

USER'S MANUAL

I. SUMMARIZE

This instrument is a 6000 counts hand-held automatic range True RMS clamp digital meter. The circuit design of the meter takes the large-scale integrated circuit Σ/Δ analog-to-digital converter (ADC) as the core, and it has the full-range overload protection circuit. It can be used to measure AC and DC voltage, low-pass filter V.F.C voltage, low impedance Low Z voltage, AC and DC current, resistance, diode, continuity test, capacitance, frequency, duty cycle, temperature and other parameters, and has data hold, relative value measurement, surge current measurement function, torch function, NCV/Live function (live wire judgment), under-voltage display and automatic shutdown function.

II. OPEN PACKING FOR CHECKING

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maintenance, do not use abrasive and solvent to prevent the case from being corroded, damaging the instrument and endangering safety.

IV. ELECTRIC SYMBOL

	Warning		DC
	High Voltage danger		AC
	Ground		AC and DC
	Dual insulation		Accord with order of the European Union
	Low battery Voltage		Fuse

V. GENERALSPECIFICATION

- Max. Indication: 5999, 3 times / sec.
- Polarity indication: The positive and negative polarities automatically display.
- Over range indication: LCD displays OL
- Low battery indication: "⏻" symbol displays
- Operation temperature: 0~40°C, relative humidity <75%
- Storage environment: -10°C~50°C, relative humidity <80%RH;

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Open the box, take out the meter, checking the items below if they are missing or damaging:

- K type probe (-20°C ~250°C) 1pc
- 1.5VAAA battery 2pcs
- Manual 1pc
- Test lead 1pair
- Carrying bag 1pc

Please contact with your supplier if you find out any problems.

III. SAFETY NOTES

The meter's design is in accordance with the CE certification, IEC61010 related terms, in conformity with double insulation, Safety standard for overvoltage CAT III 600V. If you fail to use the clamp meter in accordance with the relevant operating instructions, the protection provided by the clamp meter will be weaken or lose.

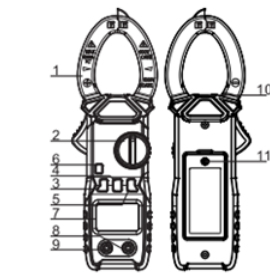
- Check the clamp meter and test lead before use to prevent any damage or abnormal phenomenon. If you find test lead and housing

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- Power: Two 1.5V AAA battery LR03
- Size: 207×72×39 mm
- Weight: approx.236g (including batteries)

VI. APPEARANCE STRUCTURE

- Clamp jaw
- Range knob
- Relative value measurement / Torch switch
- Data hold and backlight
- Reset / Surge current
- Select key / low pass filter
- LCD
- Input terminal
- COM terminal
- Torch
- Battery cover screw



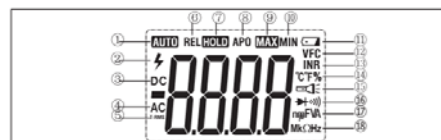
VII. DISPLAY SCREEN

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insulation is obviously damaged, and the LCD has no display, etc., or you think the clamp meter cannot work properly, please do not use it again.

- Do not use clamp meter before the back cover and battery cover are not properly covered to avoid electric shock.
- Remember that the fingers do not exceed the hand part of the test lead range when measuring, do not contact exposed electricity wires, connectors, unused inputs or measured circuits to prevent electric shock.
- The function switch must be placed in the correct position before measurement. It is strictly forbidden to change range during measurement to prevent damage to the clamp meter.
- Do not apply more than DC/AC600V voltage between the terminal of the clamp meter and the ground to avoid electric shock and damage to the clamp meter.
- Be careful when measuring voltage higher than 36V DC, 25V AC to avoid electric shock,.
- Use the clamp meter according to the

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①	Auto range	⑩	Minimum measurement
②	High voltage	⑪	Low battery
③	DC measurement	⑫	Low-pass filter measurement
④	AC measurement	⑬	Surge current measurement
⑤	True effective value	⑭	Celsius, Fahrenheit, duty cycle
⑥	Relative value measurement	⑮	Torch
⑦	Data hold	⑯	Diode, continuity test
⑧	Auto shut-down	⑰	Capacitance, voltage, current.

