USERS MANUAL

DIGITAL MULTIMETER



High voltage warning

AC or DC

Ground

Fuse

 $\overline{\sim}$

 \Rightarrow

•

X

CAT. II

CAT. III

simultaneously

!WARNING

! Caution:

the correct input.

"FUNC." key

Resistance measurement

AC (Alternating current)

Warning, important safety signs

Equipment with double insulation/reinforced insulation protection

Class II measurements are suitable for testing and measuring

Class III measurement is suitable for testing and measuring circui

Class IV measurements are suitable for testing and measurin

Product complies with all relevant European laws

DC (Direct current)

Battery under voltage

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Statement

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ray cause damage to the instrument or equipment.

It requires that you must be careful during the execution of the operation. If incorrectly perform the operation or do not follow the procedure, it may damage the instrument or equipment. In the circumstances that such conditions are not met or not fully understood, please do not continue to perform any operation indicated by the caution mark.

(*Warning" mark indicates the condition and operation which may cause danger to users.

It requires that you must pay attention during the execution of this operation. If incorrectly perform the operation or do not follow the procedure, it may result in personal injury or casualties. In the circumstances that such conditions are not met or not fully understood, please do not continue to perform any operation indicated by the warning mark.

Safety Instructions

The instrument is designed according to the requirements of the international electrical safety standard IEC61010-1 for the safety requirements of the electronic testing instruments. The design and manufacture of instruments strictly comply with the requirements of IEC61010-1 CAT.III 1000V over voltage safety standards and pollution level 2.

Safety Operation Specifications

✓️Warning

In order to avoid possible electric shock or personal injury and other safety accidents, please abide by the following specifications:

- Please read this manual carefully before using the instrument, and pay special attention to safety warning information.
- Strictly observe the operation of this manual and use this instrument. Otherwise, the protection function of the instrument may be damaged or weakened
- Please be careful if the measurement exceeds 30V AC true RMS, 42V AC peak or 60V DC. There may be danger of electric shock at this kind of voltage
- By measuring the known voltage to check whether the meter work is normal, if it is not normal or damaged, do not use it

measuring current is greater than 1A, the orange backlight will

1) Turn the knob to "Hz $\overline{\widetilde{\mathbf{V}}}$ " and Switching AC or DC voltage

2) Insert the red probe in "VΩHz%Live°C/"; "socket, insert the black

3) Contact the probe to the measured circuit (connect to the

light up, prompting the users to be careful.

Measurement operation

DC/AC voltage measurement

function by "FUNC." key

probe in "COM" socket.

 Before using the instrument, please check whether there is any crack or plastic damage in the instrument case. If you do,

- Before using the instrument, please check whether the probe is cracked or damaged. If so, please replace the same type and the same electrical specifications.
- The instrument shall be used in accordance with the
- specified measurement category, voltage or current rating. Please comply with local and national safety code. Wear personal protection equipment (such as approved rubber gloves, masks and flame retardant clothes, etc.) to prevent being damaged by electric shock and electric arc due to exposed hazardous live conductor
- When it shows low battery indicator, please replace the battery in time in case of any measurement error.
- Do not use the instrument around explosive gas, steam or in
- When using the probe, please put your fingers behind the
- finger protector of the probe. When measuring, please connect the zero line or the ground line firstly, then connect the live wire; but when disconnecting, please disconnect the live wire firstly, then disconnect the
- Before opening the outer cabinet or battery cover, please

zero line and ground line.

DC/AC voltage mV measurement

function by "FUNC." key

probe in "COM" socket.

simultaneously.

/ WARNING

3

1) Turn the knob to " $\frac{Hz}{mV}$ " and Switching AC or DC voltage

2) Insert the red probe in "WΩHz%Live%/", socket, insert the black

3) Contact the probe to the measured circuit (connect to the

4) Read the measurement result on the screen, when

The voltage above DC1000V or AC 750V can't be

Pay special attention to safety when measuring high

voltage to avoid electric shock or personal injury.

