

Digital Multimeter

Note: Please read this Manual carefully before using this product.
The manufacturer reserves the right to change product specification without prior notice.

Made in China
CE RoHS

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The manufacturer reserves the right to change product specification without prior notice.

Safety Precautions

Special attention shall be paid to the fact that improper use may cause electric shock or damage the meter. In use, it is required to follow the general safety regulations and fully observe the safety measures specified in the Manual. In order to make full use of the functions of the meter and ensure safe operation, you are required to read carefully and thoroughly, and follow, the instructions in this Manual.

The meter is designed and manufactured according to the safety requirements of the IEC safety standard IEC-61010 for electronic measuring meters and hand-held digital multimeters, and it conforms to GB/T 13978-92 Generic Specification for Digital Multimeters, and meets the safety requirements of GB4793.1-1995 (IEC-61010-1) for electronic measuring meters, which is classified into Category II pollution, subject to the over-voltage standard CAT III 600V.

Safety Information

1.1 Safety Instructions

The user, when using this meter, must follow all standard safety procedures regarding:

- the prevention of electric shock;
- the prevention of misuse of the meter

To ensure your personal safety, please use the measurement probe accompanying the meter, and make sure they are in good condition before use.

1.1 Safety Precautions

The meter will produce unstable reading, even with large errors, when the meter is being used near the devices with large electromagnetic interference.
Do not use the meter or measurement probe with appearance damage.
Incorrect use of the meter may cause the safety function provided by the meter fail.
Extreme care must be taken when working around exposed conductors or buses.
Do not use this meter near explosive gas, steam or dust.
Measurement must be performed by using correct input, function, and range.
To prevent damage to the meter, the input value must not exceed the input limit value specified for each range.
Never touch the input terminals not in use when the meter is connected to the line under test.
Operate with care to prevent electric shock when the measured voltage exceeds the 60V DC or 30V AC rms.
Place your fingers behind the measurement probe's protective ring when measuring with a measurement probe.

1.3 Safety symbols

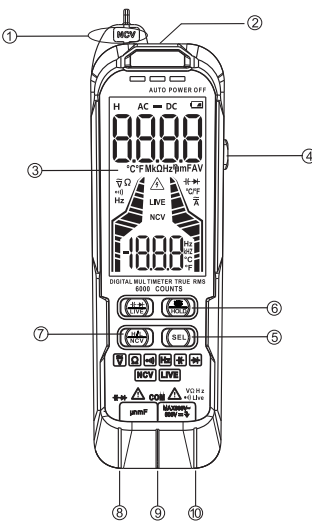
Meter body and symbols used in the Manual:

Warning, important safety sign, and the necessity of consulting instruction manual before use. Incorrect use may result in damage to the device or its components.

- AC (Alternating Current)
- DC (Direct Current)
- AC or DC
- Ground
- Compliant with EU (European Union) directives

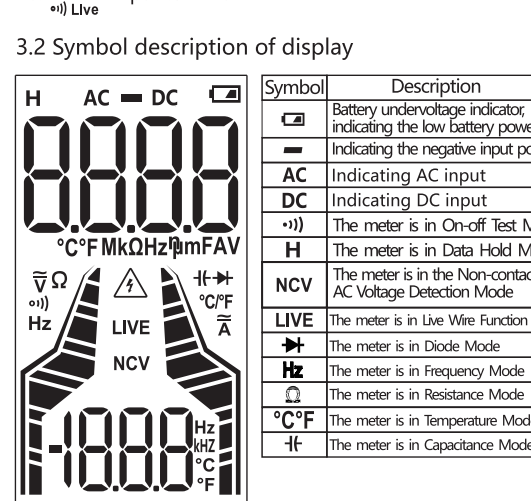
Illustration of the Meter

3.1 Schematic diagram of the meter



- Non-contact voltage sensing
- Light
- LCD monitor
- Power button
- Manual Selection button
- Flashlight and Data Hold button
- NCV and high/low sensitivity toggle key
- Capacitor and diode input terminal
- COM input terminal

3.2 Symbol description of display



3.3 Description of function buttons

Buttons	Function description
Power	Power
Switching among capacitor, diode and live wire	Switching among capacitor, diode and live wire
Flashlight and data hold	Flashlight and data hold
NCV	NCV
SEL	Function switching

Technical Indicators

6.1 Comprehensive indicators

Environmental conditions of use:
600V CAT, III Pollution grade: 2
Altitude: $\leq 2,000$ m.
Temperature and humidity of working environment:
0~40°C (<80% RH, neglected when <10°C).
Temperature and humidity of storage environment:
-10°C~50°C (<70% RH, with battery removed).

