



# **ZCLOG VALIDATION**

Wireless Verification System software

Version: 2.3

Users Manual

## ZHICE-ELEC

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### Users Tips

1. If the software interface is not fully displayed, you can try to solve the problem by adjusting the display resolution. Go to Desktop - Display Settings - Zoom - Change the zoom ratio to 100%
2. This software requires manual downloading of the adapter driver for logger pairing.
3. Before use, it is recommended to go through this manual in detail and follow the relevant instructions.
4. Please note that the abbreviation "ZCLOG-VS" is used instead of the software in this article.

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## Chapter 1 Installation & Uninstallation

### 1.1 Software installation

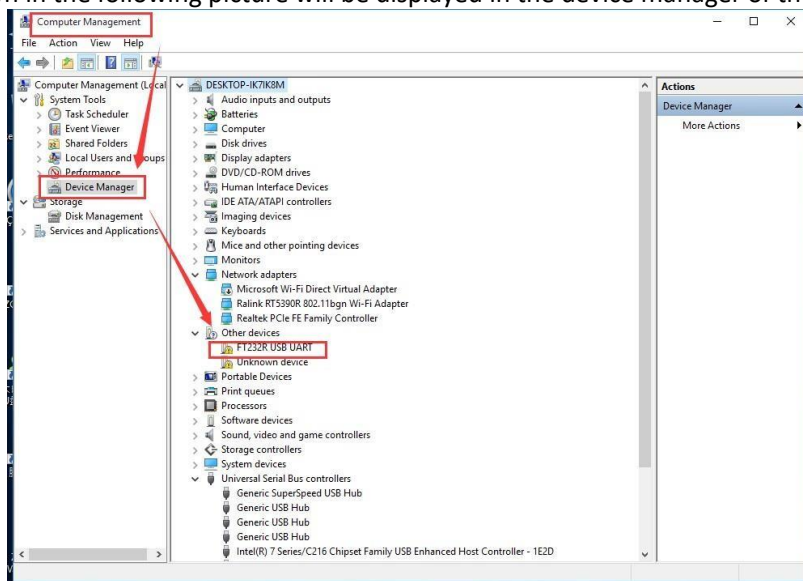
This software only supports Windows 10 and later operating systems. The following software installation instructions are Win10 operating system as an example. This software installation U disk will generally contain the following files:

Folder	Adapter Driver for Win10-11	2023-09-05 17:24	文件夹	
Application	SunClient Remote Control.exe	2019-05-13 16:35	应用程序	5,726 KB
Application	ZCLOG VALIDATION_V2.2_setup_x64.exe	2023-09-05 17:22	应用程序	176,818 KB
Application	ZCLOG-VS_V2.2 software operating manual.pdf	2023-09-05 16:16	Adobe Acrobat ...	3,272 KB

#### 1.1.1 ZCLOG IF-01 adapter communication interface driver software installation

**Step1:** Unpack the adapter and install necessary components;

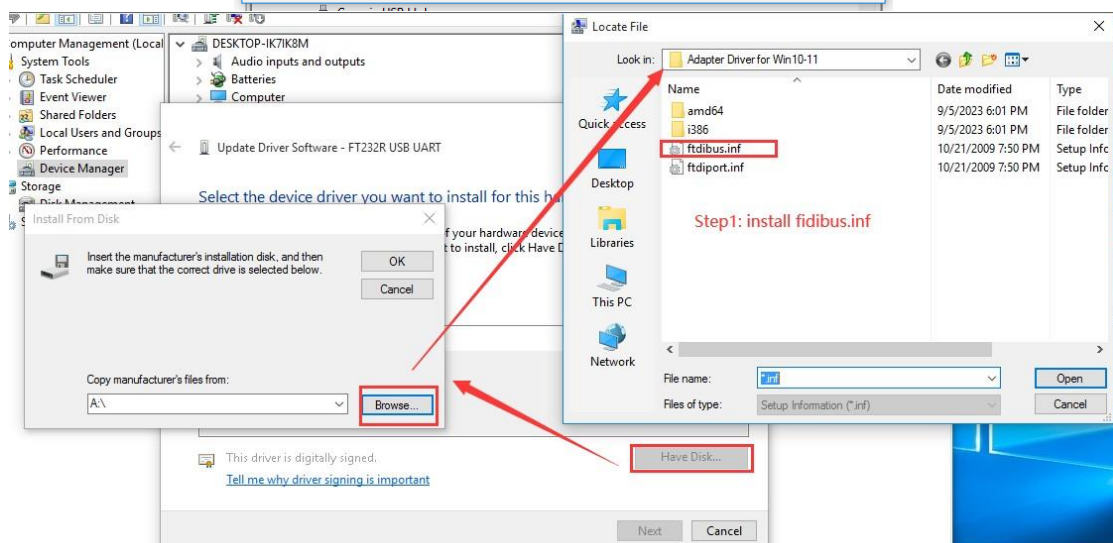
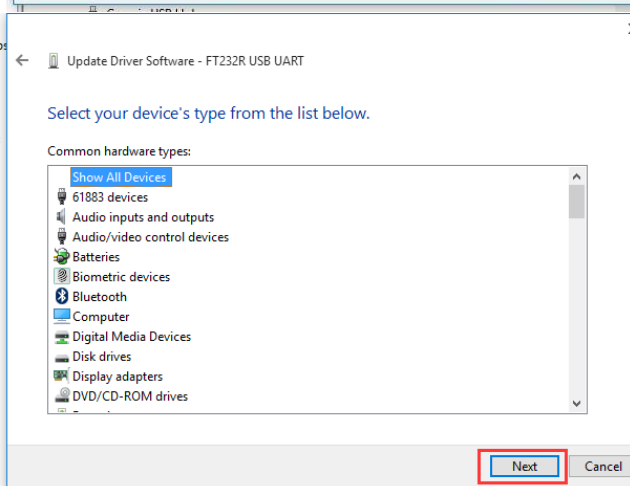
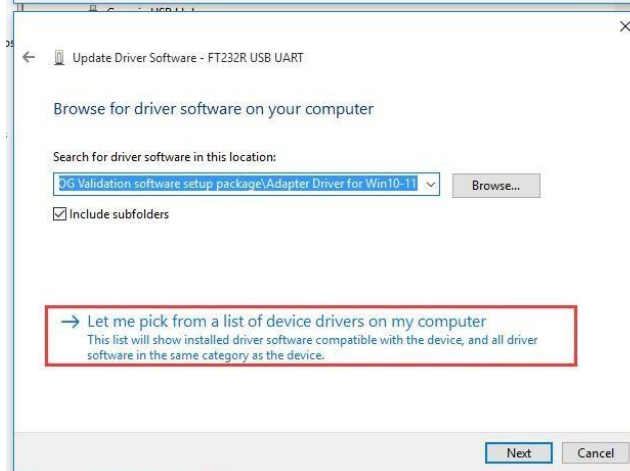
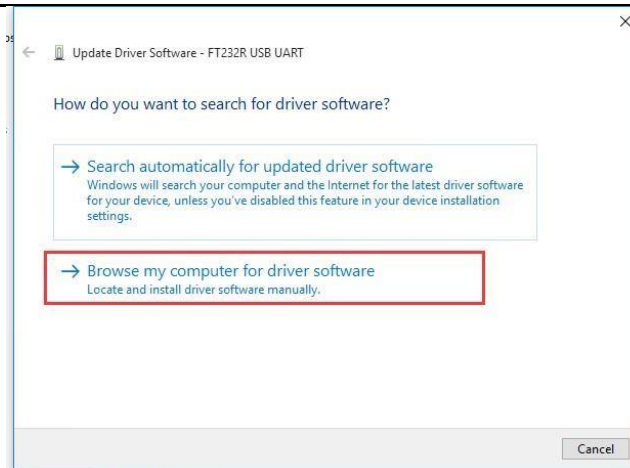
**Step2:** Use the USB communication cable of the adapter to connect the USB port of the computer and the port of the adapter. When the adapter driver is not installed for the first time, the "FT232R USB UART" identifier as shown in the following picture will be displayed in the device manager of the computer.

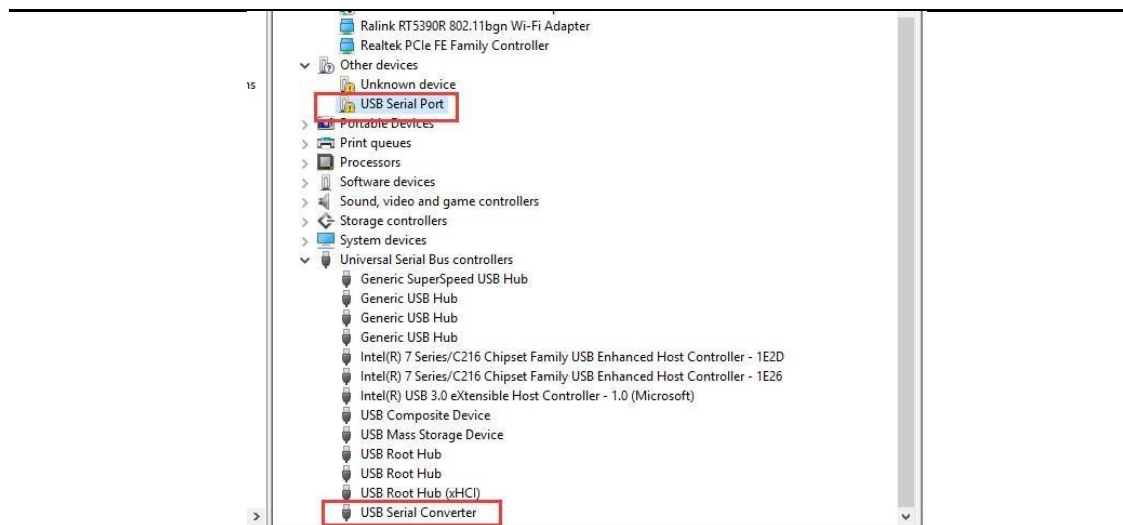


**Step3:** Insert the USB flash drive into the USB port of the computer, browse and find the driver folder in the installation USB flash drive according to your computer operating system;

名称	修改日期	类型	大小
amd64	2016-07-29 11:06	文件夹	
i386	2016-07-29 11:06	文件夹	
ftd2xx.h	2008-10-29 16:59	C/C++ Header	23 KB
ftdibus.cat	2009-11-03 13:33	安全目录	12 KB
ftdibus.inf	2016-05-28 10:27	安装信息	4 KB
ftdipoint.cat	2009-11-03 13:33	安全目录	11 KB
ftdipoint.inf	2016-05-28 10:27	安装信息	6 KB
LogoVerificationReport.pdf	2009-11-03 14:22	Adobe Acrobat ...	42 KB

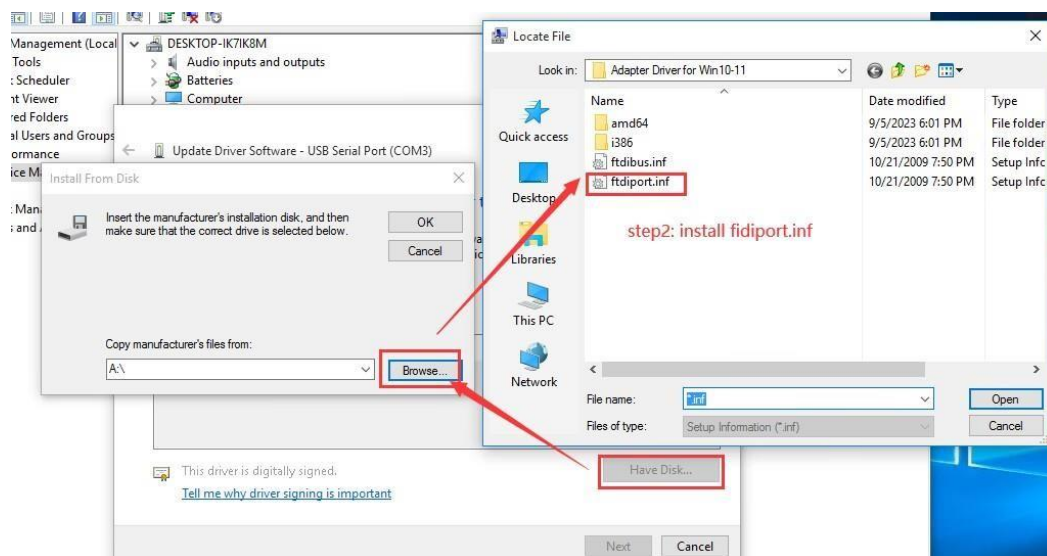
**Step4:** In the interface of device manager, right-click "FT232R USB UART" and select "Update Hardware driver" to find the driver in step3. First install "ftdibus.inf",





Close the dialog box after the prompt is successful, and the device Manager interface will refresh, as shown below!

**Step5:** Repeat step4 after successful installation, update the driver, install "ftdiport.inf", after successful setting the device manager to correctly identify the adapter model as shown in the following figure.



Additional note: The driver of the adapter contains two parts, the device manager interface corresponding to the "universal bus controller" and "port", the corresponding driver files of these two hardware parts are the "ftdibus.inf" and "ftdiport.inf" two files in the driver folder, So the driver of the adapter is divided into the above two parts when installing, and finally only the two parts are successfully installed, on behalf of

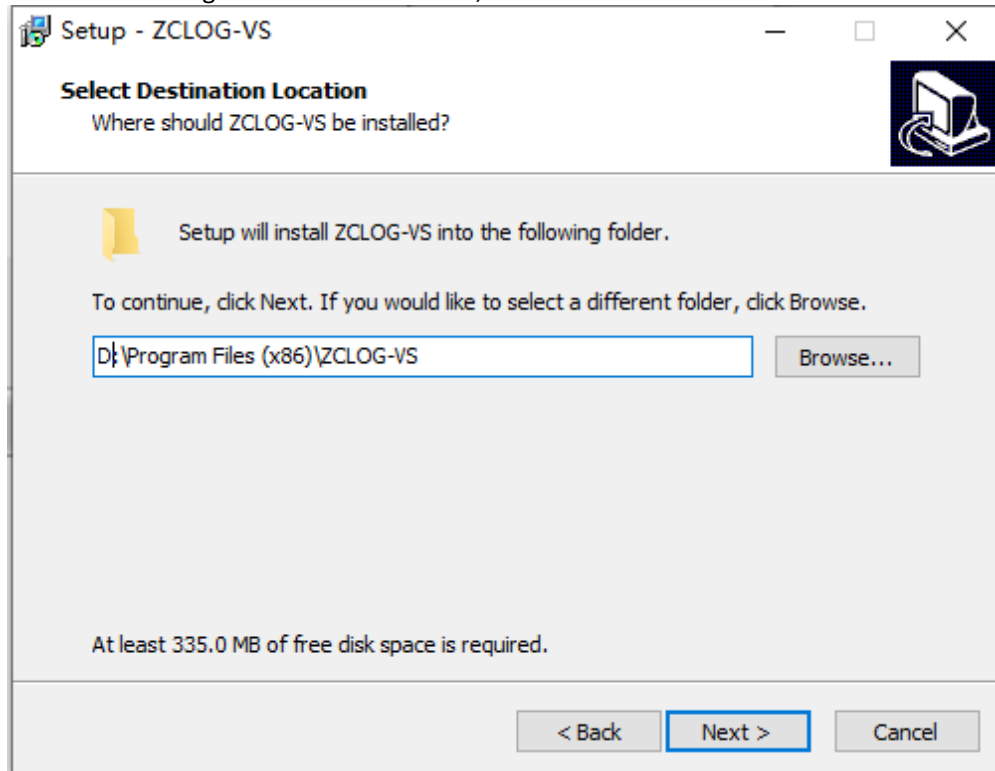


the adapter driver installation complete. Ordinary users in the first installation of the driver may encounter installation failure, you can contact us in time.

