INSTRUCTION MANUAL

MT587

15kV DIAGNOSTIC HV INSULATION TESTER

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1. INTRODUCTION

The MT587 15kV Diagnostic HV Insulation Tester boasts a large backlight LCD display, comprehensive data storage, easy data access, an alarm feature, automatic shutdown, and various other functions. This versatile meter excels in measuring both AC and DC voltage, as well as the absorption ratio and polarization index of DC voltage. With a broad measurement range, high resolution, and exceptional accuracy, this Insulation Tester is a reliable companion for professionals. Its design prioritizes convenience during operation and ensures portability for on-site tasks.

Constructed with a shockproof, dustproof, and moisture-proof structure, this meter is an indispensable tool in telecommunications, electricity, metrology, computer rooms, oil fields, electromechanical installation and maintenance, and various industrial enterprises relying on electricity as a power source. It proves invaluable for measuring the resistance of diverse insulating materials and the insulation resistance of transformers, motors, cables, and electrical equipment. Additionally, its step-adjusting voltage function allows for the output of various voltage levels.

This digital insulation resistance meter incorporates medium and large-scale integrated circuits, providing high output power and featuring six voltage levels. The DC voltage measurement range spans from 0 to 1000V, while the AC voltage measurement range covers 0 to 750V. For DC current, it accurately measures from 100pA to 6mA, and the capacitance measurement range extends from 10nF to 50nF. This instrument stands out as a sophisticated solution for professionals requiring precision in insulation testing and electrical measurements.

2. SAFETY RULES AND PRECAUTIONS

The instruction manual must be read and the safety rules and precautions listed in this manual must be strictly observed. Strict attention must be given before you use this instrument in order to avoid possible electric shock or personal injury.

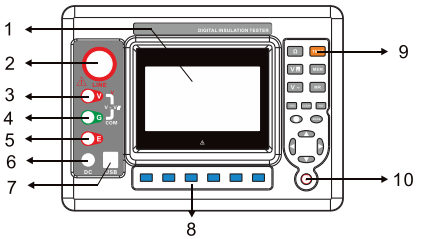
When using this instrument please pay special attention to safety.

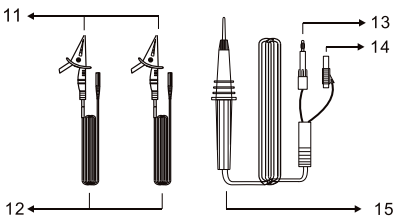
- This tester conforms to IEC61010 safety specifications for design, production, and test.
- To avoid errors during measuring, do not use high-frequency signal generators like mobile phones etc.
- Pay attention to words and symbols on the tester.

- Ensure that the tester and accessories are in good condition before use. There should be no damages or broken parts in the test leads or insulation.
- During measurement, **DO NOT** touch bare or uninsulated conductors or circuits under measurement.
- Confirm that the connector plug of the test lead has been inserted into the tester's interface correctly.
- Do not measure voltages exceeding the AC and DC Voltage ranges, it will damage the tester.
- Do not measure in flammable or gaseous areas.
- Stop using the tester when there is exposed metal caused by a broken enclosure or test lead during testing.
- Do not keep or store the tester in an area with high-temperature, moisture, or condensation, or under direct daylight radiation for a long period of time.
- When the meter displays battery low voltage symbol "▭" put the meter on charge immediately, otherwise it will lead to measurement errors.
- Do not **CHARGE** or perform data transmission during the measurement process.
- Pay attention to the measuring range and usage environment stipulated for the safe operation of the tester.
- This meter is only to be used, disassembled, adjusted, and repaired by a qualified and authorized personnel.
- If the tester is damaged during usage, it may be removed from site and sent away to an authorized personnel for repairs or disposal.
- For risk of danger icon in manual "⚠ ", users must perform safety operations strictly in compliance with the manual content.
- When performing the High Voltage Insulation Test, be sure to connect the red test lead to the object under test before pressing the test button.
- After the test is completed, wait for one minute for the discharge to complete before removing the test leads. When removing the test leads, first remove the test leads of the meter and then remove the test leads from the device under test.

