Dear Client

Thank you for Purchasing our UHV-615 automatic SF6 density relay calibrator. 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!

◆ 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

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

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

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

Content

Safety precautions before experiment

1. When verifying SF6 gas density relay on site, please disconnect the power supply and components connected to the density relay to

Destruction-free calibrator.

2. During density check, please correctly set the upper limit pressure of the tested relay for test.

3. When there is a difference between the ambient temperature of the density calibrated relay and the temperature of the calibrator, the two must be in the same place, temperature

The degree is the same to ensure the calibration accuracy.

4. Disconnect the contact signal cable corresponding to the terminal block from the terminal block to prevent the secondary loop from forming a loop with the signal cable, which may affect the verification result.

5. The density relay to be checked shall be placed upright and prohibited from lying down, otherwise it will cause inaccurate check.

6. After the test is completed, the residual gas in the pipeline can be removed.

7. The quick exhaust port on the panel is forbidden to be used in the test process, so as not to waste the gas in the air source.

8. No vibration is allowed during the calibration of SF6 gas density relay to avoid inaccurate calibration.

9. The calibration device belongs to precision electronic products, should be placed in the temperature -20 ~ 70℃, the relative humidity is not more than 90%, and Corrosive gases are strictly prohibited in the air.

10. The calibration instrument should avoid violent vibration and impact during transportation, and prevent rain and snow from getting wet.

Chapter 1 Product introduction

Overview

SF6 switches are widely used high-voltage appliances in power systems, and the reliable operation of SF 6 switches has become one of the most concerned issues in the power supply and consumption sector. The SF 6 gas density relay is an important component used to monitor the change of SF 6 gas density in the SF 6 switch body in operation, and its performance directly affects the operation safety of the SF 6 switch. The SF 6 gas density relay operating on site often occurs after a period of time due to infrequent operation, poor contact of contacts, etc., and some will also have poor temperature compensation performance of the density relay, and when the ambient temperature suddenly changes, it often leads to the malfunction of the SF6 density relay. From the actual operation point of view, it is also very necessary to regularly verify the SF 6 density relay and pressure gauge in field operation. The pressure of the gas enclosed in the container changes with the change of temperature, in order to have a unified standard for comparison, we usually take the relative pressure value of 20 °C as the standard value. When the density relay is calibrated, the measured pressure is converted into the equivalent pressure value at 20 °C according to the correspondence between pressure and temperature, and then compared.

This product is an intelligent SF6 gas density relay calibration instrument. The calibrator adopts high-precision pressure sensor and high-rate A/D converter, combined with 32-bit high-performance microprocessor can perform performance verification on various SF6 gas density relays, can accurately measure the pressure value at the current temperature when the signal is acting, automatically complete the standard pressure conversion of any

ambient temperature to 20 °C, and has the functions of printing, storage and U disk transfer, while automatically identifying faults during the test process and automatically judging the status of density relay contacts. This product is easy to carry, simple to operate, high test accuracy, strong stability and good reliability, reflecting the characteristics of "intelligent" instrument.

1.1 Instrument characteristics

1. High test accuracy: the core components adopt imported devices, with high integration, high precision and good repeatability

High reliability. Because it adopts high-speed sampling A/D, not only the density relay with a conventional action value can be measured, but also a density relay with a particularly small action value.

2. Highly intelligent: the calibration process does not require a constant temperature chamber, and SF 6 gas can be controlled in any effective temperature range Density relay, pressure gauge for calibration. Using the dynamic compensation algorithm of pressure and temperature, the pressure and the equivalent pressure value of 20°C are automatically converted, and the pressure at the current temperature and the equivalent pressure at 20°C are displayed, which completely solves the problem of on-site verification of SF 6 gas density relay.

3. Powerful:

(1) It can measure density relays of different pressure types, and density relays of relative pressure and absolute pressure can be measured.

(2) The initial state of the 1-3 sets of contacts of the density relay is in any form (normally open or normally closed), and the uplink and downlink values of the 1-3 sets of contacts can be measured simultaneously, such as alarm, lockout, overvoltage, etc. Therefore, this instrument can adapt to the full automatic calibration of all new and old density relays.

(3)The measurement displays the current pressure and ambient temperature simultaneously, solving the problem of on-site calibration of density relays.

4. Friendly man-machine interface: equipped with 7-inch high-definition full-color touch screen, simple operation, beautiful interface, all parameters and status at a glance.

5. Supporting transition joints: This product is a portable instrument, equipped with a variety of types of transition connectors, most models of switching density relays can be verified on site without disassembly, which is the best choice for SF_6 density relay calibration.

6. Less air consumption: the gas consumption during the calibration process is very small, no waste of SF_6 gas, low test cost, no pollution.

7. Support data storage: the instrument has a built-in large-capacity memory, which saves test results immediately and has power-down data Save function, query and print historical test data at any time.

8. Support printing: All relevant test results can be printed immediately after the test is completed, and the historical data can also be printed for analysis.

9. U disk transfer: support U disk transfer historical test data, through the supporting host computer software to read, easy and fast operation.

10. Easy to carry: the instrument is powered by a large-capacity lithium battery, no need to connect to alternating current, which solves the problem of difficulty in obtaining electricity outdoors, and after the instrument is fully charged, it can work for a long time, and it can also be plugged into the charger at the same time to work.

11. Powerful PC software: The supporting PC host computer application software has powerful functions and simple operation, and realizes data display, word format saving, printing and generating complete test reports, which is convenient for centralized data management.

12. Chinese and English switching: Customers can switch between Chinese and English in the main interface of the instrument, which can meet the needs of different customer groups, and accept customization in other languages.

1.2 Parameter introduction

1.Pt: The actual pressure value measured at the current ambient temperature at the time of the test.

2.P20: The actual pressure value measured at the current ambient temperature at the time of the test is converted to the equivalent pressure value of 20°C.

3. Relative pressure: Relative pressure is the pressure expressed by atmospheric pressure as a benchmark, which is a method of expressing pressure. Since the pressure measured by most load measuring instruments is relative pressure, the relative pressure, also known as gauge pressure, refers to the difference between the real pressure and atmospheric pressure somewhere inside the equipment.

4. Absolute pressure: It is a pressure expressed by using absolute vacuum as a benchmark, called absolute pressure, absolute pressure = relative pressure (gauge pressure) + atmospheric pressure (about 0.1MPa).

5. Contact count: indicates the total number of contacts of the density relay to be measured, and the corresponding selection should be made according to the actual number of contact groups of the density relay.

Single contact: When a single contact is selected, a set of test signals is received, and the system only measures the action value P1 of one set of contacts.

Double contact: When the double contact is selected, two sets of test signals are connected, and the system measures the action values P1 and P2 of the two sets of contacts.

Three contacts: When three contacts are selected, three sets of test signals are connected, and the system measures the action values P1, P2 and P3 of three sets of contacts at the same time.

6. Uplink value**:** at ambient temperature, when the SF 6 density relay is zero pressure, inflate the SF 6 density relay slowly at a certain speed, and record the pressure value at the current ambient temperature when the contact of the SF_6 density relay sends an action signal, It is converted to the equivalent pressure value at 20°C,

which is the upward value of the SF 6 density relay.

7. Downward value**:** at ambient temperature, when the pressure in the SF 6 density relay is greater than the upper limit pressure value, slowly deflate at a certain speed, when the contact of the SF_6 density relay sends an action signal, record the pressure value at the current ambient temperature, and convert it to the equivalent pressure value at 20 °C, This equivalent pressure value at 20°C is the downlink value of the SF 6 density relay.

