

Statement

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Caution

The Caution mark indicates conditions and operations that may cause damage to meters or devices.

Care is required to be taken in performing the operation, if incorrectly performed or related procedures not followed, damages to the meter or device could be resulted in. Do not proceed with any actions directed by “Caution” sign unless these conditions are met or fully understood.

Please read the Manual carefully before using the meter, and pay attention to the safety warning information.

Overview

This meter is a portable, pocket and digital multimeter. With complete functions, stable performance, high precision, low power consumption, novel structure, and safety as well as reliability, it is the ideal measuring instrument for all users.

Safety Instruction

The design and production of the meter have strictly complied with safety standard IEC61010 and met the safety standards of 300 V CAT III/600 V CAT II and Pollution Level 2.

Please follow the Manual to use a meter, otherwise the protective functions provided by it may be reduced or invalid.

Security Operation Specification



WARNING

In order to avoid possible electric shock or personal injury, please observe the following specifications:

- Please read the Manual carefully before using a meter. Please strictly follow the Manual to use it, otherwise the protective functions provided by it may be reduced or invalid.
- Check the case first before using, including its cracks and lost of or defects from plastic parts. Please carefully check the insulation near input terminals.
- If a meter is abnormal or damaged, do not use it and it shall be disabled.

- Prohibit touching the charged carrier with voltage exceeding 30 V RMS AC, 42 V AC peak, or 60 V DC.
- A meter shall be used in accordance with the specified measurement class, voltage or current rating.
- When battery level is low, please replace the cell to avoid wrong measurement.
- Please comply with local and national safety regulations. Personal protective articles (approved rubber gloves, masks, flame retardant clothing, etc.) shall be worn to prevent injury from electric shocks and arcs when dangerous live conductors are exposed.
- Do not use the “HOLD” function to measure the unknown voltage. If the “HOLD” function is turned on, the display screen does not change while different voltages are measured.
- Measure out a known voltage to determine if the meter is operating properly.
- The correct positions of functions and ranges must be selected when you measure.
- Do not use a meter near explosive gas, steam or in damp environment.
- Prohibit using damaged test leads. Check whether the insulation layer of the leads is damaged, whether there is exposed metal or wearing and the connectivity of the leads.
- When measuring, connect the neutral wire or ground wire first, and then connect the live wire. While disconnect the live wire first, then disconnect the neutral wire and earth wire.

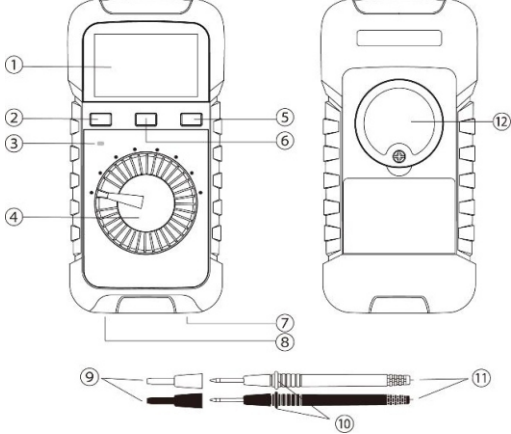
- Please hold your fingers behind protective part of test pens when measuring.
- Disconnect test leads from the measured object first before opening the rear cover of the meter.
- Please do not use a meter in a condition that exceeds the measurement class (CAT) rating of the lowest rated individual element of the meter, measuring pens or accessory.

Electrical Symbol

	Auto range
	AC (alternate current)
	DC (direct current)
	Diode test
	On-off test
	Data hold
	Battery low
	AC or DC voltage measurement
	Resistance/On-off/Diode measurement
	Frequency measurement
	1.5 V battery test

	Capacitance measurement
	mA unit class of AC or DC current measurement
	uA unit class of AC or DC current measurement
	Warning, important safety marks, please read them carefully.
	Grounding
	European Union standards are met.
	Do not discard this electrical/electronic product in household garbage.
CAT II	Class II measurements are suitable to test and measure circuits directly connected to supply points (sockets and analogs) of low-voltage power supply devices.
CAT III	Class III measurements are adapted to test and measure circuits connected to the distribution of low-voltage power supply unit of buildings.

Meter Appearance



- | | |
|-----------------------------|--------------------------------|
| ① Display screen | ② Function selection key (SEL) |
| ③ LED (On-off indicator) | ④ Rotary switch |
| ⑤ Black hold key (HOLD) | ⑥ Manual range key (RANGE) |
| ⑦ Black measuring pen input | ⑧ Red measuring pen input |

- | | |
|-----------------------|--------------------------|
| ⑨ Protective nib caps | ⑩ Measuring pen bayonets |
| ⑪ Measuring leads | ⑫ Cell cover |

Measurement Methods

AC and DC voltage measurement

1. When measuring the voltage, turn rotary switch to position; The measurement of DC voltage or AC voltage of vehicles can be selected through “SEL” key.
2. Measure the voltage by connecting measuring leads in parallel to the circuit or power supply to be measured.
3. Measured results are read on the display. When DC voltage is measured, the display screen also shows the voltage polarity at the test point of red measuring pen.