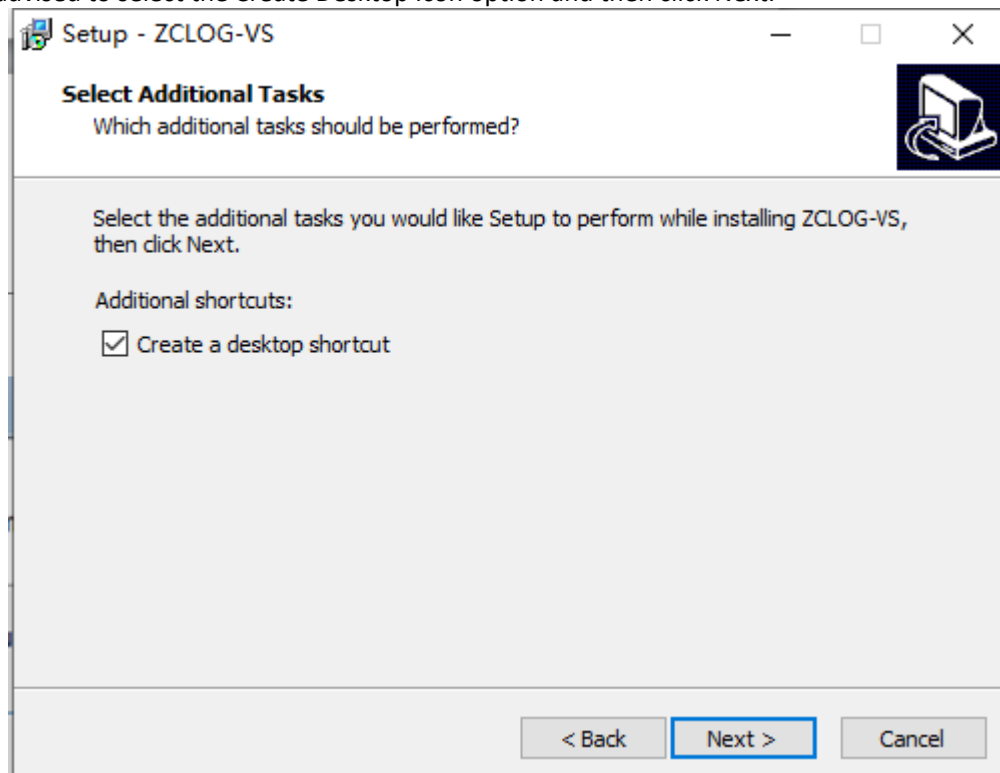
### 1.1.2 The 'ZCLOG VALIDATION' program is installed

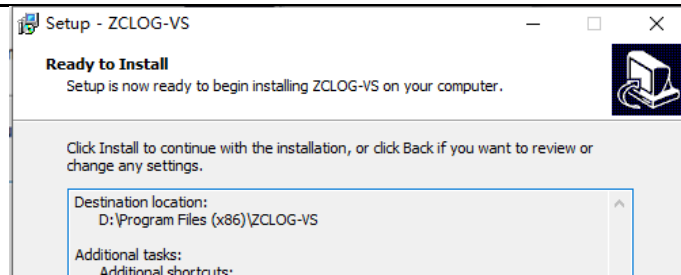
Find the "ZCLOG VALIDATION\_V2.2\_setup\_x64.exe" program, double-click it and complete the installation according to the following picture.

The file directory can be modified, or you can use the default, it is recommended to change to the D disk location, and then click 'Next'!



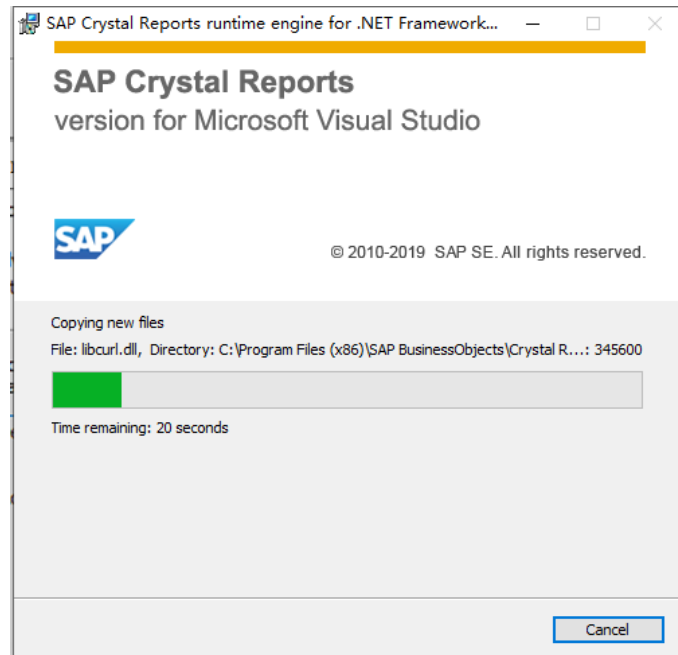
You are advised to select the Create Desktop Icon option and then click Next.





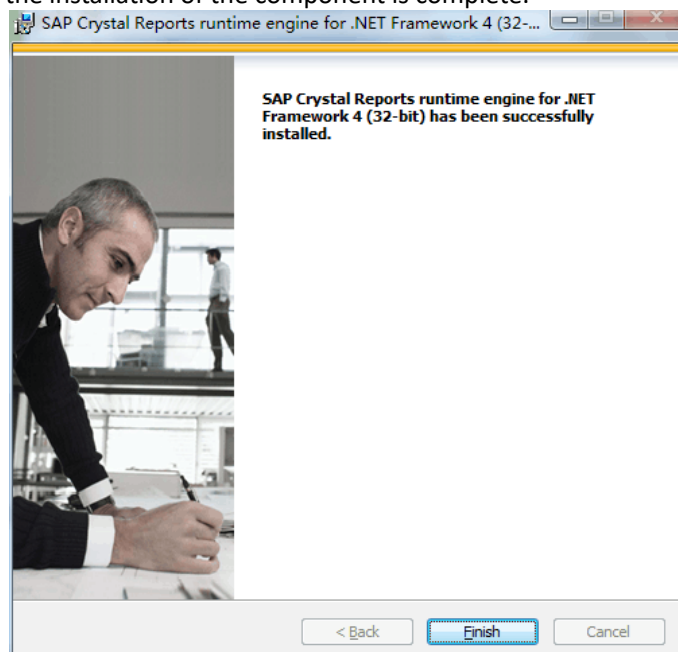
Select "Install" to install;

After the main program is installed, Crystal Report component required by this program will be installed immediately .



The next step will be the installation of the "Crystal Report" component, which is necessary for the survival report function. After selecting "Install", the interface is shown as the following figure, indicating that the component is being installed.

Then click "Finish" and the installation of the component is complete.

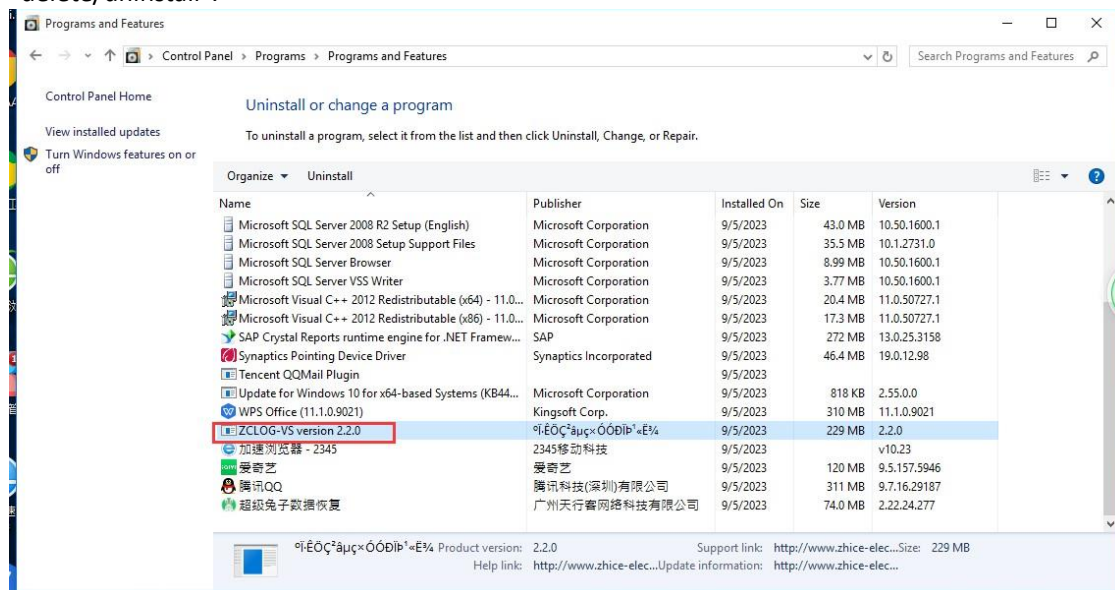




Click "Finish" after the dialog box below pops up, and the program installation of the software main body is completed.

## 1.2 Software installation

Computer - right - "control panel", "program", "program uninstall", find "ZCLOG - VS", select the right "delete/uninstall".



Note: This uninstall process does not uninstall the related components - Crystal Report that added during installation. If you need to uninstall the related components, you can uninstall the component separately.

Note: The loggers and models supported by this software are listed below :

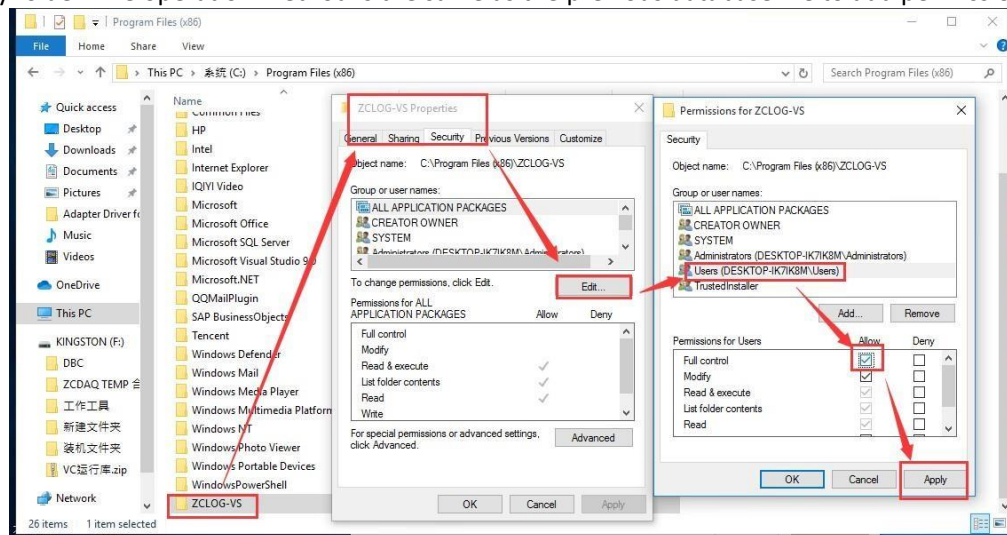
Temperature logger model: ZC02TS

Temperature and humidity logger model: ZC02THS

Temperature and pressure logger model: ZC02TPS

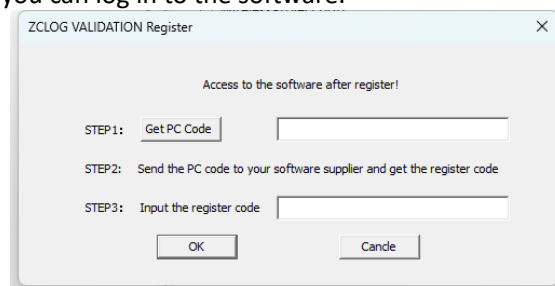
## Chapter 2 Software Run

Before using the software for the first time, you also need to set the permissions of the software installation directory, and add the full control rights of the "Users" account to the software installation directory folder. The operation method is the same as the previous database file to add permissions.

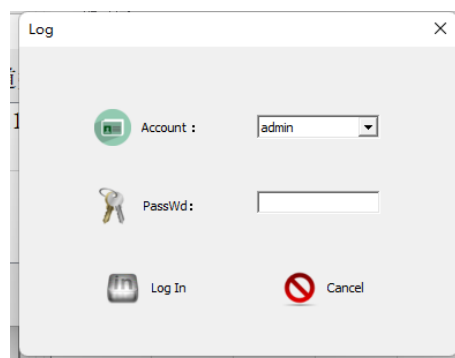


Once the setup is complete, double-click the desktop software icon to open the software. If 'Generate Desktop shortcut' is not checked during installation, you will need to find *ZCLOGVALIDATION* from the Start menu - All Programs.

Registration is required for initial use. As shown in the following figure, follow the prompts to register the software. After registration, you can log in to the software.



The initial user name of the software is admin and the password is 123456; In the initial state, the account will be automatically locked if the password is entered incorrectly for four times. Please update the user password and other parameters after login. The login interface of the software is shown in the following picture.



## Chapter 3 Function module introduction

### 3.1 System Settings

#### 3.1.1 Company properties

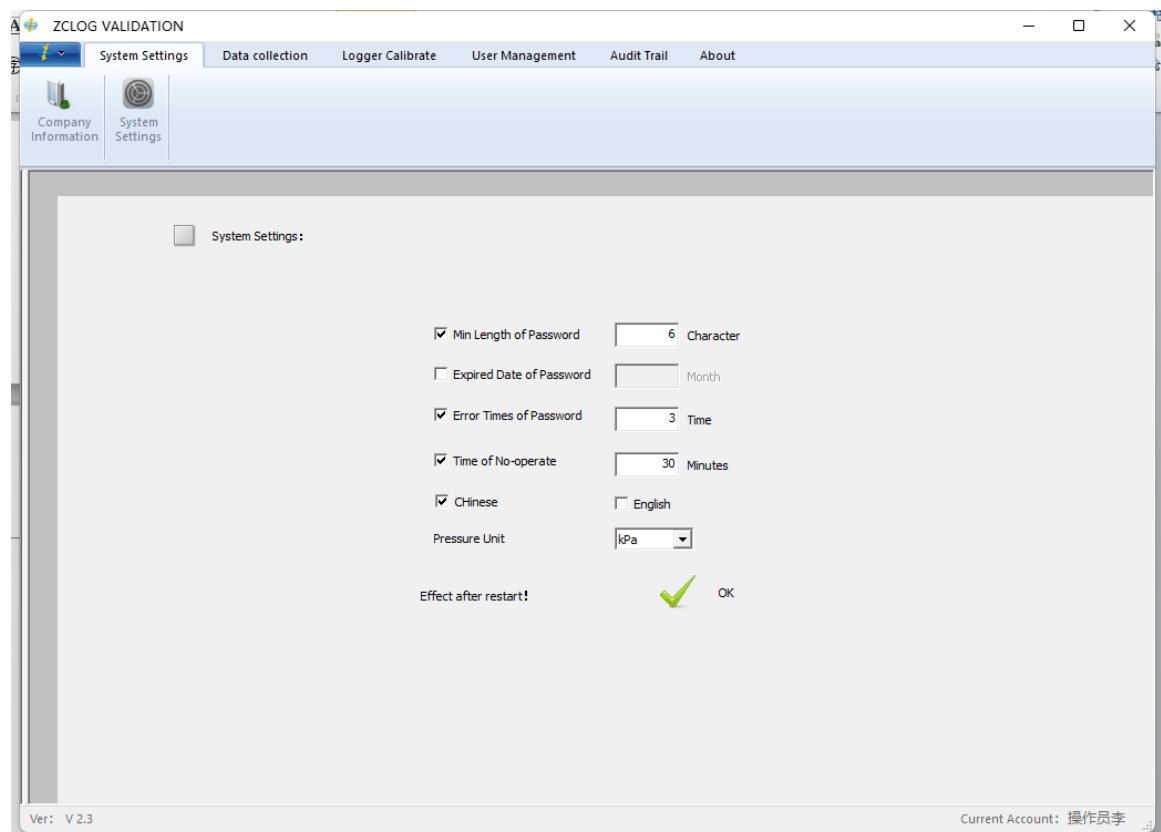
Enter "System Settings" and "Company Properties", enter relevant information in the edit box, and click "OK" button. The basic information will be saved to the created database file and displayed in the data report.