Temperature coefficient: accurate to 0.1/°C (<18°C or >28°C).
The maximum allowable voltage between the measuring terminal and the earth: 600V DC or 600V AC RMS
Conversion rate: about 3 times / second
Display: 6,000 counts LCD display, and the unit symbol is automatically displayed according to the gear of measurement function.

Overload indication: LCD will display "OL".
Battery low voltage indication: "CB" will appear When the battery voltage is lower than the normal working voltage.

Indication of input polarity: "-" is displayed automatically.
Power supply: 3×1.5V AAA batteries
Dimensions: 162×47×26mm
Weight: the meter using battery weighs about 107g (without battery), and the rechargeable one weighs about 125g (with battery).

Accuracy Index

Accuracy: $\pm(a\%$ reading + word), and the warranty period is one year from the date of delivery.
Baseline conditions: ambient temperature in the range of 18°C~28°C, and relative humidity not greater than 75%.

DC voltage

Range	Maximum resolution	Accuracy
0.5V~600V(Auto mode)	0.1V	$\pm(1.2\%$ of reading + 3 words)

Maximum input voltage: 600V DC rms.
Minimum measurement voltage: 0.5V DC in Auto mode.

AC voltage

Range	Maximum resolution	Accuracy
1V~600V(Auto mode)	0.1V	$\pm(1.2\%$ of reading + 5 words)

Maximum input voltage: 600V AC rms.
Minimum measurement voltage: 1V AC in Auto mode.

Resistance

Range	Maximum resolution	Accuracy
0.1Ω~10MΩ	0.01MΩ	$\pm(2.0\%$ of reading + 5 words)

Overload protection: 250V DC/AC.

Frequency (via V gear)

Range	Maximum resolution	Accuracy
10Hz~1000Hz	1Hz	$\pm(2.0\%$ of reading + 3 words)

Overload protection: 250V DC/AC.

Capacitance

Range	Maximum resolution	Accuracy
500nF~60mF	0.01mF	$\pm(4.0\%$ of reading + 5 words)

Overload protection: 250V DC/AC.

