



# **ZCLOG VALIDATION Wireless Validation System Software**

**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. This software uses a registration code + a username and password for access control and security protection. For first-time use, please contact us to authorize and register the software. After logging in, promptly change your user password and make sure to remember it.
4. Before use, it is recommended to go through this manual in detail and follow the relevant instructions.
5. Please note that the abbreviation "ZCLOG-VS" is used instead of the software in this article.
6. This software supports the following data logger models: ZC02TS Temperature Data Logger, ZC02THS Temperature and Humidity Data Logger, and ZC02TPS Temperature and Pressure Data Logger.

## Chapter 1 Installation & Uninstallation

### 1.1 Software installation

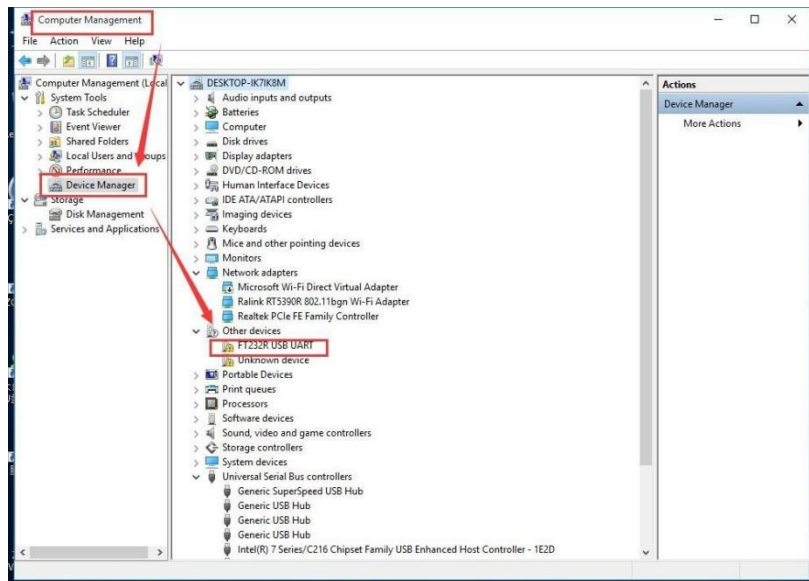
This software only supports Windows 10 and later operating systems. The following software installation instructions are Win10 operating system as an example. This software installation U disk will generally contain the following files:

Adapter Driver	
AnyDesk 远程工具-Remote Control Tool.exe	5,216,584
ZCLOG VALIDATION_V3.0.0 Software Users Manual.pdf	3,932,232
ZCLOG VALIDATION_V3.0.0无线验证软件用户手册.pdf	2,657,359
ZCLOG_VALIDATION_V3.0.0_x64_Setup.exe	109,635,9...

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

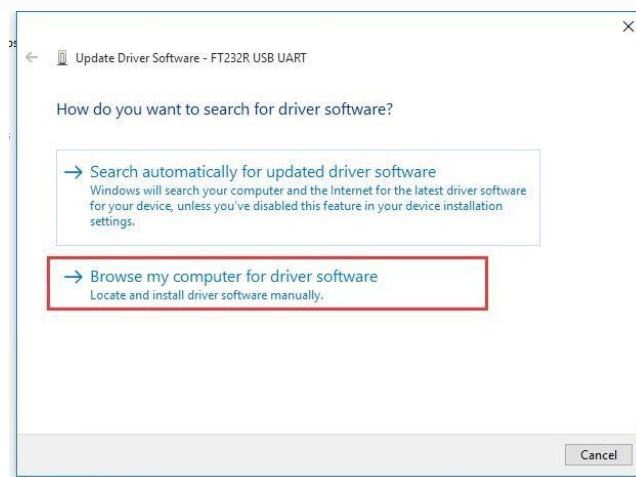
**Step1:** Unpack the adapter and install necessary components;

