Digital-R Refractometer

User Manual

DRAWELL

Artist of Science

Please read the manual before installation and operation.

Drawell International Technology Limited

Chongqing Drawell Instrument CO,.Ltd
Add:Suite 2705,Building No.12,Shiyou Road No.1,Yuzhong District, Chongqing,China
Tel: 0086-023-63268643

Shanghai Drawell Scientific Instrument Co.,Ltd
Add : Suite 1117,Lane561 XiuChuan Rd.,PuDong New Area,Shanghai,China

Web : www.drawell.com.cn
Email : sales05@drawell.com.cn

Directory

I. Summary

Refraction index is one of the important optical constants of matter, which can understand the optical properties and purity of matter.The instrument can measure the mass fraction (Brix) (0-100%) of the sugar solution.Therefore, this instrument is used in a wide range, is the oil industry, oil industry, pharmaceutical industry, paint industry, food industry, daily chemical industry, sugar industry and geological survey and other related factories, schools and related scientific research units.

The Digpol-R system of automatic refractor developed and produced by our company is an instrument that can measure the refractive index (nD) and sucrose solution mass fraction (Brix) of transparent, translucent, dark and viscous liquids.With humanized operation, friendly full color interface, fast, stable, accurate automatic measurement, accurate constant temperature control, massive data storage and other advantages.

Features of the Digipol-R fully automatic refrreader

- Cloud service system, through the network port to achieve the cloud database and instrument interconnection, storage is no longer restricted
- Built-in Palpost (Peltier) precise temperature control system
- The measuring prism located in the sample tank is made of high hardness sapphire grade glass, which has good corrosion resistance and scratch resistance, and can be cleaned at will and durable
- High-resolution CCD detector for fully automatic measurement, to avoid human error, higher measurement accuracy, can automatically measure transparent, translucent, dark, sticky and other kinds of liquids

- High-brightness LED light source with a service life of over 100,000 hours
- Large storage of 4G capacity, the instrument can automatically store up to 1000 sets of data information
- Wide 7-inch color touch display and innovative WINDOWS interface software, one-click measurement, make the instrument control and data reading more convenient
- Two USB interface, RS232 interface, Ethernet interface, convenient connection, printer and network, coupled with U disk interface and SD card interface.Easy use for users to export the data to the backup
- The whole machine has passed the TART quality certification standard of laboratory analytical instruments

OOBA

1. Carefully remove the transport box.

Note: Keep the instrument packaging box and packaging foam easy for later transportation

2. Lift the instrument out and place it on the test table.Check the instruments and accessories against the packing list. If any instrument or accessories are wrong, incomplete or abnormal, please contact the seller or manufacturer.

Special warning

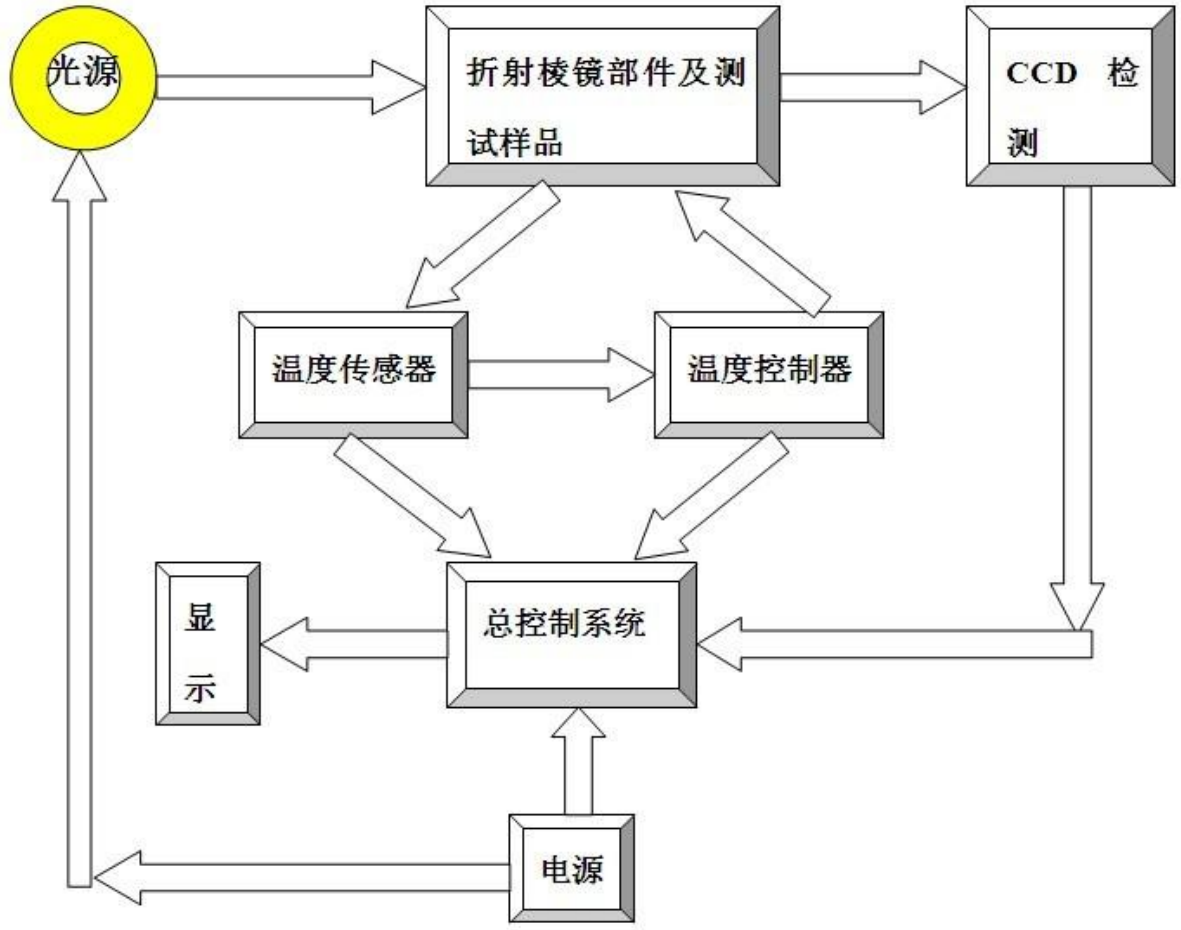
- For the safety and smooth of the experiment, please read this manual carefully!No similar instruments has been used

Personnel for inspection, please attend the basic training.

- Please keep this manual properly and hand over when the instrument operator is replaced.The Company reserves the right to upgrade the product, subject to changes in this manual without notice.

II. Working principle

1. Schematic framework diagram

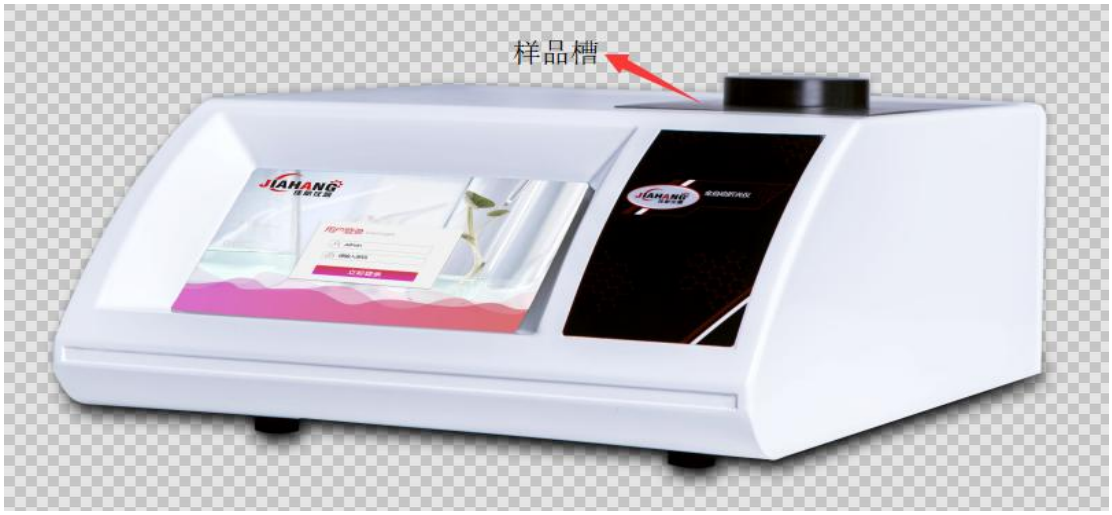


2. Principle

The principle of refractive index of Digipol-R automatic refrometer is based on the determination of zero boundary Angle, detected by CCD, sent to the microcomputer system to process the data, determine the dividing line between light and shade, that is, the position of the critical Angle, and then the number shows the refractive index or hammer of the measured sample.