1.3 Technical parameters

Measurement accuracy	0.2 F·S
Pressure display resolution	0.001MPa
Pressure measurement range	0～0.99MPa
Temperature measurement range	-20℃～80℃
Temperature measurement error	±0.5℃
SF6 gas emissions	Very little SF6 gas emissions are emitted during the entire calibration process
How it is displayed	Industrial-grade 7-inch full-color high-definition LCD screen, while displaying the measured pressure value and the equivalent pressure value at 20°C
Mode of operation	Touch screen
How to print	Array printing
Data storage	Up to 1000 measurement data can be stored
Working power supply	24V lithium battery power supply
Power consumption of the whole machine	≤20W
Main unit dimensions/weight	400×320×160(mm^3)/ 6.2kg
Accessory box size/weight	400×370×200(mm^3) / 4.8kg

1.4 Panel structure

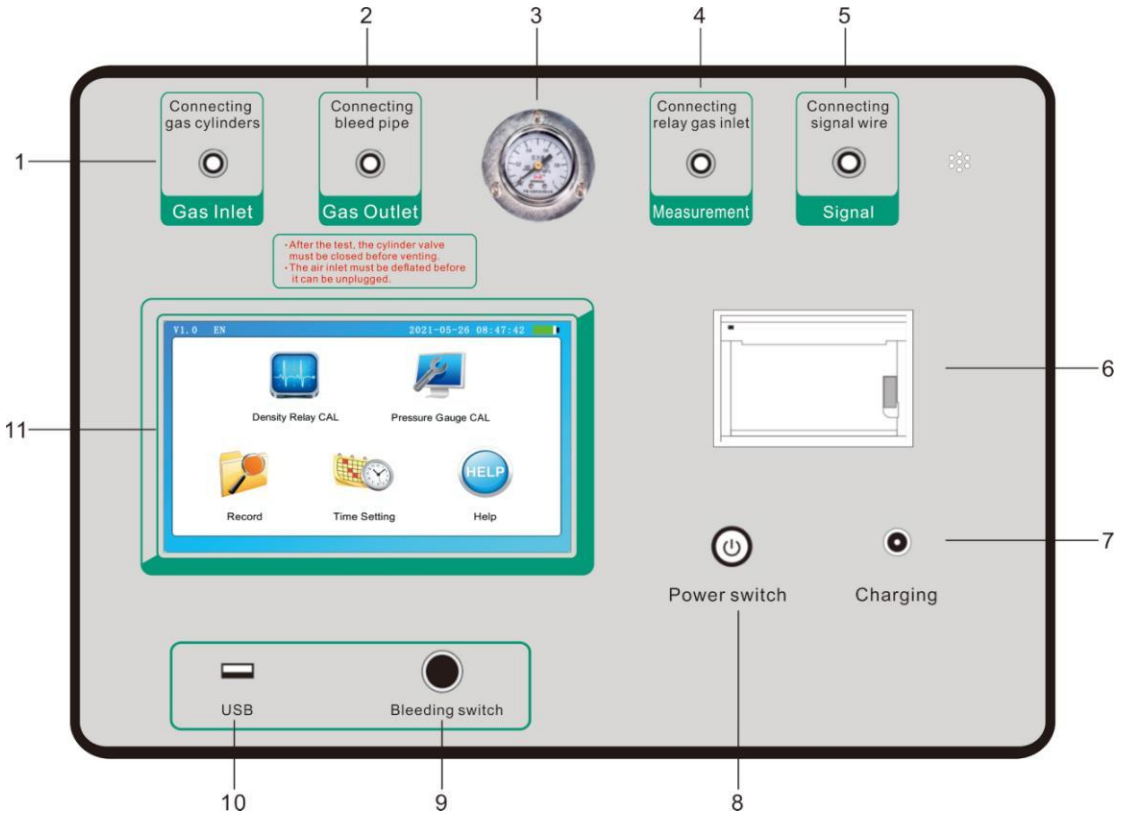


Figure 1.1 Panel structure diagram

1.Gas inlet	2.Gas outlet	3.Pressure gauge
4.Measuring port	5.Signal	6.printer
7.Charging	8.Power switch	9.Gas discharge switch
10.USB port	11.touch screen	

Chapter 2 Function Description and Main Menu

2.1 LCD display description

This instrument adopts 7-inch 800×480 high-resolution full-color LCD touch screen, which can be clearly displayed even in strong sunlight. The parameter settings and test results are displayed on the touch screen, the operation interface is friendly, the graphics are clear, beautiful and easy to operate.

2.2 Instructions for the main interface of booting

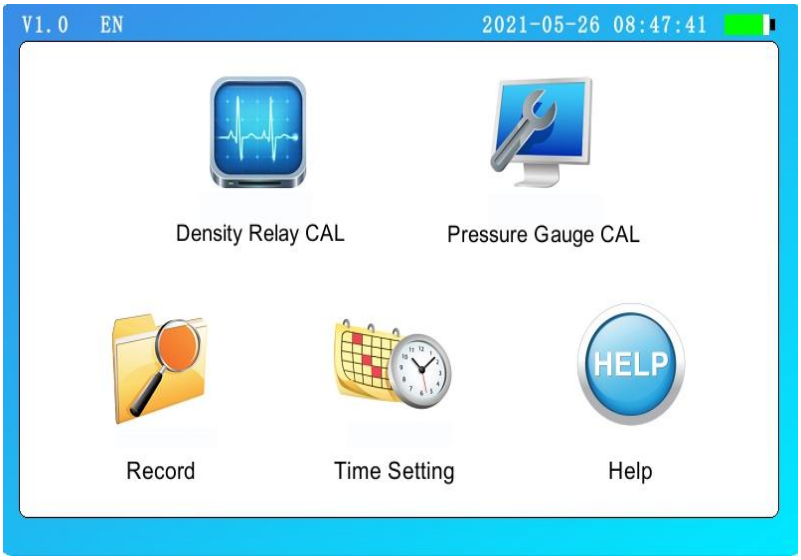


Figure 2.1 Main interface

Turn on the power switch on the panel, the instrument enters the boot screen, and after initialization, the instrument displays the main interface shown in Figure 2.1. The interface displays five functions of "Density Relay CAL", "Pressure Gauge CAL", "Record", "Time Setting" and "Help", and you can enter the corresponding function submenu by clicking the button icon.

2.3 System Time Settings

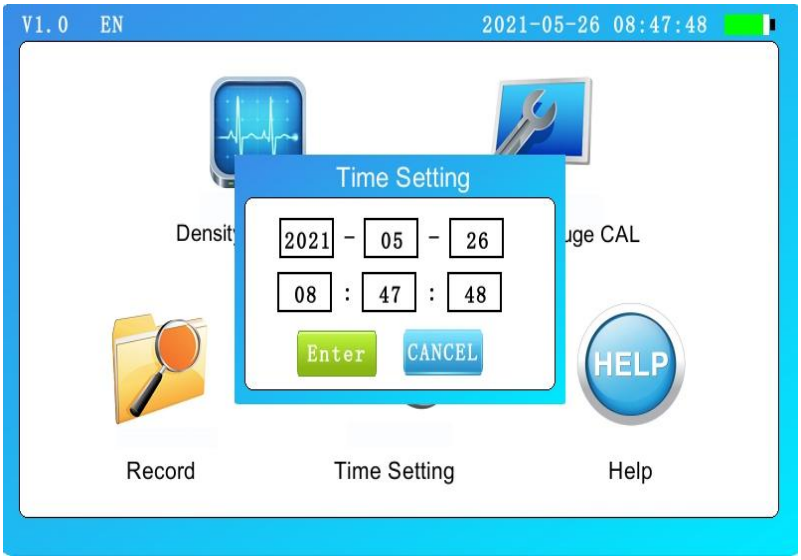


Figure 2.2 System clock setting interface

Click the "Time Settings" button icon in the main interface to enter the system clock setting interface, as shown in Figure 2.2, and set the system time in this interface. By clicking the corresponding input box and entering the numbers correctly, you can set the year, month, day, hour, minute, and second of the instrument in turn, after setting the time, click "Enter" to set the time successfully, click "Cancel" to not save the time of this setting, and the instrument returns to the main interface.

2.4 Charging Management

This instrument is powered by lithium battery, equipped with a special lithium battery charger, when the power indication progress bar in the upper right corner of the instrument interface shows that the power is less than 20%, please insert the charger in time to charge the instrument. One end of the charger is connected to the AC220V power supply, and the other end is plugged into the charging hole of the instrument panel. When the charger indicator is red, it indicates that the instrument is being charged, and when the charger indicator is green, it indicates that it is fully charged and the charger can be unplugged.

In order to ensure the battery life of the instrument, please charge the

instrument at least once every 1-2 months when the instrument is not in use for a long time.

Chapter III Instrument Operation Methods

3.1 Density relay calibration

3.1.1 Wiring method

When calibrating the SF_6 density relay on site, please use the accessories configured in the instrument to connect the gas path and the line according to Figure 3.1. The inlet pipe connects the instrument inlet to the cylinder, the bleed pipe to the vent, the measuring tubing to the measuring port of the instrument, and the SF6 to be tested via common and transition connections Density relay connections, common connectors and transition joints are shown in Appendix II. The six-core test line connects the instrument and the corresponding test point on the wiring cabinet, according to the test objective, one end of the equipped six-core test line is connected with the signal interface on the instrument panel, and the one with the alligator clip is connected with the signal socket on the junction cabinet of the density relay according to the test signal, and the crocodile clamp that is not used needs to be idle, do not contact with other crocodile clamps. When testing a set of contact signals, only the corresponding test signals should be connected, and "One" should be selected on the operation interface, and the system will automatically recognize it.