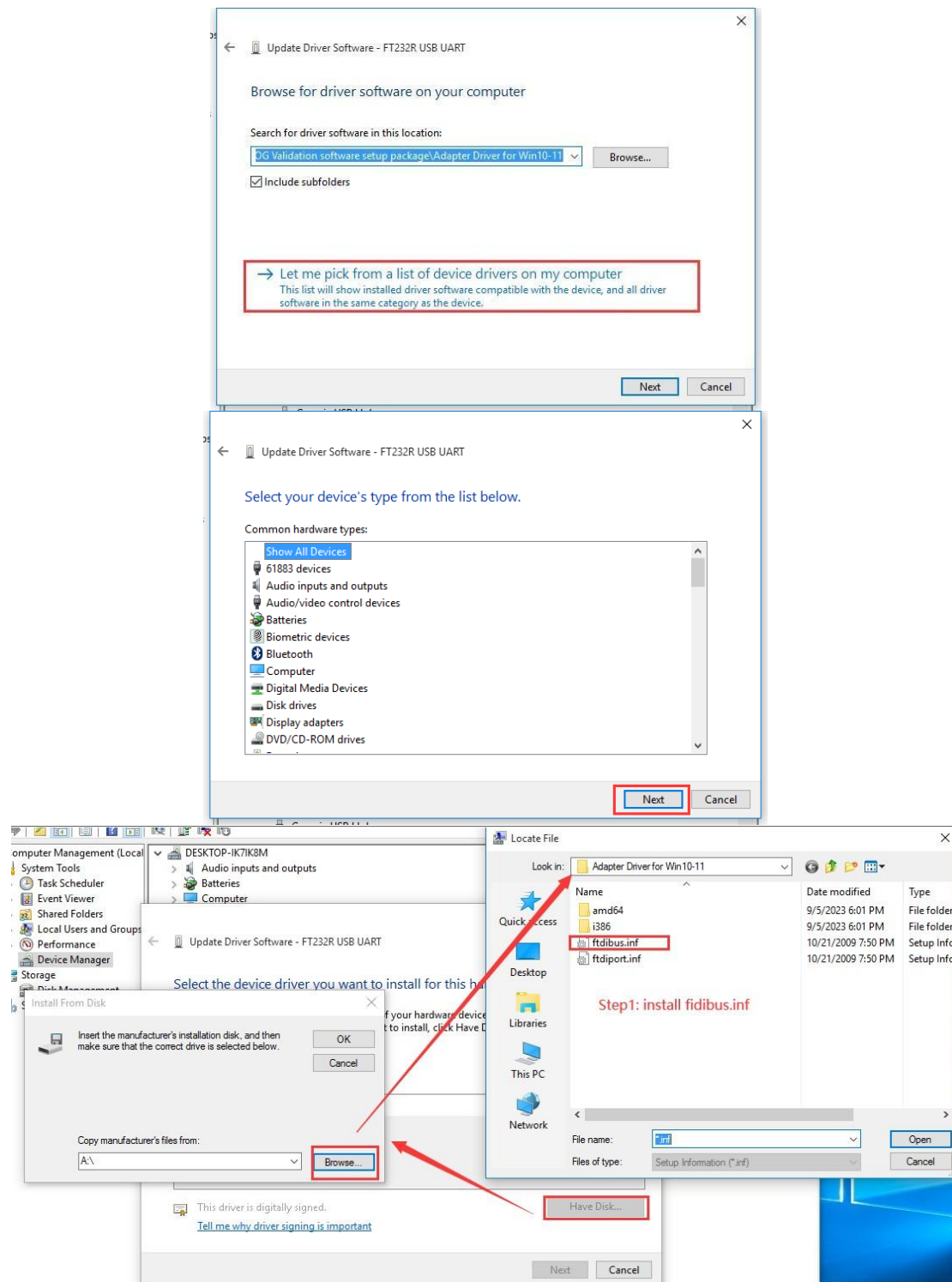
**Step2:** Use the USB communication cable of the adapter to connect the USB port of the computer and the port of the adapter. When the adapter driver is not installed for the first time, the "FT232R USB UART" identifier as shown in the following picture will be displayed in the device manager of the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



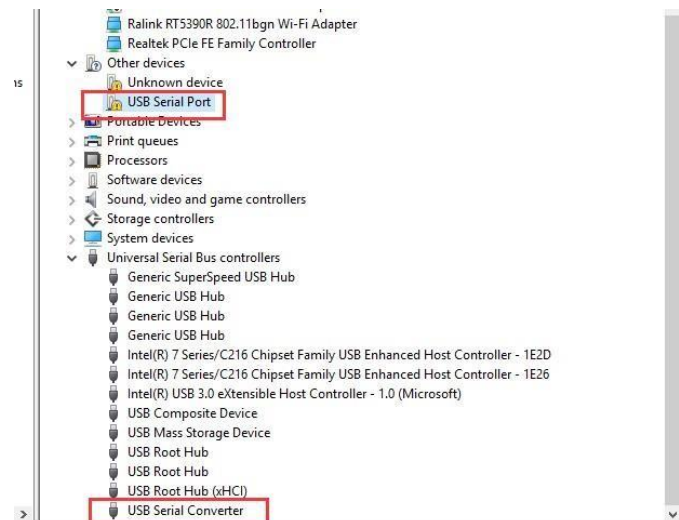
**Step3:** Insert the USB flash drive into the USB port of the computer, browse and find the driver folder in the installation USB flash drive according to your computer operating system;