3. STRUCTURE

1 - LCD display screen
2 - LINE interface
3 - V interface
4 - GUARD interface
5 - EARTH interface
6 - Changer interface
7 - USB interface
8 - Voltage select button
9 - Test button
10 - Power on/off button
11 - Security Alligator Clip
12 - Test line (green, black each 1 PC)
13 - High voltage test terminal banana plug into LINE interface

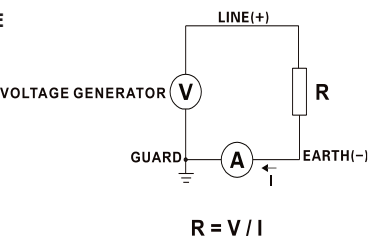




14 - Shielded cable connector plugged into GUARD interface (no connection required without this connector)
15 - High voltage test lead

4. MEASURING PRINCIPLE

Insulation resistance measurement uses a voltage generator to generate voltage (V), applied across the resistor, measuring the current (I) flow across the resistor, and calculating the ground resistance value (R) according to the formula R=V/I.



5. OPERATION METHOD

5.1 Power On/Off

Press the POWER button to turn the Instrument on and off. After the power is turned on, "APO" is displayed in the lower corner. When it is not in operation, it will automatically shut down after 15 minutes.

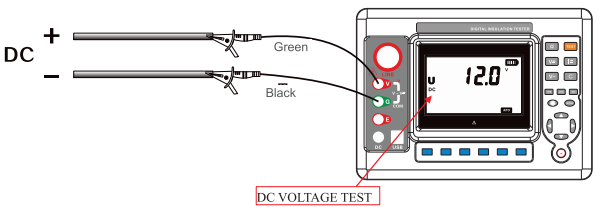
5.2. Battery Voltage Check

After powering on, if the LCD shows a low battery voltage sign "▭" it indicates that the battery is running low. Please charge timeously. Sufficient battery power will ensure measurement accuracy.

5.3. DC Voltage Test

> ⚠ **WARNING:** Input instrument DC voltage cannot exceed 1000V.

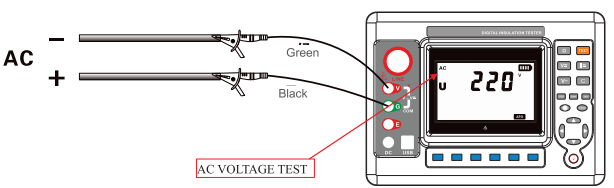
When measuring, press the V⎓ button to switch to the DC voltage test mode, connect the green test lead to the **V** terminal, the black test lead to the **COM**, and the LCD displays the real-time DC voltage value.



5.4. AC Voltage Test

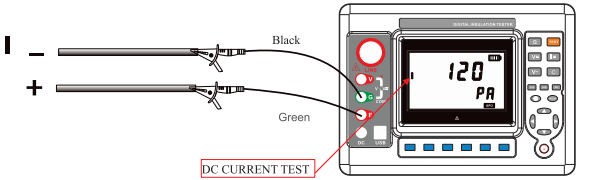
> ⚠ **WARNING:** Input instrument AC voltage cannot exceed 750V.

When measuring, press the V~ button to switch to AC voltage test mode, connect the green lead to the V terminal, and the black lead to COM. The LCD displays the real-time AC voltage value.



5.5. DC Current Test

1. When measuring, press the I⎓ button to switch to DC current test mode. Connect the green lead to the E terminal, the black lead to the COM. The LCD displays the real-time current value.



2. During the current test, the units of **mA** are shown in **Figure 5-2**, and the units of **nA, uA,** and **pA** are shown in **Figure 5-1.**

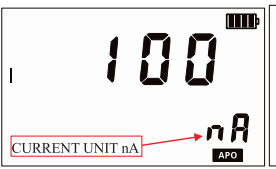


Figure 5-1 Test process display.

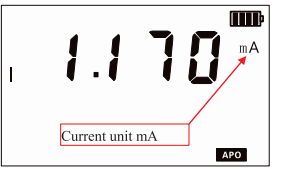


Figure 5-2 Test process display.

