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Dear Client

Thank you for Purchasing our product. Please read the manual in detail prior to first use, which will help you use the equipment skillfully.



Our aim is to improve and perfect the company's products continually, so there may be slight differences between your purchase equipment and its instruction manual. You can find the changes in the appendix. Sorry for the inconvenience. If you have further questions, welcome to contact with our service department.



The input/output terminals and the test column may bring voltage, when you plug/draw the test wire or power outlet, they will cause electric spark. PLEASE

**CAUTION RISK OF ELECTRICAL SHOCK!**

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## ◆ **SERIOUS COMMITMENT**

All products of our company carry one-year limited warranty from the date of shipment. If any such product proves defective during this warranty periods we will maintain it for free. Meanwhile we implement lifetime service. Except otherwise agreed by contract.

## ◆ **SAFETY REQUIREMENTS**

Please read the following safety precautions carefully to avoid body injury and prevent the product or other relevant subassembly to damage. In order to avoid possible danger, this product can only be used within the prescribed scope.

*Only qualified technician can carry out maintenance or repair work.*

--To avoid fire and personal injury:

### **Use Proper Power Cord**

Only use the power wire supplied by the product or meet the specification of this produce.

### **Connect and Disconnect Correctly**

When the test wire is connected to the live terminal, please do not connect or disconnect the test wire.

### **Grounding**

The product is grounded through the power wire; besides, the

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ground pole of the shell must be grounded. To prevent electric shock, the grounding conductor must be connected to the ground.

Make sure the product has been grounded correctly before connecting with the input/output port.

### **Pay Attention to the Ratings of All Terminals**

To prevent the fire hazard or electric shock, please be care of all ratings and labels/marks of this product. Before connecting, please read the instruction manual to acquire information about the ratings.

### **Do Not Operate without Covers**

Do not operate this product when covers or panels removed.

### **Use Proper Fuse**

Only use the fuse with type and rating specified for the product.

### **Avoid Touching Bare Circuit and Charged Metal**

Do not touch the bare connection points and parts of energized equipment.

### **Do Not Operate with Suspicious Failures**

If you encounter operating failure, do not continue. Please contact with our maintenance staff.

### **Do Not Operate in Wet/Damp Conditions.**

### **Do Not Operate in Explosive Atmospheres.**

### **Ensure Product Surfaces Clean and Dry.**

## — Security Terms

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Warning: indicates that death or severe personal injury may result if proper precautions are not taken

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Caution: indicates that property damage may result if proper precautions are not taken.

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# Content

1. Introduction .....	6
2. Usage .....	6
Third. performance characteristics .....	6
4. Technical indicators .....	8
5. Panel structure .....	9
6. Working principle .....	10
7. Operation method .....	10
8. Software operation .....	18
9. Precautions .....	21
10. Packing list .....	22

## 1. Introduction

This instrument using the original imported high-precision dew point sensor and the latest digital circuit control technology High-precision intelligent instrument for measuring trace moisture content in SF<sub>6</sub> gases.

The instrument adopts intelligent self-calibration technology, wide measurement range, fast response speed, high accuracy, good linearity, and dynamic display of measurement curve.

## 2. Usage

This instrument is suitable for test the dew point values of SF<sub>6</sub> gases, especially for air, nitrogen, inert gases and any dew point values that do not contain corrosive gases Used in electric power, petrochemical, metallurgy, environmental protection, scientific research institutes and other departments, with a very high cost performance. Measure the water content of SF<sub>6</sub> gas and identify its arc extinguishing performance.

### Third. performance characteristics

(1) **High stability:** Under severe interference conditions, the measurement data can be stabilized in the range of  $\pm 0.5^{\circ}\text{C}$ , and has excellent long-term stability and good repeatability.

(2) **High precision:** using the original imported high-performance dew point sensor and high-speed 12-bit  $\Sigma$ - $\Delta$ AD analog-to-digital converter, the highest resolution reaches to  $0.1^{\circ}\text{C}$ , which can fully meets the actual measurement requirements. In the full scale range, the measurement results are accurate and reliable, the measurement range is wide, the response speed is fast, and the measurement results are stable and reliable.