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instructions of manual, and it is forbidden to measure the voltage or current higher than the allowable input value. Before making online resistance, capacitance, diode, or circuit on-off measurements, you must first cut off all power supplies in the circuit and discharge all capacitors to avoid the measurement results is not accurate.

- When the LCD displays the "⏻" sign, please replace the battery in time to ensure the measurement accuracy. When you not plan to use this clamp meter for a long time, you should remove the battery.
- Do not change the internal wiring of the clamp meter to avoid damage of the instrument and hidden danger of the user.
- Do not store or use the clamp meter in a high temperature, high humidity, flammable, explosive and strong electromagnetic field environment.
- Please use a soft cloth and neutral detergent to clean the case of the clamp meter for

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⑨	Maximum measurement	⑱	Ohm, Kilo ohm, Mega ohm, Frequency
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VIII. BUTTON FUNCTION

Button Introduction: short press <2 seconds, long press ≥ 2 seconds

- Data hold button (HOLD B/L)
Press the HOLD B/L key to enter the reading hold measurement mode, and press the HOLD B/L button again to exit it.
Long press the HOLD B/L key to turn on the backlight, and then long press the HOLD B/L key to turn it off. The backlight will be turned off automatically after 15 seconds since you turned it on.
- Select key (SELECT/V.F.C)
Short press: Press this key to switch compound range.
Long press: Long press this key, the LCD will display the "VFC" symbol, and turn on low-pass filter (variable frequency signal) measurement,

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which is only valid for AC voltage 600V and AC current measurement. Long press it again to turn off low-pass filter measurement.

3. Relative value measurement (REL/)

Short press: Press once to enter the relative value measurement mode, display: measured value-base value, press it again to exit. It is valid only for AC and DC voltage, AC current, resistance and capacitance testing, it is valid for full range when measuring capacitance; Other functions are valid at the current range, range changes need to restart relative value measurement.

Long press: Long press this button to turn on/off the torch light.(note: the torch will not automatically turn off after it is turned on).

4. Surge current test (ZERO/ INR)

Short press: Press this key at the DC current range to clear the open circuit base value.

Long press: Long press this key at the AC current range, the screen will flash "----" and the INR character, now you entered the surge

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- change in a short time.
- b. In order to ensure the accuracy of the measurement data, the measured conductor must be placed in the center of the clamp head. Otherwise, $\pm 1.0\%$ additional error of the reading will occur.
- c. When the measured current is higher than 500A, the continuous test time cannot exceed 60 seconds.

2. DC current measurement

(1). Turn the meter knob to the current range, the meter defaults to AC current measurement. Short press the SELECT button can convert to DC current measurement.

(2).If the open circuit display of the meter is not zero, short press the ZERO/INR key to clear it. After measuring the high current, because the clamp head will remain magnetic and will not disappear so quickly, the LCD display will have a base value.

(3).Press and hold the trigger to open the clamp head and use the clamp head to grab the

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current test mode. Long press this button again to turn off the Surge current test, and the INR character will disappear.

5. Automatic shutdown function

In order to save power consumption and prolong battery life, the meter will turn on the APO automatic shutdown function by default after it is turned on. If the user does not operate the meter within 14 minutes, the meter will beep 3 times to prompt. If there is still no operation, after another 1 minute, the meter will have a long beep before automatically turn off the power, and enter the low-power sleep mode. If you want to wake it up , you can press the select key to turn it on.

Press the SELECT button to turn it on, the automatic shutdown function will cancel, and the LCD does not display the "APO" symbol, after cancel the automatic shutdown function, the meter will not automatically shut down, but there will have prompt sound every 15 minutes.

