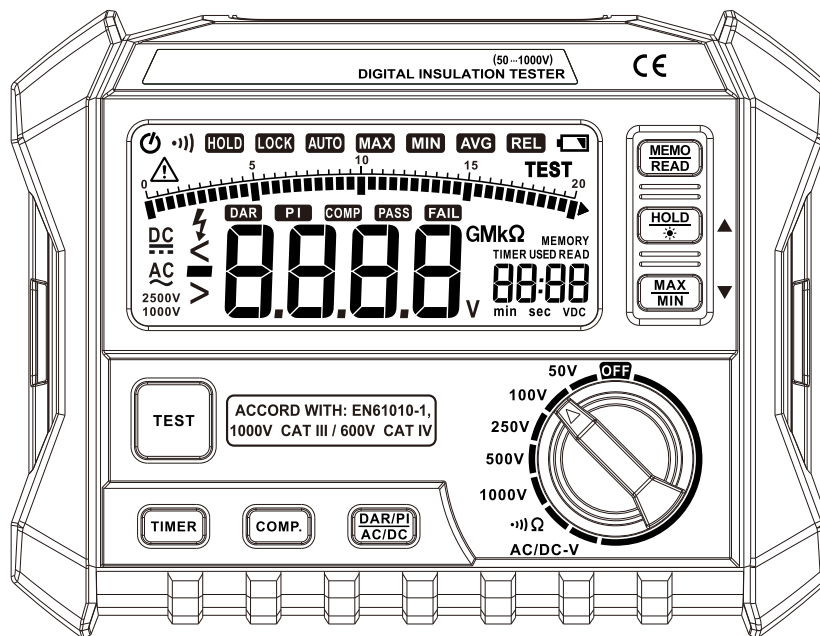


说明书做货要求：

序号	项目	内容		
1	尺寸	成品尺寸：210x140mm		
2	材质	80克书纸		
3	颜色	黑色		
4	外观要求	印刷完整清晰, 版面整洁. 无分层. 残损. 毛边等缺陷.		
5	装订方式	装钉		
6	表面处理	/		
7	其它			
版本		V02		
DWH 设计	罗樊	MODEL 机型： HT5203	Part NO. 物料编号：X	
CHK 审核	林枝			
APPRO. 批准	FAYER	HABOTEST® 东莞市华博精测仪表科技有限公司		

此页不印刷，只供参考



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

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Statement

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Safety statement

Caution

The "caution" sign indicates conditions and operations that may cause damage to the meter or equipment.

It requires caution when performing this operation. If you do not perform this operation correctly or do not follow this procedure, the instrument or device may be damaged. Do not proceed with any of the actions indicated by the Caution sign unless these conditions are met or fully understood.

Warning

The "warning" sign indicates conditions and actions that pose a danger to the user.

Note When performing this operation, pay attention to the fact that personal injury or injury may occur if the operation is not performed correctly or the operation procedure is not followed. Do not continue to perform any of the actions indicated by the warning signs without these conditions being met or without full understanding.

Before using this instrument, please read the instructions carefully and pay attention to the safety warnings.

Safety instructions

The instrument is designed according to the safety requirements of the international electrical safety standard IEC61010-1 for electronic testing instruments. Meters are designed and manufactured in strict compliance with 1000V CAT III and pollution Level 2 of IEC61010-1.