The company name is required and will be displayed in the later data report.

The screenshot displays the 'ZCLOG VALIDATION V2.1' application window. The 'System Set' menu is active, and the 'Company Info' sub-menu is selected. The 'Company Info' form is visible, featuring a 'Company Info' checkbox and several input fields. The 'Comp Name' field contains 'XXXTest', and the 'Comp Add' field contains 'XXX'. Other fields for 'Connect Tel', 'Legal Rep', 'Comp Fax', 'Comp Mail', 'Comp Web', and 'Comp Logo' are empty. A green checkmark and 'OK' button are located at the bottom right of the form. The status bar at the bottom indicates 'Ver: V 2.2' and 'Current Account: admin'.

Field	Value
Comp Name	XXXTest
Comp Add	XXX
Connect Tel	
Legal Rep	
Comp Fax	
Comp Mail	
Comp Web	
Comp Logo	

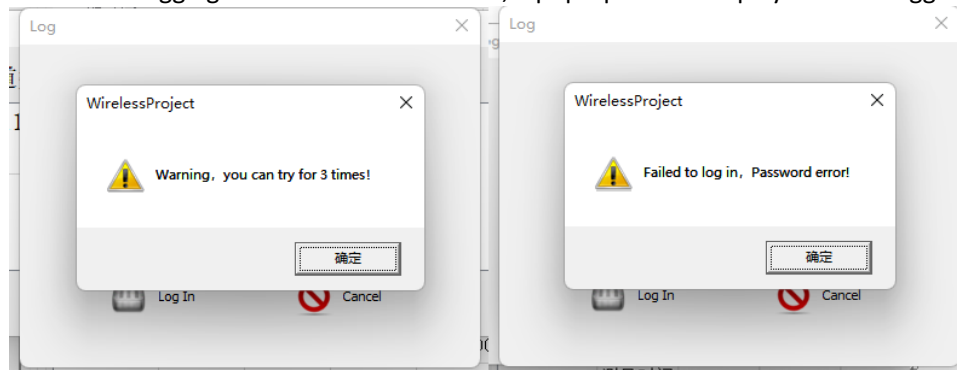
### 3.1.2 System Settings



According to relevant FDA regulations, the software must have relevant password protection measures to ensure the security and reliability of the software. Go to 'System Settings' User Security 'and set the user security information.

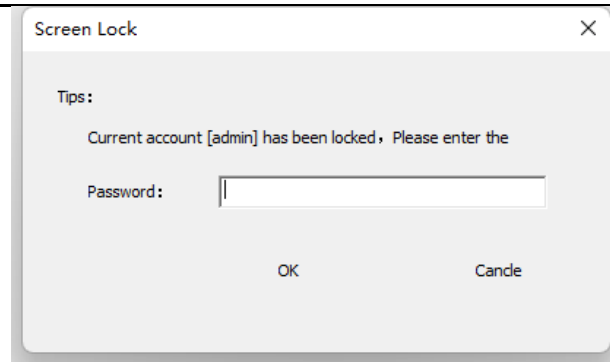
Minimum length of password: After being checked, when creating a new user, the password length of the new user will be added to the judgment;

Password expiration duration: After this parameter is selected, it will judge whether the user's password is updated in time when logging in to the software. If not, a pop-up will be displayed when logging in.

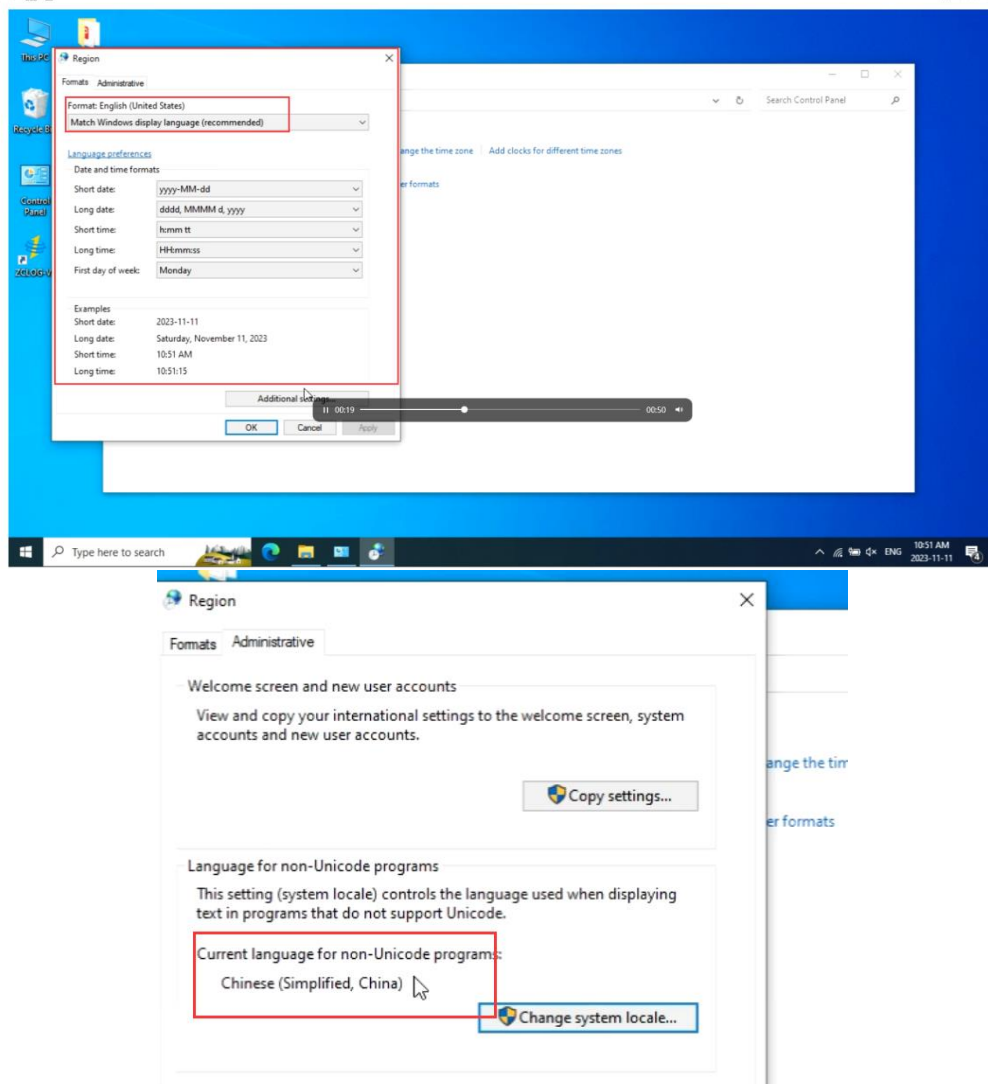


Incorrect password input times: When checked, the number of incorrect password input times will be increased when logging in. When the number of consecutive incorrect password input times reaches this set value, the account will be locked immediately. The initial admin account is the highest administrator permission and can unlock any other account. Once the admin account is locked, you can only contact our company personnel to remotely unlock it. So be sure to remember your admin account password.

No operation screen lock time ', the software will lock the software after no mouse or keyboard operation specified time, the user needs to re-enter the password to access. To prevent the user from leaving the software for a long time after others operate the software, resulting in data uncertainty. This setting takes effect after the next startup of the software. Click the [OK] button when finished. The relevant information will also be automatically saved to the created database file.



Language: The software supports switching between Chinese and English. If you are a domestic user, set the language and restart the software to take effect. If you are a foreign user, when using the English version, you also need to do the following computer system Settings, otherwise your software interface content will appear garbled characters. Make sure that in your computer - Control Panel - Clock and Zone - Zone, the language is "English(United States)" and the Unicode language is "Chinese(Simplified,China)".



Pressure Unit: bar\kPa , initialized as bar.

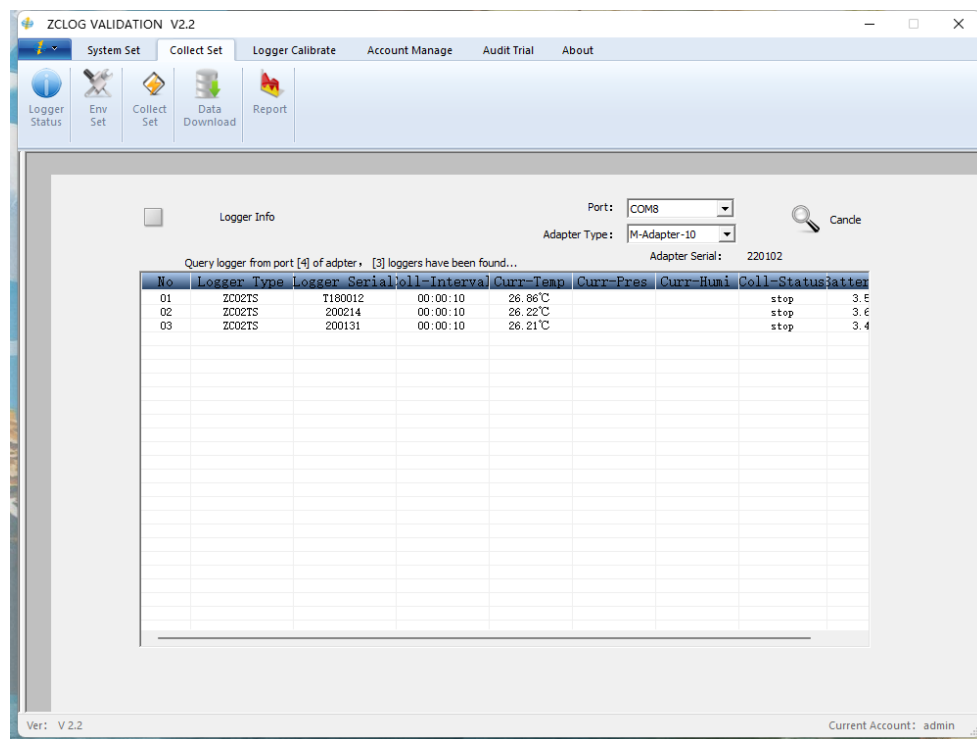
## 3.2 Data collection

### 3.2.1 Device Status

Before setting the probe, please configure the port and adapter type in this interface first, and then perform other Settings after the query is normal. To ensure that the probe status and communication are normal.

Serial port: The drop-down box will display the serial port recognized by the current computer, please check the device manager of the computer to determine the port number used by your adapter (port number <=16);

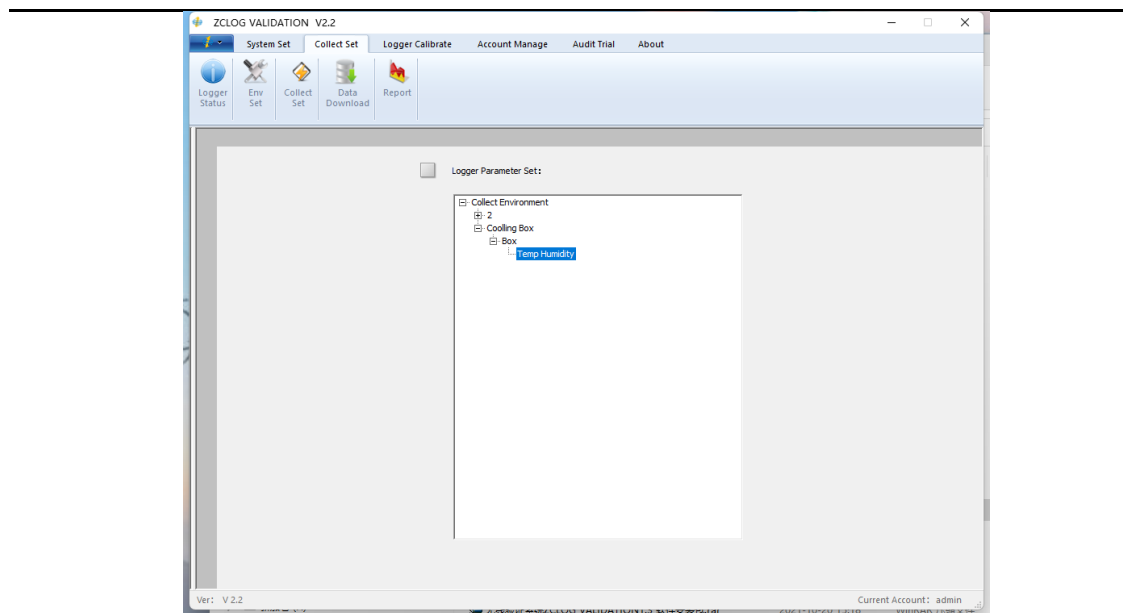
Adapter type: we have three types of adapters, single-channel adapter, multi-channel -8 adapter and multi-channel -10 adapter, single channel can be inserted a probe at the same time, multi-channel -8 can be inserted 8 probes at the same time, these two kinds of adapters are the corresponding adapters of ZC01 series loggers; Multiway-10 is the adapter corresponding to the ZC02 series of loggers, which can be plugged into 10 loggers at a time. Click the query button, the successful connection will display the information of the current logger, if the query fails, please check the logger connection. (Note: It is recommended to query each project before setting it!) Check whether the probe information is normal, such as the battery status if the battery power is lower than 2.7V, it will affect the probe at high temperature or low temperature data collection, please contact our company's after-sales personnel for battery replacement.



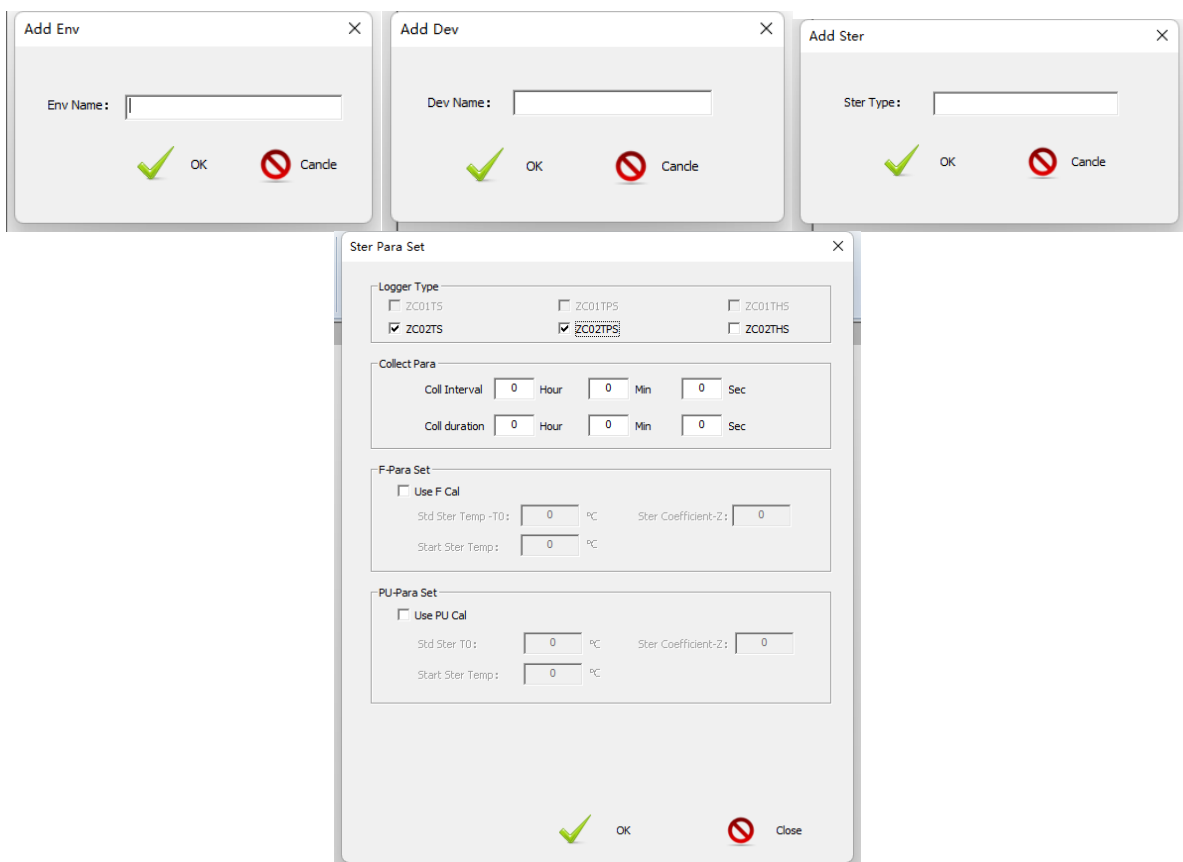
### 3.2.2 Environment under test

Enter "Data Collection" and "tested environment", you can view the existing environment and new environment, and the level of the tested environment: environment - equipment - sterilization type. After finishing, click [OK] button. The basic properties of the logger will be saved to the created database file. "Environment", "Equipment", "Sterilization type" can be added or removed by right-clicking.