5.6. Capacitance Test

> ⚠ **WARNING:** Pay attention to standard operation during the capacitor test. Check whether the capacitor is charged before the test. After the test, the capacitor must be discharged. Do not touch the capacitor without discharge.

1. When measuring, press the C button to switch to the capacitance test mode. One end of the high voltage probe test lead (red) is connected to the meter LINE and the other end of the head is in contact with the capacitor under test. The black test lead end is connected to COM and the other end is connected to the capacitor. Press the TEST key to start the test (the meter will emit a continuous beep during the test). After the test is completed, the LCD displays the correct capacitance value.

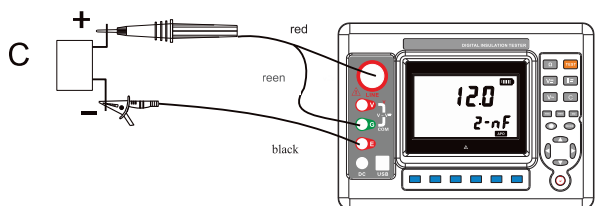


Figure 6-2 Test display

2. The capacitance measurement mode has 4 gears and requires manual shift testing. The first range is 10nf-100nf, the second range is 100nf-1000nf, the third range is 1uf-10uf, and the fourth range is 10uf-50uf. During the test, the value greater than or less than a certain value needs to be manually switched to the corresponding gear. The gear can be switched by pressing the ◀ (gear minus 1) or ▶ (gear plus 1) button.

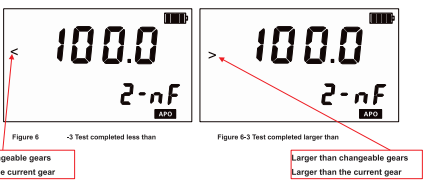


Figure 6 -3 Test completed less than

Figure 6-3 Test completed larger than

6. INSULATION RESISTANCE TEST

⚠	**WARNING:** Insulation resistance test can only be carried out on an uncharged circuit. Before testing, check whether the test circuit wiring is in good condition and whether the circuit under test is energized. If the circuit is live, it may damage the instrument and affect the measurement accuracy.
⚠	Must wear high voltage insulating gloves to operate.
⚠	In the insulation resistance range, press the test switch to generate high voltage in the test lead head and in the circuit under test. Please be careful to avoid touching.
⚠	Be sure to connect the earth wire (black) to the earthing port of the circuit under test.
⚠	Do not touch the circuit immediately after testing. The stored charge may cause electric shock.
⚠	Do not remove the test lead immediately. Wait until the discharge is complete before touching the circuit under test.
⚠	In order to ensure the measurement accuracy, do not twist the test leads together.

6.1. Precautions for testing high insulation resistance.

⚠ **WARNING:** After the high-voltage insulation material is added with DC voltage, the current passing through the sample is very small, and it is very susceptible to the influence of external interference, causing large test errors.
⚠ The higher the measured resistance value, the longer the measurement time.
⚠ As humidity increases, surface leakage increases, and bulk electrical current also increases.
⚠ The resistance value of general materials decreases with the increase of ambient temperature and humidity.

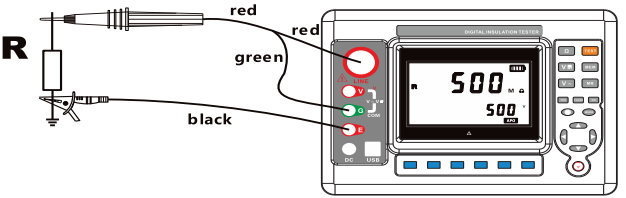
6.2. Guaranteed temperature and humidity of the insulation resistance accuracy

Insulation resistance range	Guaranteed the humidity value of the insulation resistance accuracy	Guaranteed temperature of the insulation resistance accuracy
0Ω - 100MΩ	<85% RH (No condensation)	23°C ± 5°C
100MΩ - 20GΩ	<75% RH (No condensation)	
20GΩ - 1000GΩ	<65% RH (No condensation)	
1000GΩ - 1TΩ	<55% RH (No condensation)	
1TΩ - 10TΩ	<45% RH (No condensation)	
10TΩ - 50TΩ	<35% RH (No condensation)	