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
ftdiport.cat	2009-11-03 13:33	安全目录	11 KB
ftdiport.inf	2016-05-28 10:27	安装信息	6 KB
LogoVerificationReport.pdf	2009-11-03 14:22	Adobe Acrobat ...	42 KB

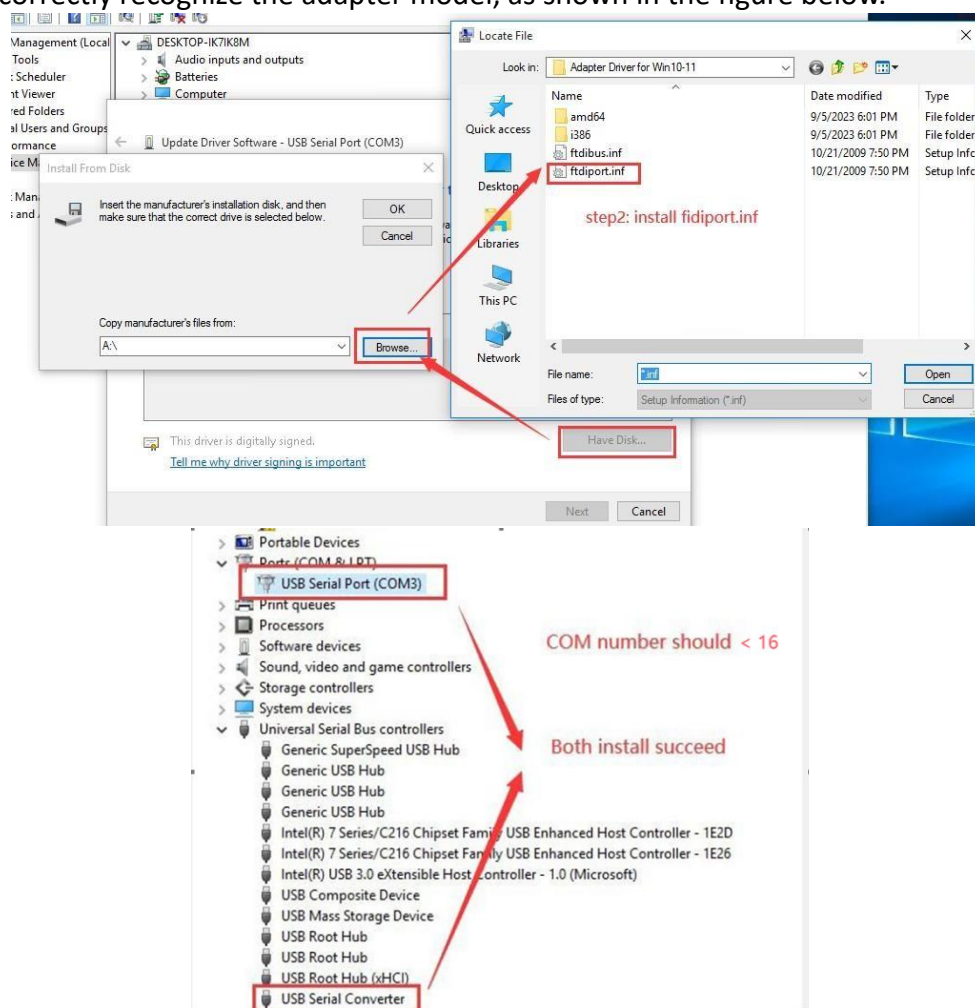




After the success message appears, close the dialog box. The Device Manager interface will refresh, as shown in the figure below. The file “ftdibus.inf” corresponds to “Universal Serial Bus controllers - USB Serial Converter” . If it is displayed correctly, this part of the installation has been completed successfully. However, if “Other devices - USB Serial Port” still shows a warning icon (exclamation mark), meaning the “ftdiport.inf” file has not yet been installed.



**Step4:** After the installation is complete, repeat Step 3. Right-click on the “Other devices - USB Serial Port” with the exclamation mark and select “Update driver.” Install the “ftdiport.inf” file. Once the installation is successful, the Device Manager will correctly recognize the adapter model, as shown in the figure below.