"Sterilization Type" can be edited by right-clicking to set information such as the type of logger allowed to be used, collection interval and collection duration. "Allowed Logger Type" : you can select up to two loggers at the same time; 'Collection Interval' : Set the interval for logger to collect data; 'Collection duration' : set the total time for logger to collect data;



### 3.2.3 Collection Settings

**Note:** Before setting collection, it is necessary to check the communication and connection of the adapter and logger to prevent the interruption of the setting process due to abnormal communication.

Step 1: Sterilization environment Settings, select the environment information set in 3.2.2, you can also use the template to create an environment.

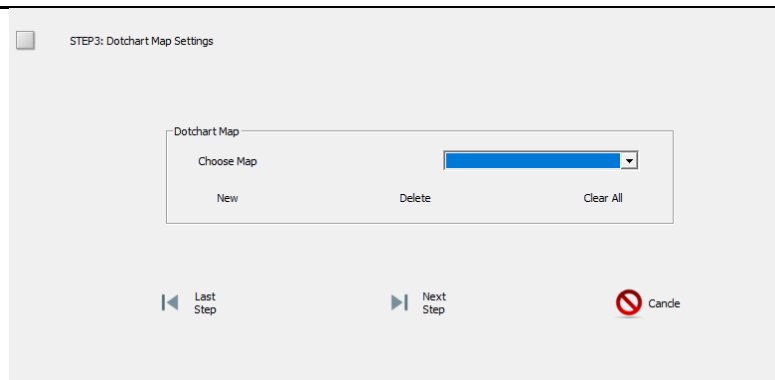
The screenshot shows the 'ZCLOG VALIDATION V2.2' application window. The 'Collect Set' tab is active. The main area is titled 'STEP1: Ster Info Set'. It contains several dropdown menus: 'From Template' (empty), 'Ster Env' (1), 'Ster Dev' (1), and 'Ster Type' (1). There is a 'Save as Template' checkbox and an empty text field. Below these is the 'Project Info' section with 'Project Name' (实验4) and 'Note' (empty). At the bottom are 'Next Step' and 'Cande' buttons. The status bar at the bottom shows 'Ver: V 2.2' and 'Current Account: admin'.

Step 2: Logger related parameter setting: set the number of loggers used in this project and the time to start collection. When "timed collection" is checked, the set time should exceed the current computer time by 5min, the logger will start collection in accordance with the set time after successful setting; If it is not checked, the data collection will start immediately after the setting is successful.

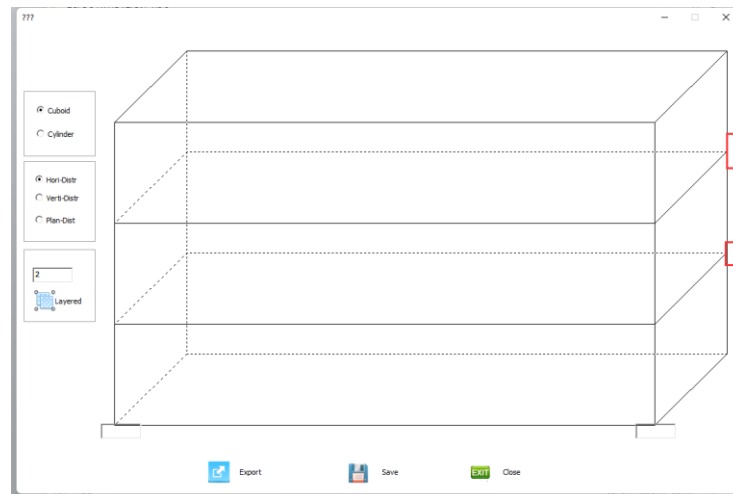
**Note: TPS and THS adapters cannot be used at the same time, if the software is checked, an error message will pop up.**

The screenshot shows the 'STEP2: Logger Collection Parameters Settings' window. It has three main sections: 'Logger Number' with input fields for ZC02TS (0), ZC02TPS (1), and ZC02THS (0); 'Collection Parameters' with 'Collect Interval' (0 Hour, 0 Min, 5 Sec) and 'Collect Duration' (2 Hour, 0 Min, 0 Sec); and 'Timing Collect' with a 'Timing' checkbox and a date/time field (2024-04-15 13:58:44). At the bottom are 'Last Step', 'Next Step', and 'Cande' buttons.

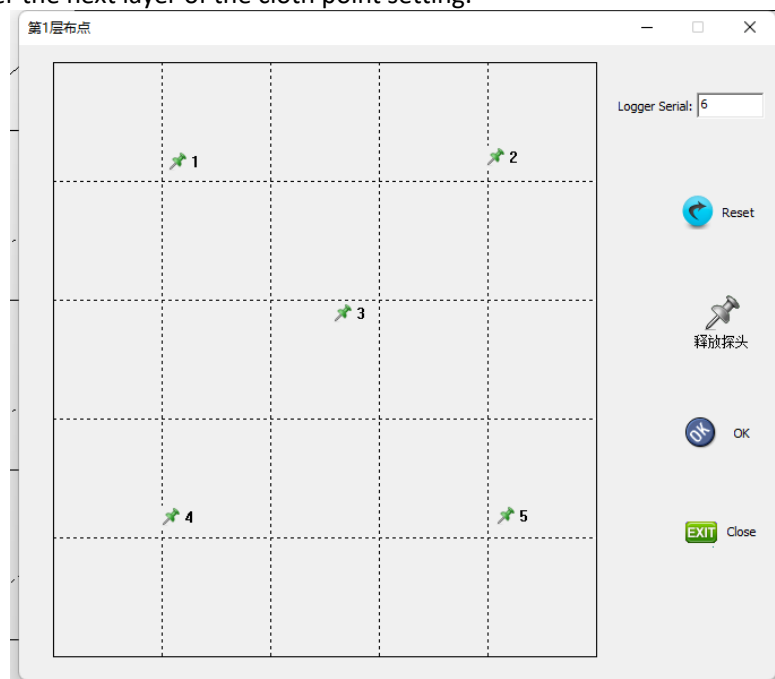
Step 3: Set the layout information



If it has been set before, you can select it by dropping it down from the drop-down list, if not, you can click the "New" button to set the layout. After creating a new layout, the following interface is displayed

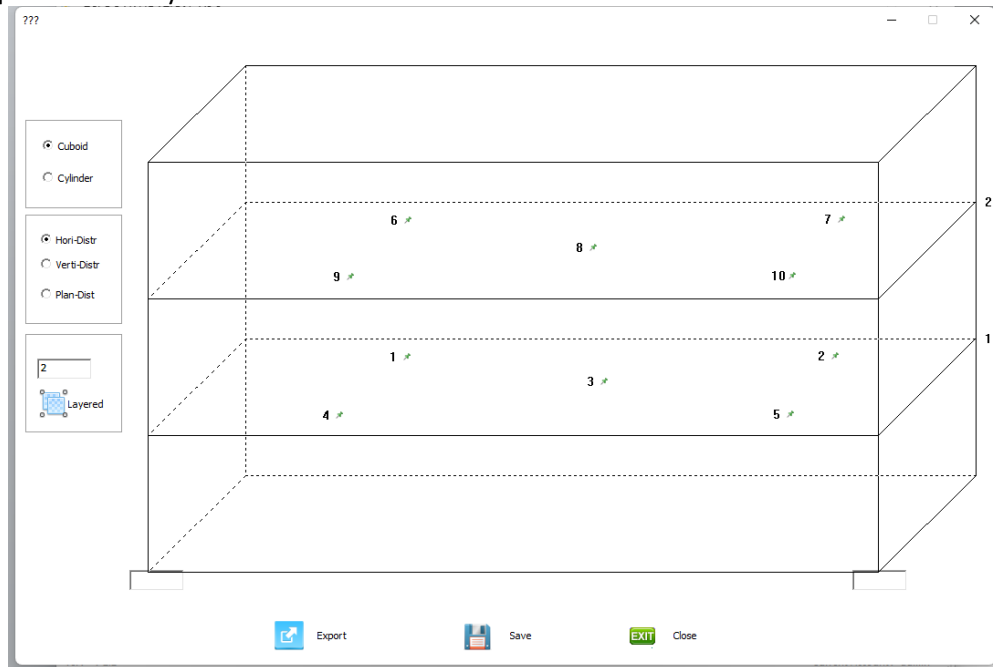


In the left part of the figure above, you can set the shape style, distribution mode and layering number of the device. After layering, click the layer number button on the right to enter the probe layout setting interface of the layer as shown in the following figure. In the flat layout setting interface of each layer, you can set the probe numbering information. After the layer is set, click OK to enter the next layer of the cloth point setting.



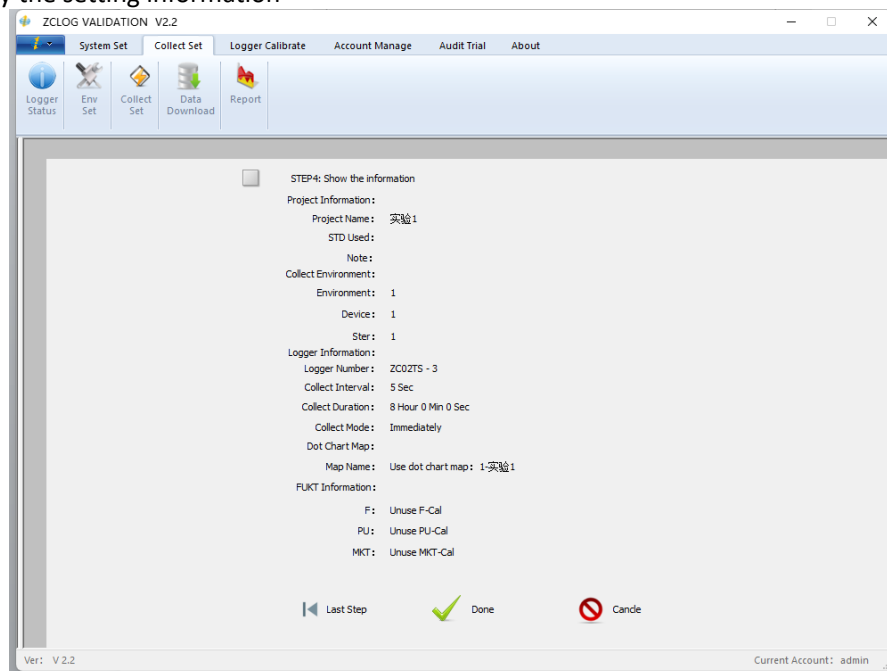
After all the Settings are set, as shown in the picture below, just click the Save button. If you need to use

other, you can export the layout. Note: If there is no response to click Save or export button here, it means that your software installation directory folder does not have permission to add, resulting in image caching failure. Add permissions to the software installation directory folder under the full control of the "Users" user to operate normally.

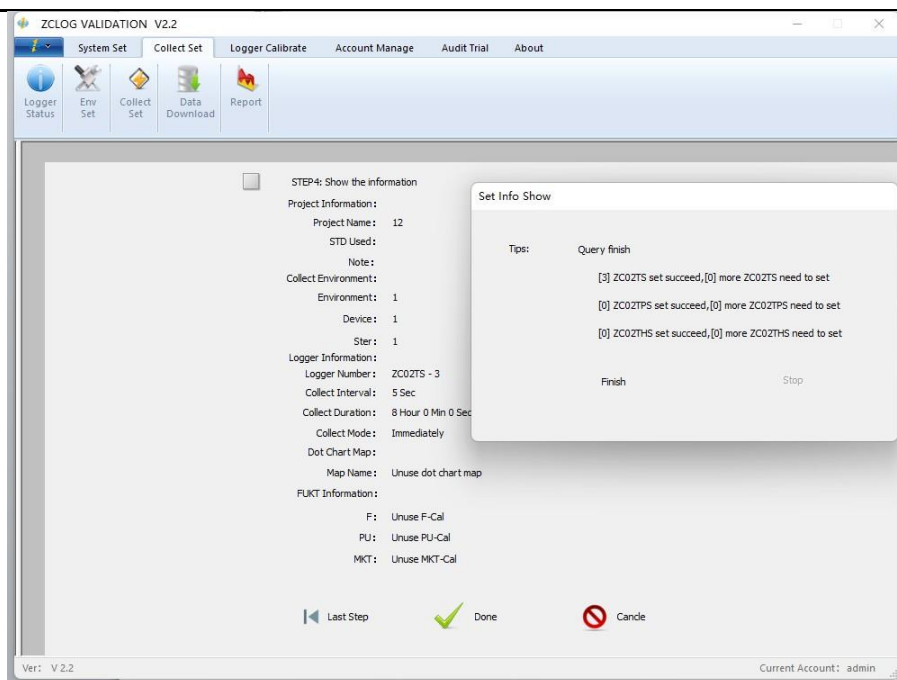


After the configuration is successfully saved, select the corresponding layout from the drop-down list in the following figure.

#### Step 4: Display the setting information



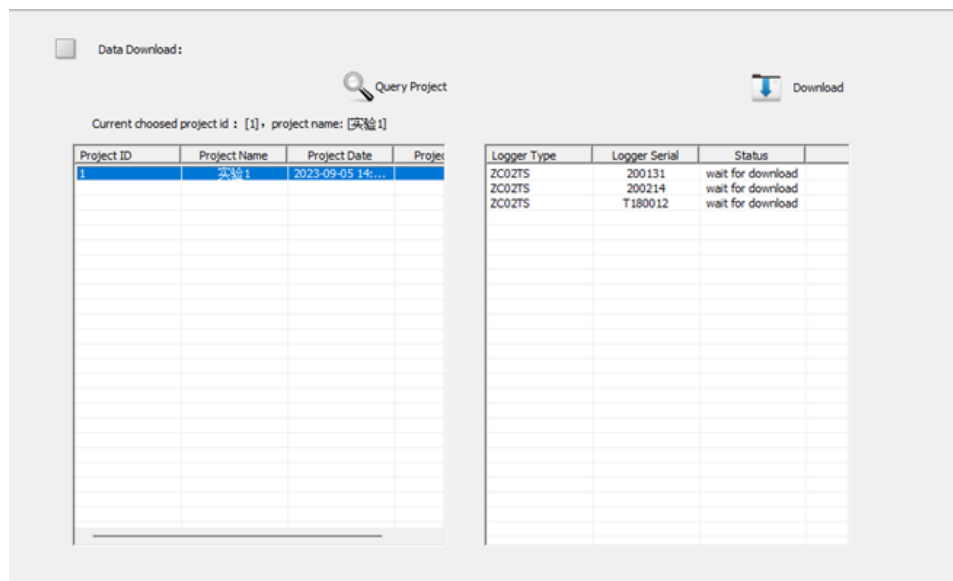
Click the "Finish" button, the following window will pop up, showing the setting- up progress information of the logger, after all the logger Settings are completed, click the "Finish" button



Note: If the prompt setting fails, check that the logger is connected correctly, then click Continue until the prompt is complete!