- (3) **Intelligent:** self-calibrating at startup, the sensor probe can automatically calibrate the zero point, automatically eliminate the systematic error introduced by the zero point drift, and ensure the accuracy of the measurement.
- (4) **Multiple protection:** With oil filter device, it is not affected by dust particles and most chemical pollution, and can protect the sensor against oil pollution, which is very suitable for use in industrial environments.
- (5) **Fast gas saving:** After entering the measurement state, the dew point value measurement time is 3~5min.
- (6) **Powerful:** 4.3-inch true color touch LCD display, directly display dew point value (°C), micro water value (ppm), date and time, dynamic display of dew point measurement curve . Save measurement data in real time, up to 999 group of measurement data can be stored.
- (7) **Data export:** Equipped with USB flash drive transfer function, historical data in the instrument can be directly transferred to a USB flash drive. By supporting the upper computer software, data can be imported, exported to WORD reports, printed, and other operations on a PC.
- (8) **Data printing:** The instrument comes with a micro printer, which can directly print out the current test results or historical data.
- (8) **Easy to use:** the original imported self-locking joint is adopted, which is easy to plug and pull, safe and reliable, and no air leakage. Sensitive touch buttons facilitate operation and improve work efficiency. Built-in large-capacity rechargeable lithium battery, small size, light weight, easy

to carry.

#### **4. Technical indicators**

**(1) Measuring range:** dew point value:  $-80\text{ }^{\circ}\text{C} \sim +20\text{ }^{\circ}\text{C}$

Micro moisture value:  $0 \sim 19999\text{uL/L}$

**(2) Measurement accuracy:**  $\pm 0.5^{\circ}\text{C}$  ( $-60^{\circ}\text{C} \sim +20^{\circ}\text{C}$ ).

$\pm 1.0^{\circ}\text{C}$  ( $-80^{\circ}\text{C} \sim -60^{\circ}\text{C}$ )

**(3) Resolution:** Dew point value:  $0.1^{\circ}\text{C}$

Micro moisture value:  $1\text{uL/L}$

**(4) Response time (+20°C, 0.1Mpa):**

63% need 5s, 90% need 45s ( $-80^{\circ}\text{C} \sim +20^{\circ}\text{C}$ )

63% need 10s, 90% need 240s ( $+20^{\circ}\text{C} \sim -80^{\circ}\text{C}$ )