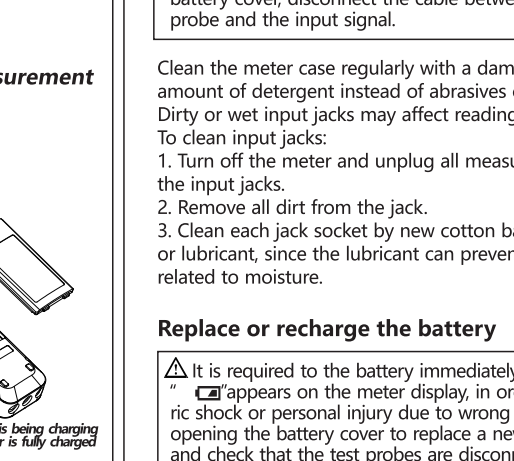
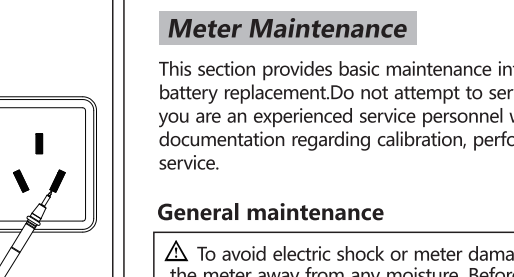
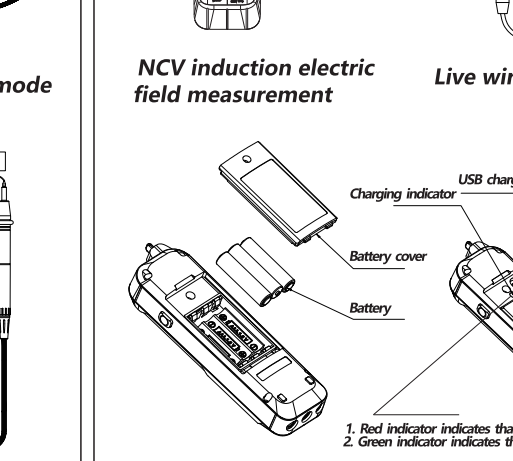
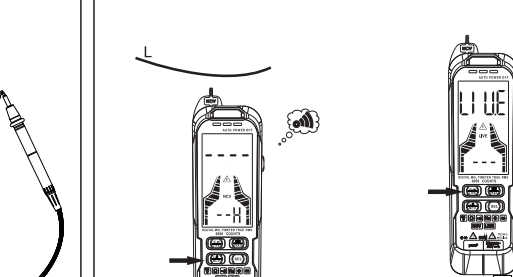
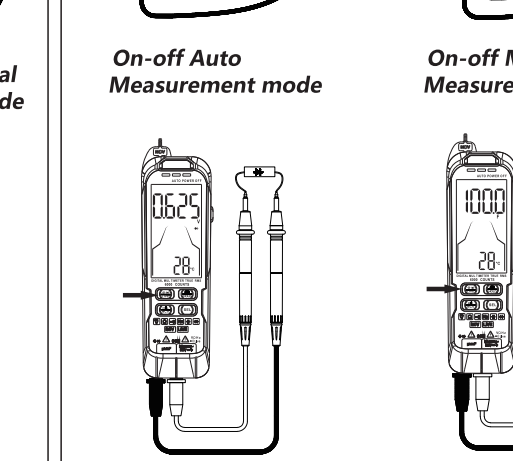
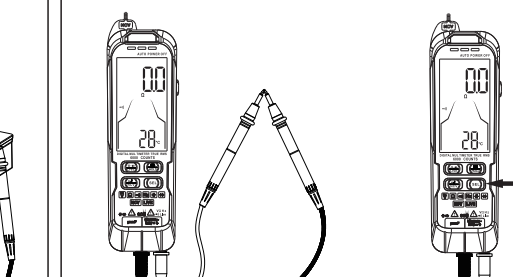
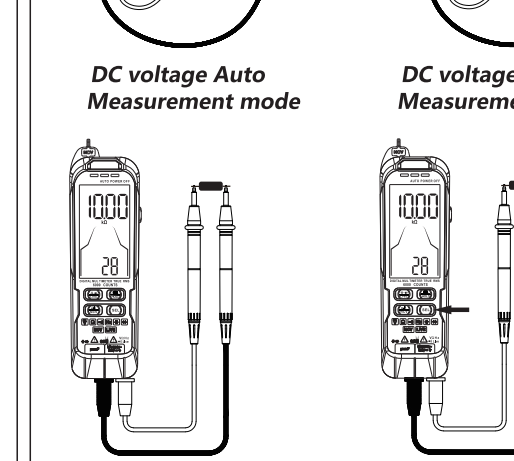
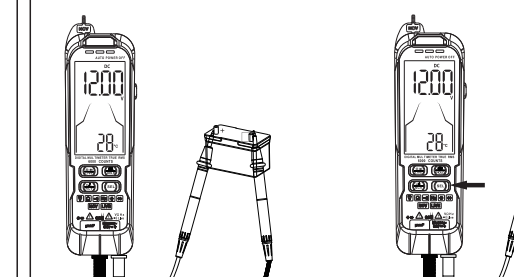
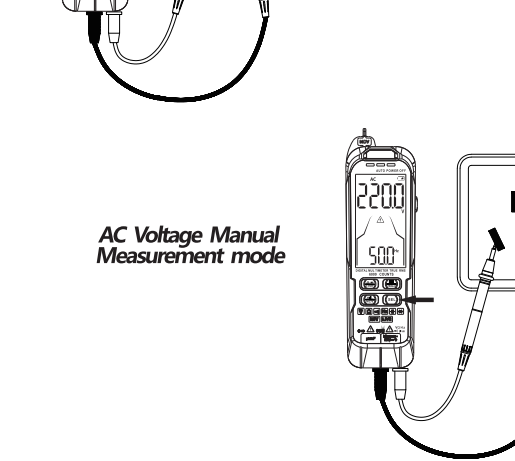
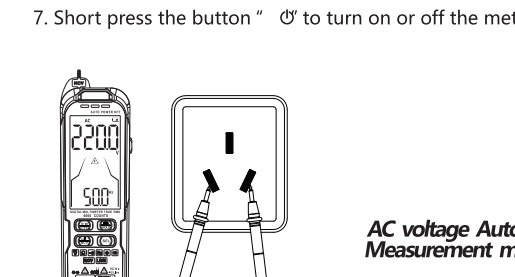
Other

Function	Description
Diode	Indicating approximate diode forward voltage drop
On-off	The built-in buzzer sounds when the tested resistance is less than 50Ω

NCV	Indicating the strength of the analog bar according to the distance of the power supply, and emitting different frequency sounds
LIVE	The test live line shows LIVE and sounds an alarm. While no response is provided for the neutral line
temperature	The ambient temperature in range of 0°C~70°C is for reference only
Shutdown	The meter automatically shuts down if no signal input is made within 15 minutes.