III. The Use and Operation Guide

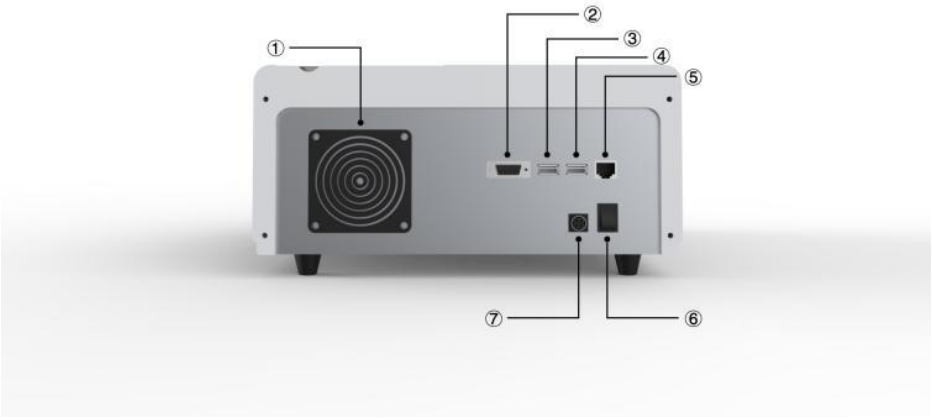
1. Instrument part name



Front elevation

Face of instrument

① screen
② Sample trough
③ pallet



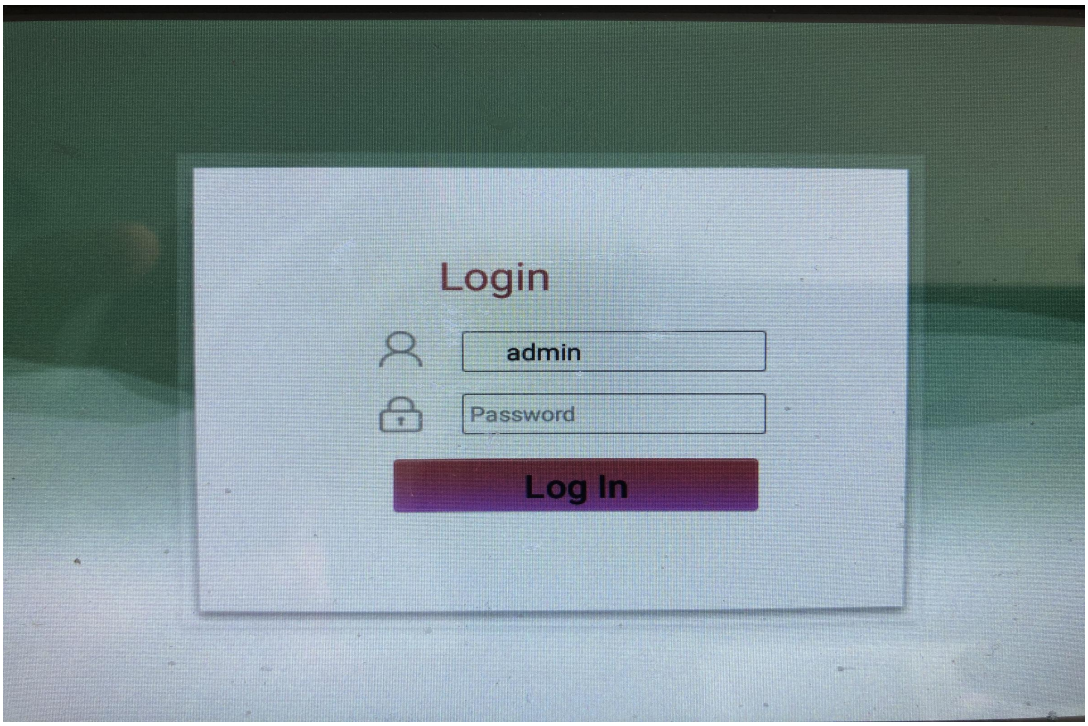
Back view

Post-Instrument View Description

① electric fan
② RS232 serial port
③ USB interface (available for customers to connect to the printer, U disk, etc.)
④ USB joggle
⑤ network interface
⑥ mains switch
⑦ Power interface

2. Introduction of the instrument interface

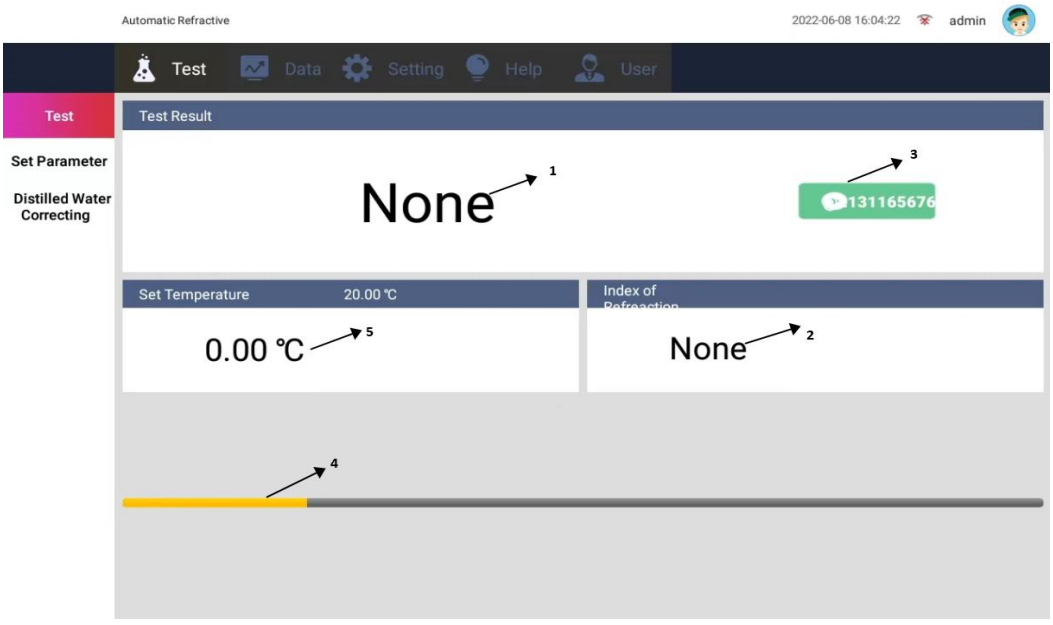
Please keep the prism surface clean before startup. If there is residue in the last test, please clean, otherwise affect the accuracy of the instrument.After completing the previous step, cover, turn on the power, turn up, and jump out of the login interface (by default, the boot login interface can be set in the user management interface) as shown in Graph 1.



graph 1

Enter the login interface, enter the user name and password, and click the login button to jump to the Graph 2 interface.
Note: User name: Admin Password: 888888