**(5) Sampling flow:**  $0.6\text{L/min} \pm 20\%$ .

**(6) Pressure range:**  $0 \sim 1.0\text{ Mpa}$

**(7) Operating temperature:**  $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$

**(8) Ambient humidity:**  $0 \sim 100\% \text{ RH}$

**(9) Charging time:** 4 hours

**(10) Machine size:**  $250 \times 150 \times 300\text{mm}^3$

**(11) Total weight:** 4.4kg



## 5. Panel structure

1. The layout diagram of the front panel of the instrument is shown in Figure 1.

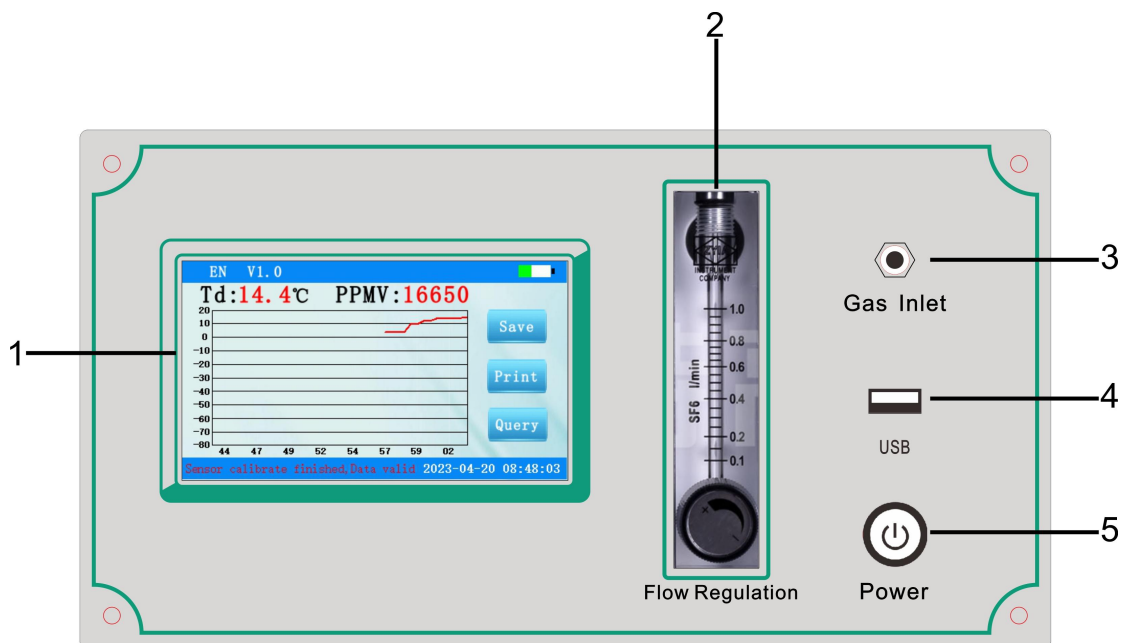


Figure 1 Front panel layout

- ①LCD
- ②Flow regulation
- ③Gas inlet
- ④USB port
- ⑤Power

2. The layout diagram of the back panel of the instrument is shown in Figure 2.

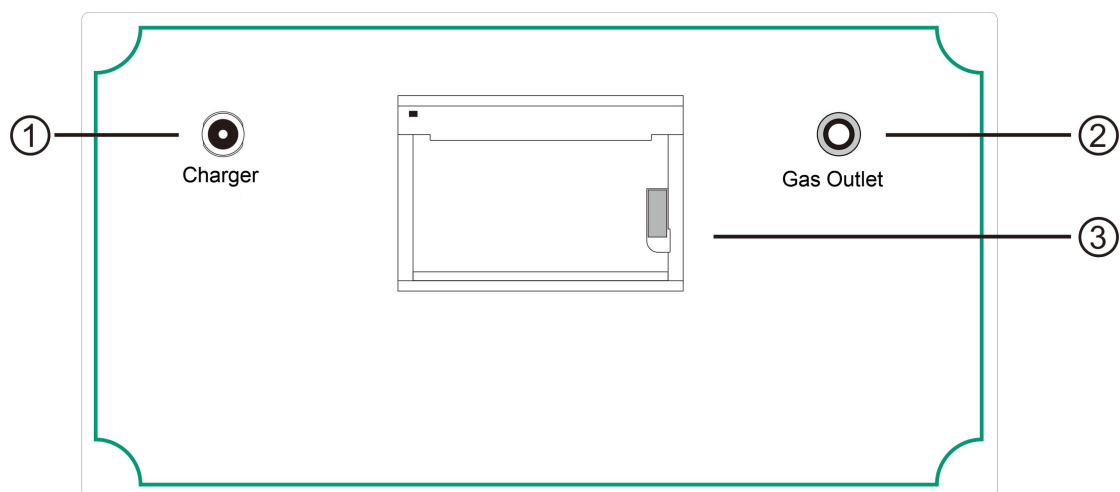


Figure 2 Layout diagram of the back panel

- ①Charging port
- ②Gas outlet
- ③Printers

**Note:** Press the bracket adjustment buttons on both sides at the same time to adjust the angle of the bracket.

## **6. Working principle**

When the measured gas enters the sensor sampling room, the trace amount of water in the gas is adsorbed into the micropores of the sensor, and the sensor converts this change into an electrical signal, which is processed by the microprocessor and finally sent to the LCD screen for display.

The micro-water measuring instrument is composed of gas path part, sensor part, signal processing part and liquid crystal display output.

## **7. Operation method**

### **1. LCD display description**

This instrument adopts 4.3-inch high-resolution true color touch LCD display, Can clear display even in strong sunlight. Click the touch screen button to complete parameter setting, data saving and other operations, the test results are displayed on the LCD screen, the graphics are clear, beautiful, easy to operate.

### **2. Connect to the SF<sub>6</sub> device**

The air source of the SF<sub>6</sub> air chamber is connected to the air inlet of the instrument through the matching joint and the gas pipe, and then the air pipe of the instrument can be connected to the air outlet of the instrument.

**Note:** (1) Do not connect the intake pipe and the outlet pipe backwards;

(2) The nut joint of the intake pipe and SF<sub>6</sub> equipment should be tightened with a wrench;

(3) The other end of the outlet pipe should point to the downwind direction, or use special equipment to collect the exhaust gas.

### 3. Introduction to the use of the interface

#### (1) Main interface

Turn on the instrument power switch and the instrument will go directly to the test interface, as shown in Figure 3.