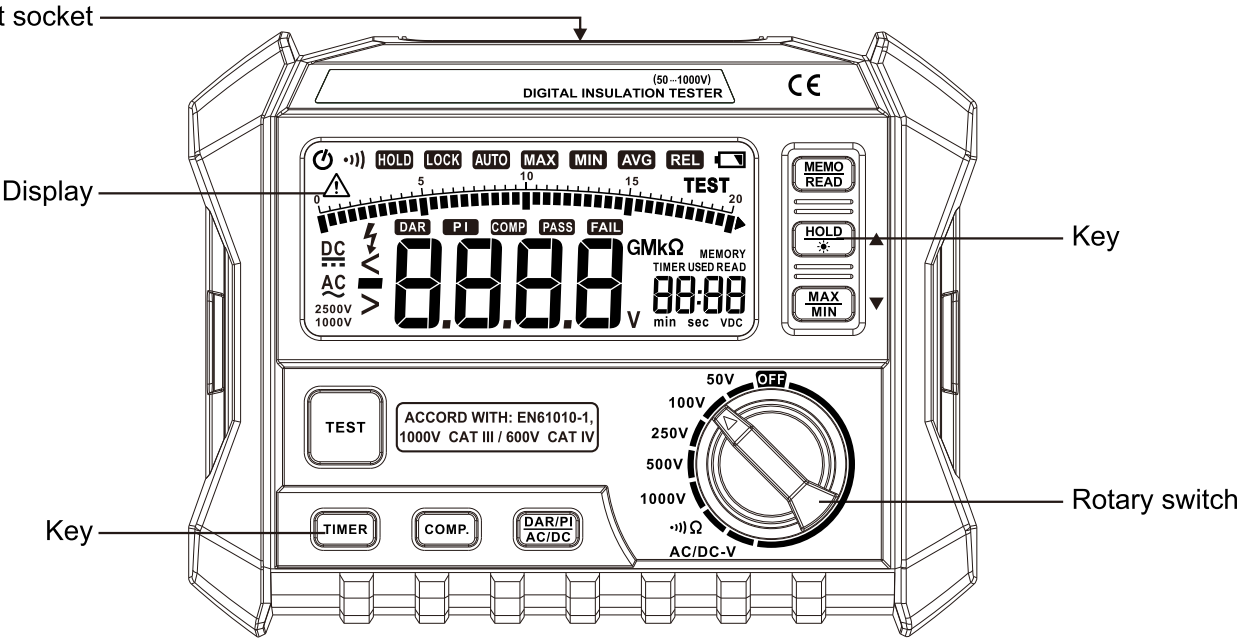
Warning

To avoid possible electric shock or personal injury, please follow the following guidelines:

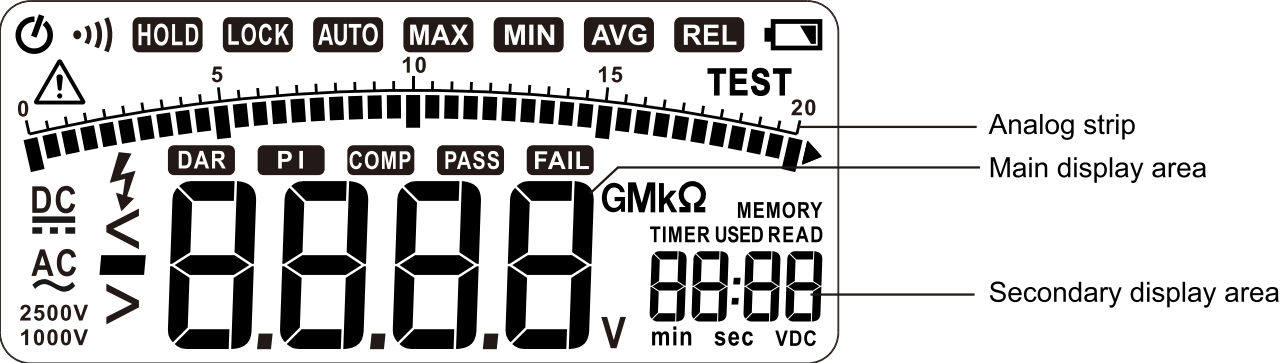
- Please strictly follow the instructions in this manual to use the instrument, otherwise the protection function provided by the instrument may be damaged.
- Do not use if the meter or test line is damaged or the meter does not operate properly. Before connecting the meter to the circuit under test, be sure to select the correct test terminal and switch position.
- Before measurement, the meter measures the known voltage to verify that the meter is operating properly.
- The voltage applied between the test terminals or between either terminal and the ground point shall not exceed the rating indicated on the meter.
- Be especially careful when using the meter beyond 30V AC true RMS, 42V AC peak, or 60 V DC. This type of voltage carries a risk of electric shock.
- When the low battery indicator appears, replace the battery as soon as possible.
- Before testing resistance, be sure to cut off the power supply and discharge all high voltage capacitors.
- Do not use the instrument in the vicinity of explosive gas or steam.
- The finger should be kept behind the finger protector when using the test lead.
- Remove the test wire from the meter before opening the case or battery cover. Never operate the meter with the meter disassembled or the battery cover open.
- Comply with local and national safety regulations when working in dangerous places.
- When working in dangerous areas, appropriate protective equipment should be used in accordance with the regulations of local or national authorities.