Test

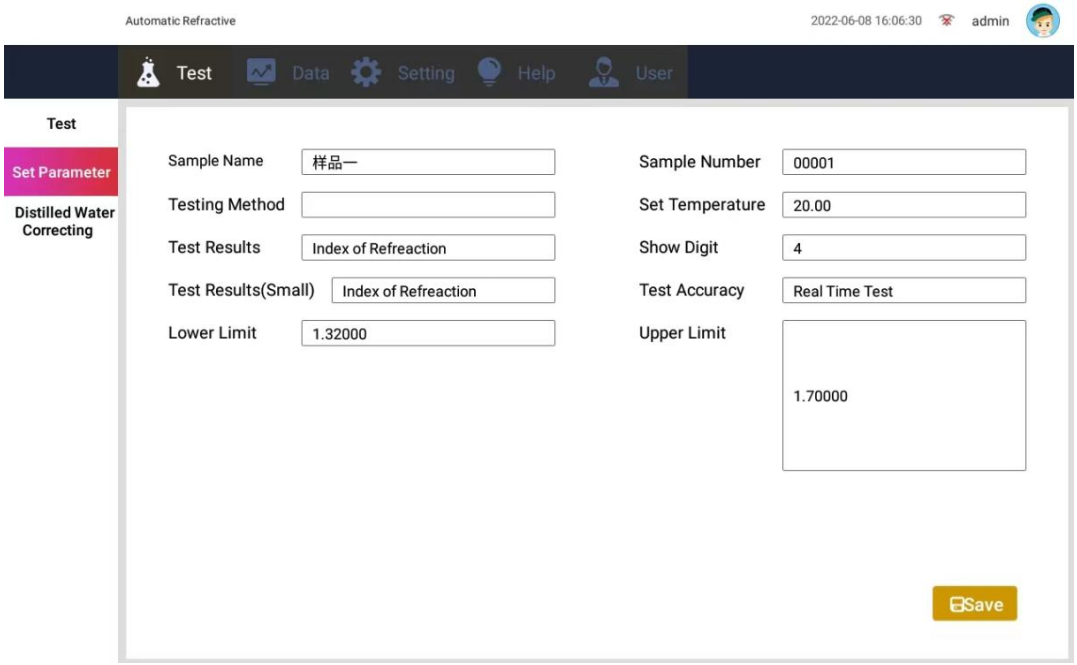


graph 2

①: The measurement value 1 appears in the content box
②: Display the measurement value 2 or define the measurement limit in the content box
③: Experimental test key
④: Progress bar (indicating whether the instrument is currently undergoing measurement or whether the measurement is completed)
⑤: The current temperature appears in the content box

1. Parameter settings

Click the test parameter button of the secondary menu to set the parameters, as shown in Graph 3.



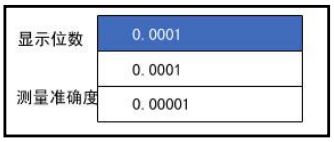
graph 3

There are two ways to set the parameters:

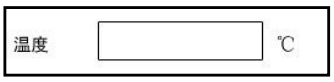
Method 1: Set the parameters according to the experiment that you want to do

The detection method does not change when setting the parameters by yourself.

: When you select a range mode, the upper and lower values set on the parameter settings page are displayed on the main interface.If not select range mode, the upper and lower values are not displayed on the main interface, but this value is saved.

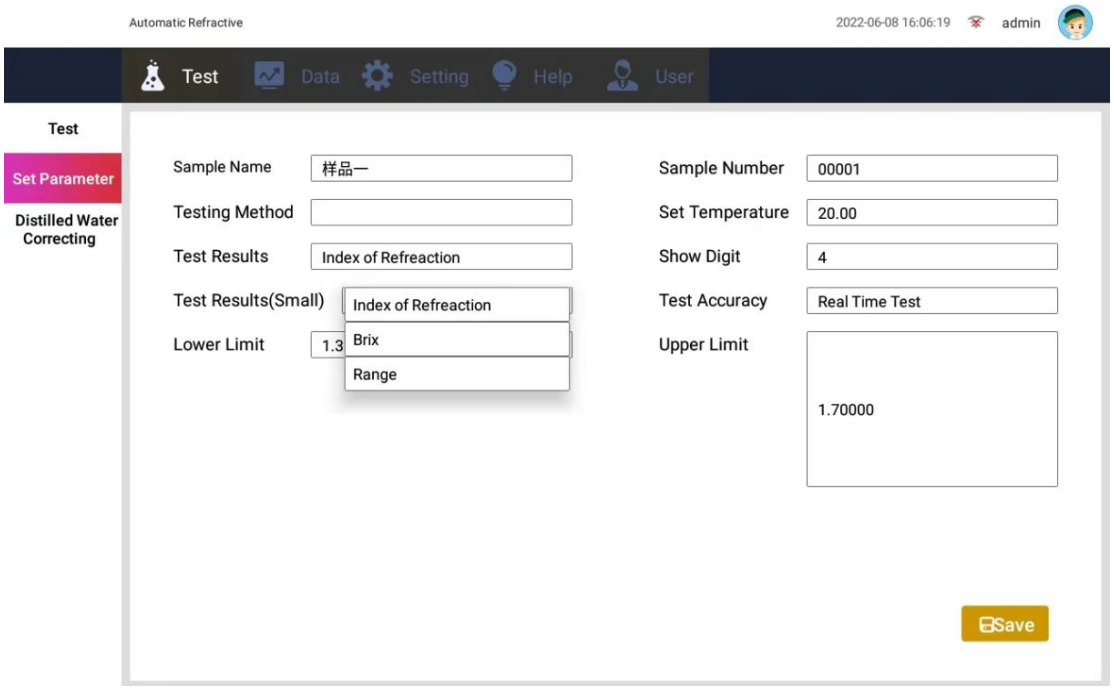


: Select the number of measurement displays.



: The temperature set in the settings parameters is displayed in the blue header box of the main interface temperature.

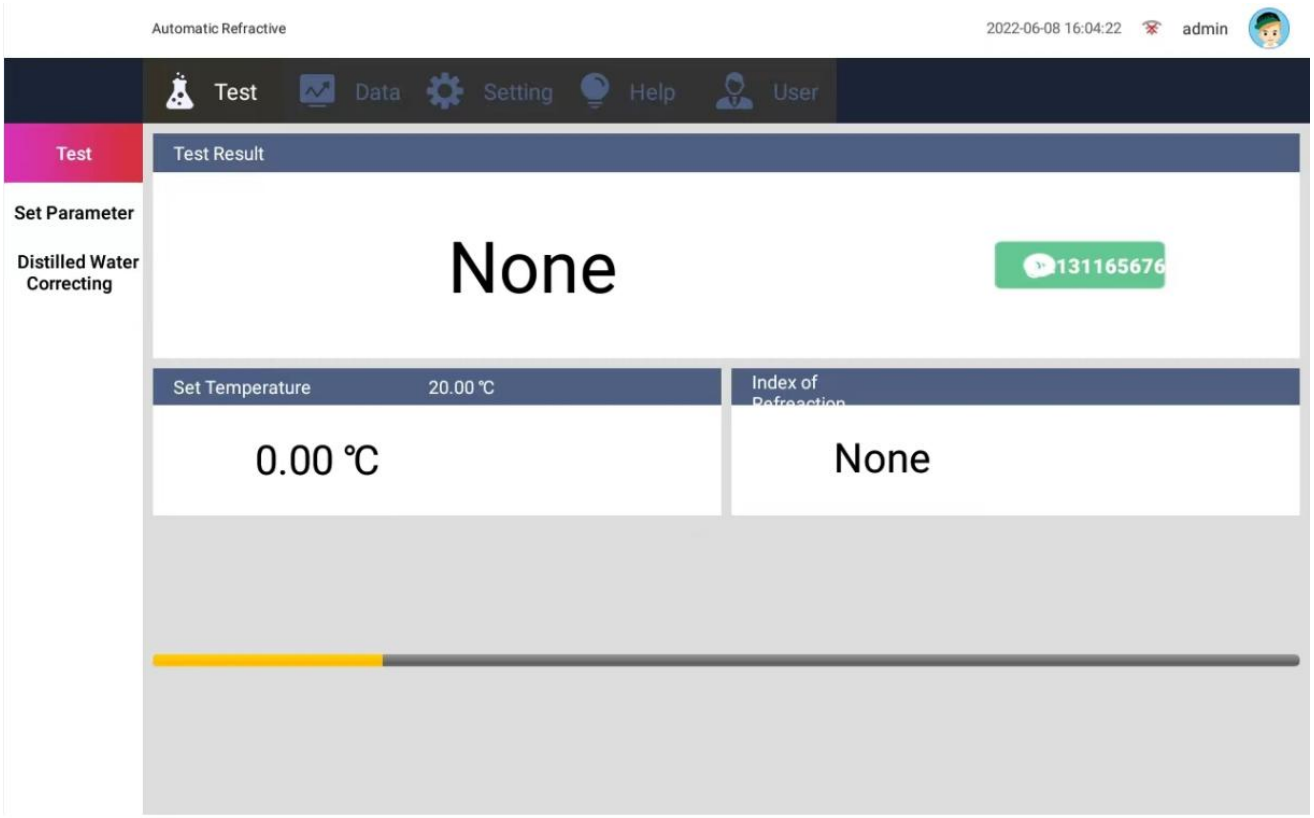
Method 2: Click the drop-down menu of the box to pull the saved test method (the test method can be set in the method management in the setting page and add) as shown in Graph 4 box.



graph 4

Note: Regardless of which setting method you choose, the latest setting is retained for the next restart.