### 3.2.4 Data Download

After the successful setup of Step 3.2.3, the test data of the project will be displayed on the page to the left of the data download, indicating that this data remains inside the logger and has not been downloaded to the database by the software. Select the project in the left list box and click Download, you can save the data to the database for the subsequent report function.



☐ Data Download:

Query Project

Current choosed project id : [1], project name: [实验1]

Project ID	Project Name	Project Date	Projec
1	实验1	2023-09-05 14:...	

process data...

Logger Type	Logger Serial	Status
ZC02T5	200131	download...
ZC02T5	200214	download finish
ZC02T5	T180012	download finish

### 3.2.5 Data Analysis

Query box in the upper left corner, support keyword query, if not input is to query all the projects in the database. Right-click on the left side after selecting the project, you can view the data of a single or multiple loggers under the same project at a time, do not support to view more than two projects at the same time.



Report module related function introduction:

Time Axis - Show Range: 2023-09-05 14:11:13 - 2023-09-05 14:19:08 Set

Vertical Left Axis Range: 25.61 °C - 26.97 °C Set

Vertical Right Axis Range: bar - bar Set

Time Axis-Label: 2023-09-05 14:11:13 Add Note Delete

Vertical Axis Left Label: °C Add Note Delete

Vertical Axis Right Label: bar Add Note Delete

Judge Result According to :

Temp-Fluc <= Temp-Homo <= Humi-Fluct <= Humi-Homo <= F >= PU >= MHT

Report Content:

☒ Data Statistic ☐ Temp-Fluctuation ☐ Temp-Homogeneity

☒ Data Analysis ☐ Humi-Fluctuation ☐ Humi-Homogeneity

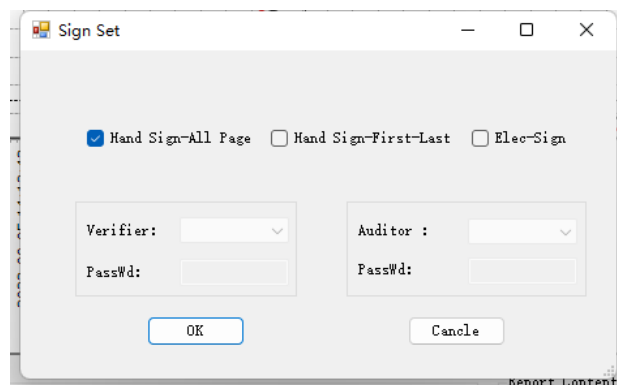
☐ Hori-Analysis ☐ F-Analysis ☐ PU-Analysis ☐ MHT-Analysis

Data Analysis Time Range:

Analysis Time Range: Start Time - End Time

Sign Set Export

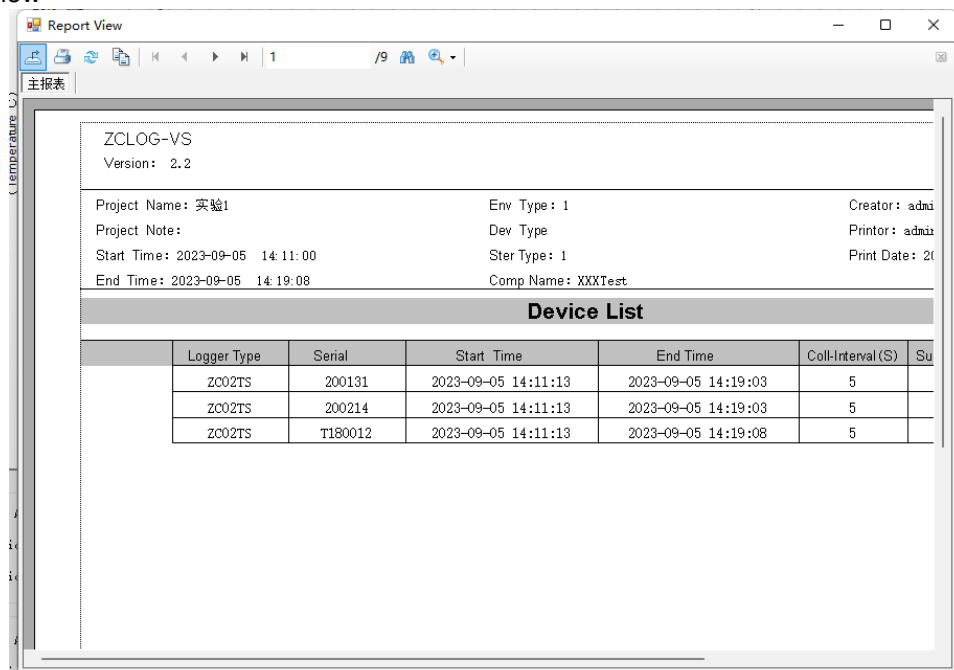
1. Display range setting area: this function box can set the horizontal and vertical coordinates of the icon, if there is a TPS or THS logger, the left side shows the vertical coordinates of temperature, the right side will show the corresponding pressure or humidity coordinates; TPS and THS logger will not exist in the same project at the same time, when the THS logger is used, the value axis bar setting will be changed to %RH setting.
2. Mark line setting: The time axis mark line allows 6 time marks to be added. Mark line can be used to set the time range in area 4 after adding remarks; Temperature and pressure or humidity are allowed to add a maximum of two marks.
3. Report select function area: After the corresponding function is selected, the generated report will display the corresponding analysis data.
4. Report analysis time setting: the default is the start collection time and the end collection time, you can select other time through the drop-down box, but only after adding remarks in the time label line of function area 2, the drop-down box here will display the corresponding remarks information.
5. Verification basis: Input the corresponding parameters to determine whether the data is qualified.
6. Signature setting: The following dialog box will pop up after clicking, if not set, the default is manual signature - full signature. When "Manual signature - First and last page signature" is checked, the report will only display the signature line on the home page and the last page. When "Electronic Signature" is selected, you need to add signature information at the bottom. Select the signature information of the corresponding account from the drop-down box. The signature information is the name added by the user when creating the user. Electronic signature requires password authorization, select which signature, you need to enter the password of the corresponding user. Only when the password is matched, can the signature information be used. After the password is successfully set, the signature information and time information are automatically filled in the signature line at the bottom of the report.



The "Sign Set" dialog box contains the following elements:

- Three radio buttons: "Hand Sign-All Page" (selected), "Hand Sign-First-Last", and "Elec-Sign".
- Two groups of fields:
  - Left group: "Verifier:" (dropdown), "PassWd:" (text input).
  - Right group: "Auditor:" (dropdown), "PassWd:" (text input).
- "OK" and "Cancel" buttons at the bottom.

Click the "Generate report" button, the preview interface of the report will pop up, as shown in the picture below



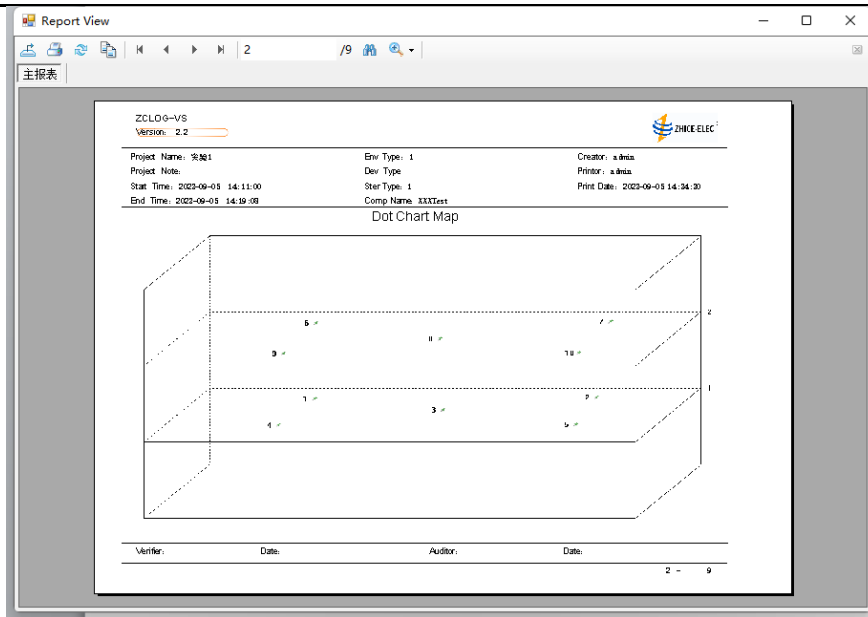
The "Report View" window displays the following information:

**ZCLOG-VS**  
Version: 2.2

Project Name: 实验1	Env Type: 1	Creator: admin
Project Note:	Dev Type:	Printer: admin
Start Time: 2023-09-05 14:11:00	Ster Type: 1	Print Date: 2023-09-05 14:18:33
End Time: 2023-09-05 14:19:08	Comp Name: XXXTest	

**Device List**

Logger Type	Serial	Start Time	End Time	Coll-Interval(S)	Su
ZC02TS	200131	2023-09-05 14:11:13	2023-09-05 14:19:03	5	
ZC02TS	200214	2023-09-05 14:11:13	2023-09-05 14:19:03	5	
ZC02TS	TI80012	2023-09-05 14:11:13	2023-09-05 14:19:08	5	



Report View

主报表

ZCLOG-VS  
Version: 2.2

Project Name: 实验1  
Project Note:  
Stat Time: 2022-09-05 14:11:00  
End Time: 2022-09-05 14:19:09

Env Type: 1  
Dev Type:  
Ster Type: 1  
Comp Name: XXXTest

Creator: a.bina  
Printer: a.bina  
Print Date: 2022-09-05 14:34:30

Data Sheet

Parameter:

Stat Time: 2022-09-05 14:11:12  
End Time: 2022-09-05 14:19:09  
保存数据: SS

Time	200110-1	200214-1	1180010-1
2022-09-05 14:11:12	23.72	23.77	26.40
2022-09-05 14:11:13	23.71	23.75	26.44
2022-09-05 14:11:14	23.70	23.72	26.44
2022-09-05 14:11:15	23.66	23.72	26.45
2022-09-05 14:11:16	23.66	23.71	26.45
2022-09-05 14:11:17	23.66	23.69	26.43
2022-09-05 14:11:18	23.67	23.70	26.44
2022-09-05 14:11:19	23.68	23.70	26.45
2022-09-05 14:11:20	23.68	23.70	26.45
2022-09-05 14:11:21	23.64	23.69	26.43
2022-09-05 14:11:22	23.63	23.69	26.43
2022-09-05 14:11:23	23.62	23.69	26.43
2022-09-05 14:11:24	23.61	23.69	26.43
2022-09-05 14:11:25	23.61	23.69	26.43
2022-09-05 14:11:26	23.62	23.69	26.49
2022-09-05 14:11:27	23.63	23.69	26.51
2022-09-05 14:11:28	23.69	23.71	26.53
2022-09-05 14:11:29	23.72	23.74	26.54
2022-09-05 14:11:30	23.83	23.77	26.53
2022-09-05 14:11:31	23.85	23.80	26.59
2022-09-05 14:11:32	23.87	23.90	26.59
2022-09-05 14:11:33	23.90	23.92	26.59
2022-09-05 14:11:34	23.92	23.94	26.62
2022-09-05 14:11:35	23.95	23.97	26.62
2022-09-05 14:11:36	26.00	26.01	26.64
2022-09-05 14:11:37	26.04	26.04	26.65
2022-09-05 14:11:38	26.07	26.07	26.66
2022-09-05 14:11:39	26.12	26.10	26.67

Verifier: Date: Auditor: Date:

5 - 9

Report View

主报表

ZCLOG-VS  
Version: 2.2

Project Name: 实验1  
Project Note:  
Stat Time: 2022-09-05 14:11:00  
End Time: 2022-09-05 14:19:09

Env Type: 1  
Dev Type:  
Ster Type: 1  
Comp Name: XXXTest

Creator: a.bina  
Printer: a.bina  
Print Date: 2022-09-05 14:34:30

Data Sheet

Parameter:

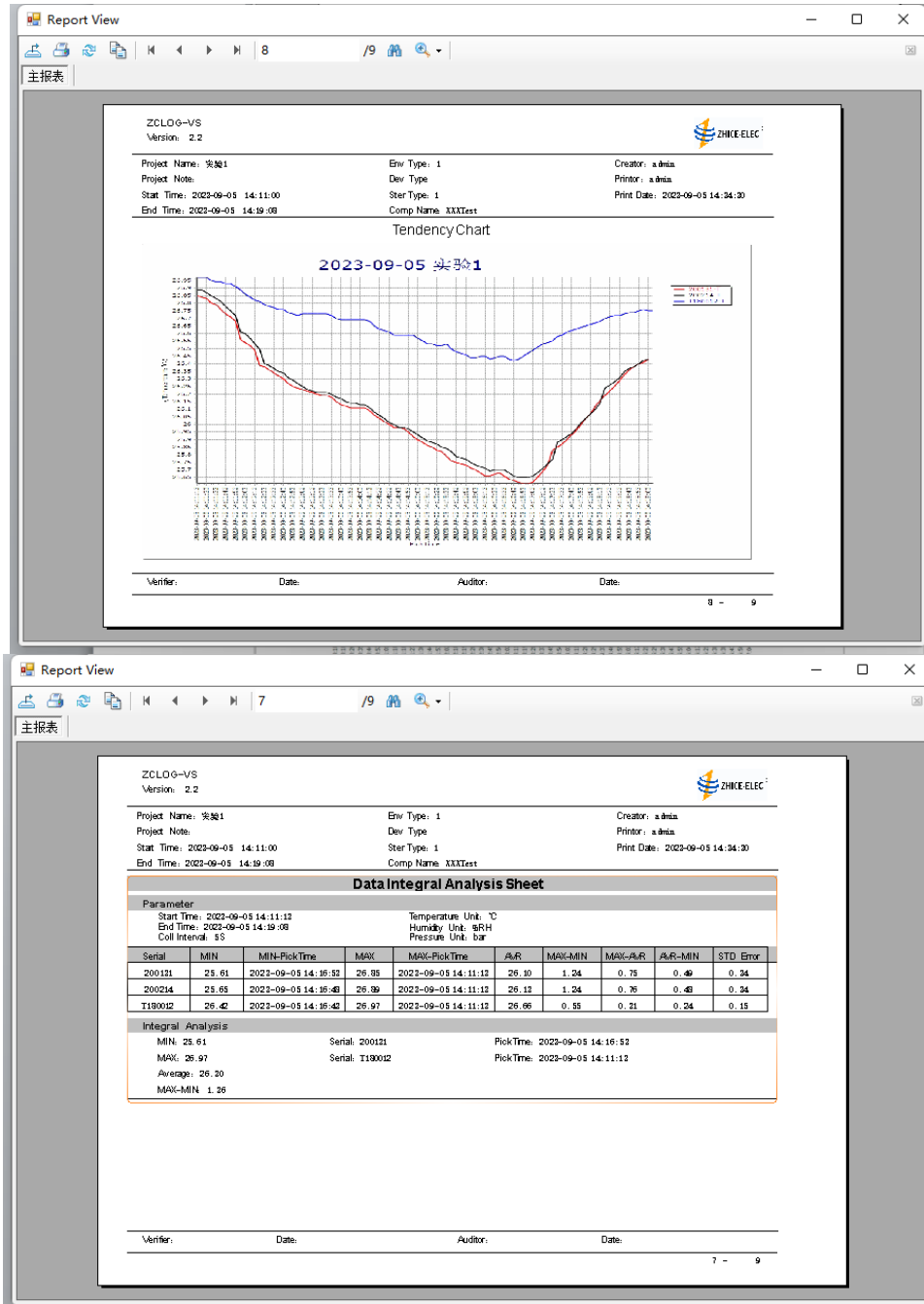
Stat Time: 2022-09-05 14:11:12  
End Time: 2022-09-05 14:19:09  
保存数据: SS