6.3. Insulation resistance test operation:

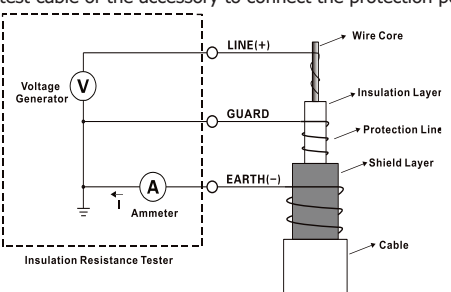
1. Insulation resistance tests can only be carried out on an uncharged circuit. Before testing, check that the test leads are good and confirm that the circuit under the test is uncharged.
2. Press the Ω key to switch to resistance test mode, then press 500V or 1000V or 2500V or 5000V or 10KV or 15KV button to select the voltage value to be tested.
3. One end of the test lead (black) is connected to **EARTH** on the instrument and the other end is connected to the earth end of the circuit under test. One end of the high-voltage probe test lead (red) is connected to the other end of the instrument **LINE** and the head is in contact with the circuit under the test. If the test has a green branch line as a shielded line, the accuracy of connecting the **GUARD** port during testing is better **(Testing resistance above TΩ must be connected with green shielded wire)**. If the matching test lead does not carry this line, it does not need to be connected. As shown in the figure, press the TEST button (During the test, the meter will emit an intermittent beep. Flashing ESC in the lower left corner of the screen). The LCD shows the measured value. Read the insulation resistance value after the measured value is fixed. After the resistance test is

completed, press and hold the Ω key to switch the displayed current value, and then press the Ω key to switch back to the resistance value.



7. GUARD USE OF PROTECTIVE WIRES

When the insulation resistance of the cable is measured, the leakage current of the covered surface passes through the interior of the insulator and the current converges, resulting in an error in the insulation resistance value. In order to avoid this phenomenon, as shown in the figure below, use the protection wire (any conductive bare wire) to flow the leakage current through the part. After connecting to the protection port, the leakage current does not flow through the indicator and the insulator can accurately measure the insulation resistance. Please use the protection test cable of the accessory to connect the protection port.



8. POLARIZATION INDEX (PI) AND ABSORPTION RATIO (DAR)

8.1. The function of Polarization Index (PI) and Absorption Ratio (DAR):

The Polarization Index (PI) and Absorption Ratio (DAR) are tests to check whether the leakage current of the insulator has increased. The leak current did not increase while confirming the application time. The instrument automatically calculates the polarization index (PI) and the

absorption ratio (DAR). As a judgement of the insulation performance, both the polarization index (PI) and the absorption ratio DAR indicate the change in the insulation resistance over a period of time after the measured object withstands the measured voltage.

8.2. The difference between Polarization Index (PI) and Absorption Ratio (DAR):

For general insulation tests, such as housing insulation, tool handles etc., can generally be tested in a relatively short period of time to increase the leakage current with the increase of the voltage application time, so generally can be tested with a short time test. The short-term insulation resistance ratio DAR is called the absorption ratio (see the following formula for the specific test time), but for the large-capacity and long-term absorption process, such as transformers, generators, cables, capacitors and other electrical equipment, sometimes the absorption ratio (DAR) is not enough to reflect the whole process of absorption, and the insulation resistance ratio can be used for a longer time, that is, the ratio between the insulation resistance (R10min) at 10 minutes and the insulation resistance (R1min) at 1 minute describes the entire process of insulation absorption, and PI is called the polarization index.