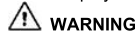


WARNING

- **Voltage higher than 600 V is prohibited to input. Displaying higher voltage values is possible, but there may be a risk of damaging the meter.**
- **If high voltage is measured, extra care must be taken to avoid electric shock.**

Resistance measurement

1. Turn the rotary switch to position. That location is defaulted for resistance measurement.
2. Make the measuring leads in parallel connection to both ends of the circuit or resistor to be measured and measure it.
3. Read measured results on the display screen.



WARNING

- **Before measuring, disconnect power supply of the circuit to be measured and fully discharge all high-voltage capacitors to prevent possible electric shock, fire and personal injury.**
- **Disconnect the measuring pens from the circuit under measurement after all measuring operations have been finished.**

Diode measurement

1. Turn the rotary switch to position, and press “SEL” key to switch to diode measurement function.
2. Connect the red measuring lead to the positive pole of the diode under measurement, and the black one to the corresponding negative pole. The reading on display screen is an approximation of forward voltage drop of the diode.



WARNING

- **Before measuring, disconnect power supply of the circuit to be measured and fully discharge all high-voltage capacitors to prevent possible electric shock, fire and personal injury.**
- **If the diode under measurement is open or the polarity is reversed, the meter will display overload.**
- **Disconnect the measuring pens from the circuit under measurement after all measuring operations have been finished.**

Connectivity test

1. Turn the rotary switch to position. Switch to on-off function by pressing the “SEL” key.
2. Connect measuring pens in parallel to two ends of the circuit or the resistor under measurement, if the resistance is less than about 50 Ω, the built-in buzzer sounds and the LED light is on, meanwhile the measured resistance is shown on the screen.



WARNING

- **Before measuring, disconnect power supply of the circuit to be measured and fully discharge all high-voltage capacitors to prevent possible electric shock, fire and personal injury.**
- **Disconnect the measuring pens from the circuit under**

measurement after all measuring operations have been finished.

Frequency measurement

1. Turn the rotary switch to position.
2. Connect the pen in parallel to the circuit or power supply to be measured and measure the frequency.
3. Read measured results on the display screen.



WARNING

- **When measuring high voltage, take extra care to avoid electric shock.**
- **Disconnect the measuring pens from the circuit under measurement after all measuring operations have been finished.**

1.5 V Battery measurement

1. Turn the rotary switch to position.
2. Connect the red measuring lead to the positive pole of the battery under measurement, and the black one to the corresponding negative pole.
3. Read measured results on the display screen.



WARNING

When selecting 1.5 V battery measuring position, do not connect a battery or power supply exceeding 1.7 V to the measuring pen nibs to prevent damages to the meter.

Disconnect the measuring pens from the circuit under measurement after all measuring operations have been finished.

Capacitance measurement

- Turn the rotary switch to capacitance measurement position.
- Measure the capacitance by connecting the measuring leads in parallel to the capacitor to be measured.
- Measured results can be read on the display screen.

- WARNING**
- Before measuring, disconnect power supply of the circuit to be measured and fully discharge all high-voltage capacitors to prevent possible electric shock, fire and personal injury.
 - Disconnect the measuring pens from the circuit under measurement after all measuring operations have been finished.

4 kΩ	0.001 kΩ	
40 kΩ	0.01 kΩ	
400 kΩ	0.1 kΩ	
4 MΩ	0.001MΩ	
40 MΩ	0.01 MΩ	

Input protection: Maximum 600 V DC or AC RMS

Frequency

Range	Resolution	Accuracy
5 Hz	0.001Hz	± (0.5% reading +5 digits)
50 Hz	0.01Hz	
500 Hz	0.1kHz	
5 kHz	0.001kHz	
50 kHz	0.01kHz	
100 kHz	0.1kHz	

Input protection: Maximum 250 V DC or AC RMS

Sensitivity: 500 mV RMS

Capacitance

Range	Resolution	Accuracy
50 nF	0.01nF	± (5.0% reading +5 digits)
500 nF	0.1nF	
5 uF	0.001uF	
50 uF	0.01uF	
100 uF	0.1uF	

Input protection: Maximum 600V DC or AC RMS

Current measurement (mA)

- Turn the rotary switch to current position, and the DC current function can be selected by pressing "SEL" key.
- Connect the pen in series to the circuit under measurement to measure its current.
- Read measured results on the display screen.