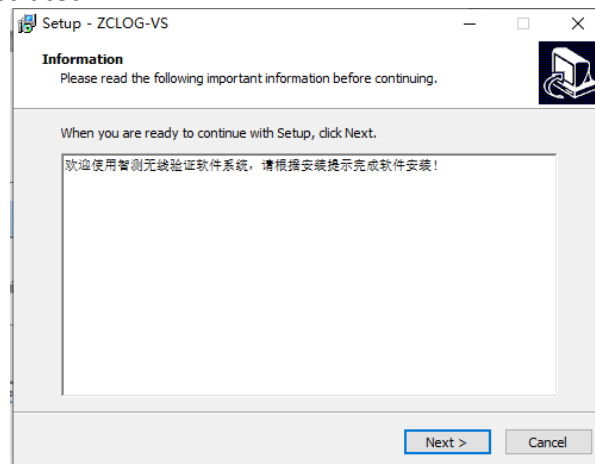


**Note:** The port number must be less than 16. If it is 16 or higher, you need to change it manually. In Device Manager, right-click on the port, select "Properties," go to

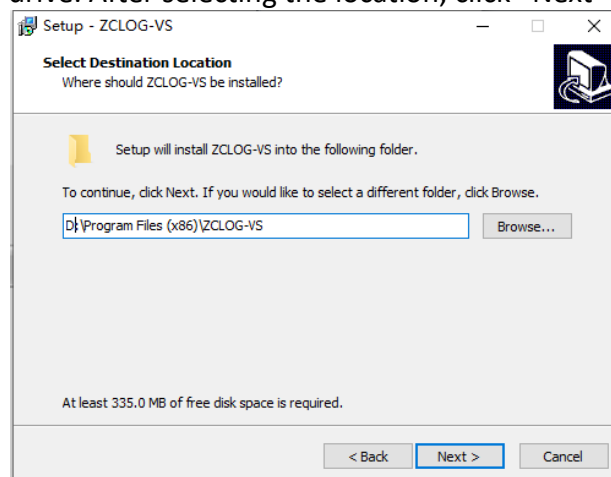
"Port Settings," then click "Advanced." From the dropdown menu, choose a new COM port number such as COM4. If there are no other USB devices using the same number, you can ignore the "in use" warning. Click "OK" to confirm. On some computers, a restart may be required for the changes to take effect. If the software still cannot communicate properly after changing the port number, try restarting the computer.

### 1.1.2 ZCLOG-VS Software Installation

Locate the file "ZCLOG\_VALIDATION\_V3.0.0\_x64\_Setup.exe" in the USB drive. Double-click the file and follow the on-screen instructions shown in the figure below to complete the installation. The installation process is straightforward—just proceed step by step as illustrated.

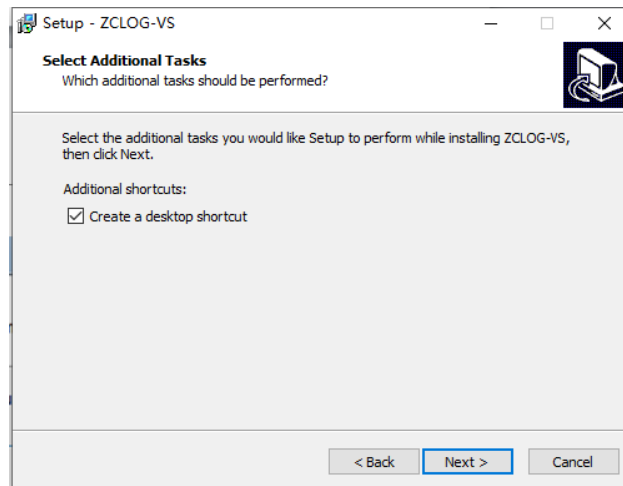


You can use the default installation location, but we recommend changing it to a directory on the D drive. After selecting the location, click "Next" to continue.

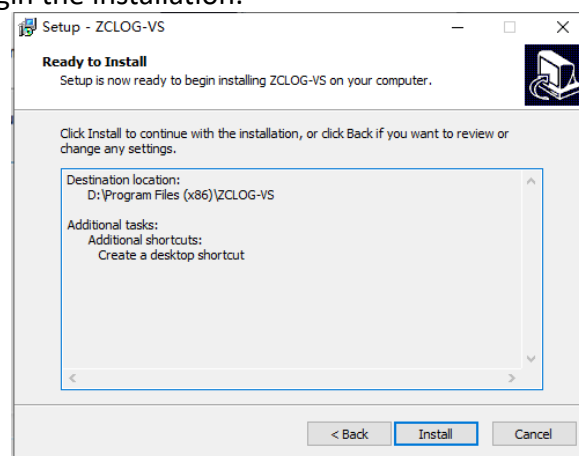


Check the option "Create a desktop icon", then click "Next" to continue.