Instructions for Operation

- Short press the button "ON/OFF" to start the meter which enters the meter which enters the "HOLD" working mode (in which mode the AC and DC voltage, resistance, and on-off functions are automatically recognized).
- Connect the meter to the voltage and resistance to be measured, the meter automatically recognizes the AC and DC voltage, and displays the current frequency when measuring AC voltage.
- Short press the button "MODE" to select capacitance, diode, and LIVE measurement modes.
- Short press the button "HOLD" to lock the current test data and unlock the test data after another short press, and long press to enable or disable the flashlight function.
- Short press the button "NCV" to switch to the induction electric field measurement mode, and select the sensitivity measurement after another short press.
- Short press SEL to select resistance, on-off, DC voltage, AC voltage, and measurement mode.



Meter Maintenance

This section provides basic maintenance information, including battery replacement. Do not attempt to service this meter unless you are an experienced service personnel with relevant documentation regarding calibration, performance testing, and service.

General maintenance

To avoid electric shock or meter damage, keep the inside of the meter away from any moisture. Before opening the case or battery cover, disconnect the cable between the measurement probe and the input jack.
Clean the meter case regularly with a damp cloth and a small amount of detergent instead of abrasives or chemical solvents. Dirty or wet input jacks may affect readings.
To clean input jacks:
1. Turn off the meter and unplug all measurement probes from the input jacks.
2. Remove all dirt from the jack.
3. Clean each jack socket by new cotton balls dipped in detergent or lubricant, since the lubricant can prevent socket contamination related to moisture.

Replace or recharge the battery
It is required to the battery immediately after the symbol "CB" appears on the meter display, in order to avoid electric shock or personal injury due to wrong readings. Before opening the battery cover to replace a new battery, power off and check that the test probes are disconnected from the measurement circuit to avoid electric shock or personal injury.

Accessories:
1. User Manualone
2. Test probesone set
3. 1.5V battery3
4. Warranty Cardone
5. Cloth baga

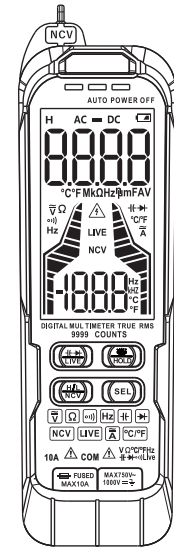
Implementing standard: GB/T13978-2008

Follow the steps below to replace the battery:

- Power off the meter.
- Unplug all test probes from the input jacks.
- Loosen the screws securing the battery cover with a screwdriver.
- Take off the battery cover.
- Remove the old battery.
- Replace with new 3×1.5V AAA batteries.
- Install the battery cover and tighten the screws.

1

User Manual



Digital Multimeter

User Manual

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1. Safety Precautions

Special attention shall be paid to the fact that improper use may cause electric shock or damage to the meter. In the process of usage, follow the general safety regulations and fully observe the safety measures specified in the Manual. In order to fully use the function of the meter and make sure the safe operation, please read and follow the instructions in this Manual, carefully and thoroughly.

The meter is designed and manufactured according to the safety requirements of the IEC safety standard IEC-61010 for electronic measuring meters and hand-held digital multimeters and it conforms to GB/T13978-92 Generic Specification for Digital Multimeters and meets the safety requirements of GB4793.1-1995/IEC-61010-1 for electronic measuring meters which is classified into Category II pollution subject to the over voltage standard CAT III 600V.

Safety Information

1.1 Safety Information

- The user when using this meter must follow all standard safety procedures regarding:
 - A the prevention of electric shock
 - B the prevention of misuse of the meter
- To ensure your personal safety, please use the measurement probe accompanying the meter, and make sure they are in good condition before using.