The PI and DAR values are calculated by the following formula:

$$\text{PI (Polarization Index)} = \frac{R10Min}{R1Min}$$

$$\text{DAR (Absorption ratio)} = \frac{R60Sec}{R15Sec}$$

$$\text{DAR (Absorption ratio)} = \frac{R60Sec}{R30Sec}$$

Remarks:

1：R10Min= resistance value measured by the voltage applied for 10 minutes
2：R1Min=R60Sec=the resistance value measured by the voltage applied for 1 minute
3：R30Sec=It is the resistance value measured by the voltage applied for 30 seconds
4：R15Sec=It is the resistance value measured by the voltage applied for 15 seconds
5：DAR calculation time can choose 15 seconds or 30 seconds

8.3. Polarization Index (PI) and Absorption Ratio (DAR) Test:

1. The Polarization Index (PI) and Absorption Ratio Test (DAR) can only be performed on uncharged circuits. Before testing, check that the test leads are good and confirm that the circuit under the test is uncharged.
2. Press the Ω key, then press 500V or 1000V or 2500V or 5000V or 10KV or 15KV button to select the voltage value to test.
3. Press the MODE key to set the corresponding mode. The LCD shows "10:01m" as the polarization index mode in the lower left corner of the

LCD, "60:15S" as the absorption mode 15 second mode, and "60:30S" as the absorption mode 30 second mode. Small numbers do not show anything for the insulation resistance measurement mode.

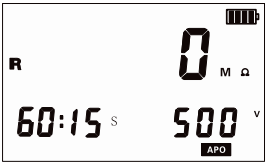


Figure 9-1 Absorption ratio mode 15 second mode

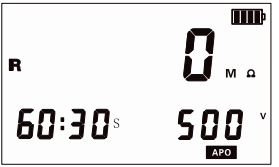


Figure 9-2 Absorption ratio mode 30 seconds mode

Figure 9-3 Polarization index mode

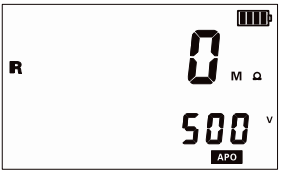


Figure 9-4 Insulation resistance measurement mode

4. One end of the test lead (black) is connected to **EARTH** on the instrument and the other end is connected to the earth end of the circuit under test. One end of the high-pressure probe test (red) is connected to the other end of the instrument **LINE** and the head is in contact with the circuit under test, and the TEST key is pressed. The LCD displays the measured value. After the measured value is fixed, the absorbency or polarization index can be read.
5. After the test is completed, you can press ▲ to switch to view the divisor and ratio of the absorption ratio or polarization index value, or press ▼ to switch to view the ratio or divisor of the absorption ratio or polarization index value. (Such as in "60: 15S" mode, the lower left corner displays "60: 15S" as the ratio, the display "15S" as the dividend, and the display "60S" as the divisor, the other modes are the same).

Figure 9-5 Ratio

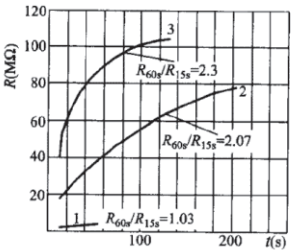
Figure 9-6 The dividend

Figure 9-7 Divisor

8.4. Polarization Index (PI) and Absorption Ratio (DAR) Applications:

In engineering, insulation resistance and absorption ratio (or polarization index) can reflect the degree of moisture in the insulation of generators, oil-immersed power transformers and other equipment. The value of the

absorption ratio (or polarization index) decreases after the insulation is wet (see Figure 1), so it is an important indicator of whether the insulation is affected by moisture. It should be pointed out that sometimes the insulation has obvious defects (for example, the insulation breaks down under high pressure), and the absorption ratio or polarization index value is still good. The absorption ratio or polarization index cannot be used to find other local insulation defects other than moisture and dirt.



1-Before drying,15 degree Celsius; 2-When the end of drying, 73.5 degree Celsius
3-After running 72h, and cooled to 27 degree Celsius

Figure 1 The relationship between the insulation resistance R of a generator and the time t

Polarization Index Reference Judgment Value:

Polarization Index	Above 4	4 ~ 2	2.0 ~ 1.0	Below 1.0
Judge	The best	Good	Need to pay attention	Bad

Absorption ratio reference judgment value:

Absorption ratio	Above 1.4	1.25 ~ 1.0	Below 1.0
Judge	The best	Good	Bad

9. BACKLIGHT CONTROL

After power on, press "☼" key to turn the backlight on or off, and the backlight function is suitable for dim places. The default backlight turns off every time you turn it on.

