltage drop
	Approx. 50Ω, Buzzer will sound and the indicator light will be on.

Temperature

Range	Accuracy	
°C	-40°C ~ 0°C	± 3°C
	0°C ~ 1000°C	± 2.0% or ± 2°C
°F	-40°F ~ 32°F	± 6°F
	32°F ~ 1832°F	± 2.0% or ± 4°F
Resolution: 1°C/1°F		
Note: use K-type thermocouple probe		

Maintenance

Clean

When cleaning the meter, please follow the following steps:

- 1) Turn off the meter power and remove the probes.
- 2) Wipe the case with a damp cloth or mild detergent. Do not use

abrasives or solvents. Wipe the contacts in each input socket with a clean swab soaked in alcohol.

 Warning

Always keep the inside of the meter clean and dry to prevent electric shock or damage to the meter.

Replace battery

- 1) Turn off the meter power and remove the probes.
- 2) Remove the screw fixing the battery cover and remove the battery cover.
- 3) Remove the old battery and replace it with a new one of the same specification. Please pay attention to

the battery polarity.

- 4) Install the battery cover back to its original position, and fix and lock the battery cover with screws.

 Warning

- **To avoid electric shock or personal injury caused by wrong reading, please replace the battery immediately when the battery is low. Do not discharge the battery by shorting it or reversing its polarity.**
- **To operate and maintain the meter safely, please take out the battery when it is not used for a long time to prevent the battery leakage**

from damaging the product.

Replace fuse

- 1) Turn off the meter power and remove the probes.
- 2) Remove the screw fixing the back cover and remove the back cover.
- 3) Remove the burnt out fuse, replace it with a new one of the same specification, and ensure that the fuse is installed in the safety clip and clamped tightly.
- 4) Install the back cover and fix it with screws.

 **Warning**

After opening the back cover of the

**meter, do not use the instrument for
measurement to prevent electric
shock or damage to the instrument**

EMC&LVD