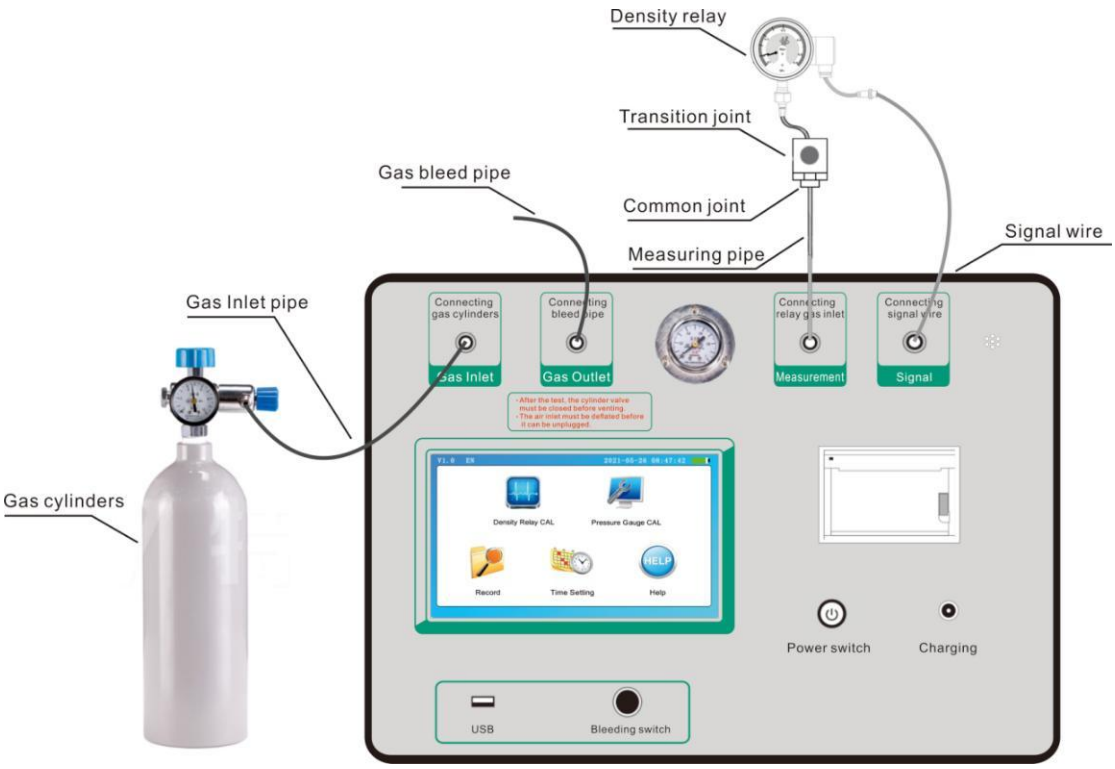


Figure 3.1 Density relay calibration wiring diagram

3.1.2 Parameter setting

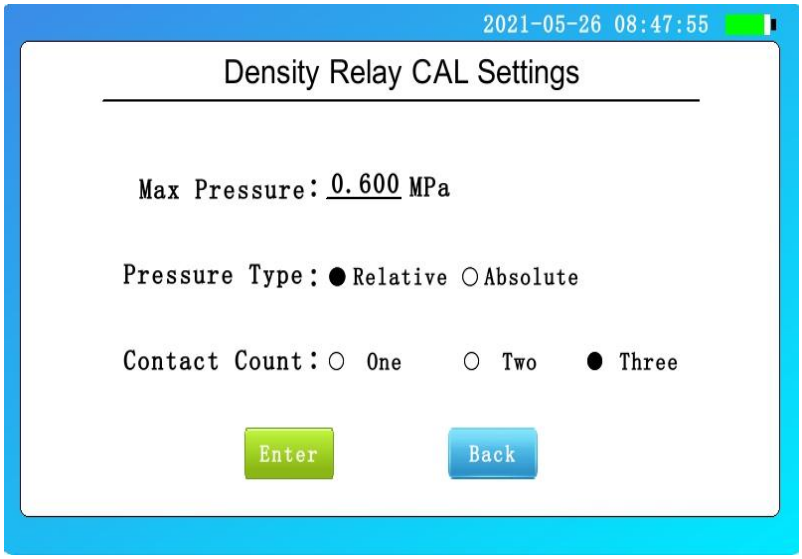


Figure 3.2 SF_6 density relay calibration parameter setting interface

Click the "Density Relay CAL" icon in the main interface to enter the density relay calibration parameter setting interface, as shown in Figure 3.2. In this interface, you can set the upper limit pressure by clicking the input box, and you can set the pressure type and number of contacts parameters by clicking the corresponding option.

Max Pressure: refers to the switching pressure value from intake to deflation when checking the density relay. By clicking the input box, after popping up the keyboard interface, enter the correct parameters, the pressure value setting range is between 0.1MPa ~ 0.99MPa, the default value is 0.6Mpa, after confirming the change of parameters, the system will record the pressure value as the initial value.

Pressure Type: is used to select the pressure type of the test, there are two options, namely "relative pressure", "absolute pressure", relative pressure is the pressure expressed by atmospheric pressure as a benchmark, is a method of expressing pressure. The other is the pressure expressed by using absolute vacuum as a reference, which is called absolute pressure. Since the pressure measured by most pressure measuring instruments is relative pressure, therefore, the relative pressure is also called gauge pressure, the pressure displayed by the pressure instrument is gauge pressure (relative pressure), which refers to the difference between the real pressure and atmospheric pressure somewhere inside the equipment, and the corresponding pressure type can be selected by clicking.

Contact Count: is used to select the actual number of contacts of the measured density relay, there are three options, namely "One", "Two" and "Three", the left circle of the option is black solid when the current option is selected, the left circle is hollow means that the current option is not selected. In the test interface, P1 is displayed as contact One, P2 as contact Two, and P3 as contact Three.

After the parameter setting is completed, click the "Enter" item, the system enters the density relay calibration test interface, as shown in Figure 3.3, click the "Back" item, and the system returns to the previous interface.

3.1.3 Measurement operations

In the interface shown in Figure 3.3, when the number of contacts is set to three contacts, there are P1 upstream value Pt, P1 upstream value P20, P1 downstream value Pt, P1 downstream value P20, P2 upstream value Pt, P2

upstream value P20, P2 downstream value Pt, P2 downstream value P20, P3 upstream value P20, P3 downstream value P20, P3 downstream value P20, P3 downstream value P20. Depending on the number of contacts set, the test results are displayed accordingly.

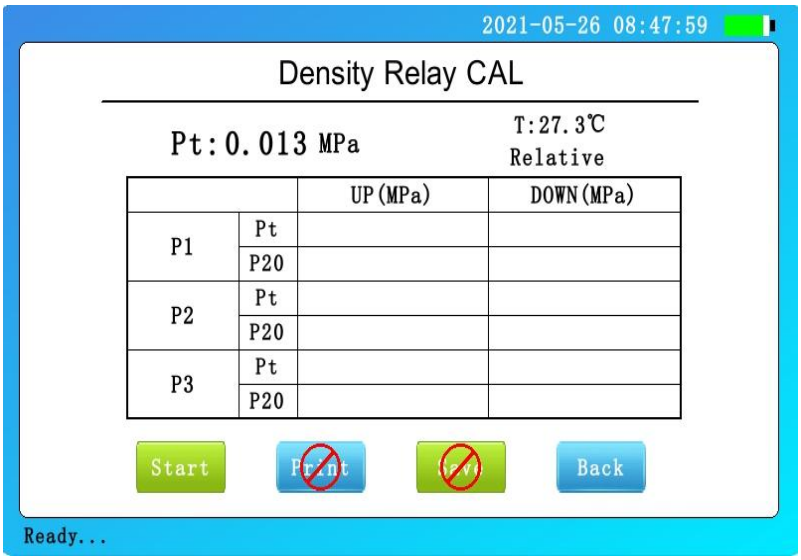


Figure 3.3 SF_6 density relay calibration test interface

After the external air path is connected, click "Start", and the system will start the detection according to the set parameters. In the process of detection, there will be a sound of solenoid valve opening or closing, when the pressure is boosted to the preset rated pressure value to reduce the pressure, there will be a short rapid deflation sound on the gas pipe, the corresponding test results will be displayed on the screen in turn, and the status bar in the lower left corner of the screen will display the current test status, and the step-up and step-down schematic diagram is shown in Figure 3.4 and Figure 3.5.