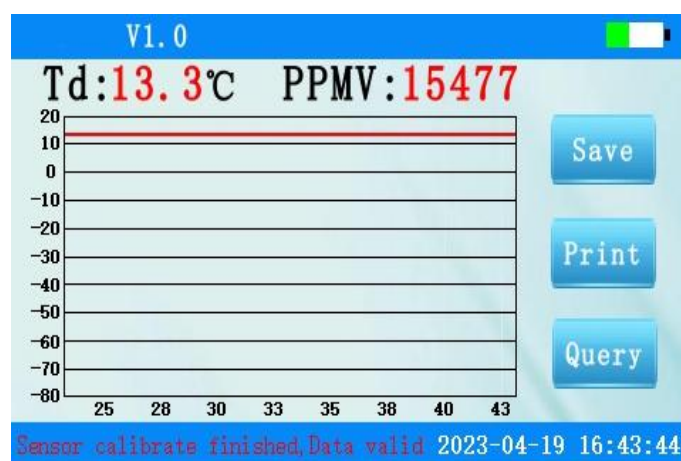


Figure 3 Main interface

At the top of the main interface, "Software Version Number", "Battery Display" are displayed respectively, and SF<sub>6</sub> is displayed below Dew point value and micro water value of the gas. The dew point measurement curve is dynamically displayed in the middle section and the clock display is at the bottom.

There are "Save", "Print", "Query" and other function buttons on the right side of the main interface, and users can operate as needed, when the sensor is in a self-calibrating state The "Save" and "Print" functions cannot be used until the sensor is self-calibrated, as shown in Figure 4.

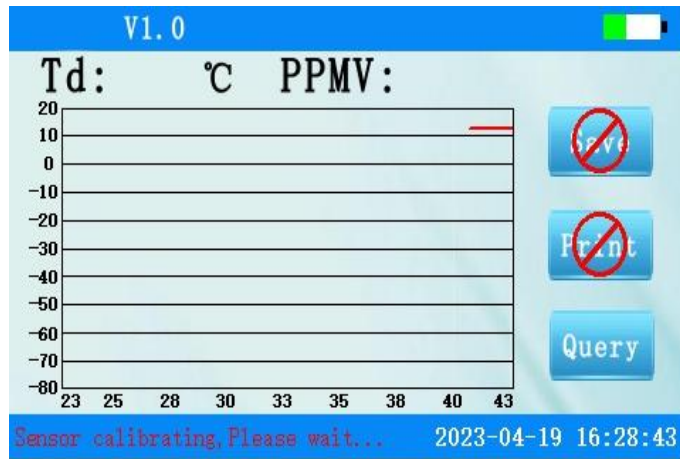


Figure 4 Main interface

**(2) Start measuring**

After entering the main interface, the instrument automatically starts to measure, adjust the "flow adjustment" knob, so that the flow indicator is about 0.6L/min, and the instrument will display the measurement curve in real time.

Observe the prompt message in the lower left corner of the instrument display, when the sensor is in the self-calibration state, prompt "Sensor calibrating, please wait...", at this time the interface will not display the dew point value, micro water value, and disable the "Save" and "Print" buttons, as shown in Figure 5.

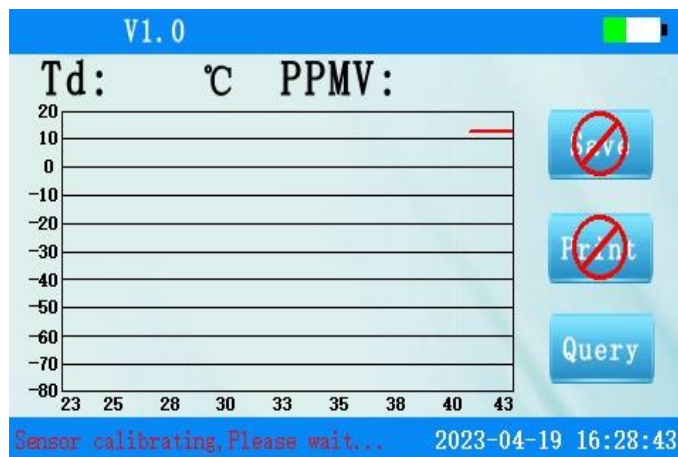


Figure 5 Sensor calibration....

When the sensor self-calibration is completed, the lower left corner will prompt "Sensor calibration finished,Data valid", at this time the dew point value, micro water value is displayed normally, and the "save", "print" function can be used normally, and the dynamic measurement curve on the screen has been completely formed into a straight line, indicating that the data has been stabilized, you can read the data, save, print, etc., as shown in Figure 6.