1.2 Safety Precautions

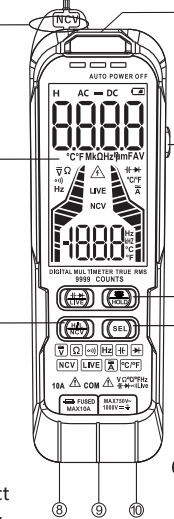
- The meter will produce unstable reading, even with large errors when the meter is being used near the devices with large electro-magnetic interference.
- Do not use the meter or measurement probe with appearance damage.
- Incorrect use of the meter may cause the safety function provided by the meter fail to take effect.
- Extreme care must be taken when working around exposed conductors or buses.
- Do not use this meter near explosive gas steam or dust
- Measurement must be performed by using correct input, function, and range.
- To prevent damage to the meter, the input value must not exceed the limited value specified for each range
- Never touch the input terminals which are not used when the meter is connected to the line under test.
- Operate with care to prevent electric shock when the measured voltage exceeds the 60V DC or 30V AC rms.
- Place your fingers behind the measurement probe's protective ring when measuring with a measurement probe.

1.3 Safety symbols

- Meter body and symbols used in the Manual:
- Warning, an important safety sign, and the necessity of consulting instruction manual before using. Incorrect use may result in damage to the device or its components
 - DC (Direct current)
 - AC or DC
 - Ground
 - Up to EU (European Union) directives

Illustration of the Meter

3.1 Symbol description of display



- Non-contact voltage sensing
- Flashlight
- LCD monitor
- Power button
- Manual Selection button
- Flashlight and Data Hold button
- NCV and high/low sensitivity toggle key
- Capacitor and diode input terminal
- COM input terminal
- Input terminal

3.2 Description

Symbol	Description
	Battery undervoltage indicator, indicating the low battery power
	Auto power off indicator
	Indicating the negative in put polarity
	Indicating AC input
	Indicating DC input
	The meter is in On-off TEST Mode
	The meter is in Data Hold Mode
	The meter is in the Non-contact AC Voltage Detection Mode
	The meter is in Line Wire Function Mode
	The meter is in Diode Mode
	The meter is in Frequency Mode
	The meter is in Resistance Mode
	The meter is in Temperature Mode
	The meter is in Capacitance Mode

3.3 Description of function buttons

Buttons	Function Description
	Power
	Switching among capacitance, diode and live wire AC
	Flashlight and data hold
	NCV
	Function switching

Technical Indicators

6.1 Comprehensive indicators

- Environmental conditions of use:
 - 600V CAT. III Pollution grade: 2
 - Altitude < 2000 m.
- Temperature and humidity of working environment: 0~40°C (< 80% RH, neglected when < 10°C)
- Temperature and humidity of Storage environment: -10°C~50°C (< 70% RH, with battery removed).
- Temperature coefficient: accurate to 0.1°C (< 18°C or > 28°C)
- The maximum allowable voltage between the measuring terminal and the earth: 600V DC or 600V AC RMS.
- Conversion rate: about 3 times/second
- Display: 9999 counts LCD display and the unit symbol is automatically displayed according to the gear of measurement function.
- Overload indication: LCD will display "OL"
- Battery low voltage indication: will appear When the battery voltage is lower than the normal working voltage
- Indication of input polarity: "-" is displayed automatically
- Power supply: lithium battery
- Dimensions: 165x80x25mm
- Weight: about 125g (without battery)

Accuracy Index

Accuracy: $\pm(0.5\% \text{ reading} + 1 \text{ word})$, and the warranty period is one year from the date of delivery

Basic condition: Environment temperature in the range of 18°C~28°C and relative humidity not greater than 75%

DC voltage

Range	Maximum resolution	Accuracy
0.5V~1000V (DC Mode)	1V	$\pm(1.2\% \text{ of reading} + 3 \text{ words})$

Maximum input voltage: 1000V DC RMS

Minimum measurement voltage: 0.5V DC

AC voltage

Range	Maximum resolution	Accuracy
1V~750V (AC Mode)	0.1V	$\pm(1.2\% \text{ of reading} + 5 \text{ words})$

Maximum input voltage: 600V AC RMS.