Test the known voltage with the meter before use,

1) Turn the knob to "Hz%" and Switching Frequency or duty

2) Insert the red probe in "VΩHz%Live°()'ρ" socket, insert the black

confirm the instrument function is intact.

CAT. IV 600V; CAT. III 1000V;

Pollution level 2, Altitude < 2000m

Working environment temperature and humidity:

Storage environment temperature and humidity:

• Temperature coefficient: 0.1× accuracy /°C (<18°C or >28°C) 。

Display: 6000 counter readout. Automatically display the unit

Low battery indication: when the battery voltage is lower than

the normal working voltage, "
" will be displayed.

Input polarity indication: automatically display "-".

symbols according to the shift of the measurement function.

MAX. Voltage between terminals and earth ground:

• Fuse protection: mA: F600mA/250V fuse

Sampling rate: about 3 times/second.

Over range indication: it displays "OL".

DC1000V/AC750V

0~40°C (<80% RH, <10°C non condensing)

-10~60°C (<70% RH, remove the battery)

10A: F10A/250V fuse

Frequency/Duty measurement

function by "FUNC." key

probe in "COM" socket.

measured power supply or circuit in parallel), measure the

measuring AC voltage the frequency is displayed on LCD

measured; otherwise the instrument may be damaged.

3) Contact the probe to the measured circuit (connect to the measured power supply or circuit in parallel), measure the

remove the probe on the instrument. Do not use the

instrument in the circumstances that the instrument is taken

• It only meets the safety standards when the instrument is

used together with the supplied probe. If the probe is

damaged and needs to replace, the probe with same model

number and same electrical specifications must be used for

apart or battery cover is opened.

frequency and duty. 4) Read the measurement result on the screen.

- /!\WARNING The voltage above 10V can't be measured; otherwise
- the instrument may be damaged. Pay special attention to safety when measuring high
- voltage to avoid electric shock or personal injury.
- Test the known voltage with the meter before use, confirm the instrument function is intact.

Caution: To avoid damaging instruments or equipment, do not enter

frequency or duty cycle signal greater than 10V valid value DC/AC current measurement

1) Turn the knob to " $\overline{\mu}^{AHz}$ " or " $\overline{\widetilde{M}}^{A}$ " or " $\overline{\widetilde{A}}^{Hz}$ " and Switching AC or DC current function by "FUNC." key

- 2) Insert the red probe in "mA" socket or "10A" Socket, insert
- the black probe in "COM" socket. 3) Disconnect the power of the tested circuit; connect the meter
- to the circuit under test, then turn on the circuit power supply.
- 5) Read the measurement result on the screen. When measuring AC current, the frequency is displayed on LCD

the relative humidity is no more than 80%,

0.1mV

0.001V

0.01V

Overload protection: 1000V DC or 750V AC:

Range Resolution

0.1mV

0.001V

0.01V

0.1V

Overload protection: 1000V DC or 750V AC;

Frequency Response: 10Hz ~ 1kHz; True-RMS

Input impedance: 10MΩ; Maximum input voltage: 750V AC

Range Resolution Accuracy

18

0.1μA ±(1.2% reading+3)

Resolution

Accuracy

Accuracy

±(0.8% reading+5)

±(0.5% reading+3)

accuracy: ± (% reading + word)

DC voltage

600mV

1000V

AC voltage

600mV

600V

DC current

60V

Range

Safety Symbols Overview

A new generation of high performance digital multimeter. The new display and function layout show clearer and better user experience. It is the best choice for professional electricians, enthusiasts or families



measure the resistance.

/!\warning

4) Read the measurement result.

Continuity measurement

probe in "COM" socket.

resistance.

struck by electric shocks.