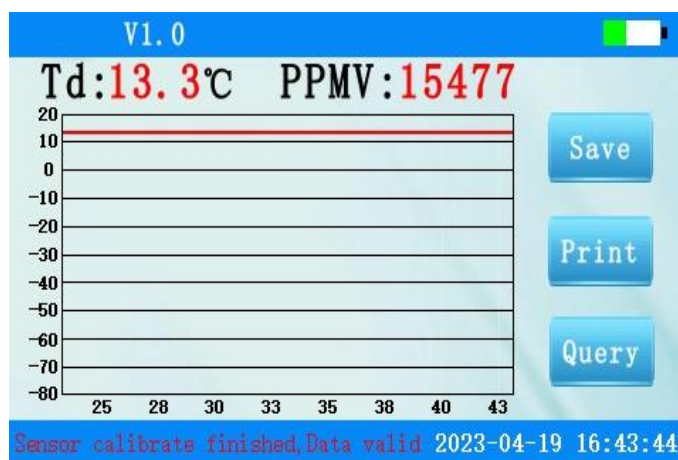


Figure 6 Sensor calibration finished...

This instrument can display the dew point value, micro water value and measurement curve at the same time during the measurement process, and the first data above the main interface is "dew point value", the unit is °C; The second data is the "micro moisture value", which is measured in ppm, which has the same meaning as uL/L.

**Note:** The first time to turn on the sensor needs to be self-calibrated, the time is slightly longer, generally 8~10min, if continuous measurement is required, do not turn off the system in the middle. After entering the measurement state, the dew point value measurement time is 3~5min.

Illustrate:

(1) During the measurement process, do not do any key operation to complete the measurement as soon as possible, save gas and save measurement time;

(2) After one sample is measured, continue to connect to the next sample to continue the measurement, in this process there is no need to turn off the power, directly switch the detected gas;

(3) General gases can be directly emitted into the atmosphere, and toxic, flammable, explosive and valuable gases should be properly treated;

### (3) Preservation

In the test interface, when the "Save" button is available, click the "Save" button, and a pop-up window will prompt that the save is successful and the save number will be displayed, as shown in Figure 7.

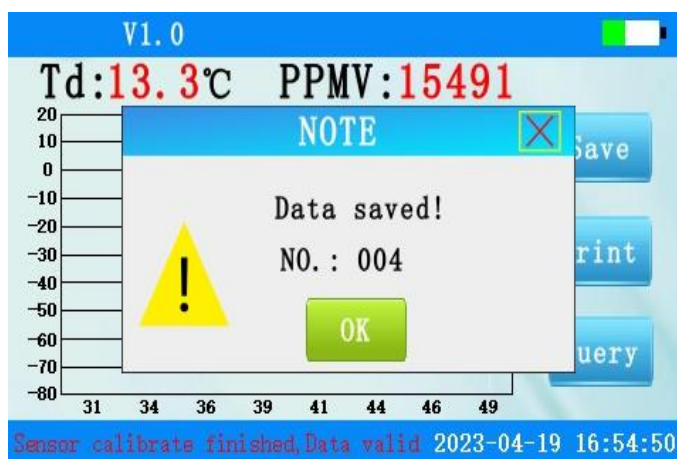


Figure 7 Saving

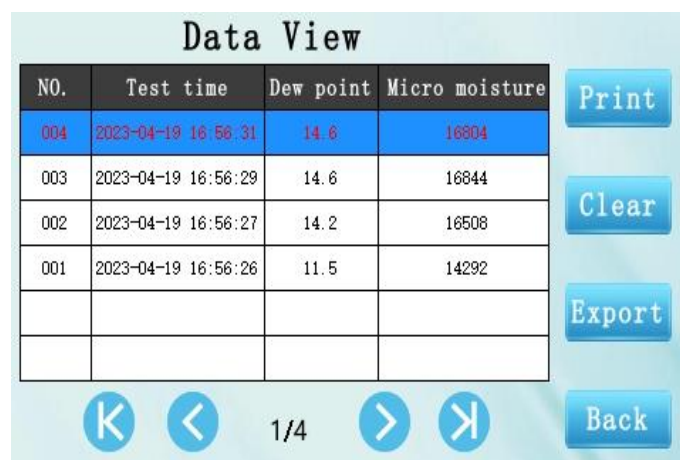
### (4) Print

On the test interface, when the "Print" button is available, click the "Print" button, and the microprinter that comes with the instrument will directly print out the current test results, including test time, dew point

value, micro moisture value, etc.