Time	200110-1	200214-1	1180010-1
2022-09-05 14:11:12	26.55	26.56	26.97
2022-09-05 14:11:13	26.54	26.59	26.97
2022-09-05 14:11:14	26.52	26.57	26.97
2022-09-05 14:11:15	26.50	26.55	26.95
2022-09-05 14:11:16	26.49	26.52	26.94
2022-09-05 14:11:17	26.46	26.51	26.94
2022-09-05 14:11:18	26.42	26.49	26.92
2022-09-05 14:11:19	26.41	26.48	26.92
2022-09-05 14:11:20	26.40	26.47	26.91
2022-09-05 14:11:21	26.39	26.46	26.90
2022-09-05 14:11:22	26.38	26.45	26.89
2022-09-05 14:11:23	26.36	26.43	26.87
2022-09-05 14:11:24	26.34	26.41	26.85
2022-09-05 14:11:25	26.32	26.39	26.83
2022-09-05 14:11:26	26.30	26.37	26.81
2022-09-05 14:11:27	26.28	26.35	26.79
2022-09-05 14:11:28	26.26	26.33	26.77
2022-09-05 14:11:29	26.24	26.31	26.75
2022-09-05 14:11:30	26.22	26.29	26.73
2022-09-05 14:11:31	26.20	26.27	26.71
2022-09-05 14:11:32	26.18	26.25	26.69
2022-09-05 14:11:33	26.16	26.23	26.67
2022-09-05 14:11:34	26.14	26.21	26.65
2022-09-05 14:11:35	26.12	26.19	26.63
2022-09-05 14:11:36	26.10	26.17	26.61
2022-09-05 14:11:37	26.08	26.15	26.59
2022-09-05 14:11:38	26.06	26.13	26.57
2022-09-05 14:11:39	26.04	26.11	26.55

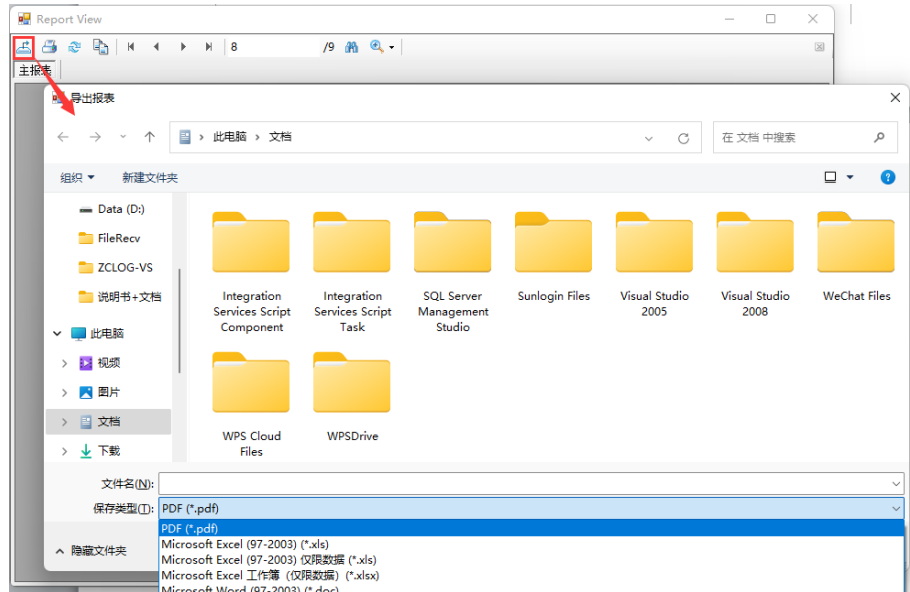
Verifier: Date: Auditor: Date:

2 - 9

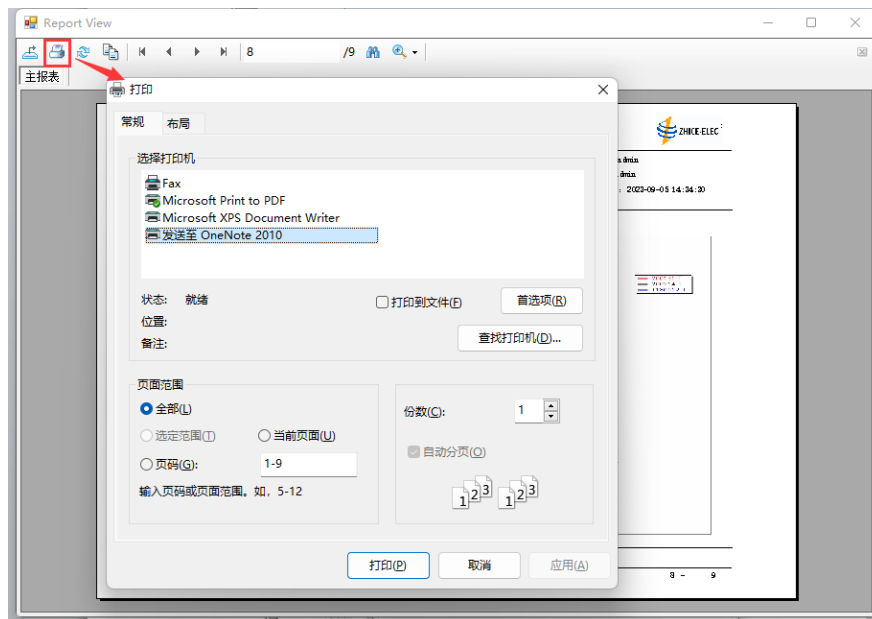




The report header and the report tail will be displayed on each page. The data in the middle is displayed according to the projects selected in Function Area 3 above. There are export, print and other buttons in the toolbar above the preview window. The export button can export the report to PDF, word, excel three formats; Print button



can select the printer for document printing.



---

### 3.3 Logger Calibration

Calibration process introduction: The calibration of wireless logger is mainly through the acquisition of the reference value of the set temperature point and the actual acquisition value, through the relevant formula calculation, the coefficient parameters are send into the logger chip. The actual acquisition value is downloaded after the acquisition project of setting the logger, and the reference value is read by the reference device. This software provides the data calibration of ZC02 series logger, including temperature, humidity, pressure three kind parameters calibration. The temperature calibration supports manual and automatic two modes. Humidity and pressure can only be used in manual mode. In temperature calibration automatic mode, the reference device support: 1621A-BLE, ZCTB-R, ZC-713A. Thermal field device support ZCTB series oil tank.

#### **Calibration note:**

- (1) 1621A device through Bluetooth low power to achieve communication with the software connection, this function requires the user computer must be Win10 operating system, and the computer side has a Bluetooth adapter, and in the computer equipment management has been added in advance through Bluetooth 1621A device. Bluetooth communication is unstable and easy to interrupt during a long calibration period, therefore, we recommend using 713A or ZCTB-R as a reference device;
- (2) The oil tank temperature field equipment needs to check that the internal circulation program of the oil tank is disconnected before connecting the software for communication, and the oil tank equipment must ensure that the display screen is in the outermost layer and cannot enter the setting interface, otherwise it cannot communicate.
- (3) The software generally reads a set of reference values 2min before the end of the stability of each calibration temperature point, and records the time point, so in order to ensure that the logger is fully stable, the stability time is recommended to be set above 10min.
- (4) When using the ZCTB-R reference logger as the temperature reference, ensure that the reference channel of the oil tank is correctly connected to the reference logger, and ensure that the parameters of the reference logger are correctly entered.
- (5) When using 1621A as the temperature reference, the reference logger parameters will generally be set at the factory, if you need to modify the parameters of the reference logger, please contact our technical personnel for technical guidance.

The following takes the automatic calibration process of temperature calibration as an example (713A+ZCTB oil tank) :

Step1: Set the logger collect project. Put the logger into the Thermal field equipment (such as ZCTB-20DL);

Step2: Set the calibration project information;

Step3: Start the automatic calibration process: 713A and ZCTB oil tank connects the software via USB communication cable to read the temperature in real time. After the temperature of

the calibration point is stabilized, a reading of 713A is obtained for a period of time as the reference value of the current calibration point, and then the oil tank is controlled to set the temperature of the next calibration point. And so on, after all the calibration points run, the software will automatically record the corresponding time and reference value of each calibration point.

Step4: The end of the automatic calibration process -- data download interface, download wireless logger data;

Step5: Entry the calibration interface -- obtain the collected value interface -- select the collection project -- select the calibrated logger serial number, and the software automatically obtains the collected value at the corresponding reference value moment;

Step6: "Start Calibration" -- After the calibration is successful, you can entry the certificate interface to view the calibration information and generate the calibration certificate.

Attention: If after the calibration of the logger, it is found that the temperature of the logger is uncorrected during the verification, and the deviation is still more, the logger can be "cleared calibration" on this interface, and the correction parameters on the bottom of the logger can be cleared for secondary calibration.

### 3.3.1 Calibration Project Settings

Creation date	Project name	Calibration mode	Calibration points	Calibration type

The calibration project setting interface is shown in the above figure. After entering the project information, click OK to pop up the following window and add the calibration point value in the sub-window.

Project Name

Temp Calibration

Start

20

Calibration Mode

Automatic

End

30

Calibration Type

ZC02-temperature

Calibration Points No

5

OK

Clear All

Creation date

30

+

-

Project name	Set value	Unit
Temp Calibration	20	°C
Temp Calibration	22	°C
Temp Calibration	24	°C
Temp Calibration	26	°C
Temp Calibration	30	°C

OK

Cande

Calibration Project Settings

Project Name

Temp Calibration

Start

20

Calibration Mode

Automatic

End

30

Calibration Type

ZC02-temperature

Calibration Points No

5

OK

Cande

Delete

Clear All

Creation date	Project name	Calibration mode	Calibration points	Calibration type	Lower lim
2024-06-15 09:30:46	Temp Calibration	Automatic	5	ZC02-temperat...	20.0

Once the settings are complete, the calibration project information is displayed in the list above. The user can select an project from the list to delete, or clear all the project information.

Calibration mode: Manual/automatic

(1) Automatic: 713A, 1621A/ZCTB-R reference device and ZCTB oil tank thermal field equipment are used in the process of calibration of logger. The common combination type is 1621+ second-class reference platinum resistance +ZCTB ; or ZCTB-R+ second-class reference platinum resistance +ZCTB tank temperature field; or 713A+ second-class reference platinum resistance +ZCTB tank temperature field. The calibration process in this combination will be introduced in

---

the following article. Parameters such as the reference value and the actual value required for calibration are automatically obtained by the software.

(2) Manual: In the case of limited conditions of reference device, manual calibration can be used. At this mode, the software does not need to control communication with the acquisition device, and the reference values of each calibration point need to be manually entered into the software interface. In addition, the pressure and humidity calibration of the logger also requires manual calibration. In the manual case of temperature, the thermal field device also supports automatic control or manual control. When the reference is manual and the temperature field is automatically controlled, it is equivalent to a "half-automatic" situation.

Calibration type selection: Currently only the ZC02 series of logger parameter calibration is supported!

(1) ZC02- Temperature: Temperature calibration, as the main calibration function of the logger, is used most frequently. The ZC02 series of logger need to be calibrated for the corresponding indicators before leaving the factory, and will be calibrated regularly according to the product performance to ensure the data reliability of the logger. The current temperature calibration supports the calibration work of [4,20] temperature points.

(2) ZC02- Pressure: For the use of ZC02TPS type logger, the manual calibration mode is adopted. During the calibration process, the reference reading of the pressure calibrator is manually input, and then the pressure calibration function is completed after calculation according to the actual value of the logger itself. Pressure calibration and temperature calibration are similar in that the least square linear fitting algorithm is used for parameter calculation, and the number of all setting points is [4,20].

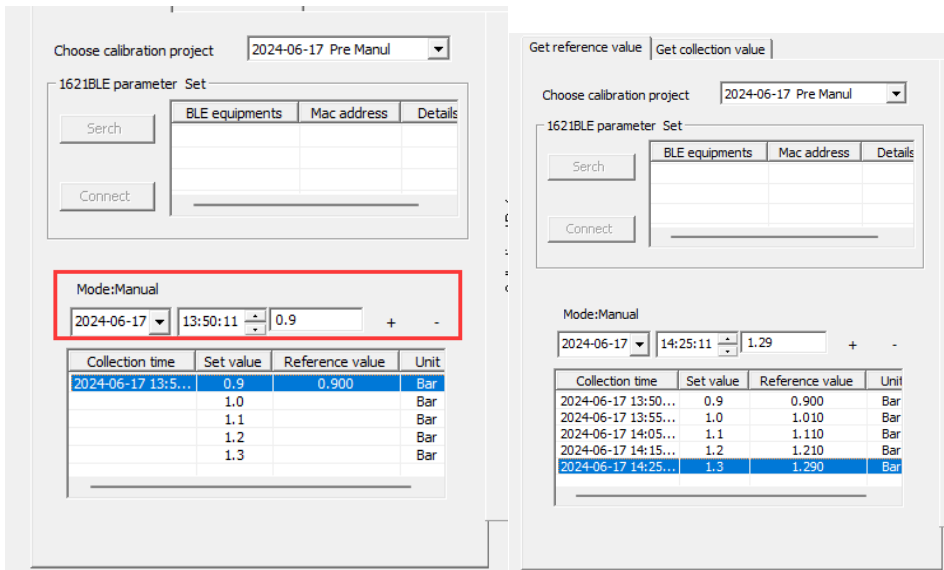
(3) ZC02- Humidity: The humidity calibration adopts manual mode, and the user manually enters the reference value and the collected value. Since the humidity correction adopts  $kX+B$  mode, the number of humidity calibration points is fixed at 2 points.

3.3.2    Logger Calibration

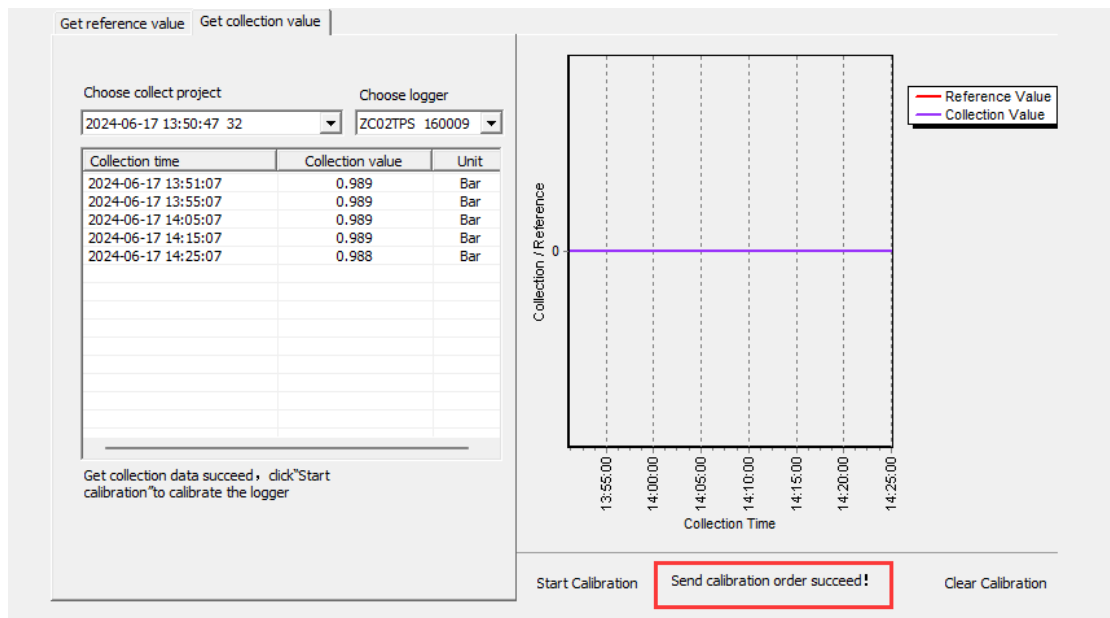
This module mainly realizes three functions: obtaining reference value, obtaining actual acquisition value, and logger calibration.