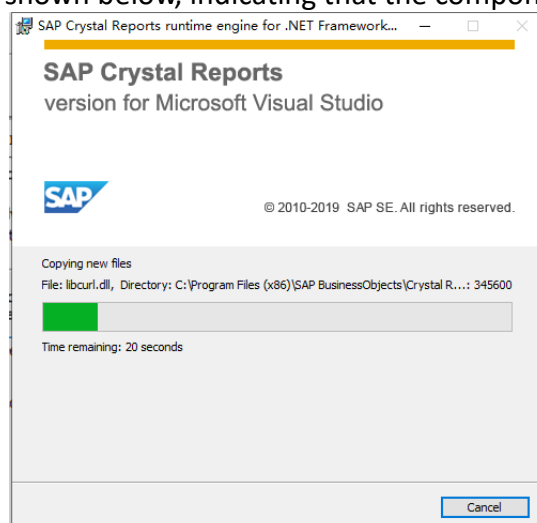




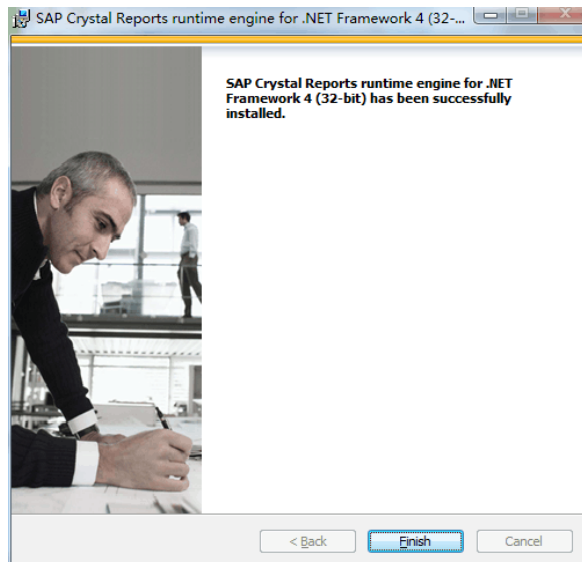
Click “Install” to begin the installation.



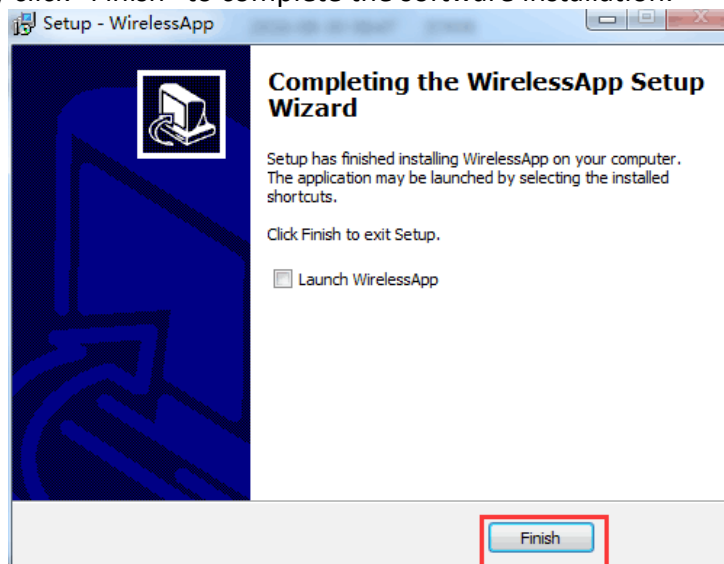
After the main program installation is complete, the required reporting component “SAP Crystal Reports” will be installed automatically. This component is essential for the software’s report generation functionality. Click “Install”, and the installation screen will appear as shown below, indicating that the component is being installed.



Then click “Finish” to complete the installation of the component.