10. ALARM VALUE SETTING

1. After power on, long press "☼" to turn on and off the alarm function.
2. Long press MODE key to enter alarm value setting mode, press Ω key to select resistance setting, press V⎓ key to select DC voltage setting, press V~ key to select AC voltage setting. Then press the ▲ (plus 10) key or ▼ (minus 10) key, or the ◀ key (plus 1) or ▶ (minus 1) key to change the current number size. Finally, press NO to save and exit.
3. When the measured voltage value is greater than the alarm critical set value or the insulation resistance value is less than the alarm critical set

value and the alarm function is turned on, the instrument flashes the "•)) " symbol and issues a continuous alarm sound. The maximum value of the DC voltage alarm setting is 900V, the maximum value of the AC voltage alarm setting is 700V, and the maximum value of the insulation resistance alarm setting is 9999MΩ.The following figure shows an example ("<" is less than the symbol to indicate an alarm, and ">" is greater than the symbol to indicate an alarm):

Figure 11-1 Resistance setting interface

Figure 11-2 AC voltage setting interface

Figure 11-3 DC voltage setting.

11. DATA LOCK/STORAGE

1. After the measurement is completed, press the MEM key to lock the currently displayed data, and automatically numbered storage, short press MEM key again to exit the lock, if the storage is full, the meter displays the "**FULL**" symbol.
2. As shown in the following figure: the measured data is 1258m ω, and the "MEM" display is stored as the fifth set of data. As shown in the following figure: the measured data is 1258MΩ, press MEM to display and store as the fifth group of data.

Figure 12-1 Lock and save display

Figure 12-2 Storage full display.

12. DATA REVIEW/DELETE

1. After booting, if the meter has saved data, long press the MEM button to enter the data lookup, and store the data read interface "MR" symbol display. Press the "▼" or "▲" key check the corresponding data with step value of 10, press the "▶" or "◀" key to check the corresponding data with a step value of 1, and then press MEM to exit the check.
2. As shown in the figure on page 16: The number 5 in the lower left corner of the screen when checking is the currently stored 5th data. If there is no stored data, the LCD displays "**NULL**". (The resistance data in the lower right corner shows the voltage, current and capacitance display units used in the test).

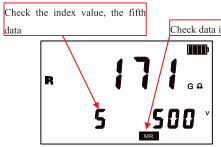


Figure 13-1 Resistance check

Figure 13-2 AC voltage check

Figure 13 -3 No stored data

Figure 13-4 DC voltage check

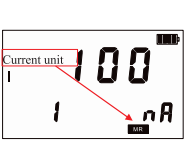


Figure 13-5 Current check

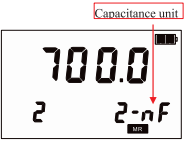


Figure 13-6 capacitance check

3. In the data review state, long press MEM key to enter the data deletion, press NO key not to delete and return to the data review state, press YES key to delete the all the stored data. Delete page as shown below:

Figure 13-6 Delete display.

13. STEP ADJUSTMENT RESISTANCE MEASUREMENT VOLTAGE

After starting up, you can modify the voltage value, for above 10KV voltage, by pressing ▲ or ▼ key with a step value of 500V, maximum voltage 15KV

Note: The maximum voltage does not exceed 15KV, and the step accuracy is ± 20%.

14. BATTERY DESCRIPTION

1. The meter uses a 12.6V lithium battery for power supply. When the battery power is low, the power symbol "▭" is displayed, please charge it timeously.

Note: When the battery power is low, the measurement accuracy will be affected.