### (5) Browse

In the test interface, after clicking the "Query" button, the instrument will directly enter the data browsing interface, and the saved data records will be displayed in a table in the data browsing interface, with "Print" and "Clear", "Export" and other function buttons on the right, as shown in Figure 8.



The screenshot shows a 'Data View' window with a table of test records. The table has four columns: 'NO.', 'Test time', 'Dew point', and 'Micro moisture'. The first row is highlighted in blue. To the right of the table are four buttons: 'Print', 'Clear', 'Export', and 'Back'. At the bottom of the window are navigation controls: a left arrow, a right arrow, a page indicator '1/4', and a right arrow.

NO.	Test time	Dew point	Micro moisture
004	2023-04-19 16:56:31	14.6	16804
003	2023-04-19 16:56:29	14.6	16844
002	2023-04-19 16:56:27	14.2	16508
001	2023-04-19 16:56:26	11.5	14292

Figure 8 Query

**Print:** After clicking a single record, click the Print button, and the microprinter on the instrument panel will directly print out the details of the currently selected record, including save number, test time, microwater value, dew point value, etc.

**Clear:** After clicking the Clear button, a pop-up window prompts "Confirm to clear ?" Click OK and the instrument will clear all saved data records, and click Back to cancel the current emptying operation, as shown in Figure 9.

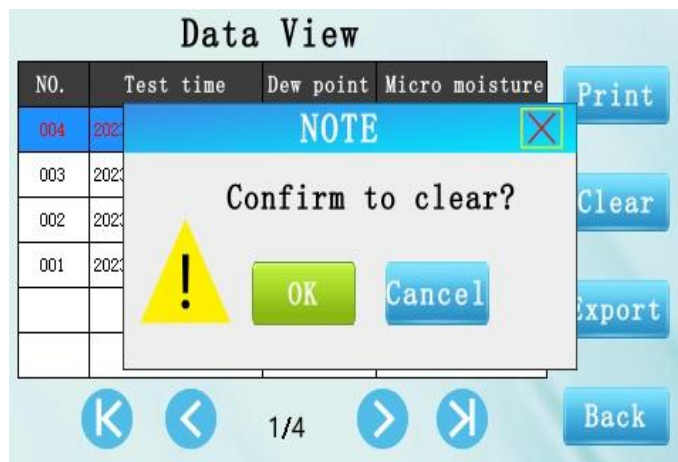


Figure 9 Clear record

**(7) Export:** On the data browsing interface, insert the U disk, click the "Export" button, the instrument will transfer all historical data records to the U disk in CSV format, and prompt the export is successful, as shown in Figure 10.

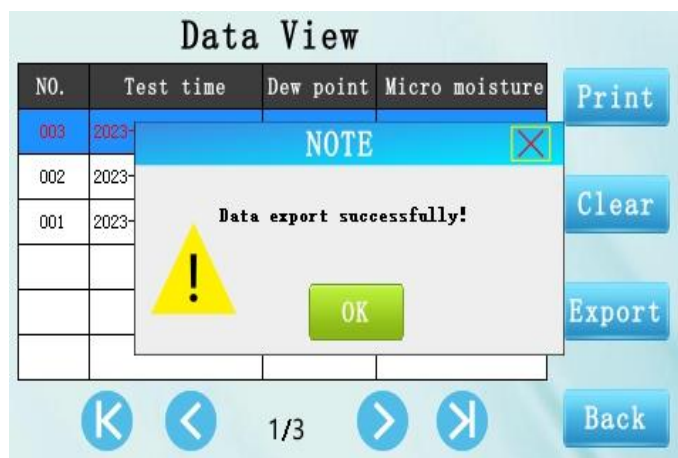


Figure 10 The export is successful

If the U disk is not inserted, or the U disk is incompatible and damaged, click the "Export Data" button, the export will fail, and prompt "Please insert the U disk or try again later", as shown in Figure 11.