IX. OPERATE INSTRUCTIONS

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measured conductor, then slowly release the trigger until the clamp head is completely closed, please make sure whether the measured conductor is clamped in the center of the clamp head, otherwise, it will occur additional errors. The clamp meter can only measure one current conductor at a time. If two or more current conductors are measured at the same time, the measurement readings will be wrong.

(4). Read the measured current value directly from the display.

Note:

- a. The current measurement function must be operated between 0°C and 40°C . At the DC current measurement, if the reading is positive, the direction of the current is from up to down (the panel is up and the back cover is down). Hold the trigger and don't release it suddenly. The Hall element is a sensitive device, which is not only sensitive to magnetism, but also to thermal and mechanical stress in different degree, and

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1. AC current and surge current measurement

(1). Set the dial knob to the current range, the meter defaults to AC current measurement, Short press the "SELECT" key to switch the DC current measurement.

(2). Press and hold the trigger to open the clamp head and use the clamp head to grab the measured conductor, then slowly release the trigger until the clamp head is completely closed, please make sure whether the measured conductor is clamped in the center of the clamp head, otherwise, it will occur additional errors. The clamp meter can only measure one current conductor at a time. If two or more current conductors are measured at the same time, the measurement readings will be wrong.

(3). Read the True RMS of AC current directly from the display.

(4). You can test relative value by short press the REL key and the REL character will appear on the screen of the meter. Press again to exit the

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impact will cause the reading to change in a short time.

b. In order to ensure the accuracy of the measurement data, the measured conductor must be placed in the center of the clamp head. Otherwise, $\pm 1.0\%$ additional error of the reading will occur.

c. After the DC current (especially high current) test is completed, the open circuit base value may be too large. Please do an AC current test to eliminate the residual magnetic signal generated by the clamp head through the AC electric field.

d. When the measured current is higher than 500A, the continuous test time cannot exceed 60 seconds.

3. AC voltage measurement V~ and low-pass filter voltage V. F. C measurement

(1). Insert the red test lead into the " $V\Omega+H\text{Live}^{\circ}\text{C}^{\circ}\text{F}$ " jack and the black test lead into the COM jack.

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relative value measurement and the character REL on the screen will also disappear.

(5). Long press the INR button at the AC current range to perform surge current measurement, and the character INR will appear on the screen at the same time. At this time to start the electric appliance, the maximum current of the instantaneous start of the electrical appliance can be measured.

Long press this key again to exit the surge current measurement, and the character INR will also disappear. The surge current measurement is about the True RMS of the maximum current within 200ms.

Note:

- a. The current measurement function must be operated between 0°C ~ 40°C . Hold the trigger and don't release it suddenly. The Hall element is a sensitive device, which is not only sensitive to magnetism, but also to thermal and mechanical stress in different degree, and impact will cause the reading to

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(2). Turn the meter knob to the voltage range, short press the SELECT button to switch the AC voltage measurement, and connect the red and black test leads in parallel to the measured power supply or load.

(3). Read the True RMS of AC voltage directly from the display.

(4). Long press V. F. C key at AC voltage range to turn on/off low-pass filter voltage measurement. The low-pass filter can measure the variable frequency signal generated by the inverter and variable frequency motor.

Note:

- a. Do not input voltage higher than DC/AC600V. Although it is possible to measure higher voltage, it may easily damage the meter.
- b. When measuring high voltage, pay special attention to avoid electric shock.
- c. Disconnect the test lead from the measured circuit after all measurement operations are completed.
- d. When the measured voltage is higher than

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24V DC/AC safe voltage, the LCD of this meter displays the high-voltage warning prompt "⚡" for alarm reminder.

e. When measuring voltage above 36V, pay attention to wear safety protection equipment.

4. LowZ low impedance AC voltage measurement

(1).Insert the red test lead into the "VΩ-HLive°C°F" jack and the black test lead into the COM jack.

(2).Turn the meter knob to the low impedance AC voltage measurement range, and connect the test leads in parallel to the measured power supply or load.