Instrument introduction

Panel description



Display symbol specification



Symbol	Description
	This is the indicator of low battery power. Please replace the battery in time when this symbol appears to avoid electric shock or personal injury caused by incorrect reading.
HOLD	The symbol for hold data
COMP	This symbol is displayed when the comparison function is enabled.
PASS	If the comparison function is enabled and the measured value is greater than the set value, this symbol will be displayed.
FAIL	If the comparison function is enabled and the measured value is less than the set value, this symbol will be displayed.
DAR	The dielectric absorption rate of the object under test is displayed during the insulation test

Symbol	Description
PI	The polarization index of the object under test is displayed during the insulation test
MAX MIN	Maximum value, minimum value measurement symbol
TIMER	The timing measurement function is enabled.
MEMO	Memory function symbol
READ	Read function symbol
DC	Measuring DC voltage
AC	Measuring AC voltage
VDC	This is the test voltage for insulation testing. The unit is DC volts.
	This is the negative sign. This symbol is displayed when the measured value is negative.
	This is the greater than sign.
	This is the less than sign.
	The measuring terminal of the instrument has dangerous voltage. Do not touch the measuring terminal at this time to avoid electric shock.
	Continuity measurement

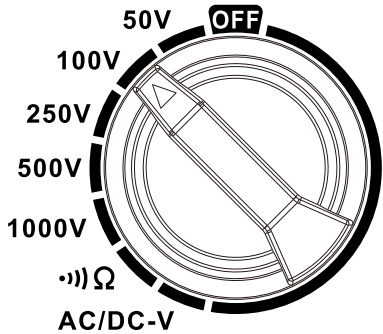
Symbol	Description
	Automatic shutdown symbol
2500V 1000V	Test voltage of insulation resistance
min sec	Time units for timed measurements
GMkΩ	Units of measurement
Other symbol	No special definition

Key description:

- ① The  key: Press this key briefly to save the data. Press and hold this key to enter data reading mode.
- ② The  key: Press this key briefly to turn the data-hold function on or off. Press and hold this key to switch the backlight on or off.
- ③ The  key : Max-min button
- ④ The **TEST** key: Insulation resistance measurement button
- ⑤ The **TIMER** key: Insulation resistance timing button
- ⑥ The **COMP.** key: Insulation resistance comparison function button
- ⑦ The  key : The conversion absorption ratio (**DAR**) or polarization index (**PI**) was measured at the insulation resistance range. In AC/DC-V position, the AC/DC voltage is converted for measurement.

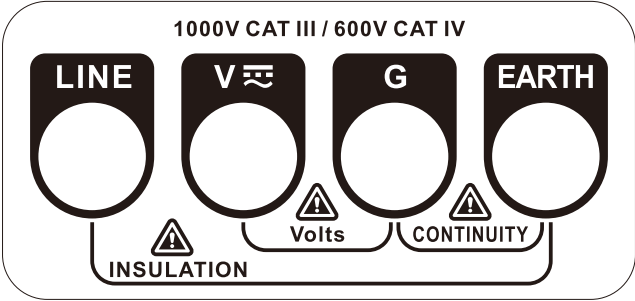
Rotary switch specification:

Position	Function
OFF	Turn off the meter power.
50V	Insulation resistance gear; Test voltage 50V; The insulation resistance is less than 200M.
100V	Insulation resistance gear; Test voltage 100V; The insulation resistance is less than 1G.
250V	Insulation resistance gear; Test voltage 250V; The insulation resistance is less than 2G.
500V	Insulation resistance gear; Test voltage 500V; The insulation resistance is less than 20G.
1000V	Insulation resistance gear; Test voltage 1000V; The insulation resistance is less than 100G.
⌚Ω	This is the continuity measurement gear, measuring range 0.1~200.0Ω, resistance is less than 50.0Ω buzz prompt.
AC/DC-V	This is the AC-DC voltage measuring gear, where DC voltage is measured below 1000V and AC voltage is measured below 750V.



Input terminal description:

Input terminal	Description
LINE	Positive input terminal for measuring insulation resistance.
V 	Positive input terminals for measuring AC/DC voltages.
G	① Negative input terminal for measuring AC/DC voltage ; ② The input terminal for measuring continuity at the  position.
EARTH	① Negative input terminal for measuring insulation resistance; ② The input terminal for measuring continuity at the  position.