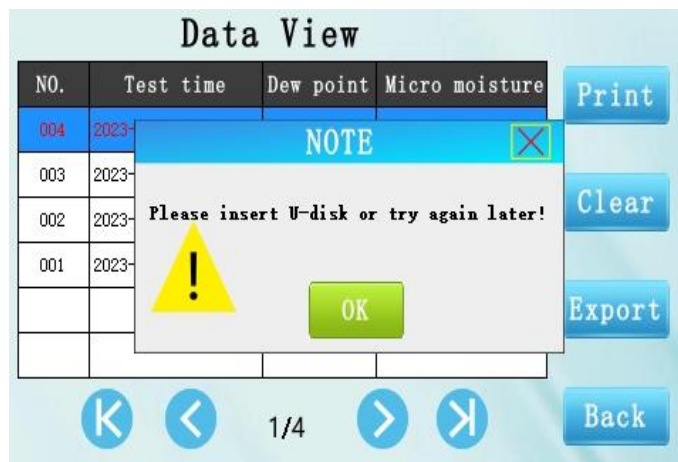


Figure 11 Failed to export

After exporting, the data can be imported by the supporting host computer on PC, exported WORD report, printing and other operations.

### (8) Time setting

On the test screen, click Show Clock in the lower right corner to enter the "Time Settings" interface, which is shown in Figure 12.



Figure 12 Time calibration

### (9) Check the power level

During the use of the instrument, please check the battery level displayed in the upper right corner of the LCD screen, when the power display is low, please plug in the charger to charge and continue to use. This instrument supports use during charging.

Note: When the instrument is not used for a long time, please charge it at least once in 1-2 months to ensure the battery life of the instrument.

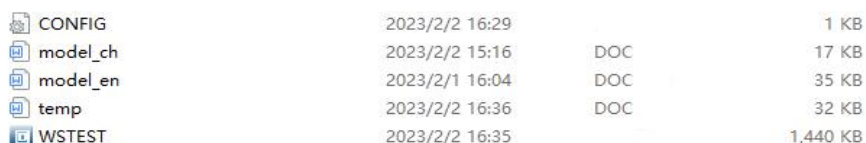
## 8. Software operation

### 1. Introduction to software functions

This companion tool software is used to synchronize the data in the instrument to the computer for further analysis and processing of the data by the tester, this software is green software, no installation can be used.

### 2. Random U disk file

Open the randomly configured USB flash drive and copy the contents of the USB flash drive file to the local computer folder, the file directory is shown in Figure 13.



CONFIG	2023/2/2 16:29		1 KB
model_ch	2023/2/2 15:16	DOC	17 KB
model_en	2023/2/1 16:04	DOC	35 KB
temp	2023/2/2 16:36	DOC	32 KB
WSTEST	2023/2/2 16:35		1,440 KB

Figure 13 U disk directory

### 3. Software operation method

(1) Insert the U disk that has exported data from the instrument into the computer USB port, and then double-click to open the running program with the Chinese name "WSTEST" in the U disk directory, as shown in Figure 14 after running shown.

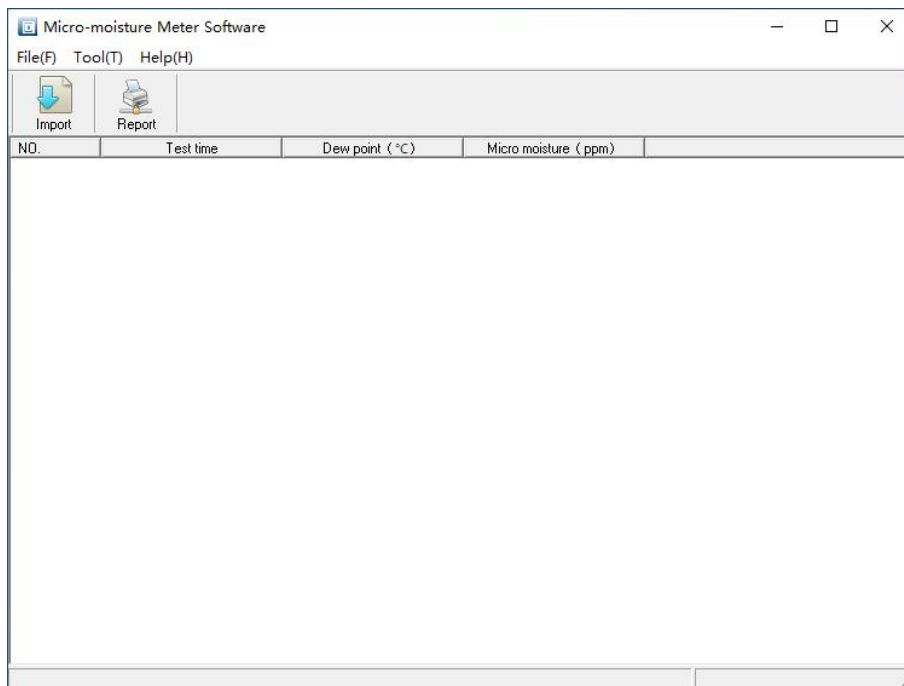


Figure 14 Operation diagram of the host computer

After clicking the "Import Data" button, select the import path, select the corresponding path of the U disk, and finally select the "Data Record .csv" table file in the U disk,