WARNING

When measuring resistance on the line, disconnect the

power supply and discharge all the high-voltage capacitors

1) Turn the knob to " Ω and Switch to Continuity function by

2) Insert the red probe in "VQHz%Livec/s" socket, insert the black

4) If the resistance or circuit of the measured resistance is less

than 30Ω , the buzzer will on and the green indicator lights up

at the same time; when the resistance is about between 30Ω

to 60Ω , the red indicator lights up; LCD displays the

3) Contact the probe to the measured circuit or resistance,

When measuring Continuity on the line, disconnect the

power supply and discharge all the high-voltage capacitors.

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Otherwise, the instrument may be damaged and may be

Otherwise, the instrument may be damaged and may be

(5) Function keys 6 Function knob

Maintenance.

Clean.....

Replace Battery and Fuse...

Other measurement input socket 8 COM Input socket

 mA、uA Input socket 10A Input socket

FUNC. keys

When there are multiple measuring functions on a gear, the FUNC. key switch function is adopted.

Data hold

Maximum measurement Press the MAX/MIN key to enter the maximum measurement, and then press the loop to display the maximum and minimum

values. Press and hold for more than 2 seconds to cancel the

Press"HOLD" key, enter data hold mode/cancel data hold mode.

maximum/minimum measurement mode. Backlight

Diode measurement

function by "FUNC." key.

probe in "COM" socket.

/!\WARNING

/!\WARNING

contacts the diode cathode

Capacitance measurement

1) Turn the knob to"-/-.".

probe in "COM" socket.

measure the resistance.

4) Read the measurement result on the screen.

Press" key, turn on backlight/turn off backlight.

1) Turn the knob to " $\Omega_{\blacktriangleright}^{\circ ij}$ " and Switch to diode measurement

2) Insert the red probe in " $_{V\Omega Hz\%Live\mathring{C}/F}$ " socket, insert the black

3) Touch the diode anode with the red probe, the black probe

When measuring diode on the line, disconnect the power

supply and discharge all the high-voltage capacitors.

Otherwise, the instrument may be damaged and may be

2) Insert the red probe in "VΩHz%Live%/°F" socket, insert the black

3) Contact the probe to the measured circuit or Capacitance,

When measuring Capacitance on the line, disconnect the

Otherwise, the instrument may be damaged and may be

power supply and discharge all the high-voltage capacitors.

4) Read the measurement result on the screen.

Flashlight

Press key, and keep more than 2 seconds to turn on the flashlight / turn off flashlight.

Auto power off

- There will be no operation in 15 minutes . The instrument will turn off automatically to save battery energy. After automatic shutdown, press any key to restore the working state of the
- If you press the "FUNC." button and turn on the meter power, the automatic shutdown function will be cancelled. After turning off the meter, the meter is reopened to restore the automatic shutdown function.

Input LED indication function

When power on or function switching, the corresponding input light flashes to prompt the user to insert the input port of the

High voltage prompt function

struck by electric shocks.

/ WARNING

When the measuring voltage is greater than 80V or the

1) Turn the knob to the "Live" and Switch to NCV test function by

2) Then NCV probe gradually approaches the detected point.

3) When the meter senses weak AC signals, the green indicator

lights up, at the same time, the beeps send out slow dips.

4) When the meter senses strong AC signals, the red indicator

In order to avoid possible accidents such as electric shock

1) Turn the knob to the "NCV", and Switch to live test function by

2) Insert the red probe in "\(\frac{\dagger}{V\OHz}\)\(\text{Live}\)\(\frac{\dagger}{F}\)\(\text{socket}\), Then the probe

3) When the meter senses weak AC signals, the green indicator

4) When the meter senses strong AC signals, the red indicator

In order to avoid possible accidents such as electric shock

lights up, at same time, the beeps send out slow dips.

lights up, at same time, the beeps send out fast dips.

Function

ound and the indicator light is green

When the resistance >30 and <60, the

ouzz does not ring, the indicator ligh

lights up, at same time, the beeps send out fast dips.

or personal injury, please follow the safety regulations.

"FUNC." key. Meter will display "NCV".

"FUNC." key. Meter will display "LIVE".

contact to the test point

measured power supply or circuit in parallel), measure the voltage. 4) Read the measurement result on the screen, when

simultaneously.