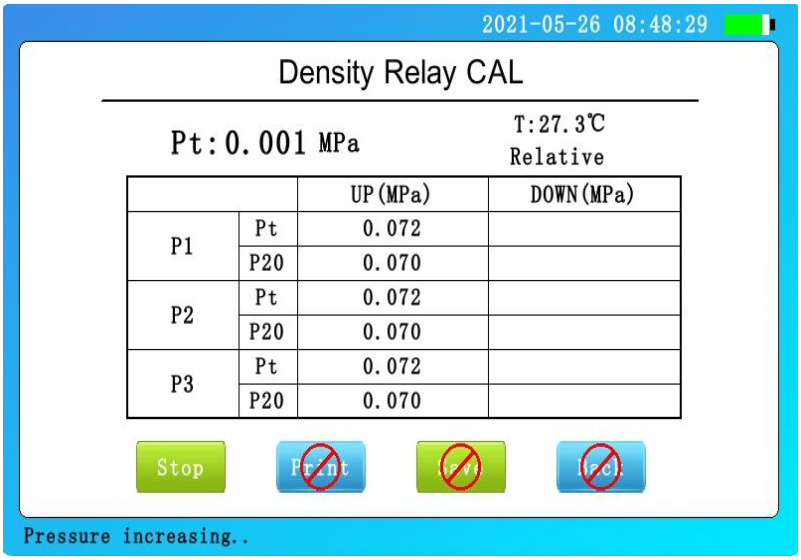


Figure 3.4 Pressure increasing interface

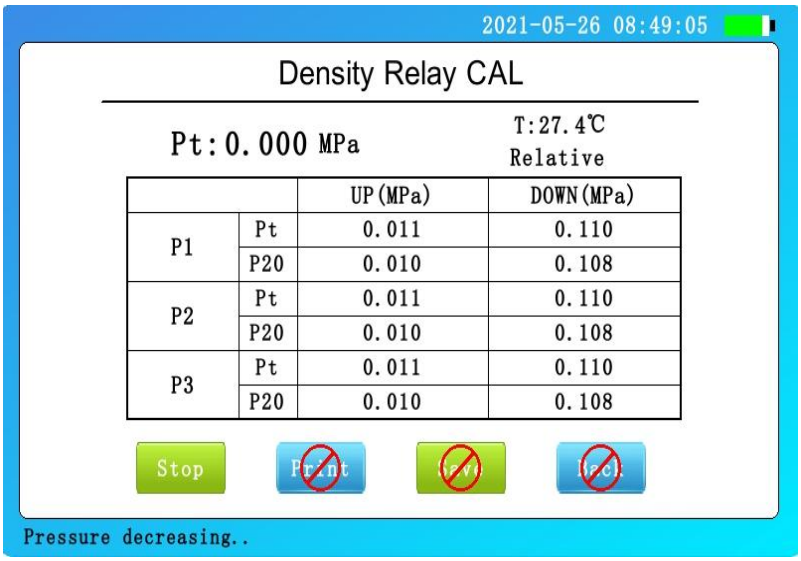


Figure 3.5 Pressure decreasing interface

At this time, click "Stop" to close the valve to stop the detection, and the instrument will automatically deflate. If a problem is encountered during the inspection, a "Device Fault" is displayed, at which point the user should check that the connection of the wiring and air path and the "Contact Count" are selected correctly. When the test is complete, "Test Completed" is displayed on the status bar, as shown in Figure 3.6. The interface displays the information, "Number of contacts" for the test results of three contacts. Click "Start" again to clear the display results and re-test, click "Save" to save the current test results, click "Print" to print the current test results, click "Back" to return the density relay calibration parameter setting interface.

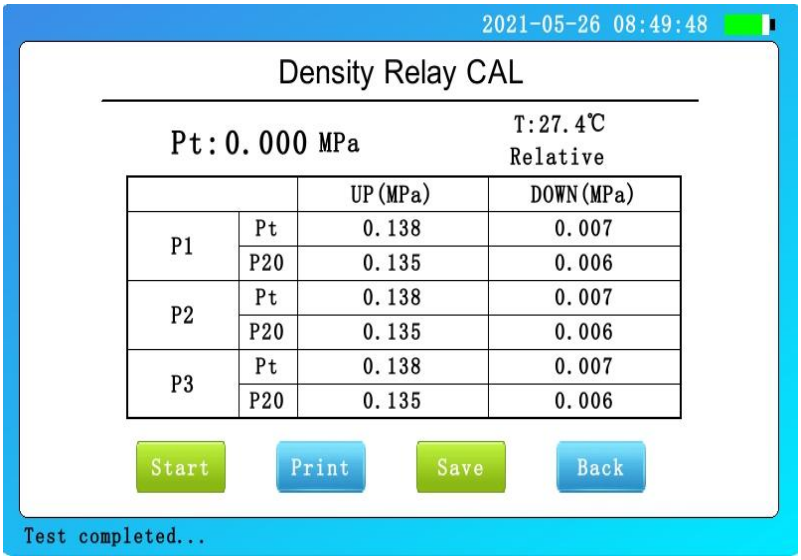


Figure 3.6 Test completion screen

After the test is complete, click the "Print" button and the instrument panel microprinter will print all the data results of the current test. Click the "Save" button, the pop-up window prompts to enter the number, click the input box, enter the number, and finally click Enter, the instrument will save the test record, as shown in Figure 3 As shown in Figure 7, go directly to the data browsing interface, as shown in Figure 3 8 As shown, after clicking the "Print" button, the instrument panel microprinter will print out all the data of the current interface, and after clicking the "Back" button, it will return to the density relay calibration interface.

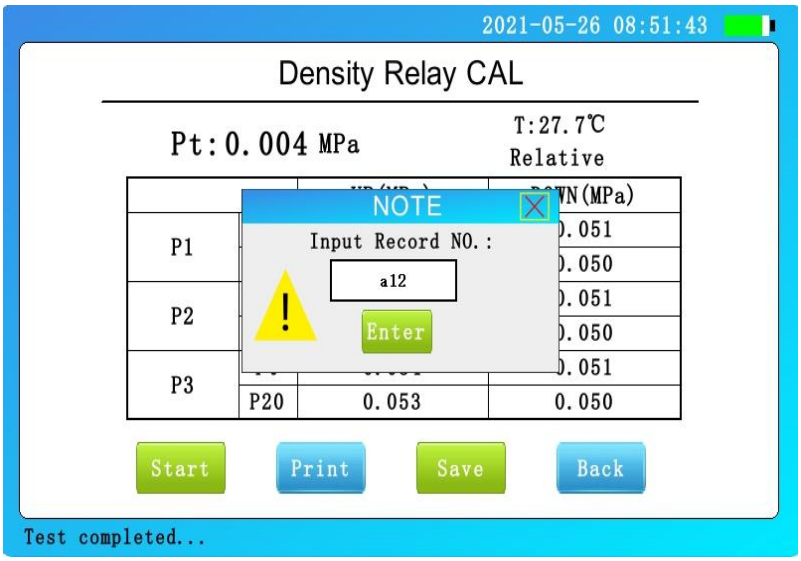
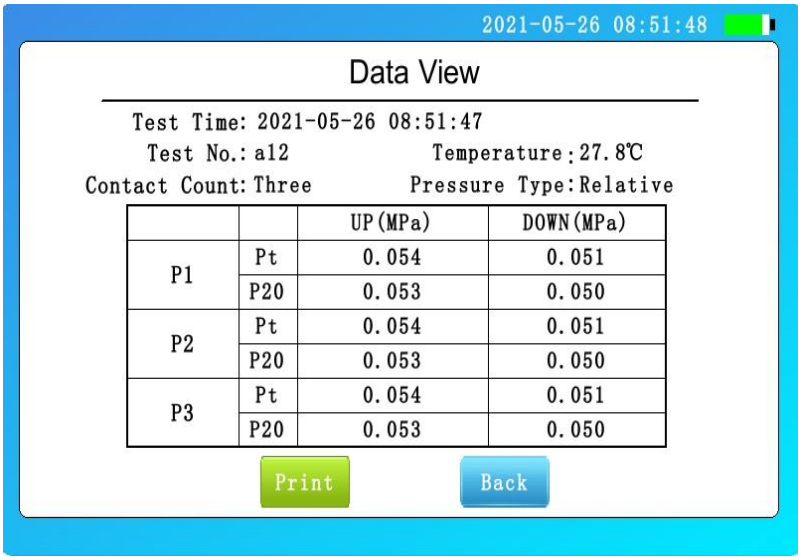


Figure 3.7 Saving successful prompt



3.8 Data View Interface

3.1.4 Description of test result parameters

SF_6 density relay calibration basic principle: the gas pressure in a closed container changes with temperature, usually the pressure value of SF 6 at 20°C as the standard value. During on-site calibration, the SF 6 pressure value measured at a certain ambient temperature should be converted to its equivalent pressure value at 20°C, so as to judge the performance of the density relay.