Open "Data Logging" and the software will list all historical data logging detailed results, as shown in Figure 15.

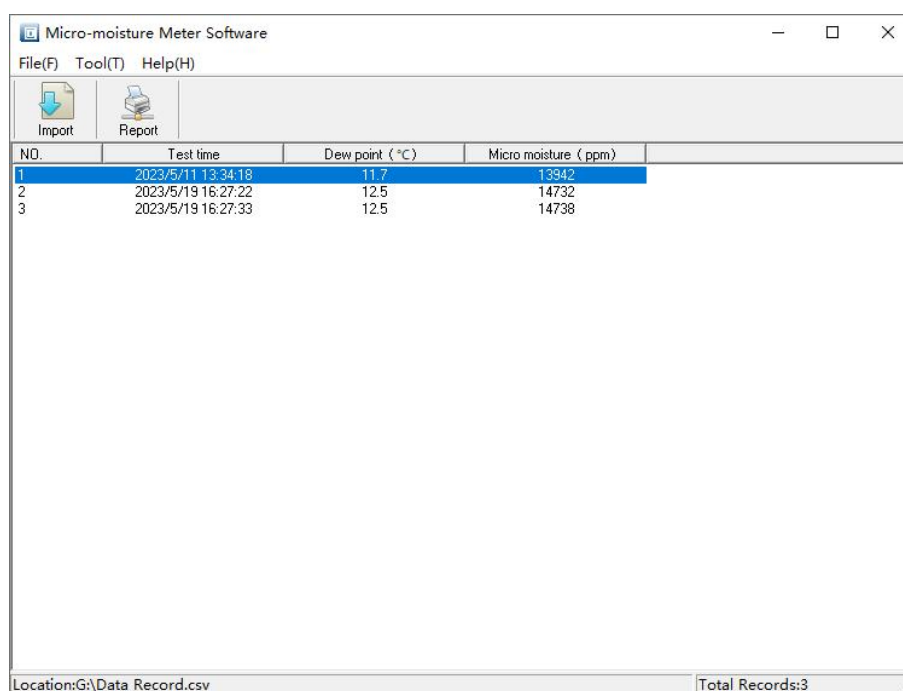


Figure 15 Data display

Here you can select a single record, click "Generate Report", select the save path, and the instrument will automatically save the data results as a word format file, as shown in Figure 16.

**Test Report**

Equipment NO. : \_\_\_\_\_

<b>Test Result</b>			
Test NO.	1	Test Date	2023/5/11 13:34:18
<u>Humiture</u>	Temperature: _____°C	Test Position	
	Humidity: _____%RH		
Dew point (°C)	11.7	Moisture (ppm)	13942
Test Conclusion :			
Remarks :			
Tester			
Checker		Check Date	

Figure 16 Data results

## 9. Precautions

1. When the battery power is displayed low, it should be charged in time. During the charging process, the charger indicator is red, after 3~4 hours, the battery is fully charged, and the charging indicator light turns green. The instrument can also be used as usual in the charging state, but the charging time is slightly longer.

2. When adjusting the gas flow, the flow valve should be opened slowly so that the flow indication is about 0.6L/min.

3. The instrument should be placed in a safe position to prevent breaking and avoid violent vibration.

4. Do not measure corrosive gases.

## 10. Packing list

1、 Instrument host	1 unit
2、 Air inlet pipe (3m) (with common connection).	1 set
3、 Bleed tube (3m).	1 root
4、 Adapter (serial number (1) ~ (8)).	1 set
5、 Raw meal belt	2 volumes
6、 Paper	2 volumes
7、 charger	1 set
8、 U Disk	1 sheet
9、 Inspection report	1 serving
10、 Certificate	1 sheet
11、 Product Manual	1 serving