/ WARNING

 The voltage above DC1000V or AC750V can't be measured; otherwise the instrument may be damaged

measuring AC voltage the frequency is displayed on LCD

- Pay special attention to safety when measuring high voltage to avoid electric shock or personal injury.
- Test the known voltage with the meter before use, confirm the instrument function is intact.

Note: When the voltage is greater than 80V, the orange

backlight will light up.

or personal injury, please follow the safety regulations.

- Temperature Measurement
- Turn the knob to the "c/r". 2) Insert the K thermocouple into the instrument, The input, and the negative end (black) is inserted into the
- 3) Contact the measured object with the thermocouple probe

and read the result from the display.

The cold junction of thermocouple is placed inside the

instrument, and it needs longer heat balance with the measuring environment.

Note 2: Using K type thermocouple probe.

/!\warning

When measuring temperature with thermocouple, the probe of thermocouple can't touch the charged object, otherwise it may damage the instrument and may suffer electric shock or personal injury.

General Technical Specifications

• Environment condition of using:

Reference condition: the environment temperature 18°C to 28°C. 17

Accuracy Specifications The accuracy applies within one year after the calibration.

Power requirement: 2 x 1.5V AAA batteries.

the battery power is low. Please do not make battery short circuit or reverse battery polarity to discharge the

• To ensure safety operation and product maintenance, when the instrument will not be used for an extended period of time, please remove the batteries to avoid any product damage caused by battery leakage.

Replace Fuse

1) Turn off the power supply of the instrument, and remove the probe on the instrument. 2) Use screwdriver to unscrew screws fixing the back cover,

- and remove the back cover.
- 3) Remove the burnt fuse, replace with new fuse of the same specifications, and ensure that the fuse is clamped
- in the safety clip. 4) Install the back cover, fix and lock it with screws.

WARNING

To avoid possible electric shock, personal injury or instrument damage, please use the fuse with same specifications or specified specifications.

probe in "COM" socket. 3) Contact the probe to the measured circuit or resistance, 12 6000uA 0.01mA ±(1.2% reading+3) 600mA 0.1mA

The voltage above 250V can't be measured; otherwise

Pay special attention to safety when measuring high

Test the known current with the meter before use

confirm the instrument function is intact.

should be no longer than 15 seconds

voltage to avoid electric shock or personal injury.

• When measuring large current, continuous measurement

To avoid damaging the instrument or equipment, check the

fuse before measuring and ensure that the measured

current does not exceed the rated maximum current; use

1) Turn the knob to " $\Omega^{(n)}$ " and Switching resistance function by

2) Insert the red probe in "vonz*Livec/*r" socket, insert the black

the instrument may be damaged.

0.01A Overload protection: µA/mA: F600mA/250V fuse 10A: F10A/250V fuse Maximum input current: mA: 600mA; A: 10A When measuring large current, continuous measurement should be no longer than 15 seconds

AC current

Range	Resolution	Accuracy
600μΑ	0.1μΑ	
6000μΑ	1μΑ	
60mA	0.01mA	±(1.5% reading+3)
600mA	0.1mA	
404	0.044	

Maximum input current: mA: 600mA; A: 10A Frequency Response: 10Hz ~ 1kHz; True-RMS When measuring large current, continuous measurement should be no longer than 15 seconds

Resistance

Range	Resolution	Accuracy	
600Ω 0.1Ω		±(1.0% reading+3)	
<u> </u>	10		

±(1.0% reading+3) 0.01k Ω 600kΩ 0.1kΩ 0.001ΜΩ ±(1.5% reading+3) 60ΜΩ 0.01ΜΩ Overload protection: 250V

 $0.001k\Omega$

Capacitance

Range	Resolution	Accuracy	
10nF	0.001nF		
100nF	0.01nF	1	
1000nF	0.1nF	±(4.0% reading+5)	
10μF	0.001μF		
100μF	0.01μF		
1000μF	0.1μF		
10mF	0.001mF	±(5.0% reading+5)	
100mF	0.01mF		