Obtain reference value: Enter the logger calibration interface, and first perform "Obtain reference value". Select a calibration project from the drop-down box, and the software will display the corresponding device setting interface according to the type of the calibration project, as shown in the following figure.

Manual mode: If the selected calibration project is manual mode, the following dialog box will pop up, requiring the user to input basic equipment information and configure the communication parameters of the temperature field equipment. If the temperature field device is not enabled, the software does not need to communicate with any device. It only needs to view and mark the reading value of the temperature field device after it has stabilized for a certain period of time, and input the corresponding time point (in manual mode, this time can be filled at will, and it does not need to be accurate) and temperature value in the dialog box interface. Click to select the line corresponding to the reference value. Then click the "+" button to complete the addition of the reference value; If the input is incorrect, click to select the corresponding reference value line and press the "-" button to delete it.



If the selected calibration project has previously been interrupted for special reasons, and the logger is still in the setting collection for the project, you can choose to continue the calibration. Continuing the calibration will set the temperature field device from a subsequent temperature point that has not been calibrated. If you choose to restart, the previous reference value of the calibration project will be overwritten.



Automatic mode: After selecting the automatic calibration project, the "Automatic calibration Settings" dialog box will pop up, and all parameters must be entered. In automatic mode, our reference device supports the 1621A handheld thermometer, the ZCTB-R external reference, the 713A reference temperature module, and the 1622A (not supported yet). If the reference is selected 1621A, because the 1621A device through Bluetooth low power to achieve communication with the software connection, this function requires the user computer must be Win10 operating system, and the computer side has a Bluetooth adapter, and in the computer equipment management has been added in advance through Bluetooth 1621A device; After the Settings are completed, in the "1621BLE- Parameter Settings" section of the following interface, click the "Find device" button first, after finding a valid 1621 device, it will be displayed in the list on the right, then click the 1621 device line in the list, and then click the "Establish connection" button, the software will connect to the 1621A device through Bluetooth. The 1621A readout is read in real time, and then the readout refresh is displayed in the "Reference value"



edit box of this interface.

Auto Calibration Parameter Settings

ZC02-Reference Parameter

Device Type: 1621A

Device Model: 713A

Reference Type: 5609

Reference Model: PRT-ITS90

Port Number:

Baud Rate: 9600

Channel:

Rtp100.00A0.0000

A40.0000B0.0000

B40.0000C0.0000

Test Connect

Thermal Filed Device Parameter

Device Type:

Port Number:

Baud Rate:

Device Model: ZCTB-80DL

Keep Time: 15 min

Test Connect

OK

Cancel

If the 713A or ZCTB-R is used as a reference, you need to use a USB serial port connection for communication. The 713A is connected separately as an independent device, and the ZCTB-R is an external attachment to the temperature field device, which does not require additional communication Settings. The 713A device connection interface is shown in the following figure:

Get reference value | Get collection value

Choose calibration project2024-06-15 Temp Calibration

1621BLE parameter Set

Search

Connect

BLE equipments	Mac address	Details

Mode: AutomaticStatus: Wait for starting

2024-06-15

11:07:26

OFFLINE

Reference

Collection time	Set value	Reference value	U
2024-06-15 11:03:51	20.0	20.362	90
	22.0		90
	24.0		90
	26.0		90
	30.0		90

Start

Stop

Alert

Current calibration project is not finished, click "Yes"to continue , "No"for restart the calibration project!

OK

Cancel

Reference Value

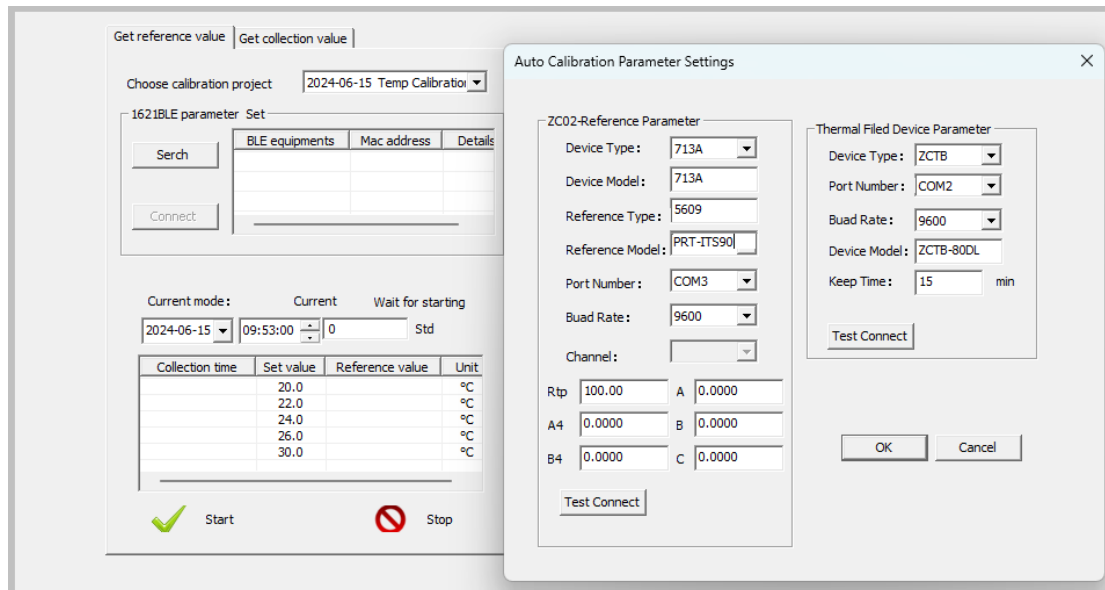
Collection Value

11:03:51

Collection Time

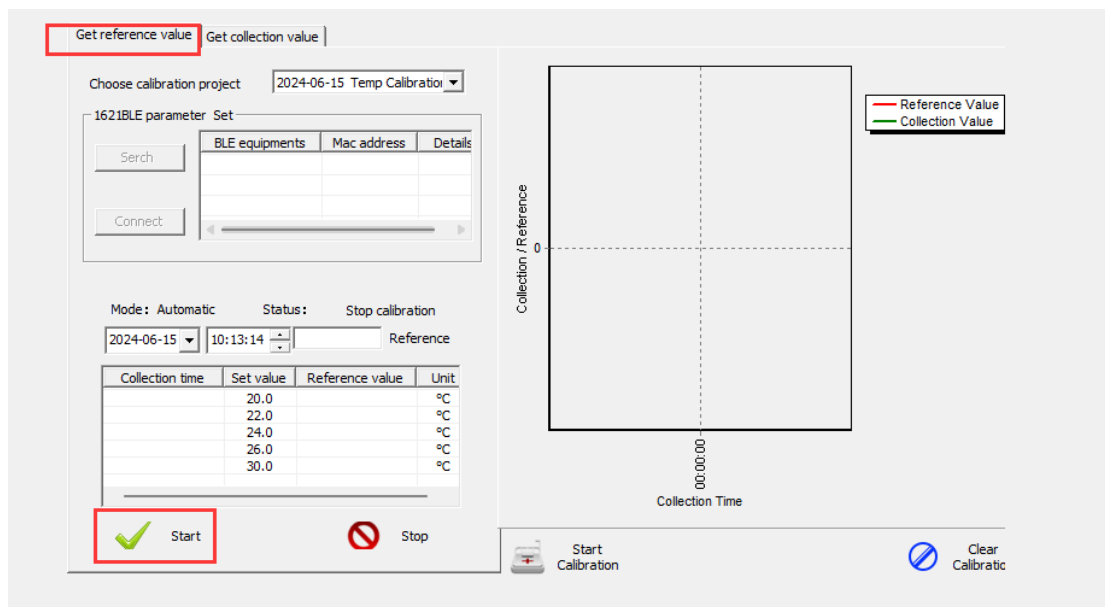
Start Calibration

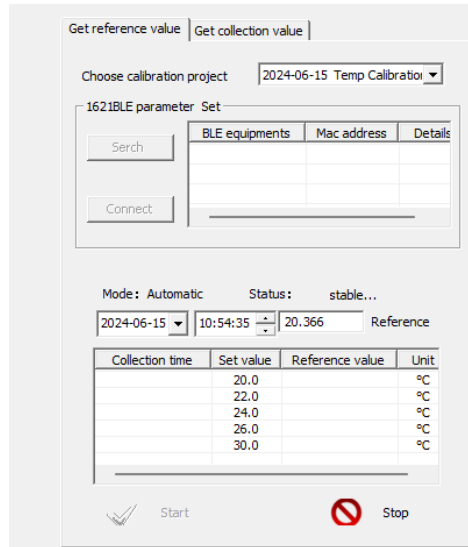
Clear Calibration



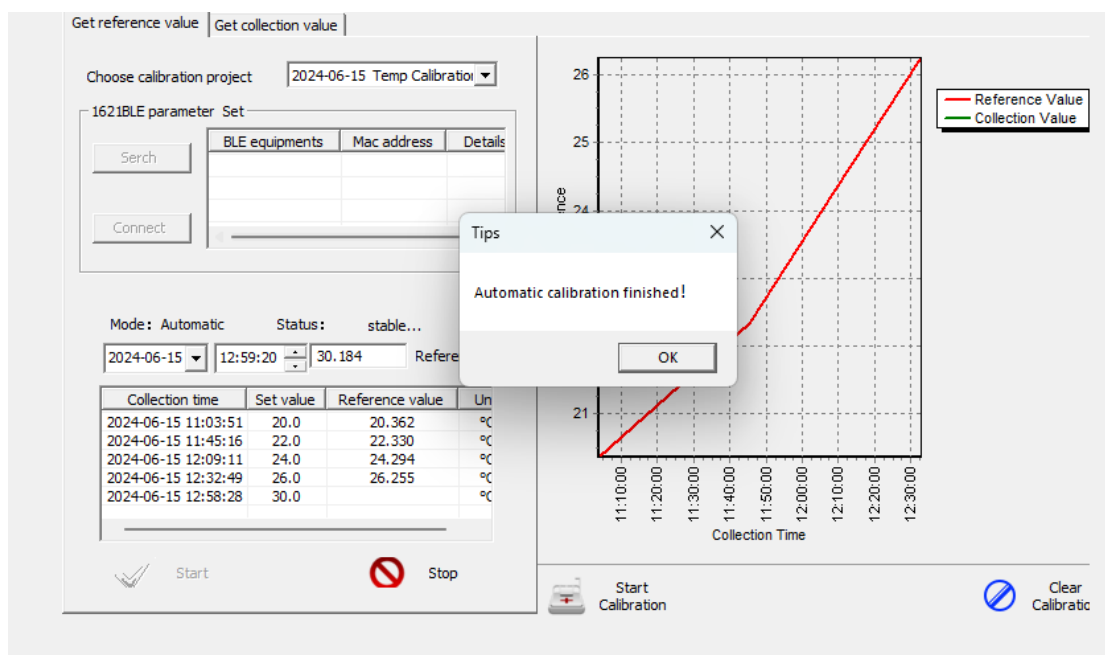
After the reference device is connected, click the "Start" button, the software will automatically control the temperature field device and refresh the current status information in real time. After the temperature field device is stabilized, the reference value at this moment will be read as the temperature reference value at this time two minutes before the end of the stabilization time. If the selected calibration project is interrupted due to special reasons, you can choose to continue the calibration if the logger is still in the setting collection of the project.

Continue calibration will continue to set the temperature field device from the temperature point obtained by the reference, if you choose to restart, then the previous reference value of the calibration project will be overwritten.



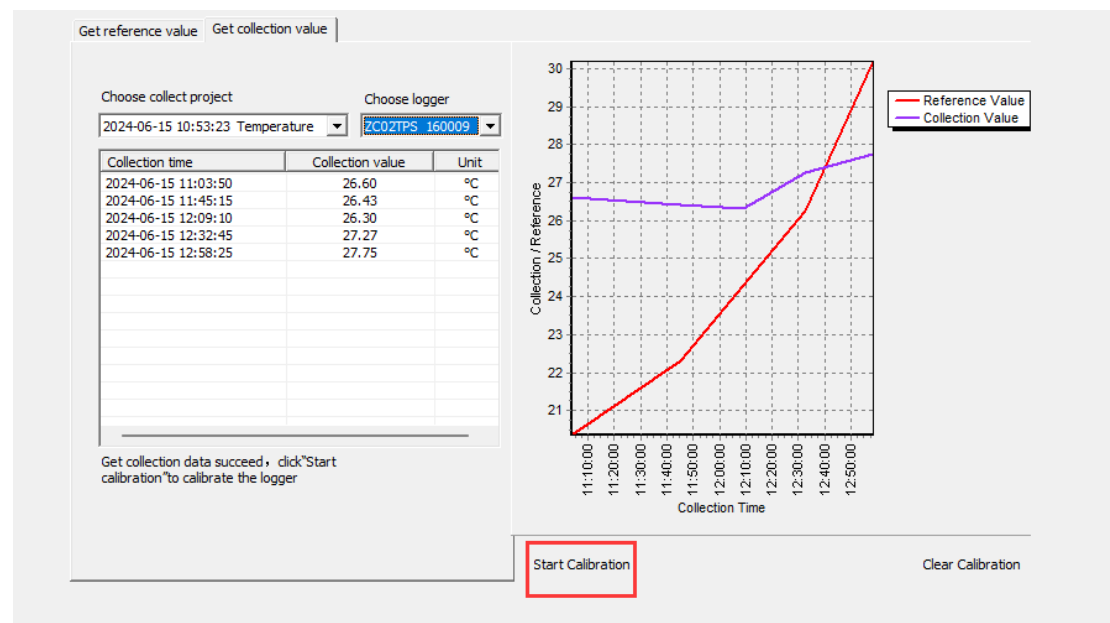


After all the reference values are obtained, the process of automatic calibration of the process control collector and temperature field equipment is over. At this time, the corresponding equipment can be shut down, disconnected, and the data of the collection project can be downloaded on the data download interface.

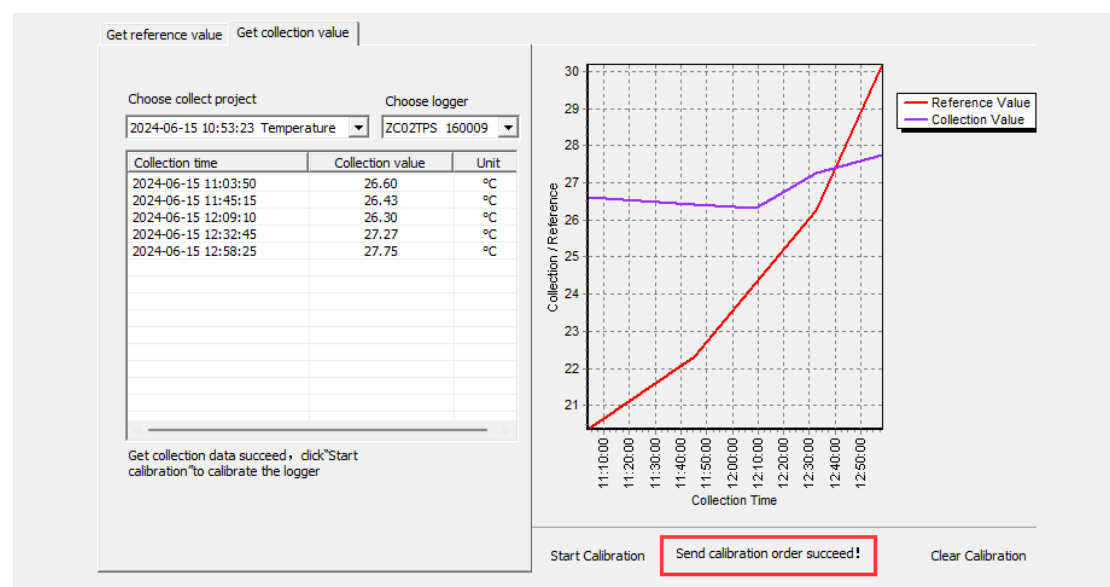


Get the collected value: Switch to the interface of "Acquisition of acquired values", select the corresponding acquisition projects, and then select the serial number of the current logger to be calibrated. In manual calibration mode, as shown in the figure below, please manually enter the acquisition values corresponding to each calibration point (you need to open the data report of this acquisition project first, and then find the corresponding data). After entering the acquisition values of all temperature points, Click the Save button, and after saving successfully, you can carry out calibration work. If it is an automatic calibration project, when the dropdown selects the logger, the software will find the actual collected value of the corresponding time point in the logger according to the time point of the reference value. (Note: The adapter and logger must be

connected at this time, and only one logger will be calibrated per calibration!)