Instrument function introduction

Automatic shutdown function:

When the instrument is no operation for about 15 minutes, the instrument will automatically shut down to save battery power. After automatic shutdown, turn the switch back to the OFF position, and then switch on. Press the

 button to switch on and cancel the automatic shutdown function. The screen first shows "OFF", release the

 button to enter the normal mode, "  " no longer displayed.

Insulation resistance data saving/reading function:

At the insulation resistance gear, press  key (< 1 sec) to save the data. Press  key (> 2 sec) to enter the data viewing mode. In the data view mode, press the "▲/▼" key to browse the data. In the data viewing mode, press the  button (< 1 sec) to delete a group of data with the current serial number. Press the  button (> 3 sec) to delete all data. After the operation is complete, press the  key (> 2 sec) to exit the data viewing mode.

Data hold function:

Press the  button (< 1 sec) to switch the data hold function on or off.

Backlight function:

Press the  button (>2 sec) to turn the backlight on or off.

Maximum and minimum values:

Only in the "AC/DC-V" gear, press the  button (less than 1 second) to view the maximum and minimum value. Press and hold  button (more than 2 sec) to exit the maximum and minimum value mode.

Insulation resistance comparison function:

The insulation resistance comparison function is used to monitor whether the meter's insulation resistance measurement data exceeds the pre-set alarm value. The meter displays 'PASS' when the meter's measurement data exceeds the alarm value. The meter displays 'FAIL' when the meter's measurement data below the alarm value.

Press the **COMP.** key (< 1 sec) to enable or disable the data comparison function at the insulation resistance gear. Press the **COMP.** key (> 2 sec) to enter the insulation resistance alarm value setting, press the ▲/▼ keys to adjust the current flashing digit and press the  key to switch the flashing digit and press the  key to increase the value by 10 times. After setting the insulation resistance alarm value, press the **COMP** key (> 2 sec) to exit the insulation resistance alarm value setting.

Timed insulation resistance measurement function:

Timing measurement function is only effective for insulation testing. Press the **TIMER** key to enable timing measurement function. At this time, the meter displays 'TIMER'. Press the "▲/▼" key to adjust the timing time up and down. When the test time reaches the set timing time, the instrument stops the insulation test. Press the **TIMER** key again to close the timing measurement function.

Absorption ratio (DAR) and polarization index (PI) :

- The absorption ratio and polarization index are used to check whether the leakage current is reduced after the voltage is applied to the measured object (When the PI value or DAR value is close to 1, it indicates that the insulation of the measured object is basically destroyed). The meter calculates the PI value and DAR value as a reference to judge the insulation performance. Both of these parameters represent the change of the insulation resistance of the measured object within a period of time after the measured voltage is applied.

- Definition of DAR and PI

$$DAR = \frac{R_{60 \text{ Sec}}}{R_{15 \text{ Sec}}}$$

$$PI = \frac{R_{10 \text{ Min}}}{R_{1 \text{ Min}}}$$

- The **R10Min** is the resistance value measured by applying the voltage for 10 minutes. The **R1Min (R60Sec)** is the resistance value measured by applying the voltage for 1 minute. The **R15Sec** is the resistance value measured by applying the voltage for 15 seconds.
- At the insulation resistance gear, press the  key to switch the absorption ratio (DAR) or polarization index (PI), and the meter displays DAR or PI. When the measurement time is less than 1 minute, the absorption ratio (DAR) is invalid. When the measurement time is less than 10 minutes, the polarization index (PI) will be invalid.

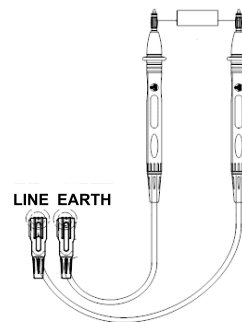
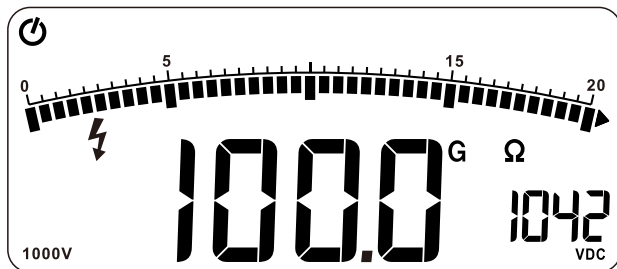
Basic measurement operation:

Insulation resistance measurement

Note: Please do not turn the rotary switch during the insulation test to avoid damage to the instrument.