(3).Read the True RMS of AC voltage directly from the display.

⚠Note:

▶Do not input voltage higher than AC300V. Although it is possible to measure higher voltage, it may easily damage the meter.

▶When measuring high voltage, pay special

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attention to avoid electric shock.

▶If the resistance value is higher than 0.5Ωwhen the test leads are short-circuited, you need to check whether the test leads are loose or other reasons.

▶When measuring resistance above 1MΩ, it may take a few seconds for the reading to stabilize. It is normal for high resistance measurements. In order to obtain stable readings, you can buy an extra short alligator clip test line instead of our standard test leads to do the measurement.

▶Disconnect the test lead from the measured circuit after all measurement operations are completed.

7. Diode and continuity test

(1) Insert the red test lead into the "VΩ-HLive°C°F" jack and the black test lead into the COM jack.

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attention to avoid electric shock.

▶Test a known voltage before use the meter, it is to confirm whether the product function is correct.

▶After using LowZ low impedance function range, please wait 3 minutes before perform LowZ voltage measurement, in order to eliminate false voltages, the LowZ function of the meter will provide a low impedance on the entire wire circuit to obtain more accurate measurements.

▶When the measured voltage is higher than 24V AC safe voltage, the LCD of this meter displays the high-voltage prompt "⚡" for warning.

5. DC voltage measurement

(1).Insert the red test lead into the "VΩ-HLive°C°F" jack and the black test lead into the COM jack.

(2).Turn the meter knob to the voltage range, the meter will defaults to DC voltage measurement, and connect the red and black test leads in

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parallel to the measured power supply or load.

(2) Turn the knob to the resistance range, short press "SELECT" to select diode or continuity test measurement mode.

(3) When under continuity test, if the resistance of the tested circuit is less than 50Ω, the built-in buzzer will sound.

(4) In the diode measurement mode, connect the red test lead and black test lead to the positive and negative pole of the diode respectively, and the LCD will display the forward voltage drop of the diode.

⚠Note:

▶If the open circuit or polarity of the measured diode is reversely connect, the display will show "OL".

▶When measuring diode and continuity test, all power supplies in the measured circuit must be turned off before the measurement, and all capacitors should release completely.

▶Do not input voltage higher than DC or AC 30V to avoid personal safety injury.

▶Disconnect the test lead from the measured

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parallel to the measured power supply or load.

(3).Read the measured voltage value from the display.

⚠Note:

▶Do not input voltage higher than DC/AC600V. Although it is possible to measure higher voltage, it may easily to damage the meter.

▶When measuring high voltage, pay special attention to avoid electric shock.

▶Disconnect the test lead from the measured circuit after all measurement operations are completed.

▶When the measured voltage is higher than 24V DC/AC safe voltage, the LCD of this meter will displays the high-voltage prompt "⚡" for warning.

▶When measuring voltage above 36V, please pay attention to wear safety protection equipment.

6. Resistance measurement

(1).Turn the knob to the "Ω-H" range, the meter

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defaults to the resistance range.

8. Capacitance measurement

(1). Insert the red test lead into the "VΩ-HLive°C°F" jack and the black test lead into the COM jack.

(2). Turn the meter knob to the resistance range, and short press the SELECT key to switch the capacitance measurement.

(3).Connect the test lead to both ends of the measured capacitor and confirm whether the polarity is correct.

(4).Read the measured capacitance value directly from the LCD display.

⚠Note:

▶The capacitance should release completely before measurement; it takes about 10 seconds to stabilize the reading when measuring large capacitance.

▶The capacitance test can use REL mode to test, REL mode measurement can be applied to

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defaults to the resistance range.

(2).Insert the red test lead into the "VΩ-HLive°C°F" jack and the black test lead into the COM jack.

(3).Connect the test lead wire to both ends of the measured resistance.

(4).Read the reading directly from the LCD screen.