2. The higher the measurement voltage, the higher the battery power required.

15. SPECIFICATIONS

15.1. Insulation Resistance Range and Accuracy (Measuring function - Insulation Resistance)

Output voltage	Measuring Range	Accuracy	Resolution
500V (±10%)	0.2 MΩ ~ 2MΩ	±3%rdg ± 5dgt	0.001MΩ
	2MΩ ~ 20MΩ	±3%rdg ± 5dgt	0.01MΩ
	20MΩ ~ 200MΩ	±3%rdg ± 5dgt	0.1MΩ
	200MΩ ~ 2000MΩ	±3%rdg ± 5dgt	1MΩ
	2GΩ ~ 20GΩ	±5%rdg ± 5dgt	0.01GΩ
	20GΩ ~ 200GΩ	±10%rdg ± 5dgt	0.1GΩ
	200GΩ ~ 2000GΩ	±20%rdg ± 5dgt	1GΩ
1000V (±10%)	0.5MΩ ~ 5MΩ	±3%rdg ± 5dgt	0.001MΩ
	5MΩ ~ 50MΩ	±3%rdg ± 5dgt	0.01MΩ
	50MΩ ~ 500MΩ	±3%rdg ± 5dgt	0.1MΩ
	500MΩ ~ 5000MΩ	±3%rdg ± 5dgt	1MΩ
	5GΩ ~ 50GΩ	±3%rdg ± 5dgt	0.01GΩ
	50GΩ ~ 500GΩ	±10%rdg ± 5dgt	0.1GΩ
	500GΩ ~ 5000GΩ	±20%rdg ± 5dgt	1GΩ
2500V (±10%)	1MΩ ~ 10MΩ	±3%rdg ± 5dgt	0.01MΩ
	10MΩ ~ 100MΩ	±3%rdg ± 5dgt	0.1MΩ
	100MΩ ~ 1000MΩ	±3%rdg ± 5dgt	1MΩ
	1GΩ ~ 10GΩ	±3%rdg ± 5dgt	0.01GΩ
	10GΩ ~ 100GΩ	±3%rdg ± 5dgt	0.1GΩ
	100GΩ ~ 1000GΩ	±10%rdg ± 5dgt	1GΩ
	1TΩ ~ 10TΩ	±20%rdg ± 10dgt	0.01TΩ
5000V (±10%)	2MΩ ~ 20MΩ	±3%rdg ± 5dgt	0.01MΩ
	20MΩ ~ 200MΩ	±3%rdg ± 5dgt	0.1MΩ
	200MΩ ~ 2000MΩ	±3%rdg ± 5dgt	1MΩ
	2GΩ ~ 20GΩ	±3%rdg ± 5dgt	0.01GΩ
	20GΩ ~ 200GΩ	±5%rdg ± 5dgt	0.1GΩ
	200GΩ ~ 2000GΩ	±10%rdg ± 5dgt	1GΩ
	2TΩ ~ 10TΩ	±20%rdg ± 10dgt	0.01TΩ
10KV (±10%)	5MΩ ~ 50MΩ	±3%rdg ± 5dgt	0.01MΩ
	50MΩ ~ 500MΩ	±3%rdg ± 5dgt	0.1MΩ
	500MΩ ~ 5000MΩ	±3%rdg ± 5dgt	1MΩ
	5GΩ ~ 50GΩ	±3%rdg ± 5dgt	0.01GΩ
	50GΩ ~ 500GΩ	±5%rdg ± 5dgt	0.1GΩ
	500GΩ ~ 5000GΩ	±20%rdg ± 5dgt	1GΩ
	5TΩ ~ 35TΩ	±30%rdg ± 10dgt	0.01TΩ
15KV (±10%)	6MΩ ~ 60MΩ	±3%rdg ± 5dgt	0.01MΩ
	60MΩ ~ 600MΩ	±3%rdg ± 5dgt	0.1MΩ
	600MΩ ~ 6000MΩ	±3%rdg ± 5dgt	1MΩ
	6GΩ ~ 60GΩ	±3%rdg ± 5dgt	0.01GΩ
	60GΩ ~ 600GΩ	±10%rdg ± 5dgt	0.1GΩ
	600GΩ ~ 6000GΩ	±20%rdg ± 5dgt	1GΩ
	6TΩ ~ 50TΩ	±30%rdg ± 10dgt	0.01TΩ

Remark: Common electrical unit conversion
1 TΩ (Tera ohm) =1000GΩ=10^{12}Ω
1 GΩ (Giga ohm) =1000MΩ=10^{9}Ω
1 MΩ (Mega ohm) =1000KΩ=10^{6}Ω