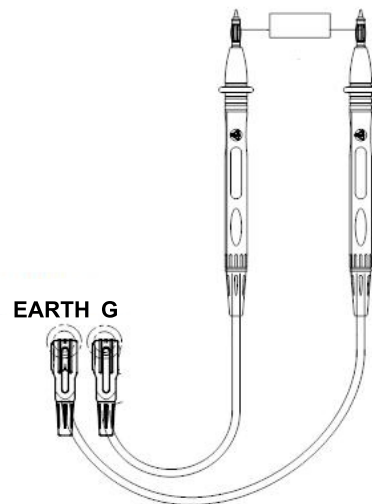
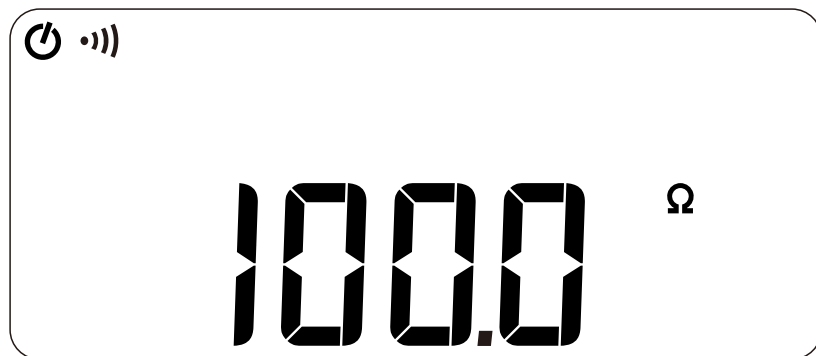
- The insulation test can only be carried out on the circuit that is not live. Before the test, check whether the test wire is intact and whether the circuit under test is live.
- Turn the rotary switch to the appropriate insulation resistance gear (50... 1000V), if the low battery symbol is displayed, please replace the battery in time.
- Insert the test probe into the **LINE** (red) and **EARTH** (red) terminals (when measuring high resistance, do not wrap the test wires around each other to avoid affecting the measurement result) and connect it to the object under measurement.
- Press the **TEST** key (> 2 sec), drop a sound, enter the insulation resistance measurement.
- The ⚡ symbol of the instrument flashes during measurement, and the red indicator of the **TEST** key lights up. The main screen displays the measured insulation resistance, and the secondary screen displays the actual output voltage. Press the **TEST** key (< 1 sec) and drop to stop measuring.
- Remove the test probe. Read the measurement from the display.

Note: For auxiliary measurement, you need to connect the G terminal to obtain more accurate measurement results.



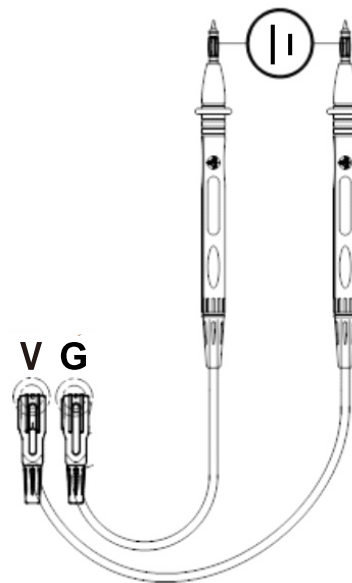
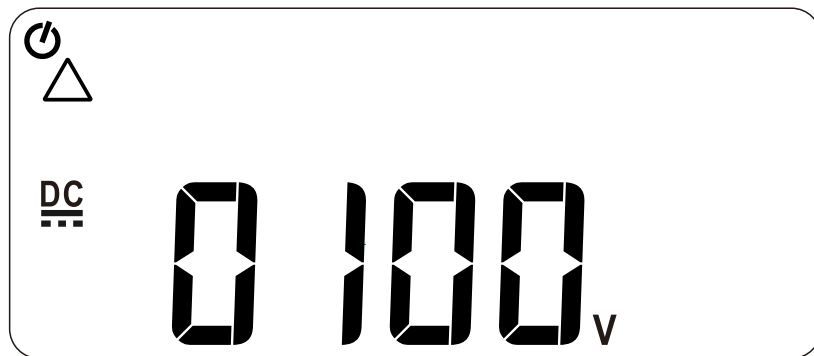
Continuity measurement