Minimum measurement voltage: 1V AC

Resistance

Range	Maximum resolution	Accuracy
0.1Ω~100MΩ	0.01MΩ	$\pm(1.2\% \text{ of reading} + 5 \text{ words})$

Overload protection: 250VDC/AC

Frequency (via V gear)

Range	Maximum resolution	Accuracy
0~10MHz	0.01MHz	$\pm(2.0\% \text{ of reading} + 1 \text{ Hz, 5 words})$

Overload protection: 250V DC/AC

Capacitance

Range	Maximum resolution	Accuracy
0~100mF	0.01mF	$\pm(4.0\% \text{ of reading} + 5 \text{ words})$

Overload protection: 250V DC/AC

Direct current

Range	Maximum resolution	Accuracy
10mA~10A	0.1A	$\pm(3.0\% \text{ of reading} + 10 \text{ words})$

Overload protection: 600V/10A Fuse

Alternating current

Range	Maximum resolution	Accuracy
10mA~10A	0.1A	$\pm(3.0\% \text{ of reading} + 10 \text{ words})$

Overload protection: 600V/10A Fuse

Other

Function	Description
Diode	Indicating approximate diode forward voltage drop
On-off	The built-in buzzer sounds when the tested resistance is less than 50Ω
NCV	NCV Indicating the strength of the analog bar according to the distance of the power supply and emitting different frequency sounds
LIVE	The test liveline shows LIVE and sounds an alarm while no response is provided for the neutral line
Temperature	The ambient temperature in range of 0°C~70°C is for reference only
Shutdown	Shutdown The meter automatically shuts down if no signal input is made within 15 minutes

Instructions for Operation

- Short press the button to start the meter which enters the meter which enters the "HOLD" working mode (in which mode the AC and DC voltage resistance and on-off functions are automatically recognized).
- Connect the meter to the voltage and resistance to be measured, the meter automatically recognizes the AC and DC voltage and displays the current frequency when measuring AC voltage

3. Short press the button to select capacitance, diode and LIVE measurement modes.

- Short press the button to lock the current test data and unlock the test data after another short press and long press to enable or disable the flashlight function
- Short press the button to switch to the induction electric field measurement mode and select the sensitivity measurement after another short press
- Short press SEL to select resistance on-off DC voltage AC voltage, and measurement mode
- Short press the button to start the meter or turn on the meter

DC Voltage Auto measurement mode

DC Voltage Manual Measurement mode

On-off AUTO Measurement mode

On-off Manual Measurement mode

DC Current Measurement mode

AC Current Measurement mode

Resistance Auto measurement mode

Resistance Manual Measurement mode

Diode measurement

Capacitance measurement

Frequency Measurement mode

Temperature Measurement mode

Schematic diagram of the rechargeable meter

Meter Maintenance

This section provides basic maintenance information, including battery replacement. Do not attempt to service this meter unless you are an experienced service personnel with relevant documentation regarding calibration, performance testing, and service.

General maintenance

- To avoid electric shock or meter damage, keep the inside of the meter away from any moisture. Before opening the case or battery cover, disconnect the cable between the measurement probe and the input signal.

Clean the meter case regularly with a damp cloth and a small amount of detergent instead of abrasives or chemical solvents. Dirty or wet input jacks may affect readings.

To clean input jacks:

- Turn off the meter and unplug all measurement probes from the input jacks.
- Remove all dirt from the jack.
- Clean each jack socket by new cotton balls dipped in detergent or lubricant, since the lubricant can prevent socket contamination related to moisture.

Replace or recharge the battery

- It is required to the battery immediately after the symbol appears on the meter display in order to avoid electric shock or personal injury due to wrong operation, before opening the battery cover to replace a new battery, power off and check that the test probes are disconnected from the measurement circuit to avoid electric shock or personal injury.

Accessories:

- User Manual.....one
- Test probes.....one set
- Lithium battery
- Warranty Card.....one
- Cloth bag.....one
- Thermocouple.....one

Follow the steps below to replace the battery:

- Power off the meter.
- Unplug all test probes from the input jacks.
- Loosen the screws securing the battery cover with a screwdriver.
- Take off the battery cover.
- Remove the old battery.
- Install the battery cover and tighten the screws.
- Charging model charging according to the schematic diagram

Follow the steps below to charge :

- Power off the meter.
- Unplug all test probes from the input jacks.
- Loosen the screws securing the battery cover with a screwdriver.
- Plug in the charging cable
- Green light comes out after full of electricity
- Install the battery cover and tighten the screws.

Accessories:

- User Manual.....one
- Test probes.....one set
- Lithium battery
- Warranty Card.....one
- Cloth bag.....one
- Thermocouple.....one