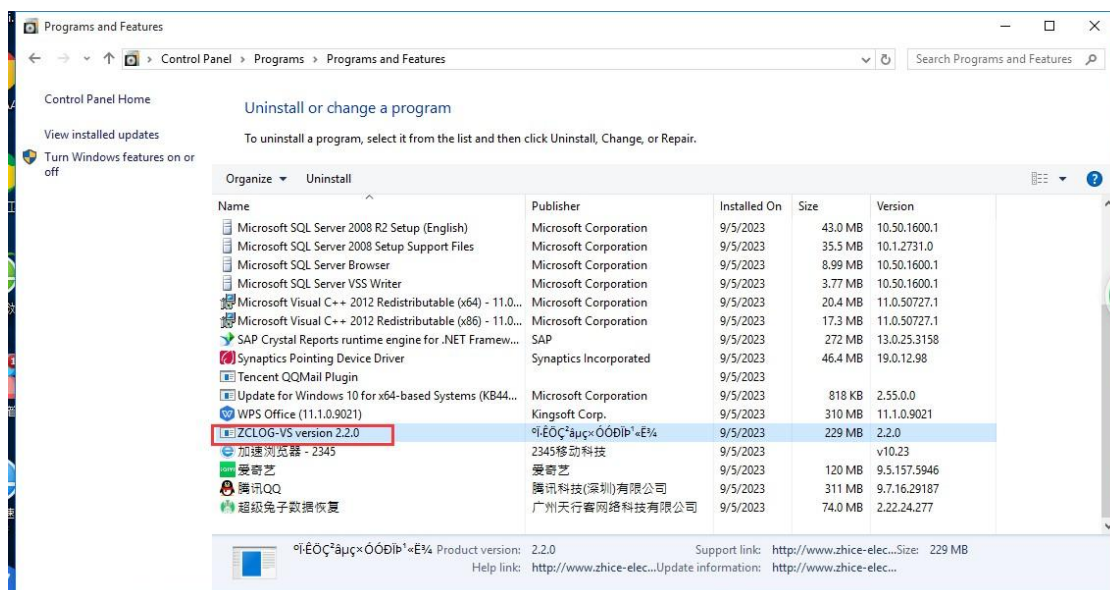


When the dialog box shown below appears, do not check the "Log in to the software" option. Simply click "Finish" to complete the software installation.



## 1.2 Software Uninstallation

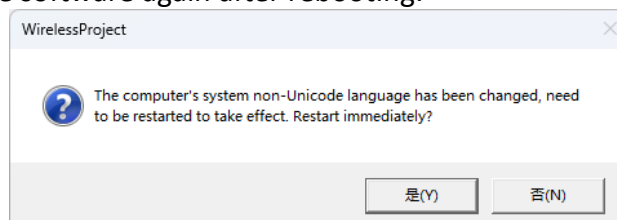
Computer - right - "control panel", "program", "program uninstall", find "ZCLOG - VS", select the right "delete/uninstall".



**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.

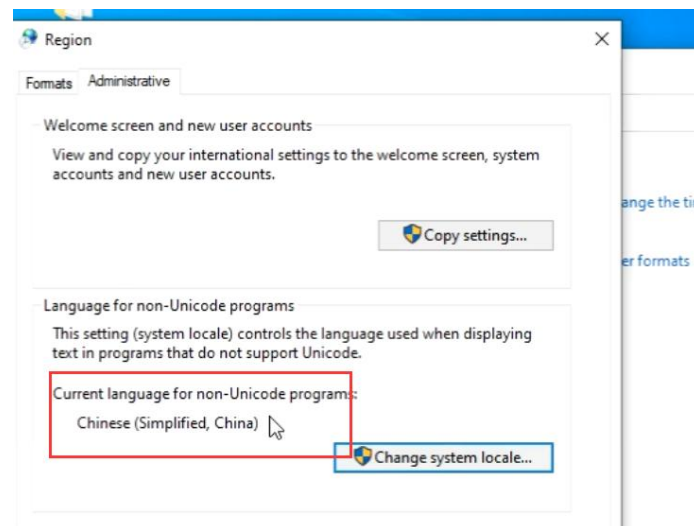
## Chapter 2 Software Register

If you are an international user, the following dialog box will appear upon your first login after installation. This means the software has automatically changed your system's non-Unicode program language to Simplified Chinese, which requires a restart to take effect. After clicking "OK," your computer will restart immediately. Please log in to the software again after rebooting.



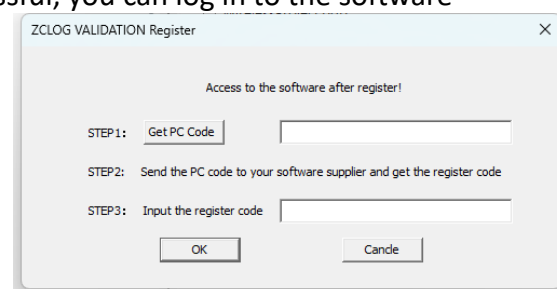
If the above dialog box does not appear, please change the setting manually as follows:

Go to Computer - Control Panel - Clock and Region - Region- Administrative tab - under Language for non-The current language for non-Unicode programs is set to Chinese (Simplified, China).

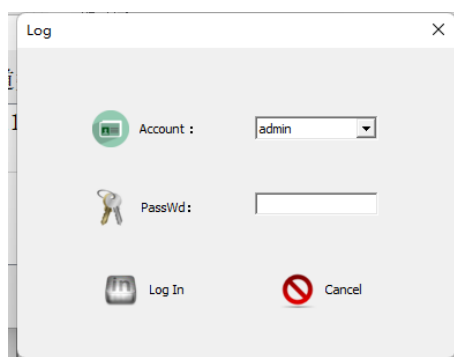


Please note: If this setting is not changed, garbled characters may appear in the software interface.

After completing the setting, double-click the software icon on the desktop to open the program. For first-time use, registration is required. As shown below, click the “Get PC Code” button and follow the instructions to register the software. Once registration is successful, you can log in to the software



The software includes a built-in default administrator account named admin with the initial password 123456. By default, the account will be automatically locked after three consecutive incorrect password attempts. Please log in and update your password and other user information promptly. The software login screen is shown below.