Uplink value: at ambient temperature, when the SF 6 density relay is zero pressure, inflate the SF 6 density relay slowly at a certain speed, and record the pressure **value** at the current ambient temperature when the contact of the SF_6 density relay sends an action signal. It is converted to the equivalent pressure value at 20°C, which is the upward value of the SF 6 density relay.

Downward value: at ambient temperature, when the pressure in the SF 6 density relay is greater than the upper limit pressure value, slowly deflated at a certain speed, when the contact of the SF_6 density relay sends an action signal, record the pressure value at the current ambient temperature, and convert it to the equivalent pressure value at 20 °C, the equivalent pressure **value** at 20 °C is SF_6 downlink value of density relay.

3.1.5 End verification

After the calibration is completed, in order to ensure the safety of the

calibration personnel, it is necessary to remove the gas circuit and connecting line in strict accordance with the following steps.

1) Close all valves on the cylinder.

2) Press the "Bleed" button on the panel to clean the residual gas in the pipeline, and the pressure gauge points to the zero position.

3) Turn off the power, unplug the trachea, unplug the signal cable and power cord.

Caution: It is strictly forbidden to unplug the air intake without deflation!

3.2 Pressure gauge calibration

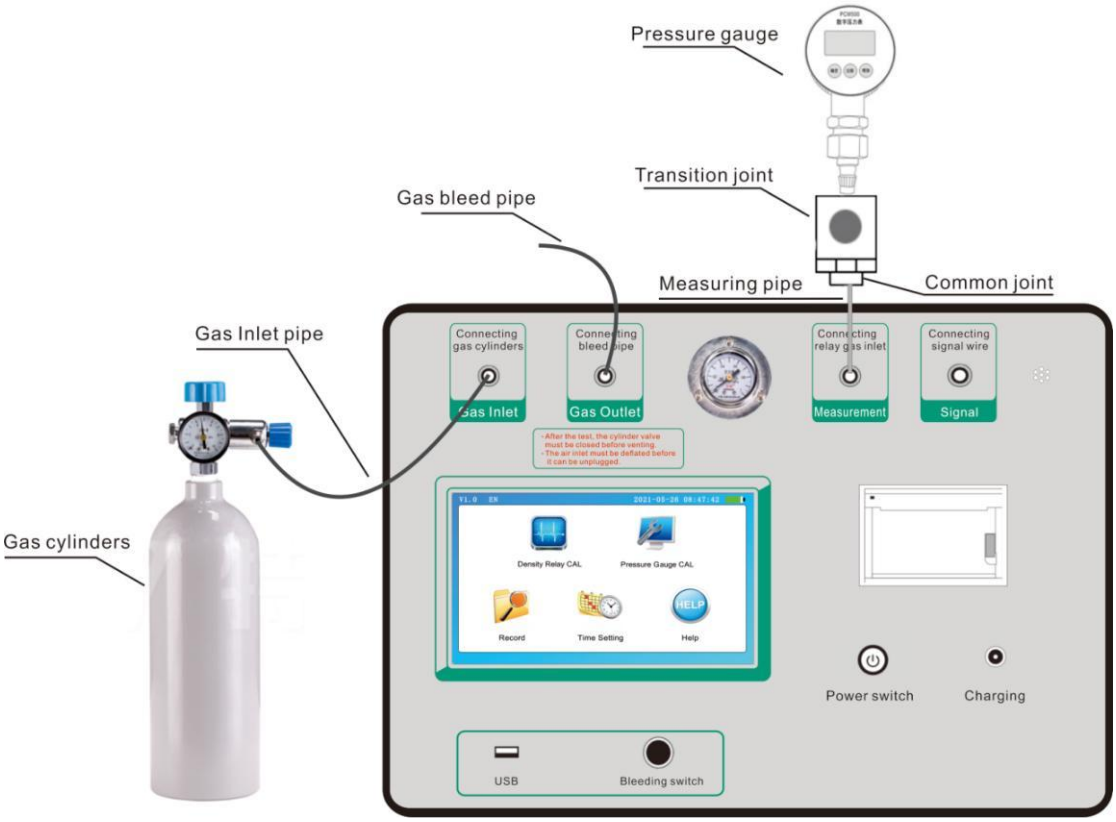


Figure 3. 9 Calibration wiring diagram of pressure gauge

3.2.1 Wiring method

The calibration wiring of the room temperature pressure gauge is shown in Figure 3. 9 As shown, the inlet pipe connects the instrument inlet port and the gas cylinder, the vent pipe connects the vent, and the measuring tubing connects the measuring port on the instrument panel and the pressure gauge to be verified

through the transition joint and the common connector.

3.2.2 Parameter setting

Click the "Pressure Gauge CAL" icon on the main interface to enter the pressure gauge calibration setting interface, as shown in Figure 3. 10 shown in.

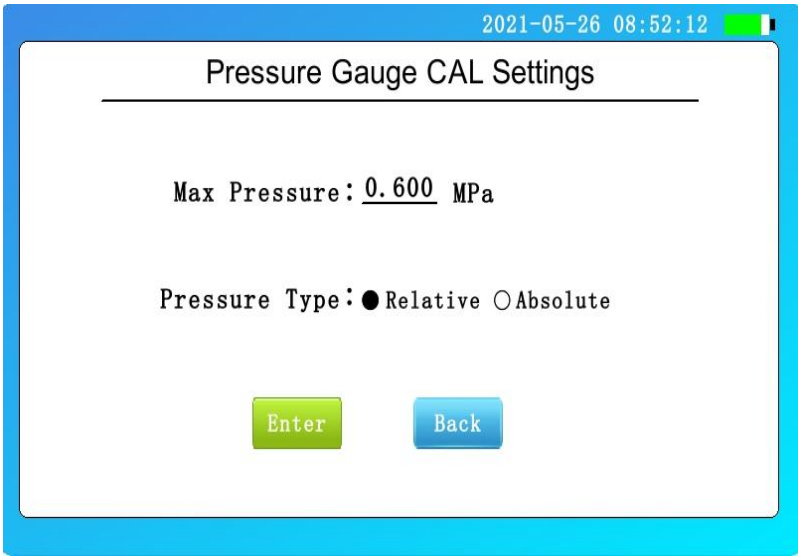


Figure 3. 10 Pressure gauge calibration parameter setting interface

Max Pressure: is used to set the maximum value of rising pressure, when the pressure value is greater than the upper limit pressure, can not continue to boost, pressure value setting range between 0.010MPa ~ 0.99MPa, the default value is 0.6MPa.

Pressure type: is used to select the pressure type of the test, there are two options, namely "Relative", "Absolute", relative pressure is the pressure expressed by atmospheric pressure as a benchmark, is a method of expressing pressure. The other is the pressure expressed by using absolute vacuum as a reference, which is called absolute pressure. Since the pressure measured by most pressure measuring instruments is relative pressure, therefore, the relative pressure is also called gauge pressure, the pressure displayed by the pressure instrument is gauge pressure (relative pressure), which refers to the difference between the real pressure and atmospheric pressure somewhere inside the equipment, and the corresponding pressure type can be selected by clicking.

3.2.3 Measurement operations

After the parameter setting is completed, click "Enter" to enter the pressure gauge calibration interface, as shown in Figure 3.11.

Figure 3. 11 Pressure gauge calibration interface

After entering the pressure gauge verification interface, you can see the current temperature, current pressure Pt, and current pressure P20.

After confirming that the external air path is ready, press the "UP" button, the intake solenoid valve will have an open sound, indicating the start of the intake boost, while updating the current pressure value in real time, after releasing the button, the intake solenoid valve closes, stop the intake, the current pressure value will gradually stabilize, if you want to continue to boost, just press and hold the "UP" button.