Note: the parameters do not include errors caused by the capacitance of the pen capacitor and the substrate. Frequency/Duty

Range	Resolution	Accuracy	
10Hz	0.001Hz	1/1 00/ reading (2)	
100Hz	0.01Hz	±(1.0% reading+3)	
	20		

1000Hz	0.1Hz	±(1.0% reading+3)		
10kHz	0.001kHz			
100kHz	0.01kHz			
1000kHz	0.1kHz			
10MHz	0.001MHz	±(3.0% reading+3)		
1~99%	0.1%	±(3.0% reading+3)		
z/duty:				

2) Voltage sensitivity: 0.2~10V AC 3) Overload protection: 250V;

1) Range: 0 ~ 100 kHz 2) Voltage sensitivity: 0.5~600V AC3); μΑ、mA、A:

1) Range: 0 ~ 100 kHz 2) Voltage sensitivity: ≥ 1/4 Full range 3) Overload protection: μA/mA: F600mA/250V fuse; A: F10A/250V fuse

Diode test

1) Range: 0 ~ 10MHz

	Function	Forward DC current is about 2.5mA
+	It displays the approximate forward voltage value of the diode.	Reverse DC voltage is about 3V Overload protection:250V

Continuity test he resistance is <30, the buzzer wil

/ WARNING

emperature					
Range	Resolution	Accuracy			
		-20℃~0℃	\pm 5.0% reading or \pm 3 $^{\circ}\mathrm{C}$		
$^{\circ}\!\mathbb{C}$	1℃	0℃ ~ 400℃	\pm 1.0% reading or $\pm2^\circ\!\mathrm{C}$		
		400℃ ~ 1000℃	± 2.0% reading		
		-4°F∼ 32°F	$\pm5.0\%$ reading or $\pm6^{\circ}\!\mathrm{F}$		
$^{\circ}\mathrm{F}$	1°F	32°F∼ 752°F	\pm 1.0% reading or $\pm4^\circ\!\mathrm{F}$		

752°F ~ 1832°F ± 2.0% reading

bout 3V

Overload protection:250V

The accuracy does not include the error of the thermocouple probe.

Maintenance

according to the steps below:

If there's dust on the terminal or the terminal is wet, it may cause measurement error. Please clean the instrument

1) Switch off the power supply of the instrument, and remove the test probe. Reverse DC voltage i 2) Turn over the instrument and shake out the dust

accumulated in the input socket. Wipe the outer cabinet with a damp cloth and mild detergent, do not use abrasive or solvent. Wipe contacts in each input socket with a clean cotton swab soaked in alcohol. / WARNING

Please always keep the inside of the instrument clean and

dry to avoid electric shock or instrument damage. Replace Battery and Fuse

Replace Battery: 1) Turn off the power supply of the instrument, and remove the probe on the instrument.

2) Use screwdriver to unscrew screws fixing the battery cover, remove the battery cover. 3) Remove old batteries, replace with new batteries of the same specifications. Please note the polarity of the

battery according to the positive and negative polarity

marks inside of the battery cover. 4) Install the battery cover to its original position, fix and lock the battery cover with screws.

To prevent electric shock or personal injury caused by error reading, please replace the battery promptly when

/ WARNING

EN18118AV10 24

ent				10nF	0.001nF	
nge	Resolution	Accuracy		100nF	0.01nF	
	0.1μΑ			1000nF	0.1nF	. (4.00)
١	1μΑ			10μF	0.001μF	±(4.0% reading+5)
	0.01mA	±(1.5% reading+3)		100μF	0.01μF	
	0.1mA			1000μF	0.1μF	
	0.01A			10mF	0.001mF	
d protection: μA/mA: F600mA/250V fuse			100mF	0.01mF	±(5.0% reading+5)	
10A: F10A/250V fuse		(Overload protect	tion: 250V		