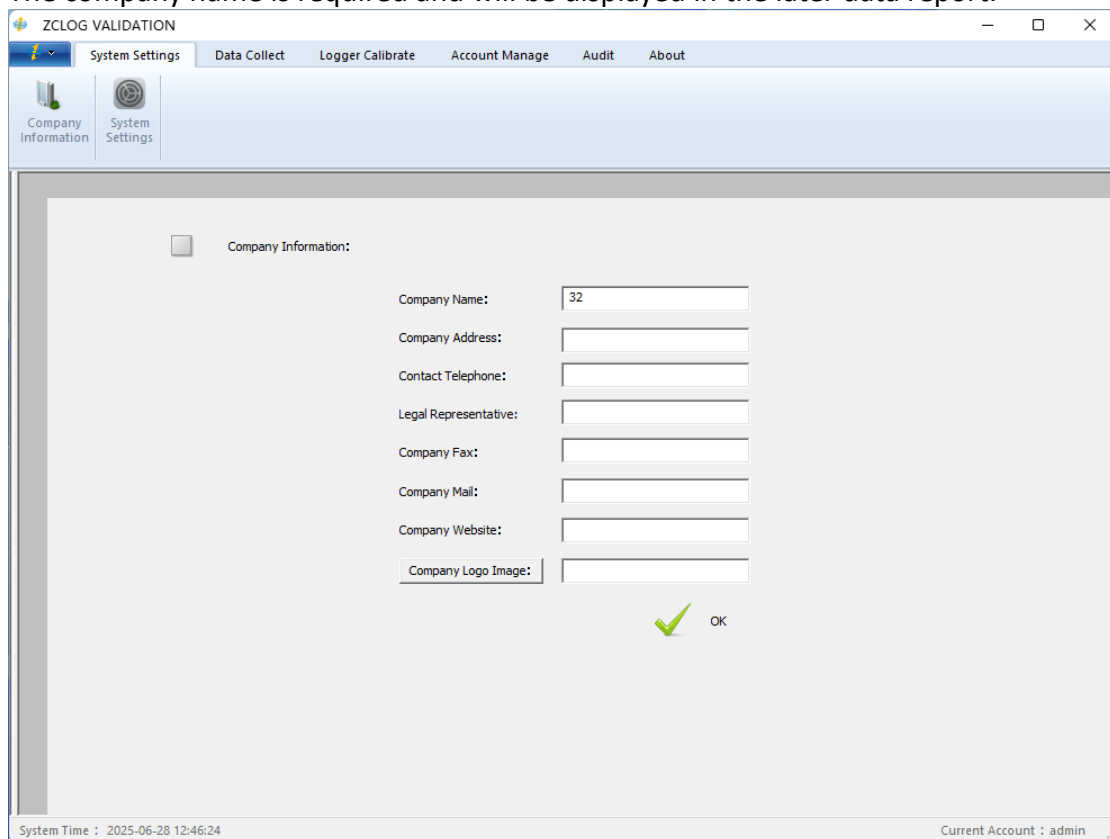
## Chapter 3 Function module introduction