Press the "DOWN" button to deflate the solenoid valve will have an open sound, indicating the start of deflation and pressure reduction, while updating the current pressure value in real time, after releasing the button, the intake solenoid valve closes, stop deflating, the current pressure value will tend to be stable, if you want to continue to reduce the pressure, just press and hold the "DOWN" button.

After pressing the deflating button, the gas is directly evacuated gradually

to return the pressure gauge to the zero position.

When the current pressure is greater than the upper limit pressure during the test, the "UP" button will be disabled, and the pressure cannot be continued to rise, only "DOWN" or "BLEED" can only be selected, and only when the current pressure is less than the upper limit pressure, the "UP" button will return to normal.

The test process is shown in Figure 3.12.

The end check operation is the same as the density relay end calibration operation.

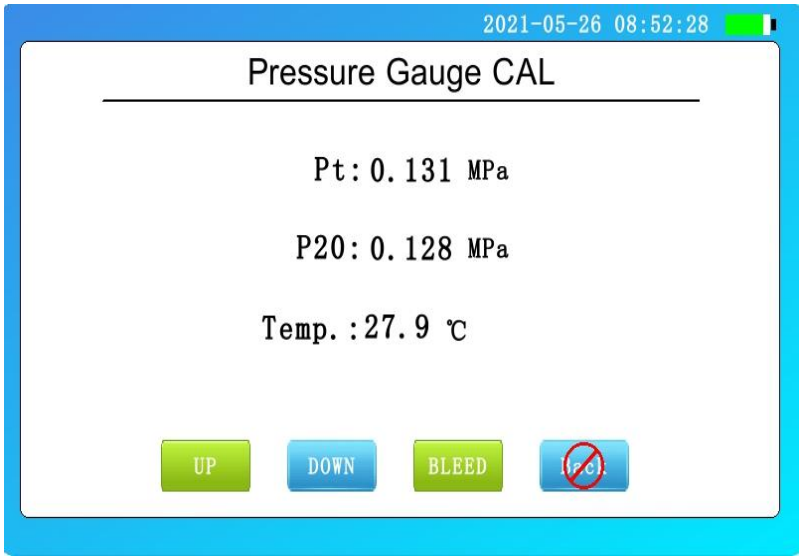


Figure 3. 12 Pressure gauge calibration test interface

3.4 Historical Data Query

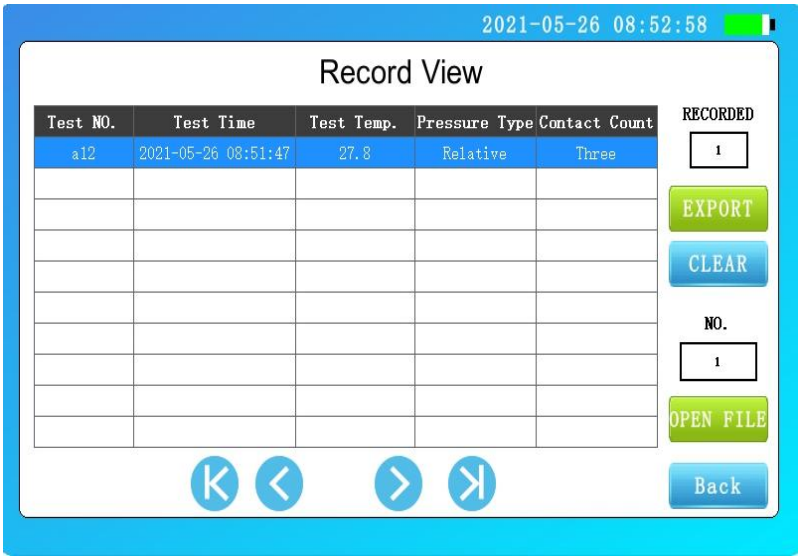


Figure3.13History interface

Click the "Record" icon on the main interface to enter the record query interface, as shown in Figure 3. 13 as shown. On this interface, you can click to select a single record to open, print and other operations, and also export data and clear records for all data.

EXPORT: On the data query 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 that the export is successful. After exporting, the data can be imported by the supporting host computer on PC, exported WORD report, printing and other operations. The U disk is not inserted, or the U disk is incompatible and damaged, click the "EXPORT" button, the export will fail, and prompt "Please insert the U disk or try again later".

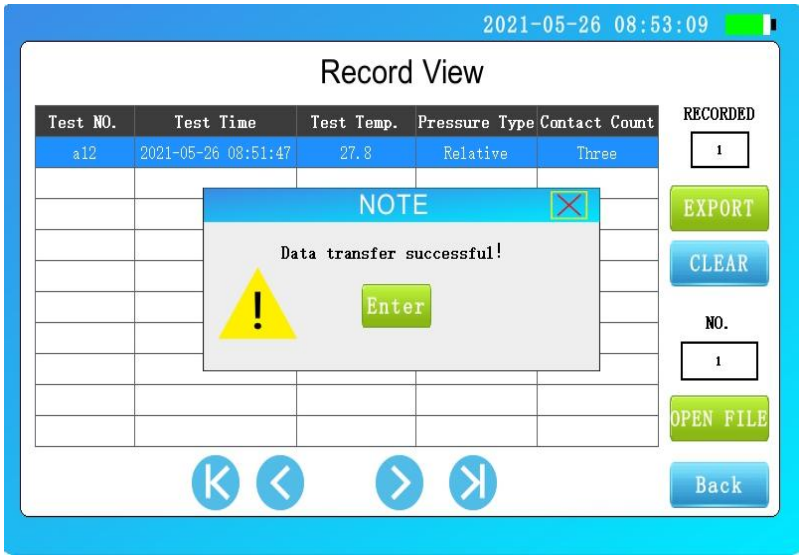


Figure 3.14 Data transfer successful interface

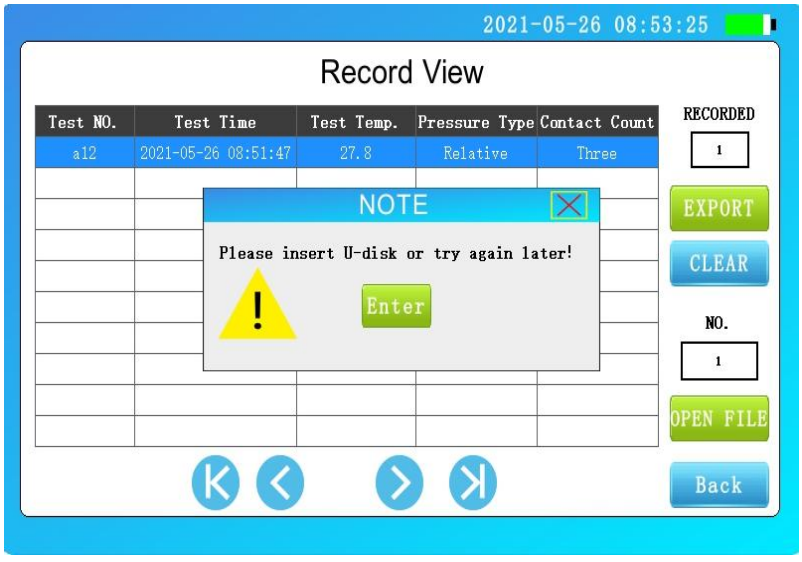


Figure 3.15 Data transfer failure interface

CLEAR: In the data query interface, after clicking the "CLEAR" button, a pop-up window will be displayed to confirm, after clicking the "Confirm" button, all historical data will be completely cleared, click the "Cancel" button, then cancel the current clearing operation and return to the record query interface, as shown in Figure 3.16.

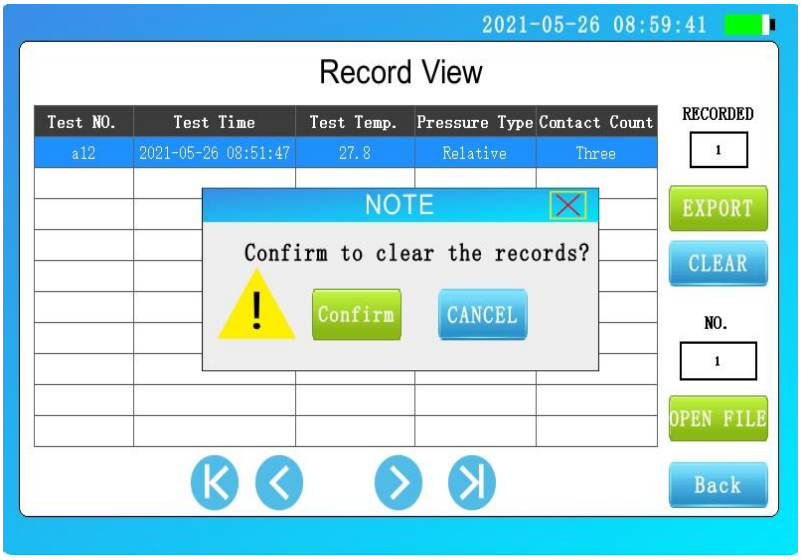


Figure 3.16 Record clear interface

OPEN FLE: In the record query list, select a single piece of data, click the "OPEN FILE" button, you will enter the data browsing interface, this interface will display the detailed test results of the selected data. After clicking the "Print" button, the instrument panel microprinter will print out all the data of the current interface, and clicking the "Back" button will return to the record query interface, as shown in Figure 3.17.