- WARNING**
- Before measuring, disconnect power supply of the circuit to be measured and fully discharge all high-voltage capacitors to prevent possible electric shock, fire and personal injury.
 - The maximum current range of this meter is 400 mA. Do not connect the current exceeding 400 mA to the gauge for measurement.
 - Disconnect the measuring pens from the circuit under measurement after all measuring operations have been finished.

Current measurement (uA)

- Turn the rotary switch to current position, and the DC voltage function can be chosen by pressing "SEL" key.
- Connect the pen in series to the circuit under measurement to measure its current.

Diode

Function	Range	Resolution	Test environment
Diode test	2 V	0.001 V	Testing current: about 1mA; open-circuit voltage: about 2.1 V. Displaying the approximation of forward voltage drop of diodes.

Input protection: Maximum 600 V DC or AC RMS

Connectivity test

Function	Description	Test environment
	When the built-in buzzer sounds, the measured resistance is not greater than about 50Ω.	Testing current: about 1 mA; open-circuit voltage: about 1.0 V.

Input protection: Maximum 250 V DC or AC RMS

Meter Maintenance

Basic maintenance like replacing a fuse or a cell is provided here. Do not attempt to repair the meter unless you are an

- Read measured results on the display screen.

- WARNING**
- Before measuring, disconnect power supply of the circuit to be measured and fully discharge all high-voltage capacitors to prevent possible electric shock, fire and personal injury.
 - The maximum current range of the current position is 4000 uA. Do not connect the current exceeding 4000 uA to that location of meter for measuring.
 - Disconnect the measuring pens from the circuit under measurement after all measuring operations have been finished.

General Technique Data

Environmental conditions for using:

IEC/EN 61010-1 300 V CAT III/ 600 V CAT II , Pollution Level

2, and altitude < 2000 m

Working temperature and humidity: 0~40℃ (RH<80%, no need to consider when the temperature<10℃)

Storing temperature and humidity: -10~60℃ (RH<70% , without batteries)

Temperature coefficient: 0.1*accuracy /℃

Maximum allowable voltage between measuring end and

experienced maintenance man and have data related to the calibration, performance testing and maintenance.

- WARNING**
- In order to prevent possible electric shock, fire and personal injury:
- Do not use the meter for any measurement while the meter case is open.
 - Remove input signals first before cleaning the meter.
 - The specified replacement parts shall be used. The meter shall be repaired by an accredited and approved technician.

General maintenance

Clean meter case regularly with a damp cloth and a little detergent. Do not use abrasive or chemical solvents.

Fuse and cell replacement

- WARNING**
- Replace the cell in a timely manner when " "is displayed on the screen to avoid electric shock or personal injury caused by incorrect readings.
 - In order to ensure the safe operation and maintenance of a meter, please take out the cell when the meter is not

ground: 600 V DC or AC RMS

Sampling rate: about 3 times/second

Automatic shutdown: about 15 minutes

Display: Maximum number 3999

Over range indication: displaying "OL"

Low battery indication: When the battery voltage is lower than the normal operating voltage, " " symbol will be displayed on the LCD.

Input polarity indication: automatically displaying the symbol "-".

Power supply: button cell CR2032 (3 V)

Dimensions: W50*H100*D12 mm (without storage box)

Weight: about 75 g (not including storage box)

Accuracy Parameter

Accuracy: (% reading + words), with a guarantee period of one year

Standard condition: ambient temperature 18℃ to 28℃, relative humidity is not more than 80%.

DC voltage

Range	Resolution	Accuracy
4 V	0.001 V	± (1.0% reading +3 digits)
40 V	0.01 V	
400 V	0.1 V	
600 V	1 V	

Input impedance: about 10 MΩ

Maximum measured voltage: 600 V DC or AC RMS

AC voltage

Range	Resolution	Accuracy
4 V	0.001 V	± (2.0% reading +5 digits)
40 V	0.01 V	
400 V	0.1 V	
600 V	1 V	

Input impedance: about 10 MΩ

Maximum measured voltage: 600 V DC or AC RMS

Frequency range: 40 Hz~400 Hz

DC current

Range	Resolution	Accuracy
400 uA	0.1uA	± (2.0% reading +5 digits)
40 mA	0.01mA	
400 mA	0.1mA	

Fuse specification: 400 mA/250 V

AC current

Range	Resolution	Accuracy
400 uA	0.1uA	± (2.0% reading +5 digits)
40mA	0.01mA	
400mA	0.1mA	

Fuse specification: 400 mA/250 V

Frequency range: 50 Hz~60 Hz

Resistance

Range	Resolution	Accuracy
400Ω	0.1 Ω	± (2.0% reading +5 digits)