After obtaining the acquisition value, you can click the "Start calibration" button on the right side of the interface to calibrate the current selected logger, and there will be corresponding prompts after completion. (Note: The adapter and logger must be connected at this time, and only one logger will be calibrated per calibration!) If you need to clear calibration data, you can ignore the previous steps of setting calibration projects, obtaining reference values, obtaining collected values, etc., directly enter the "obtain collected values" interface, select the logger, and then click the "Clear calibration" button. The manual mode for humidity and pressure calibration is similar to the manual mode for temperature calibration.



---


[illegible]

 Query

160009 ZC02-temperat ▾

No.	Reference value	Original value	Unit
1	20.36	26.60	°C
2	22.33	26.43	°C
3	24.29	26.30	°C
4	26.25	27.27	°C
5	30.19	27.75	°C

Coefficients	Value
AT0	307160.80.
AT1	-33897.683
AT2	1246.5687.
AT3	-15.274562

 Generate Certificate

---

Calibration information

Temperature field equipment model

Reference equipment model

Reference probe model

合肥智测电子有限公司  
安徽省合肥市高新区科技实业园  
Tel: 0551-23020100 Fax: 0551-2400000  
zhice-elec.com  
http://www.zhice-elec.com

校准证书

Calibration Certificate

仪器/Instrument: 温度压力记录器/Temperature&Pressure Data logger  
制造商/Manufacturer: 合肥智测电子有限公司 / Hefei Zhice Electronics Co.,Ltd.  
型号/Model: ZC02TPS 序列号/Serial NO.: 160009  
校准类别/CalType: ZC02-temperature

标准值 Reference Temperature ℃	实测值 Original Temperature ℃
20.36	26.60
22.33	26.43
24.29	26.30
26.25	27.27
30.19	27.75

Coefficient of expansion:  $\alpha = 307160.80424798$   $\Delta T_1 = -33897.68314904$   $\Delta T_2 = 1246.56870155$   $\Delta T_3 = -15.27456277$

打印日期 / Printed Date: 2024-06-17 11:23:32  
校准日期 / Calibrate Date: 2024-06-15 09:30:46 有效期至 / Valid Until: 2025-06-15  
恒温槽 / Thermostatic Bath: 15  
测温仪 / Thermometric Indicator: 713A  
标准铂电阻 / Reference Thermometer: 5609

校准系统偏差 / System Calibration Error: 0.1 ℃  
操作人员 / Operator: \_\_\_\_\_

### 3.4 User Management

#### 3.4.1 User Query

The software provides a very detailed user query function, which may filter queries based on a variety of information conditions.

☐ Account Query

Logging Name:


Create Date:

Expired Date:

Account Name:

Account Level:

Account Status:

 Query

Account Name	User Name	Account Level	Contact Telep...	Create Date	Expired Date	Account Status
admin	admin	管理员	13888888888	2015-12-10	2050-12-10	Normal


#### 3.4.2 Adding Users

Add users as shown in the figure below. The software supports account management with level 3 permissions. The operation permissions corresponding to different user levels can be viewed by clicking the "Permissions" button. You can set the detail authority in the 'Authority Detail' interface.

Account Level:

Account Status:

Connect Telephone:

 Authority

☐ Create Account:

Account Name:

Password:

Check password:

Electronic signature:

Account Level:


Account Status:

Connect Telephone:

Create Date:

Expired Date:

Note:

 Create

Authority Detail

Account Level:

☒ Company-Modify

☒ User Security-Modify

☒ Environment-Add

☒ Environment-Modify

☒ Environment-Delete

☒ Collect-Set

☒ Data download-Query

☒ Data download-Download

☒ Report-Query

☒ Report-Export

☒ Report-Delete

☒ Calibration Project-Add

☒ Calibration Project-Delete

☒ Calibration-Calibrate

☒ Calibration Report-Qeury

☒ Calibration Report-Export

☒ Account - Query

☒ Account - Add

☒ Account - Modify

☒ Account - Delete

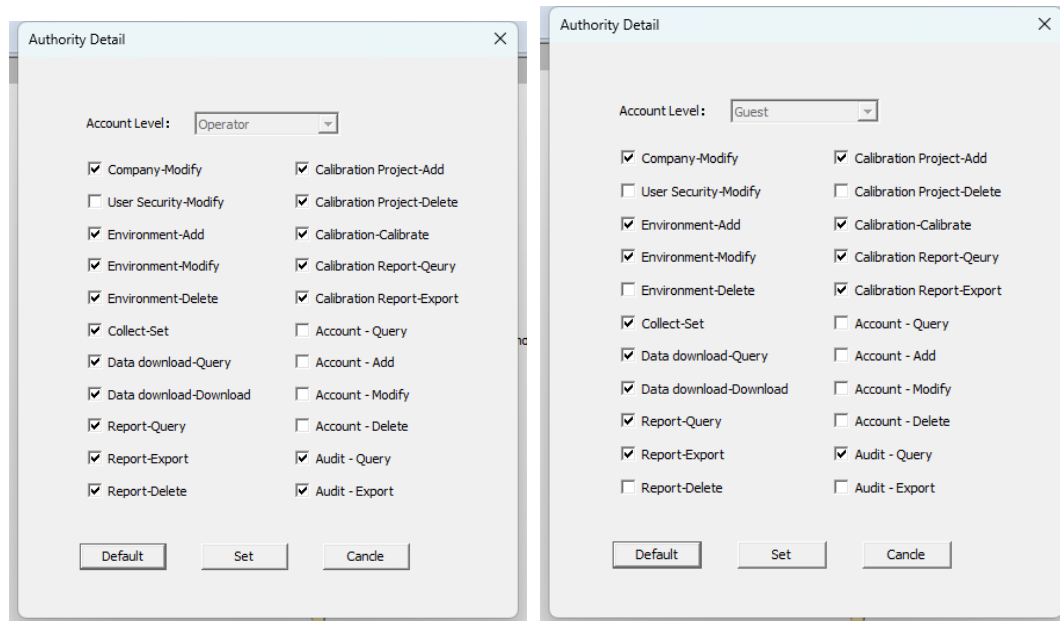
☒ Audit - Query

☒ Audit - Export

Default

Set

Candle



The button with gray state indicates that this feature is disabled as shown in the figure below.


☐ Create Account:

Account Name:

Password:

Check password:

Electronic signature:

Account Level:   Authority


Account Status:

Connect Telephone:

Create Date:

Expired Date:

Note:

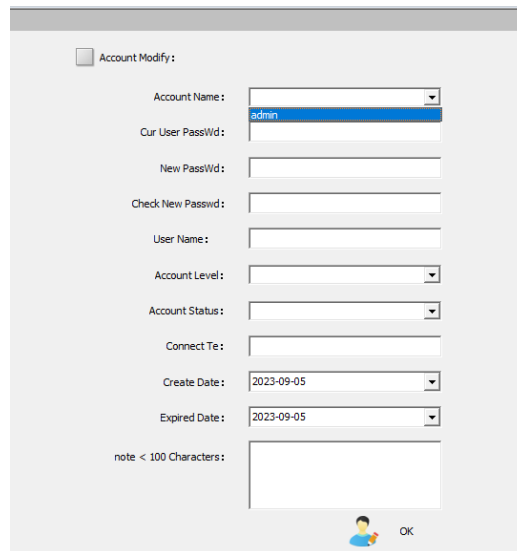
 Create



---

### 3.4.3 User Modification

According to the rights management assignment, high-level users can modify the information of the same level and low-level users, but low-level users cannot modify the information of high-level users, as shown in the following figure, even if low-level users have the "User modify" permission.



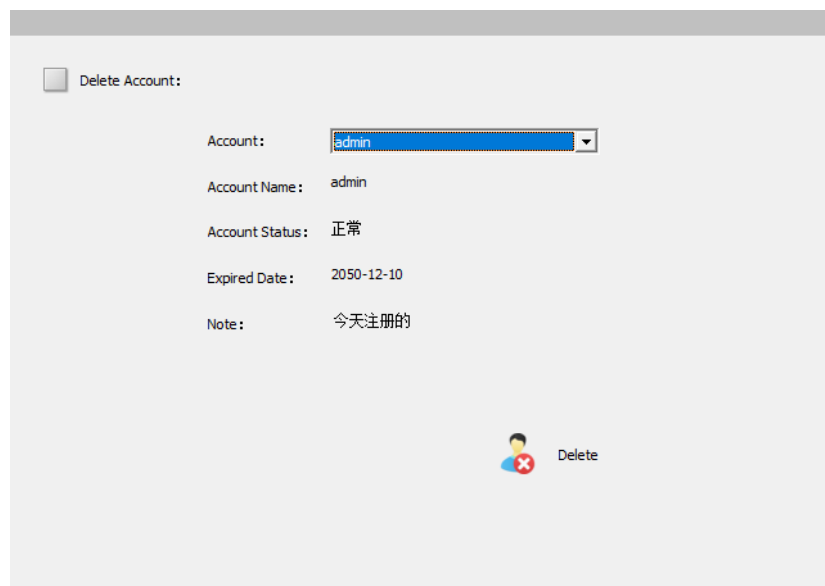
The 'Account Modify' dialog box contains the following fields:

- Account Name: dropdown menu with 'admin' selected
- Cur User PassWd: text input field
- New PassWd: text input field
- Check New Passwd: text input field
- User Name: text input field
- Account Level: dropdown menu
- Account Status: dropdown menu
- Connect Te: text input field
- Create Date: date picker showing 2023-09-05
- Expired Date: date picker showing 2023-09-05
- note < 100 Characters: text area

At the bottom right, there is a user icon and an 'OK' button.

### 3.4.4 Delete Users

Note: 'User Add', 'User Modify', 'User Delete' all require administrator rights to perform!

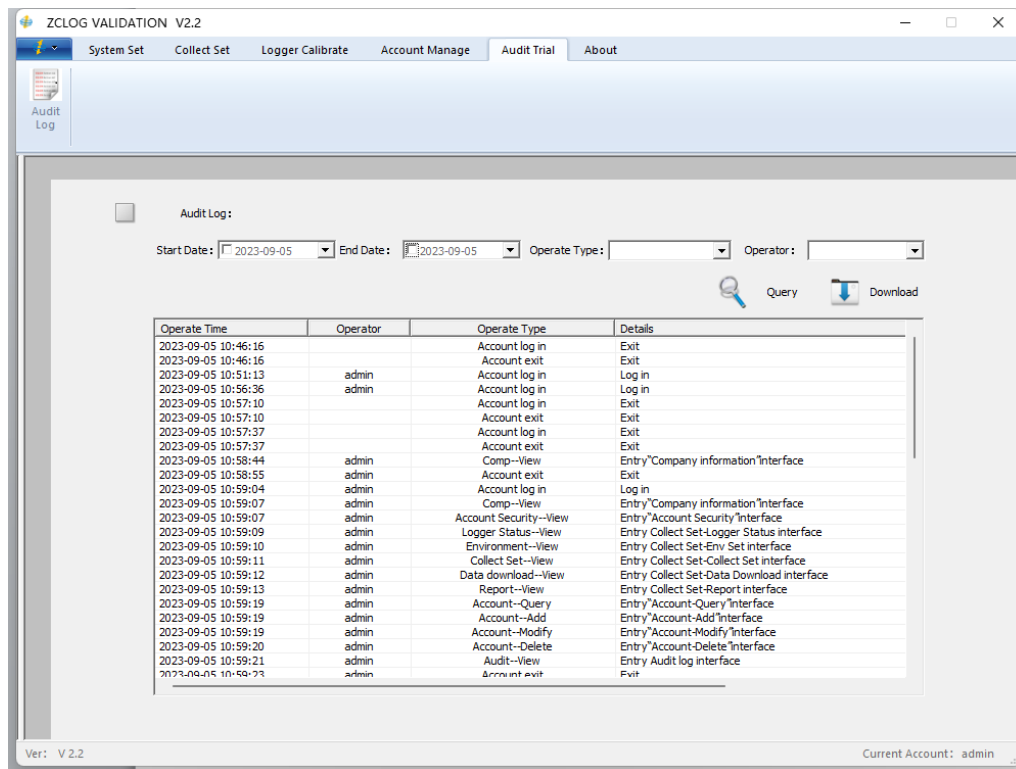


The 'Delete Account' dialog box contains the following fields:

- Account: dropdown menu with 'admin' selected
- Account Name: text input field with 'admin'
- Account Status: text input field with '正常'
- Expired Date: text input field with '2050-12-10'
- Note: text input field with '今天注册的'

At the bottom right, there is a user icon with a red 'X' and a 'Delete' button.

### 3.5 Audit Trail

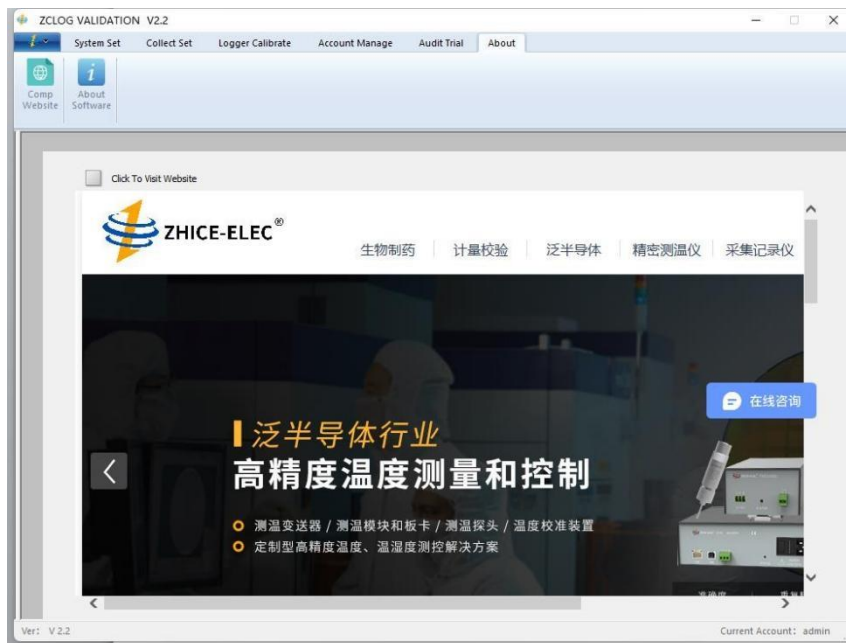


You can query logs to view user operations based on different conditions. Click the "Download" button, you can export the log in PDF format file.

## 3.6 About

### 3.6.1 Company Website

Enter the "Company Website" interface, click the "Click to view company website" button on the upper left, our official website can be displayed on the interface, you can quickly inquire about our company's relevant information on this interface.



### 3.6.2 About Software

This interface allows you to view the version information of the software, as well as the contact information of our company.