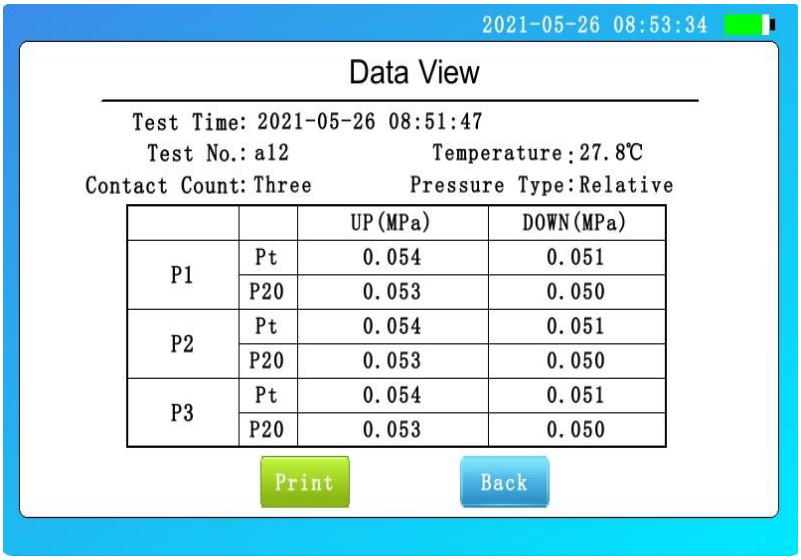


Figure 3. 17 Data browsing interface

Chapter IV Instructions for the Use of Supporting Tools Software

4.1 Introduction to the use environment of supporting tool software and U disk file

4.1.1 Introduction to Software Functions

This supporting tool software can import the measurement data transferred to the U disk through the instrument for the tester to further analyze and process the measurement data.

4.1.2 Software Features

1. This software is green software and can be used without installation
2. Support all Windows series operating systems, fast running speed and easy to use

4.1.3 U disk file

Open the randomly configured U disk, copy the files in the U disk to the local computer folder, and open the file directory as shown in Figure 4.1, which contains CONFIG (configuration file), host computer software, and product manual.

4.2 Instructions for Using the Software

4.2.1 Software Run: Double-click to run the host computer software, as shown in Figure 4.2.

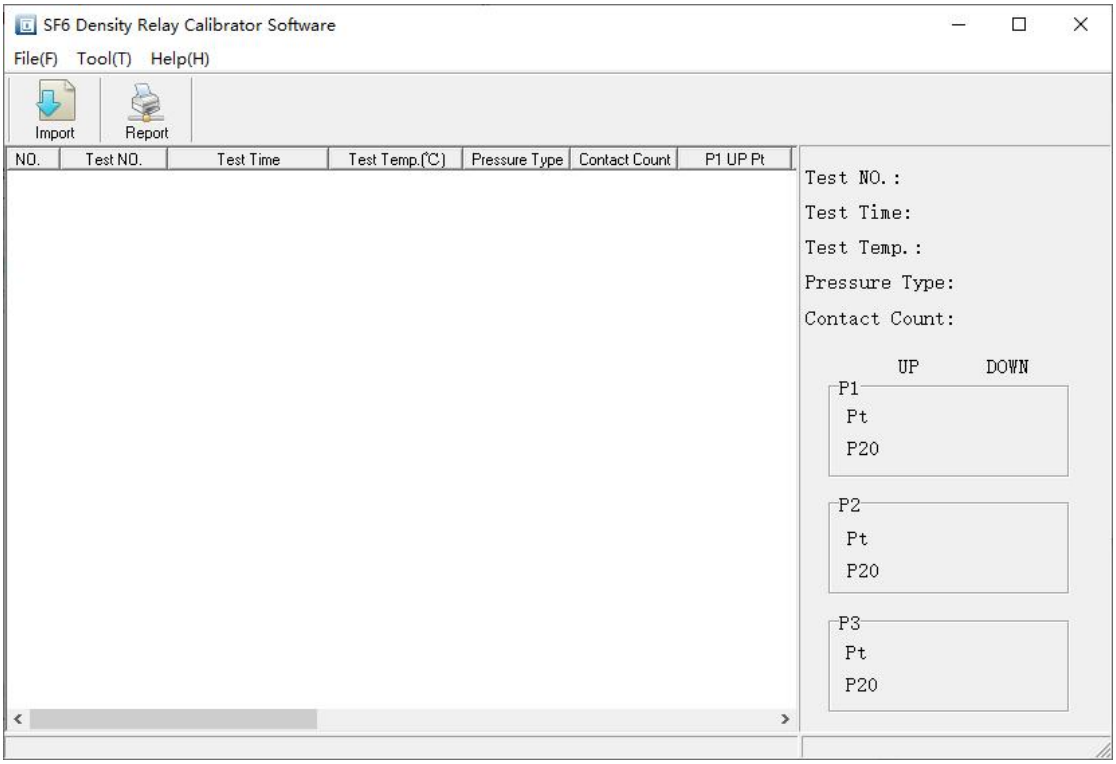


Figure 4.2 Automatic SF6 density relay calibrator (software interface)

4.2.2 Import: Insert the U disk, click the "Import" button, click the file name to be imported, click Open, and enter the import successful interface.

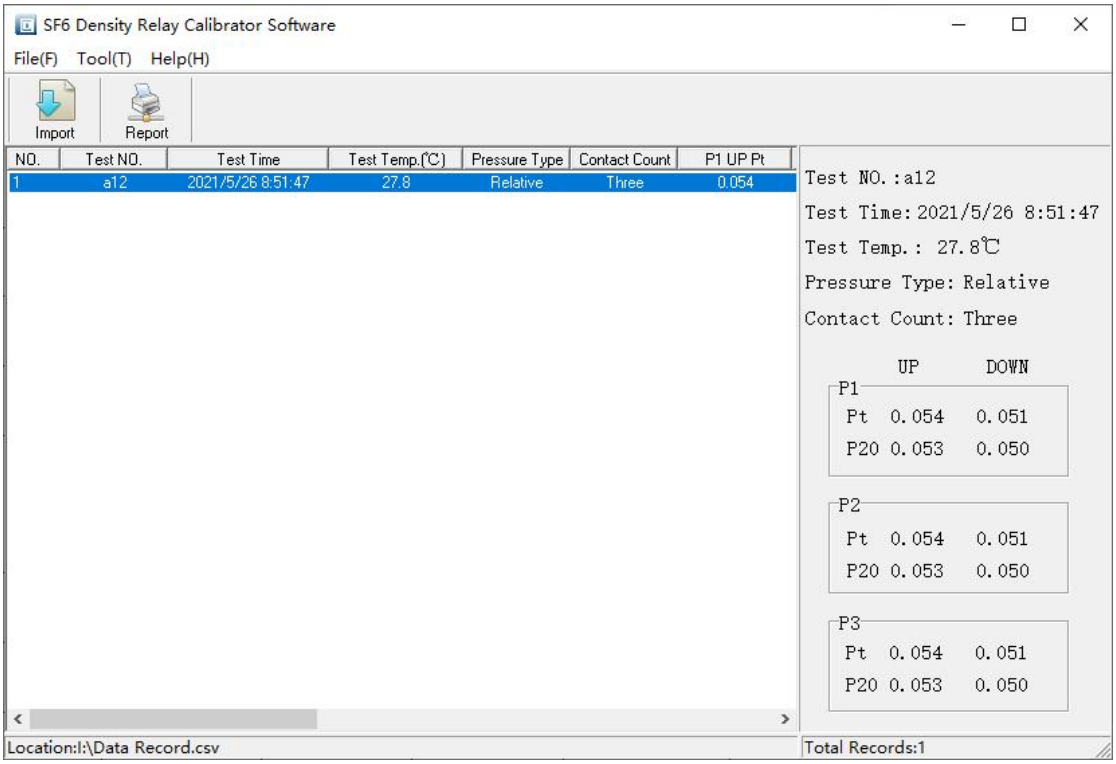


Figure 4.4 Data import successful interface

4.2.3 Generate report: Select one of the measurement data and click the "Generate Report" button to generate detailed data into a WORD format report, as shown in Figure 4.5.