⚠Note:

▶If the tested resistor is under open circuit or the resistance of the measured resistor exceeds the maximum range of the meter, the display will show "OL"

▶When measuring on-line resistance, all power supplies in the measured circuit must be turned off before the measurement, and all capacitors are released completely. In order to ensure the measurement is correct.

▶When measuring low resistance, the test leads will have about 0.1Ω-0.2Ω measurement error. In order to obtain accurate readings, you can perform relative value measurement, after

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the automatic range of capacitance, and can also be used to subtract (clear) the base value of open circuit and lead.

9. Frequency measurement

(1).Insert the red test lead into the "VΩ-HLive°C°F" jack and the black test lead into the COM jack.

(2).Turn the knob to Hz, and connect the test leads in parallel to the measured signal source.

(3).Read the measured frequency value directly from the display.

10. Temperature measurement

(1).Turn the meter knob to °C/°F.

(2).Connect the K-type thermocouple to the "VΩ-HLive°C°F" jack and COM jack of the instrument, and pay attention to the polarity when connecting;

(3).Use the temperature probe to measure the surface of the measured object, and the temperature value will display.

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(4). Press the SELECT button to switch between Fahrenheit and Celsius measurement.

⚠Note:

▶ Insert the temperature probe into the tested socket of the meter, the temperature will automatically display.

▶ The meter will display current ambient temperature if not connect to the temperature probe.

11. Live Wire Recognition Live

(1). Turn the knob to the Live range, short press the select button to switch the Live function, and the LCD displays Live.

(2). Insert the red test lead into the "VΩ-HLive°C°F" jack, and touch the measured position with the red test lead.

(3). If meter has audible and visual alarm, the tested wire connected to the red test lead is a live wire. If it is no change, the tested wire is not a live line.

⚠Note:

The accuracy of V.F.C low-pass filter measurement need to increase 5%;

4. DC voltage

Range	Accuracy	Resolution	Overload protection
600mV	± (0.5%+7)	0.1mV	600V DC/AC
6V		0.001V	
60V		0.01V	
600V		0.1V	

Input impedance: ≥10MΩ;

5. Low impedance AC voltage LowZ V~

Range	Accuracy	Resolution	Overload protection
6V	± (1.0%+10)	0.001V	300V DC/AC
60V		0.01V	
300V	± (1.0%+12)	0.1V	

⚠Display: AC voltage True RMS;

Input impedance: ≤3kΩ;

Frequency response: sine wave and triangle wave 40Hz~1k Hz;

The accuracy is 5% to 100% of the range, and the voltage range short-circuit allows ≤5 words of

▶ The range must be operated in accordance with safety rules.

▶ This function only detects AC standard main live wire (AC 110V~AC 380V).

12. Non-contact AC voltage induction measurement NCV

(1). Turn the knob to NCV range, and the LCD displays NCV.

(2). The NCV induction voltage range is 48V~250V. Put the upper part of the clamp head of the instrument close to the measured charged electric field (AC power line, socket, etc.), when the instrument sensing AC voltage electric field, the meter will display "----" and the buzzer issued "drop, drop" alarm sound. As the intensity of the induction electric field increases, the more horizontal sections of "----" displays on the LCD, and the higher the sound frequency of the buzzer

Note: When the tested electric field voltage is ≥ AC 100V, pay attention to whether the conductor of the measured electric field is insulated to

remaining readings.

6. Resistance

Range	Accuracy	Resolution	Overload protection
600Ω	± (1.0%+5)	0.1Ω	250V DC/AC
6kΩ		0.001kΩ	
60kΩ		0.01kΩ	
600kΩ		0.1kΩ	
6MΩ		0.001MΩ	
20MΩ		0.01MΩ	
60MΩ	± (2.5%+20)	0.01MΩ	

Open circuit voltage: about 1V;

The accuracy is 10% to 100% of the range.

7. Continuity test

Range	Accuracy
600Ω	The resistance value ≤50Ω, the buzzer will have sound.

