USERS MANUAL

DIGITAL MULTIMETER

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

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Statement

In accordance with the international copyright law, without permission and written consent, do not copy the contents of this manual in any form (including storage and retrieval or translation into languages of other countries or regions). The manual is subject to change in future edition without prior notice.

Safety Statement

⚠ "**Caution**" mark refers to the condition and operation which may 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 600V over voltage safety standards and pollution level 2.

Safety Operation Specifications

⚠ **Warning**

In order to avoid possible electric shock or peronal 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 again.

- Before using the instrument, please check whether there is any crack or plastic damage in the instrument case. If you do, do not use it again.
- 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 wet environment.
- 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 zero line and ground line.
- Before opening the outer cabinet or battery cover, please

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remove the probe on the instrument. Do not use the instrument in the circumstances that the instrument is taken apart or battery cover is opened.

- 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 replacement.

ϟ	High voltage warning
~	AC (Alternating current)
⎓	DC (Direct current)
≂	AC or DC
⚠	Warning, important safety signs
⏚	Ground
▭	Fuse
⧈	Equipment with double insulation/reinforced insulation protection
▭	Battery under voltage
CE	Product complies with all relevant European laws
	The additional product label shows that do not discard this electrical/electronic product into household garbage.
CAT. II	Class II measurements are suitable for testing and measuring circuits directly connected to power points (sockets and similarities) of low voltage power installations.
CAT. III	Class III measurement is suitable for testing and measuring circuits connected to the distribution part of low voltage power supply devices in buildings.
CAT. IV	Class IV measurements are suitable for testing and measuring circuits connected to the power supply of low voltage power installations in buildings.

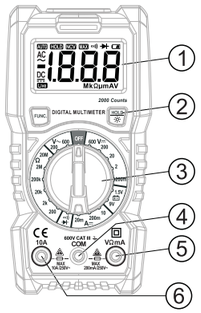
Safety Symbols

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.

Instrument panel description

① LCD display
② Function keys
③ Function knob
④ COM Input socket
⑤ Other measurement input socket
⑥ 10A current Input socket



FUNC. Keys

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

Data hold

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

Backlight

Press HOLD key, and keep more than 2 seconds to turn on the backlight / turn off back light, or about 10 seconds after it will automatically shut down.

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 button to restore the working state of the instrument.
- 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.

Measurement operation

DC/AC voltage measurement

1) Turn the knob to DC voltage or AC voltage shift and select the appropriate range.
2) Insert the red probe in "VΩmA" socket， insert the black probe in "COM" socket。
3) Contact the probe to the measured circuit (connect to the

measured power supply or circuit in parallel), measure the voltage.

4) Read the measurement result on the screen.

⚠WARNING

- **The voltage above 600V 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.**

DC current measurement

1) Turn the knob to DC current shift and select the appropriate range.
2) Insert the red probe in "VΩmA" 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.
4) Read the measurement result on the screen.

⚠WARNING

- **The voltage above 600V 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.**

Resistance measurement

1) Turn the knob to resistance shift and select the appropriate range.
2) Insert the red probe in "VΩmA" socket，insert the black probe in "COM" socket。
3) Contact the probe to the measured circuit, measure the resistance.
4) Read the measurement result on the screen.

⚠WARNING

When measuring resistance on the line, disconnect the power supply and discharge all the high-voltage capacitors. Otherwise, the instrument may be damaged and may be struck by electric shocks.

Continuity measurement

1) Turn the knob to shift and Switch to Continuity measurement function according to "FUNC." key.
2) Insert the red probe in "VΩmA" socket，insert the black probe in "COM" socket。
3) Contact the probe to the measured circuit, measure the resistance.

4) If the resistance or circuit of the measured resistance is less than 30Ω, the buzzer will sound; the screen displays the resistance of the measured circuit.

⚠WARNING

When measuring Continuity on the line, disconnect the power supply and discharge all the high-voltage capacitors. Otherwise, the instrument may be damaged and may be struck by electric shocks.

Diode measurement

1) Turn the knob to shift and Switch to diode measurement function according to "FUNC." key.
2) Insert the red probe in "VΩmA" socket，insert the black probe in "COM" socket。
3) Touch the diode anode with the red probe, the black probe contacts the diode cathode.
4) Read the measurement result on the screen.

⚠WARNING

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 struck by electric shocks.

Battery test

1) Turn the knob to battery test shift and select the appropriate range.
2) Insert the red probe in "VΩmA" socket，insert the black probe in "COM" socket。
3) Touch the positive with the red probe, the black probe contacts the negative.
4) Read the measurement result on the screen.

Note：1.5V range Load resistance：30Ω

9V range Load resistance：300Ω

General Technical Specifications

- Environment condition of using:

  CAT. III 600V

  Pollution level：2

  Altitude < 2000m。

  Working environment temperature and humidity:

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

  Storage environment 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：600V
- Fuse protection：

  mA： F200mA/250V fuse

  10A：F10A/250V fuse
- Sampling rate: about 3 times/second.
- Display: 2000 counter readout. Automatically display the unit symbols according to the shift of the measurement function.
- Over range indication: it displays "OL".
- Low battery indication: when the battery voltage is lower than the normal working voltage, "" will be displayed.
- Input polarity indication: automatically display "".
- Power requirement: 2 x 1.5V AAA batteries.
- Dimension: 148mm x 75mm x 46mm.

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%,

accuracy: ±（%reading + word）.

DC voltage

Range	Resolution	Accuracy
200mV	0.1mV	±(0.5% reading+3)
2V	0.001V	
20V	0.01V	
200V	0.1V	
600V	1V	

Overload protection: 600V

Maximum input voltage: 600V

AC voltage

Range	Resolution	Accuracy
200V	0.1V	±(1.2% reading+5)
600V	1V	

Overload protection: 600V

Maximum input voltage: 600V

Frequency Response：40Hz ~ 500Hz

DC current

Range	Resolution	Accuracy
20mA	0.01mA	±(1.2% reading+3)
200mA	0.1mA	
10A	0.01A	

Overload protection: mA：F200mA/250V fuse

A： F10A/250V fuse

Maximum input current：mA: 200mA； A: 10A

When measuring large current, continuous measurement should be no longer than 15 seconds

Resistance

Range	Resolution	Accuracy
200Ω	0.1Ω	±(1.0% reading+3)
2kΩ	0.001kΩ	
20kΩ	0.01kΩ	
200kΩ	0.1kΩ	
2MΩ	0.001MΩ	±(1.5% reading+3)
20MΩ	0.01MΩ	

Overload protection：600V;

Diode test

	functions	
	It displays the approximate forward voltage value of the diode.	Forward DC current is about 1mA Reverse DC voltage is about 2.4

Continuity test

	functions	
	The resistance is <30, the buzzer will sound	Open circuit voltage is about 0.5V Overload protection:600V

Maintenance

Clean

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

1) Switch off the power supply of the instrument, and remove the test probe.
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.

⚠WARNING

- **To prevent electric shock or personal injury caused by error reading, please replace the battery promptly when the battery power is low. Please do not make battery short circuit or reverse battery polarity to discharge the batteries.**
- **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.

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