Test Report

Equipment No.	a12	Temperature	27.8℃
Contact Count	Three	Pressure Type	Relative

Test Result

	UP(Mpa)		DOWN(Mpa)	
	Pt	P20	Pt	P20
P1	0.054	0.053	0.051	0.050
P2	0.054	0.053	0.051	0.050
P3	0.054	0.053	0.051	0.050

Test Conclusion :

Remarks :

Tester		Test Time	2021/5/26 8:51:47
Checker		Check Time	

Figure 4.5 GENERATING WORD REPORT INTERFACE

Modify the basic information in the report, such as the title, reviewer, and review date, as needed. Click the Print button at the top of the page to print the current test report.

Chapter 5 Microprinter Operating Instructions

1. Replace the paper roll

Step 1: Press the round button to open the front cover of the printer and remove the remaining paper core, as shown in Figure 5.1.

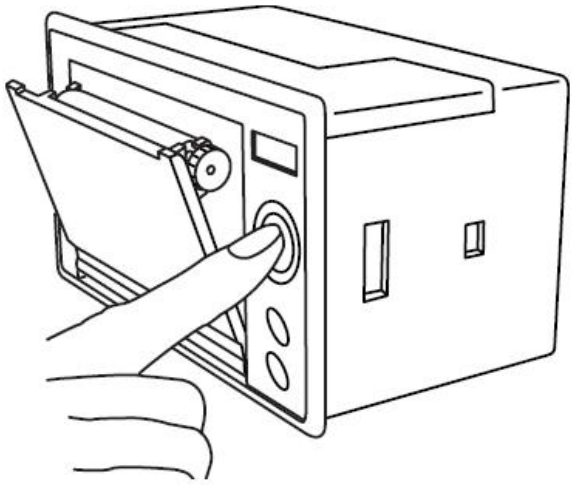


Figure 5.1 Open the front cover

Step 2: Put in a new paper roll as shown in Figure 5.2.

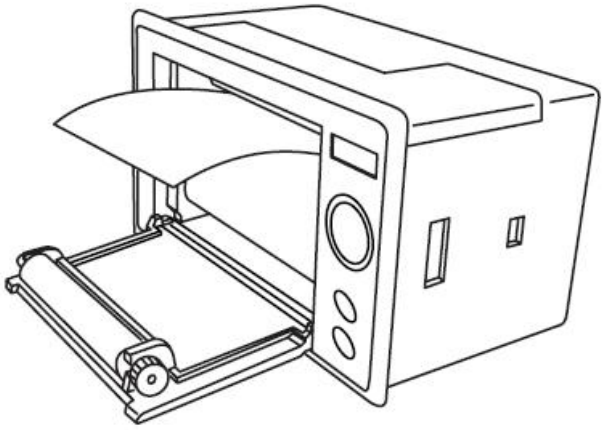


Figure 5.2 Put it in a paper roll

Step 3: Pull out a part of the paper head, place it in the center position, and close the front cover, as shown in Figure 5.3.

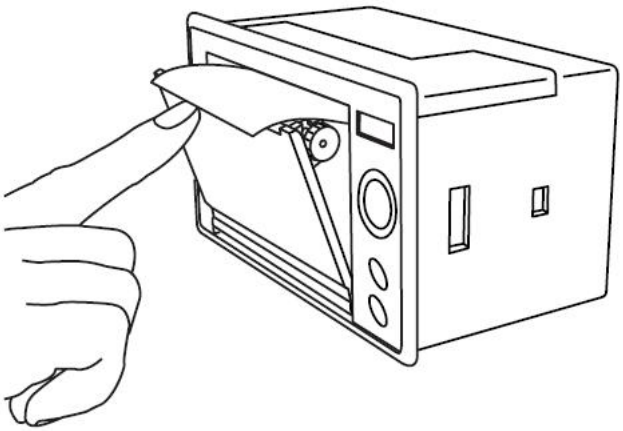


Figure 5.3 Close the front cover

Note: When closing the front cover, let the paper protrude a section from the paper outlet, and let the rubber shaft fully press the paper roll, otherwise it cannot be printed. When loading paper on a thermal printer, you must confirm that the thermal coating of the thermal printer paper is on it, and then put the thermal paper into the printer compartment, if the thermal layer is not printed on it, no handwriting can be printed. If the printer paper deviates, you can reopen the front cover to adjust the position of the printer paper.

Appendix I Instructions for use of gas cylinders

1. Gas cylinder deflation method

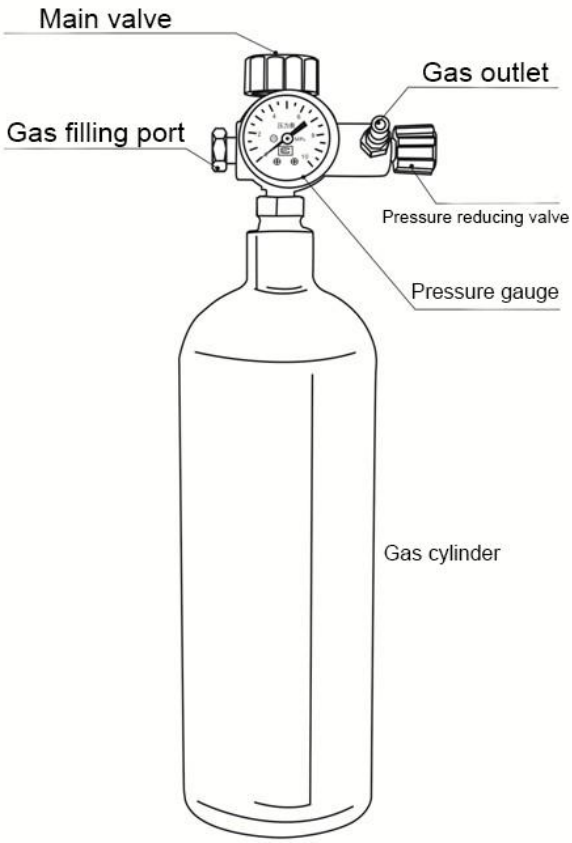
The first step: before the test, it is necessary to check whether there is gas in the cylinder, first close the pressure reducing valve, and then open the main valve, the indicator value of the pressure gauge is the pressure value in the cylinder (if the gas in the bottle is lower than 0.2MPa, the cylinder needs to be inflated and then put for use).

Step 2: After the test is prepared, connect the inlet pipe equipped with the instrument with the gas cylinder, open the main valve in turn, and the pressure reducing valve can be used. After the test, first close the main valve, use the rapid exhaust function of the instrument to drain the residual gas in the pipeline, then close the pressure reducing valve, and finally pull the connecting line in the gas circuit.

2. Gas cylinder inflation method (there is no gas in the cylinder before leaving the factory, you need to fill it yourself)

The first step: close the general valve and pressure reducing valve of the gas cylinder, use a movable wrench to twist the filling port, connect one end of the inflation adapter in the attachment with the filling port, and connect the other end to the gas source, open the cylinder main valve and the gas source valve in turn, observe the pressure gauge on the cylinder, the pressure value rises to indicate that it is in positive inflation, for safety reasons, it is recommended that the filling gas volume is 4-5MPa.

Step 2: After filling, close the gas source valve and the cylinder main valve in turn, unscrew the inflation adapter, and then tighten the cylinder filling port.


Main valve
Gas outlet
Gas filling port
Pressure reducing valve
Pressure gauge
Gas cylinder

Instrument packing checklist

NO.	Name	Quantity	Unit
1	host	1	platform
2	charger	1	root
3	Gas cylinders	1	piece
4	Air intake pipe (80cm)	1	root
5	Measuring tubing (250cm) with common fittings	1	root
6	Bleed pipe (250cm)	1	root
7	Adapter Connector （Appendix II～8）	8	piece
8	Inflatable adapter（Appendix II9）	1	piece
9	6-core test line	1	root
10	Paper	2	volume
11	Raw meal belt	2	volume
12	flash drive	1	piece
13	Instructions	1	root
14	Inspection report	1	piece
15	Certificate	1	piece