After all the settings are completed, click Save, and the interface will automatically jump to the test home page, as shown in Graph 5.



graph 5

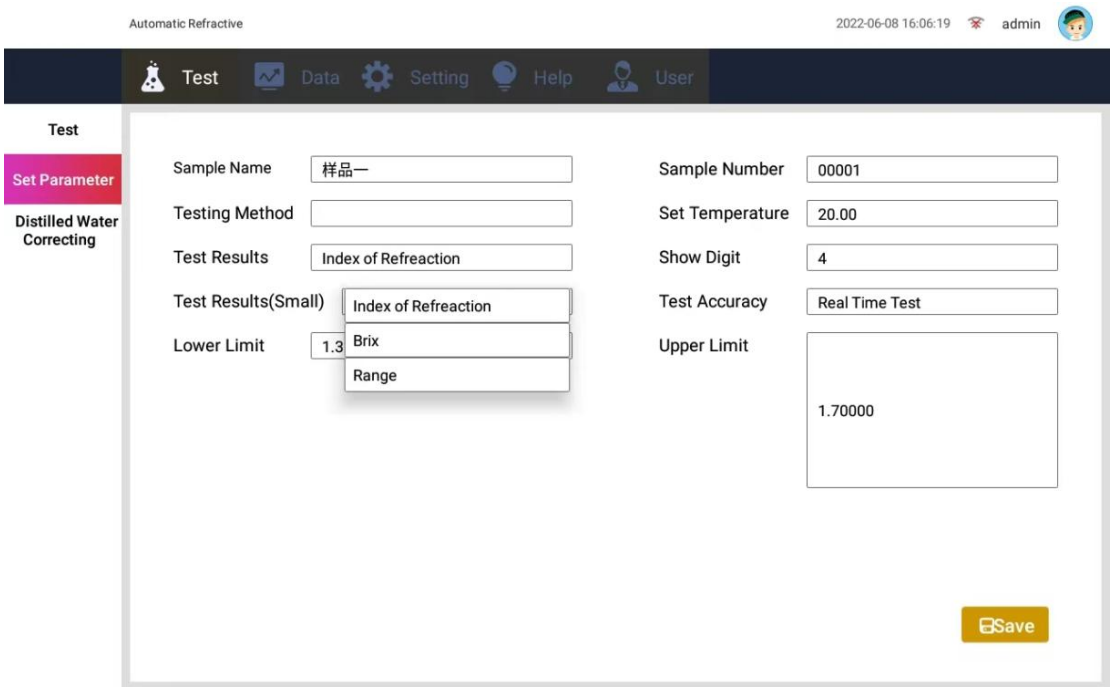
After the temperature reaches the set temperature, add the tested liquid to the sample tank, cover, and wait for the test results to stabilize.

Instructions for the keys

Case 1: In the test parameter interface, if the measurement accuracy is real-time measurement, start the test, as shown in Graph 6.

graph 6

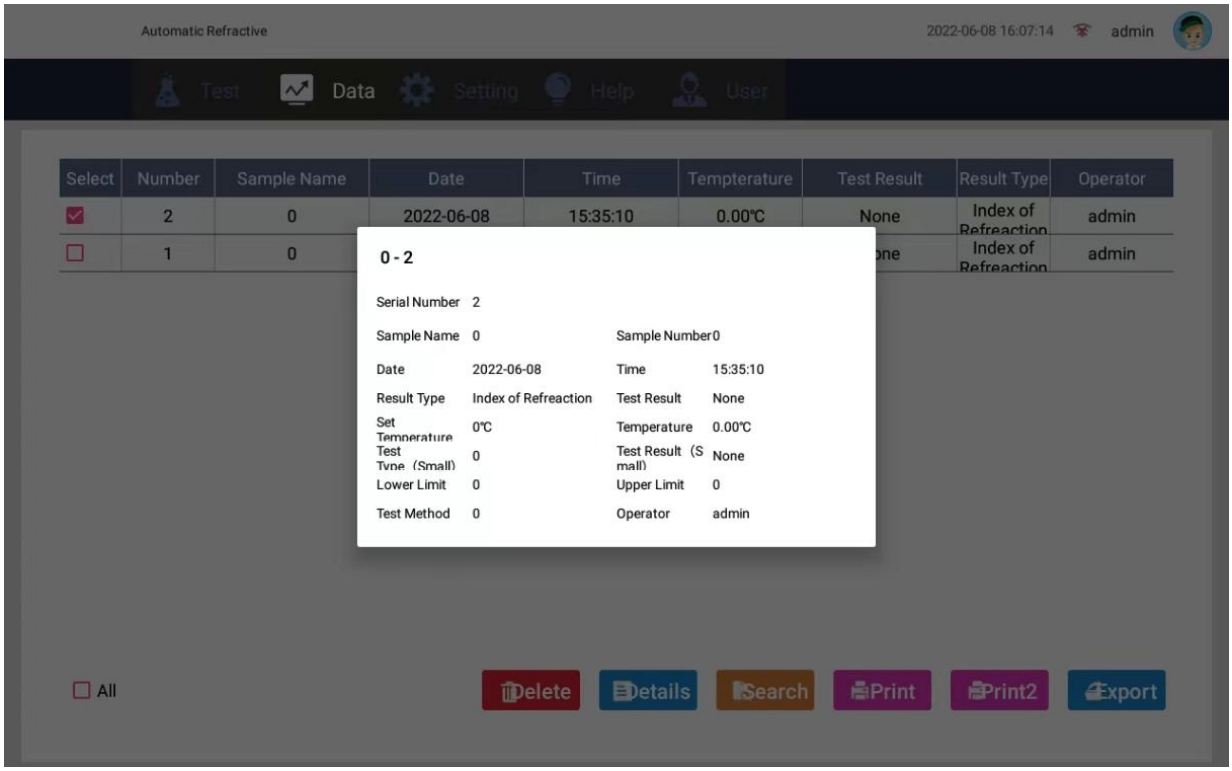
Case 2: In the test parameter interface, if the measurement accuracy selects any one of the other three types, you must press the start key to start the test, as shown in Graph 7.



graph 7

Data

Click the data button in the navigation bar to jump out of the database interface, as shown in Graph 8.

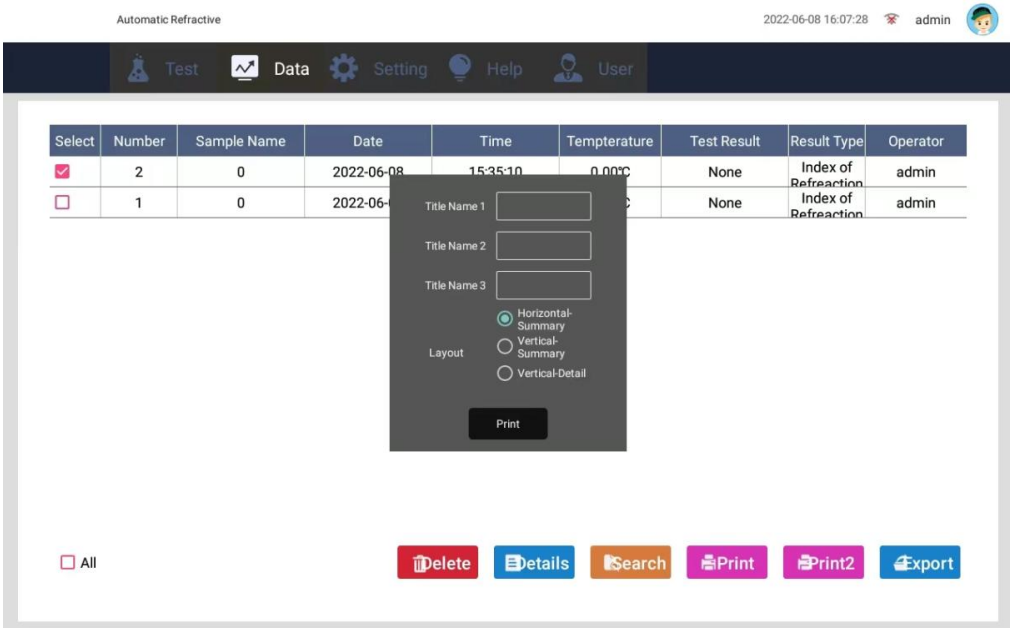


graph 8

Description of key function in Graph 8 interface:

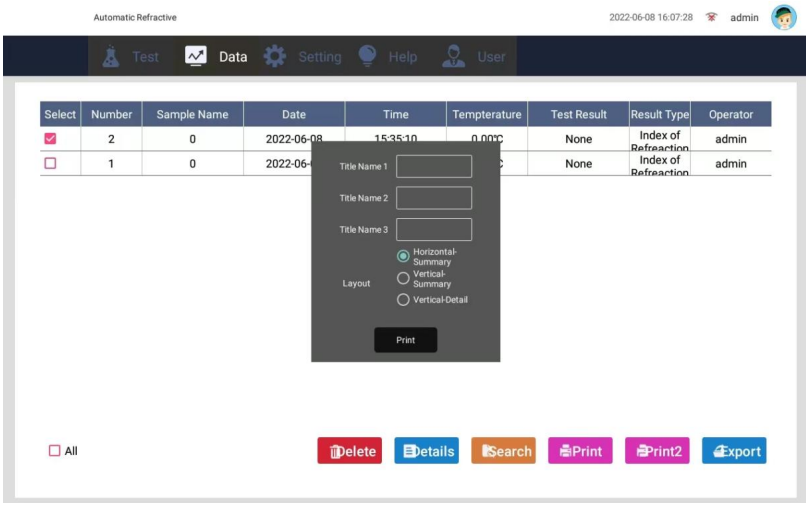
: After pressing the print button, jump out of a pop-up box, enter the printed head in the pop box (can be filled), and press the OK key to print, as shown in Graph 9.

Note: The printer model conGraphd with the instrument specifies the HP P1106 (USB interface).



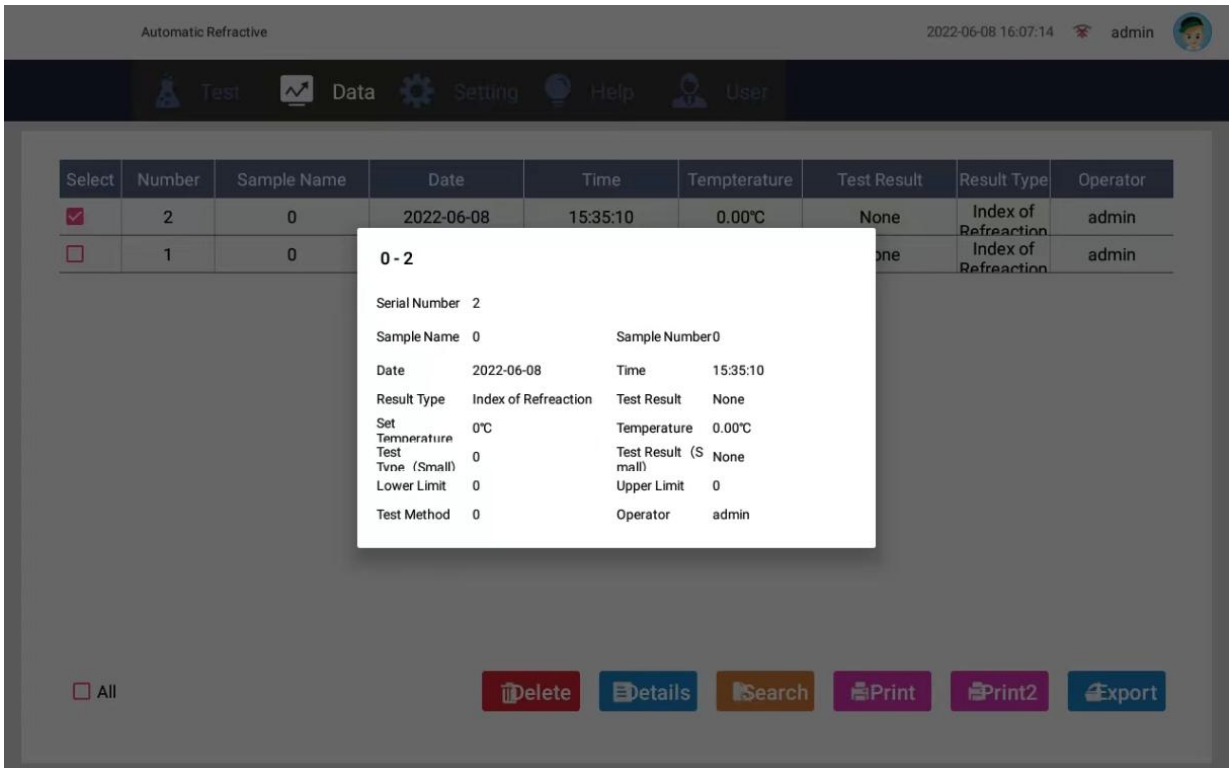
graph 9

Export: It is necessary to insert the U disk (see the view after the instrument, select the customer interface), press the output button, pop a pop-up, input the file name, and press the OK button for output. The output format is PDF, as shown in Graph 10.



graph 10

Details: You must select a message in the database, and then press the details key to jump out of the data details, as shown in Graph 11



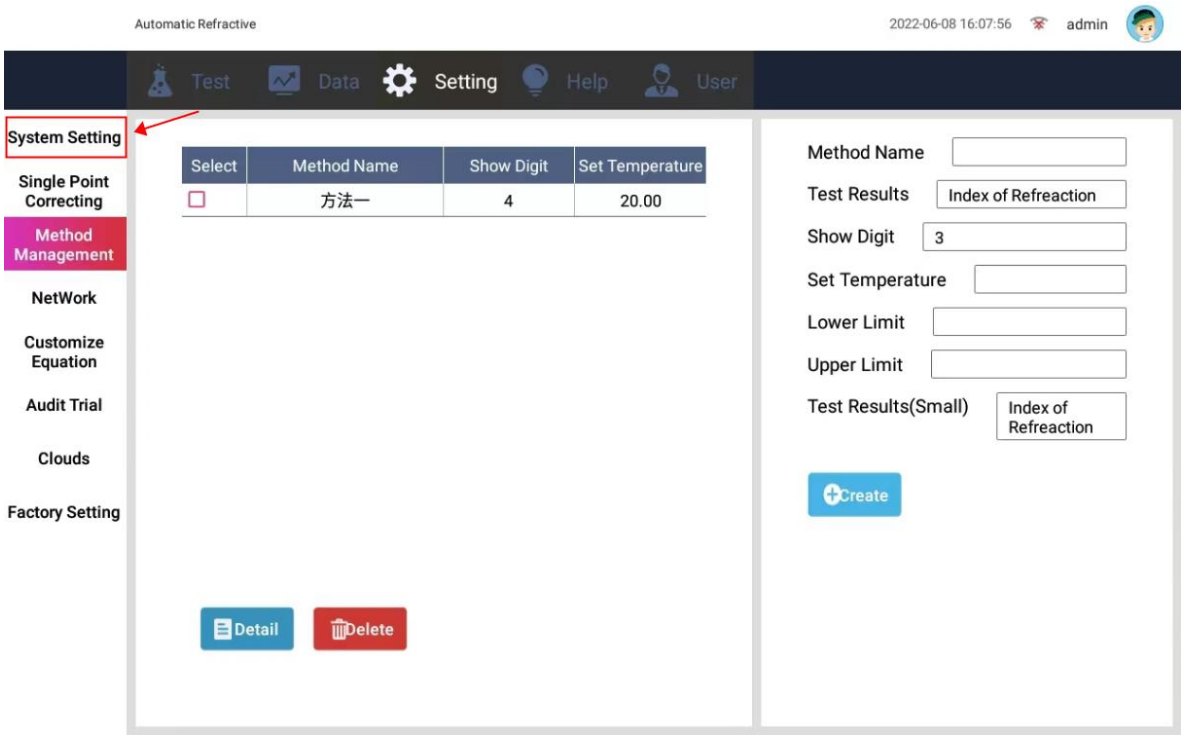
graph 11

Delete: Press Delete to delete the selected data.

Search: Upload all the data to the cloud service.