Resolution: 0.1Ω

Open circuit voltage: about 1V

Overload protection: 250V AC/DC

avoid electric shock.

X. TECHNICAL CHARACTERISTIC

Accuracy calibration, ambient temperature 23°C ± 5°C, humidity less than 75%RH.

1. AC current ACA

Range	Accuracy	Resolution	Overload protection
60A	±(4.0%+10)	0.01A	600A
600A		0.1A	

⚠Frequency response: 50Hz~60Hz;

Display: the current True RMS; Suitable for 10% to 100% of the range.

The open circuit of the current range allows ≤10 words of remaining readings;

When the measured current is higher than 500A, the continuous test time cannot exceed 60 seconds.

The accuracy of V.F.C low-pass filter measurement needs to increase 5%;

2. Direct current DCA

8. Diode test

Range	Accuracy
6V	The open circuit voltage is about 3V, The short circuit ≤2mA

Resolution: 0.001V

Overload protection: 250V AC/DC

9. Capacitance

Range	Accuracy	Resolution	Overload protection
6nF	± (5.0%+40)	0.001nF	250V AC/DC
60nF		0.01nF	
600nF		0.1nF	
6μF		0.001μF	
60μF		0.01μF	
600μF		0.1μF	
6mF	0.001mF		

⚠ Measured value = measured display value-test lead open circuit value.

The accuracy is 10% to 100% of the range.

Large capacitance response time: ≥1mF about 8s; measurement error does not include lead

Range	Accuracy	Resolution	Overload protection
60A	±(4.0%+10)	0.01A	600A
600A		0.1A	

⚠Accuracy is 10% to 100% of the range, you can short press the ZERO button to clear the open circuit base value before test.

When the measured current is higher than 500A, the continuous test time cannot exceed 60 seconds.

3. AC voltage(V~)

Range	Accuracy	Resolution	Overload protection
6V	± (0.8%+10)	0.001V	600VDC/AC
60V		0.01V	
600V	± (1.2%+25)	0.1V	

⚠Input impedance: ≥10MΩ;

Display: Voltage True RMS; Suitable for 10% to 100% of the range.

The V.F.C low-pass filter measurement mode is only apply to 600V range and 1V resolution;

Frequency response: 40Hz~200Hz;

distributed capacitance.

10. Frequency Hz/Duty Cycle%

Range	Accuracy	Resolution	Overload protection
10Hz	± (0.3%+3)	0.001Hz	250V DC/AC
100Hz		0.01Hz	
1kHz		0.1Hz	
10kHz		0.001kHz	
100kHz		0.01kHz	
1MHz		0.1kHz	
10MHz	0.001MHz		

⚠For signals below 3 Hz, the reading is zero;

1. 5Vrms ≤ input sensitivity ≤ 20Vrms.

11. Temperature test°C/°F

Range	Display range	Resolution
(-20~1000) °C	<400°C ± (2.0%+5) ≥400°C ± (1.5%+15)	1°C
(-4~1832) °F	<752°F ± (2.0%+5) ≥752°F ± (1.5%+15)	1°F

Overload protection: 250V DC/ AC RMS

⚠ The accessory is equipped with a type K (nickel-chromium-nickel-silicon) thermocouple. If the difference of the ambient temperature inside the machine reaches $\pm 5\text{C}$, the accuracy is available after 1 hour. Open circuit displays the current ambient temperature.

XI. INSTRUMENT MAINTENANCE

1. The power supply of this product is 2 AAA batteries, if the meter meets following conditions, please replace the batteries.

- (1).When LCD displays low battery "🔋" symbol.
- (2).When the brightness of the LCD backlight decreases.
- (3).When the buzzer sound of the meter becomes smaller.

2. General maintenance

(1).The maintenance and service of this instrument must be completed by professional maintenance personnel or designated maintenance service department.

- (2).Please take out the battery when it is not used for a long time to avoid corrosion of the instrument caused by battery leakage.
- (3) Pay attention to waterproof, dustproof and anti-fall.

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