15.2. Voltage Range and Accuracy

Measuring function	Measuring Range	Accuracy	Resolution
DC voltage	0.0V ~ 1000V	±1.5%rdg ± 3dgt	0.1V
AC voltage	0.0V ~ 750V	±1.5%rdg ± 3dgt	0.1V

15.3. Current Range and Accuracy

Measuring function	Measuring Range	Accuracy	Resolution
DC current	1mA - 6mA	±5%rdg ± 2dgt	0.01mA
	100uA - 1000uA	±5%rdg ± 2dgt	1uA
	10uA -100uA	±5%rdg ± 2dgt	0.1uA
	1uA -10uA	±5%rdg ± 2dgt	0.01uA
	100nA -1000nA	±5%rdg ± 2dgt	1nA
	10nA -100nA	±10%rdg ± 5dgt	0.1nA
	1nA -10nA	±20%rdg ± 5dgt	0.01nA
	100pA -1000pA	±30%rdg ± 5dgt	1pA

15.4. Capacitance Range & Accuracy

Measuring function	Measuring Range	Accuracy	Resolution
Capacitance	10uf - 50uf	±10%fs. ± 5dgt	0.01uf
	1uf - 10uf	±10%fs. ± 5dgt	0.01uf
	100nf - 1000nf	±10%fs. ± 5dgt	1nf
	10nf - 100nf	±10%fs. ± 5dgt	0.1nf

15.5. Technical Specifications

Function Insulation resistance test, voltage test, DC current test, capacitance test

Function	Range	
Basic condition	23°C ± 5°C, below 75%RH	
Rated voltage	500V, 1000V, 2500V, 5000V, 10kV, 15kV	
Test Voltage(V)	Rated voltage x (1±10%)	
Insulation resistance range	0.01MΩ ~ 50TΩ	Resolution: 0.01MΩ
DC Voltage Range	0 ~ 1000V	Resolution: 0.1V
AC Voltage Range	0 ~ 750V	Resolution: 0.1V
DC Current	0.1nA ~ 6mA	Resolution: 0.1nA
Capacitance	10nF ~ 50uF	Resolution: 10nF
Output short-circuit Current	≥6mA@15KV	
Absorption, Ratio and Polarization Index Measurement	PI (Polarization Index) = $\frac{R\ 10\ Min}{R\ 1\ Min}$ DAR (Absorption ratio) = $\frac{R\ 60\ Sec}{R\ 30\ Sec}$	
Power Supply	12.6V rechargeable battery	
Backlight	Controllable grey screen backlight, suitable for use in dim places	

Function	Range
Display Mode	4-bit large LCD display, grey screen backlight
LCD display size	108mm x 65mm
Instrument size	L/W/H: 240mm x 188mm x 85mm
USB interface	With USB interface, software monitoring, storage data can be uploaded to the computer, save and print
Communication Line	USB communication line 1PC
Test Lead	High voltage probe red 3m, high voltage test lead black 1.5m, green 1.5m
Data Storage	500 groups, "FULL" symbol indicates that storage is full
Data Review	Data review function: "MR" symbol display
Overflow Display	Exceed measurement range overflow function: ">" symbol display
Alarm Function	Alarm when the measured value larger or smaller than the alarm setting value
Power Consumption	Standby: 30mA Max (backlight off), Turn on backlight: 42mA Max, Measure: 200mA Max (backlight off)
Instrument weight	2750g (including battery)
Battery voltage	When the battery voltage is low, low battery symbol "▭" will display
Automatic shut-down	Automatic shutdown after 15 minutes
Insulation Resistance	≥50MΩ (between Measuring line and housing)
Pressure Resistance	AC3kV / 50Hz 1min
Working Temperature and Humidity	-10°C to 50°C < 85%RH
Storage Temperature and Humidity	-15°C to 55°C < 90%RH
Safety Regulations	IEC61010-1, IEC1010-2-31, IEC61557-1,5, IEC60529 (IP54) pollution grade 2, CAT III 300V

16. ACCESSORIES

Instrument	1PC
High pressure rod	1PC red
High voltage test lead	2PCS (black,green each 1)
Monitoring Software CD	1PC
USB communication line	1PC
Charger	1PC
Manual, certificate	1SET
Instrument box	1PC

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