Set up

Click the navigation bar on the right side to set the button, and the screen interface in Graph 13 will appear.



graph 13

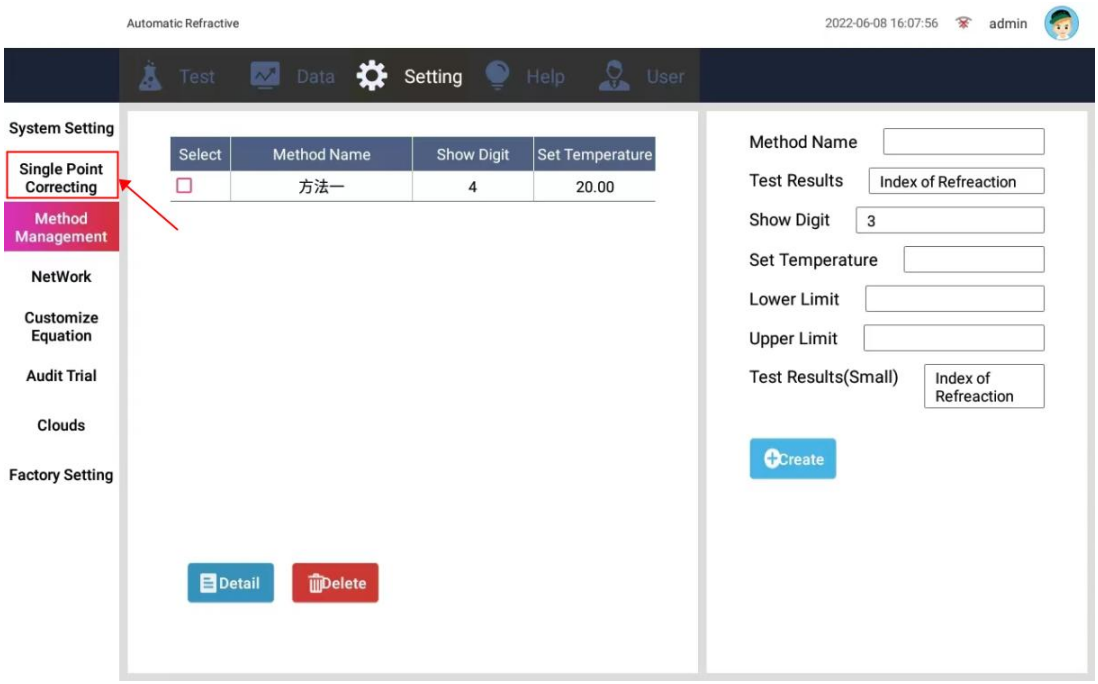
This interface enables language selection and display time settings:

1. Press the pointer key to pull down and select the desired language.

2. The interface sets the time displayed by the instrument. Customers can edit the time according to the needs. After editing, press "Settings" to complete the time setting.

Edit method: Click the input box, the keyboard interface will pop up (the keyboard can switch numbers between Chinese and English), input, after entering a number, press the "OK" key to display to the input box.

Correction



graph 14

In FIG. 14, when the current temperature stabilizes, the input refractive index is a standard fold of the liquid in the sample groove

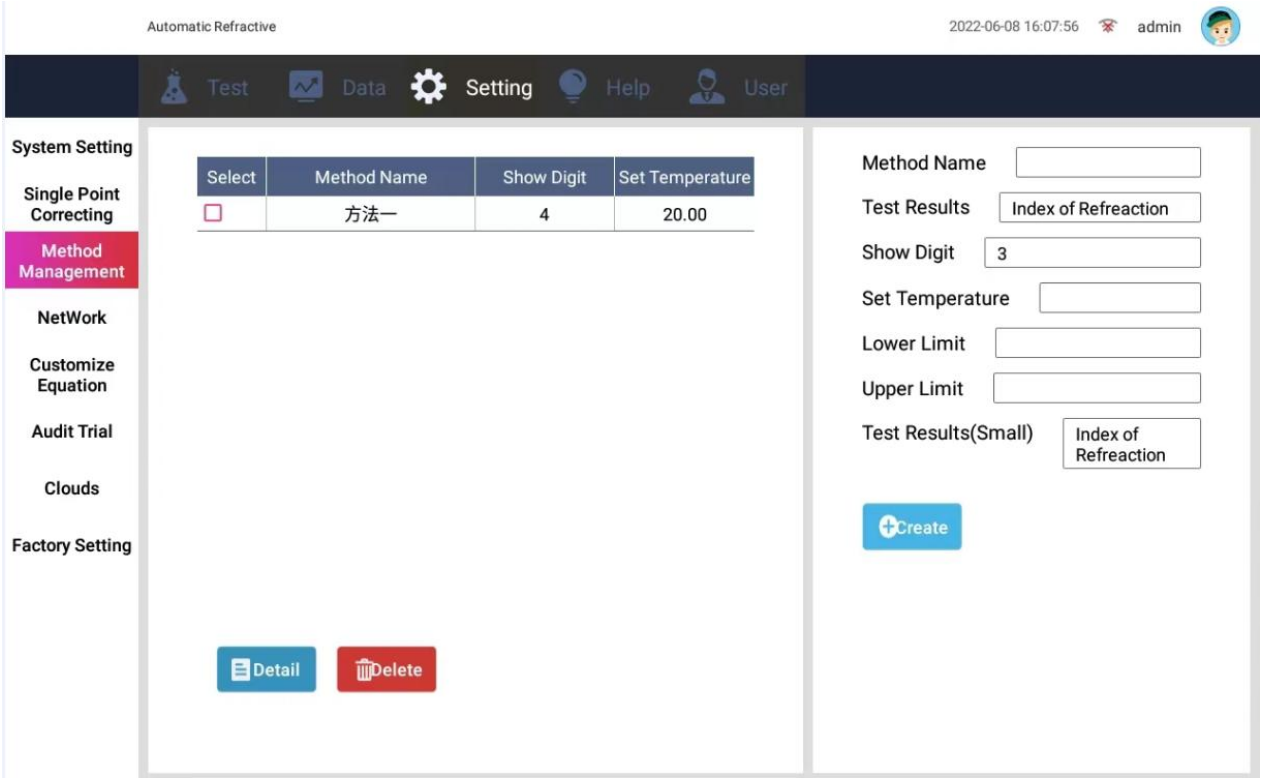
Ejection, click save, when the refractive index of the sample and the liquid refractive index is more accurate.

When saved and deleted, a prompt box is popped up for various possible states, as shown in Graph 15-1,15-2. Similar tips will often appear throughout the program and will not be repeated later.

graph 15-1

graph 15-2

Method setting



graph 16

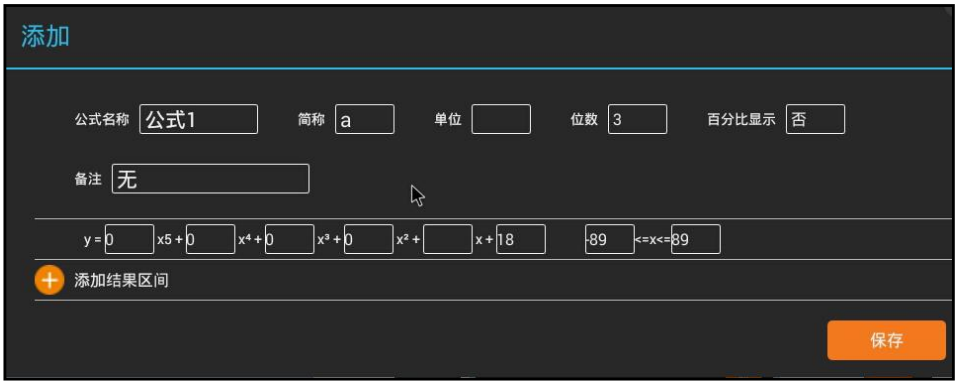
Set the test method content in the right content bar of the method management interface of Graph 16. Click the "Add" button to add the test method to the left method library. The test method in the method library can be directly pulled in the detection method drop-down menu in the test parameter page.

Click the "Cloud Service" button to upload the method library to the web server.