- Turn the rotary switch into the $\cdot)))\Omega$ position.
- Insert the red probe into the **EARTH** terminal and the black probe into the **G** terminal.
- Connect the test probe to the measured object.
- Read the measurement from the display.
- The buzzer will sound when the test resistance is less than 50.0Ω . Measurement range: $0.1\sim200.0\Omega$.



AC/DC voltage measurement

- Turn the rotary switch to the **AC/DC-V** position and press the  button to switch the AC/DC voltage measurement.
- Insert the red probe into the **V**  terminal and the black probe into the **G** terminal.
- Connect the test probe to the circuit or power supply.
- Read the measurement from the display.



General characteristic

- In accordance with IEC/EN 61010-1 1000V CAT III, 600 V CAT IV measurement standards.
- 1000V DC, 750V AC (**Sine wave**)
- Insulation test measurement range: 3.00MΩ~100.0GΩ
- Insulation resistance test voltage: 50、100、250、500、1000 V
- Accuracy of insulation resistance test voltage: $\pm 10\%$
- The insulation short-circuit test current is about 3.0 mA
- Maximum capacitive load for insulation testing: 1uF
- Storage temperature: -20°C~60°C
- Operating temperature: 0°C~40°C
- Operating altitude: 2000m CAT III 1000V; 3000m CAT II 1000V.
- Temperature coefficient: for temperatures below 18 °C or above 28 °C, the coefficient is per (°C) x 0.05 x specified accuracy
- Relative humidity: 40%~75%
- Size: 180(L) mm×140(W) mm×65(H)mm
- Batteries: 8 x 1.5V AA (LR) batteries

Technical specifications

DC voltage measurement

Range	Resolution	Accuracy
1000 V	1 V	$\pm(1.0\% \text{ reading} + 5 \text{ word})$

AC voltage measurement

Range	Resolution	Accuracy
750 V	1 V	$\pm(1.0\% \text{ reading} + 5 \text{ word})$

Frequency range: 40 ~ 400 Hz (Sine wave)

Continuity measurement

Range	Resolution	Accuracy
200.0 Ω	0.1 Ω	$\pm(1.0\% \text{ reading} + 5 \text{ word})$
 Ω	If the resistance is less than approx. 50.0 Ω , the buzzer sounds.	

Insulation resistance measurement

Test voltage	Range	Resolution	Accuracy
50V	0~20.00MΩ	0.01MΩ	±(3% reading + 5 word)
	20.0~200.0MΩ	0.1MΩ	
100V	0~20.00MΩ	0.01MΩ	±(3% reading + 5 word)
	20.0~200.0MΩ	0.1MΩ	
	0.200~1.000GΩ	0.001GΩ	
250V	0~20.00MΩ	0.01MΩ	±(3% reading + 5 word)
	20.0~200.0MΩ	0.1MΩ	
	0.200~2.000GΩ	0.001GΩ	
500V	0~20.00MΩ	0.01MΩ	±(3% reading + 5 word)
	20.0~200.0MΩ	0.1MΩ	
	0.200~2.000GΩ	0.001GΩ	
	2.00~20.00GΩ	0.01GΩ	
1000V	0~20.00MΩ	0.01MΩ	±(3% reading + 5 word)
	20.0~200.0MΩ	0.1MΩ	
	0.200~2.000GΩ	0.001GΩ	
	2.00~20.00GΩ	0.01GΩ	
	20.0~100.0GΩ	0.1GΩ	±(5% reading + 5 word)

Replace the battery

Warning

To avoid electric shock and personal injury, replace the battery when the battery is low.

When replacing the battery, turn the meter switch to the off position, disconnect the meter test line from the circuit under test and remove it from the meter.

- 1) Unscrew the fastening screw of the meter battery cover and remove the battery cover.
- 2) Replace the old battery and pay attention to the direction of the battery electrode marked at the bottom of the battery case.
- 3) Put the battery cover back to its original position, and fix and lock the battery cover with screws.

- ① : Screw
- ② : Batteries