Custom formula

You can add, modify, and delete formulas in this box;

Add: Click 'Add' to pop up as shown in Graph 21, fill in the formula name and basic parameters of the formula, fill in the interval range of x (required), and click 'Save'.If you need to add multiple formulas, click 'Add result interval' to create a new formula.



graph 21

Delete: You can delete the selected formula;

Details: Click 'Details' to see the details of the formula;

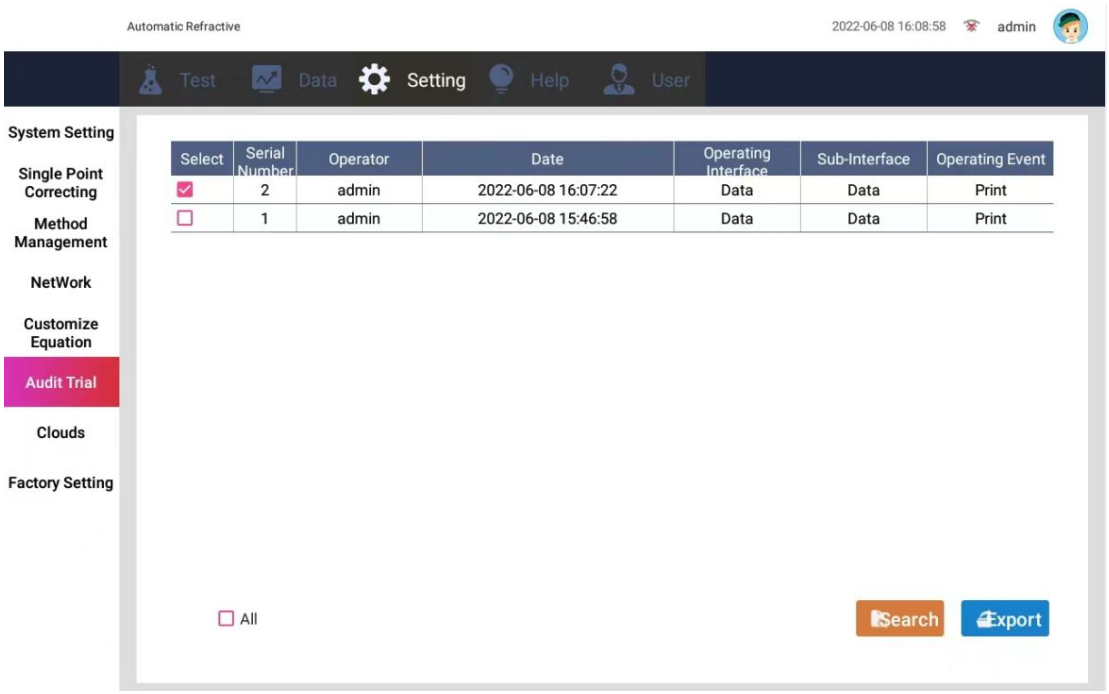
Retrieval: Set the retrieval conditions, view, edit, and delete the formula;

Note: The formula cannot be modified during the test use

Audit trail

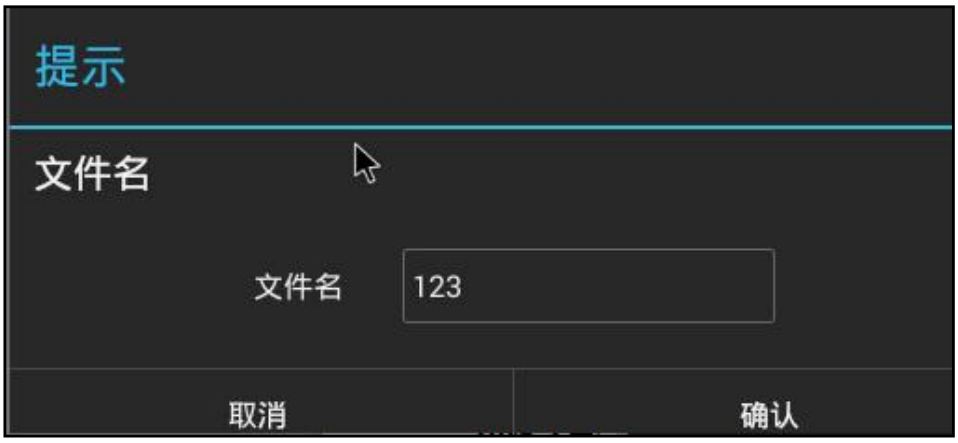
The Settings or operations that affect the test results and are not recorded in the data will be recorded in the audit tracking, and the users can query the relevant operation records;

As shown in Graph 22, each one records the operator, time, date, operation interface and sub-interface, and operation events;



graph 22

Export: You can export the selected audit trace in the form of a file, fill in the file name in the pop-up box, and click 'OK';



graph 23

Retrieval: You can set the date range and the operator to retrieve the operation records;

Factory setting

Factory settings can only be set up by manufacturers, users do not need to use.

Help

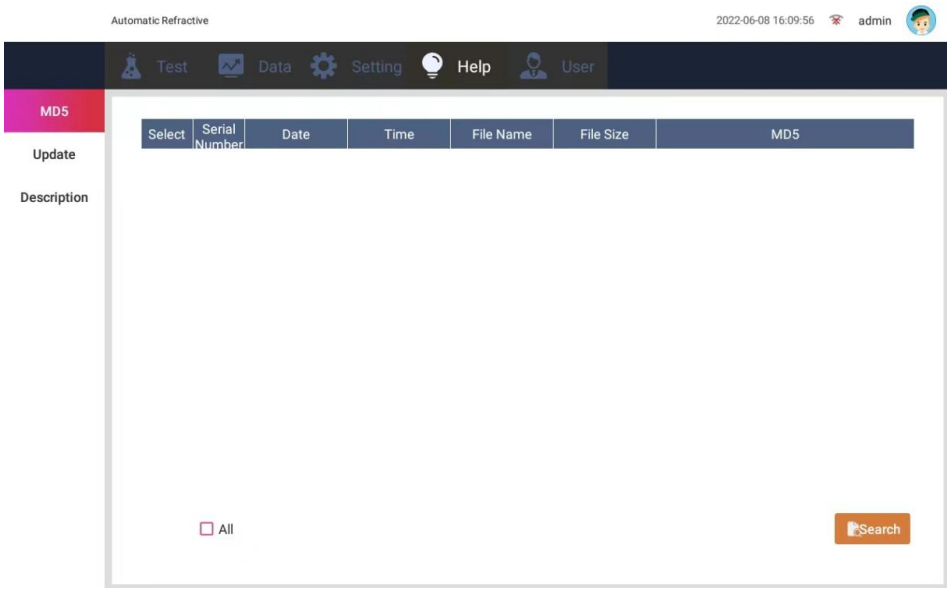
1.MD5

After the data is exported, the file is generated, and an MD5 value is automatically generated. The MD5 value is irreversible. You can judge whether the file is changed according to the MD5 value, as shown in Graph 25 below.

Export: You can generate the MD5 values for a file export;

Retrieval: You can retrieve the MD5 value according to the time and the operator;

The export and retrieval pop-up boxes for the MD5 values are the same as for the audit trace.

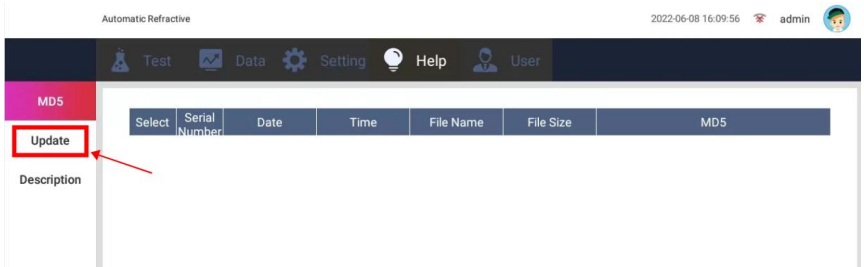


graph 25

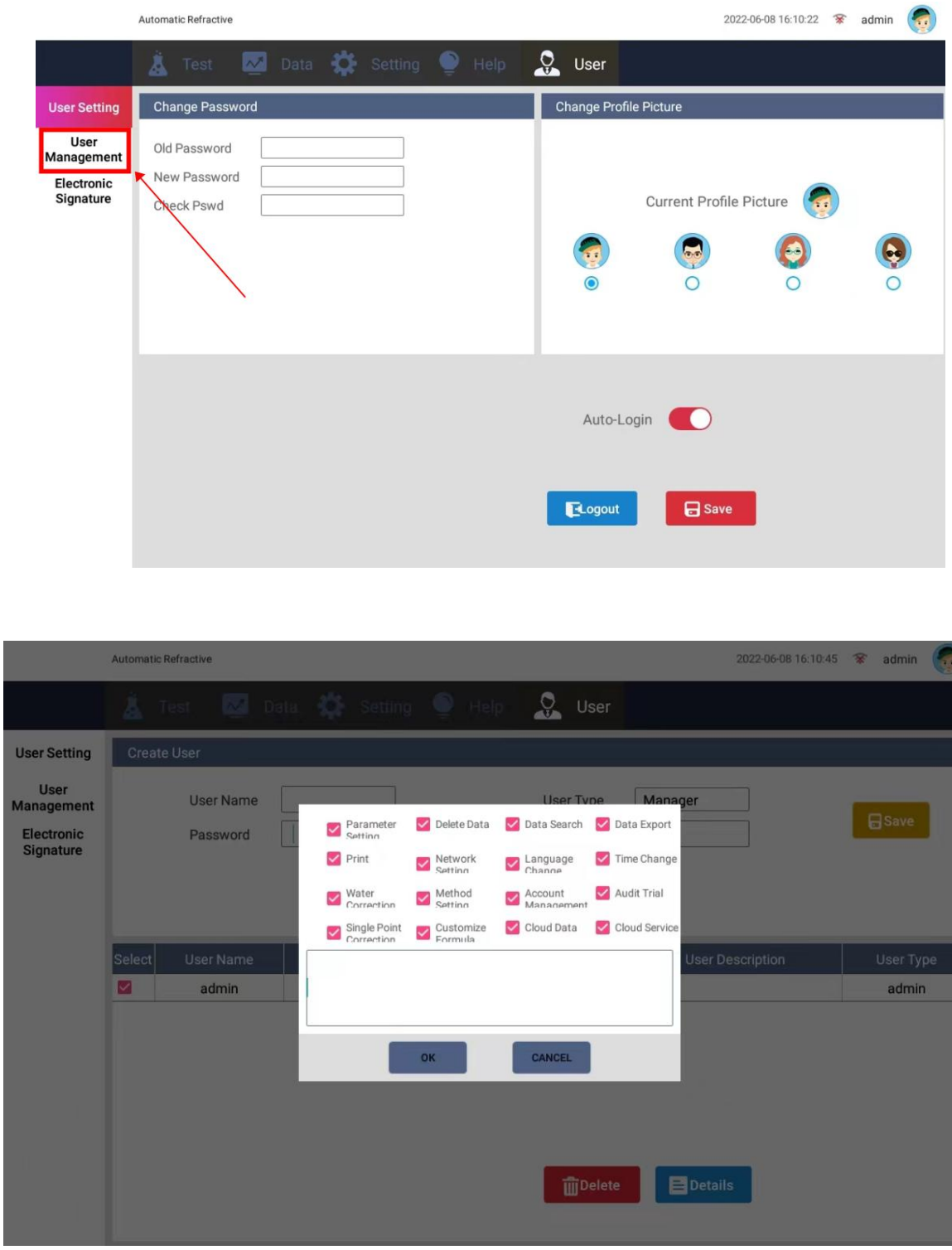
2. Version update

Click 'version update', the system automatically detects the optimal disk, if there is a new version, the upgrade operation automatically, after the upgrade, automatically exit, restart.

Version upgrade retains historical data.



User management



graph 17

In Graph 17, new users who log in for the first time can create their own username, password, and permissions.Enter the "confirm" key to save, the next time you can use the created user name, password login.

Delete user is selected in the user list content click to delete the "Delete" key to delete.

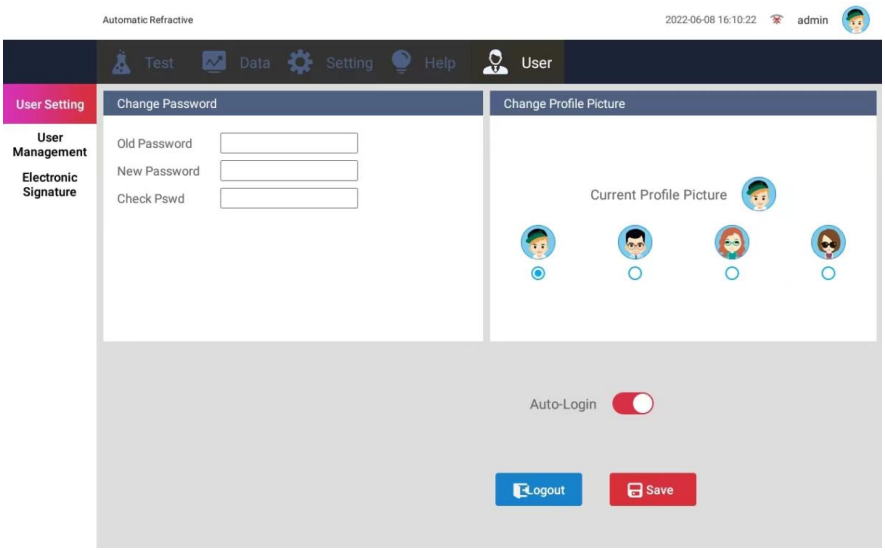
Log display is choose "Yes" or "No" in the drop-down menu, choose "Yes" is after the boot will jump out of the login interface, to enter the user name and password to login, choose "No" directly into the main interface.

Note: Delete user permission as shown in the Graph: Graph 18.

	主管	操作员
管理员	✓	✓
主管	✗	✓
操作员	✗	✗

graph 18

User Settings



graph 20

In Graph 20, the current user can modify the login password in this page. After the modification, click "Save" to save the current setting, and then click "login" to return to the login interface and re-enter the modified password.

Note: As the software version will be updated and modified, the actual interface and the manual may differ slightly, please refer to the actual instrument.

IV. Instrument maintenance

The instrument is a precision measuring instrument. In order to ensure the accuracy of the instrument and prevent damage in use, the user will maintain and maintain the instrument as below:

1. When the instrument is not used, it should be placed in a dry and ventilated room as far as possible. The indoor temperature difference is not easy to change too much, so as to avoid damp mildew in optical parts.
2. Before and after the use of the instrument and when replacing the sample, the working surface of the refractive instrument sample vessel must be cleaned first.
3. When the corrosive liquid is tested, it should be cleaned in time.
4. This instrument is strictly prohibited to measure highly corrosive liquids.
5. The instrument should be kept clean. It is strictly prohibited to touch the surface of the prism with bare hands. If the prism surface has a gray tip, it can be cleaned with advanced suede or long fiber skim cotton.If the surface is stained with oil scale, it should be cleaned with alcohol ether mixture.
6. Corrosive liquid should be prevented from dropping on the shell plastic of the instrument to prevent damaging the shape of the instrument.
7. It is strictly prohibited to disassemble the instrument without authorization. If the instrument fails, it should be sent to repair in time.

V. Use precautions

According to the characteristics of fully automatic refractor, such as high cleanliness requirements of sample test tank and prism surface, and high temperature influence on the refractive index of liquid, in order to help customer service to obtain more accurate data, give the following suggestions:

1. Before each test, clean the sample test tank carefully to ensure that there is no any other liquid in the sample test tank.
2. When setting the temperature, the gap between the ambient temperature and the set temperature should be reduced to accelerate the stability speed and stability of the temperature control.
3. During testing, the liquid in the sample test tank should be placed for a certain time, so that the temperature of the liquid fully reaches the set temperature before measuring.
4. Stay away from cold source and heat source, and avoid direct sunlight and high humidity.
5. After the measurement, clean the liquid in the sample tank in time and do not place it for a long time.
6. After the measurement is completed, please adjust the temperature to the normal temperature state, and do not stop at the ultra-high or ultra-low temperature state for a long time.

VI. After-sales service & producer responsibility

The whole machine is guaranteed for one year from the date of sale (subject to the date of the invoice issued), but the following conditions are not covered by the warranty:

1. Over the warranty period;
2. Instrument damage due to improper use;
3. Without the permission of the manufacturer, its own disassembly will cause damage to the instrument;
4. Damage to the instruments due to improper transportation and storage.

Drawell International Technology Limited

Chongqing Drawell Instrument CO,.Ltd
Add:Suite 2705,Building No.12,Shiyou Road No.1,Yuzhong District, Chongqing,China
Tel: 0086-023-63268643

Shanghai Drawell Scientific Instrument Co.,Ltd
Add : Suite 1117,Lane561 XiuChuan Rd.,PuDong New Area,Shanghai,China

Web : www.drawell.com.cn
Email : sales05@drawell.com.cn