### 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.

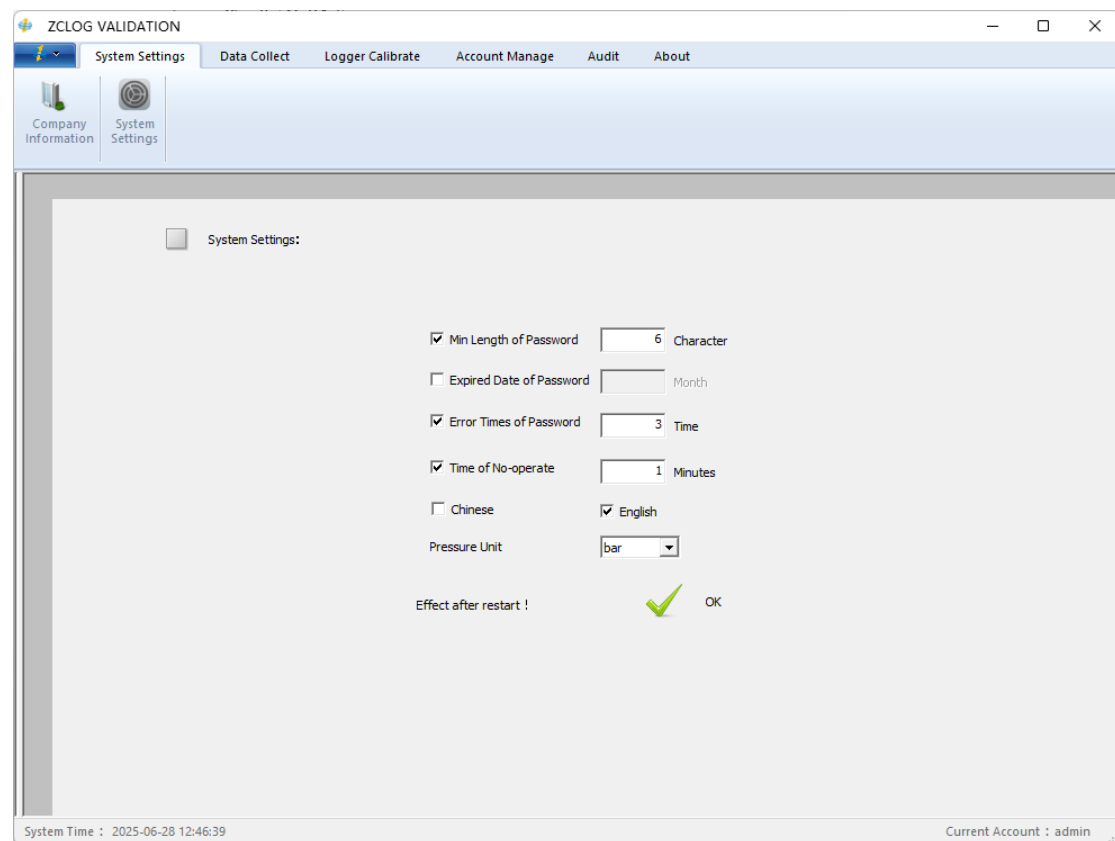


The screenshot displays the 'ZCLOG VALIDATION' software window. The 'System Settings' tab is active, and the 'Company Information' sub-tab is selected. The 'Company Information' dialog box is open, showing a form with the following fields:

- Company Name: 32
- Company Address:
- Contact Telephone:
- Legal Representative:
- Company Fax:
- Company Mail:
- Company Website:
- Company Logo Image:

An 'OK' button with a green checkmark is located at the bottom right of the dialog box. The status bar at the bottom of the window shows 'System Time : 2025-06-28 12:46:24' and 'Current Account : admin'.

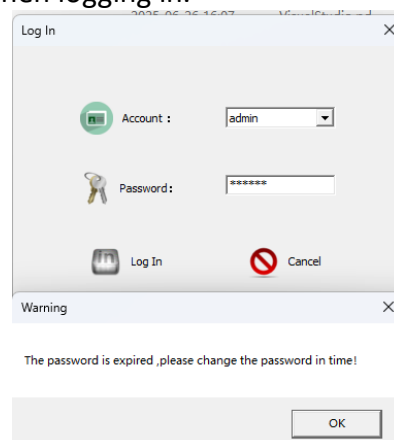
### 3.1.2 System Settings



According to relevant GMP and 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.

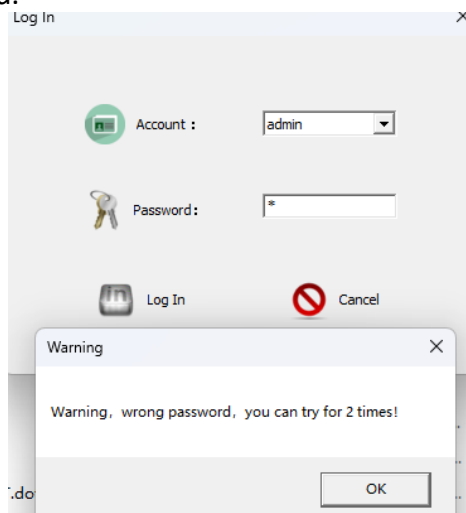
Minimum length of password: After being checked, when creating a new user, the password length of the new user will be added to the judgment;

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.

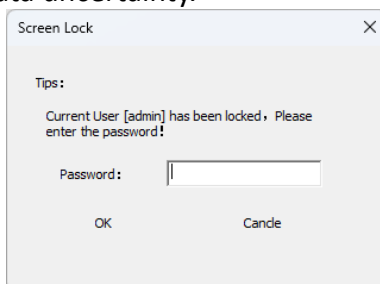


Incorrect password input times: When checked, the number of incorrect password input times will be increased when logging in. When the number of consecutive incorrect password input times reaches this set value, the account will be locked

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.



Language Display (Chinese/English): The software supports both Chinese and English interfaces. If you are a domestic user, the language setting will take effect after restarting the software.

Pressure Unit: bar\kPa. The default unit is bar, and you can configure the pressure sensor unit as needed.

After setting the parameters on the “System Settings” page, click the “OK” button to save. Language changes will take effect the next time the software is launched.

## 3.2 Data collection

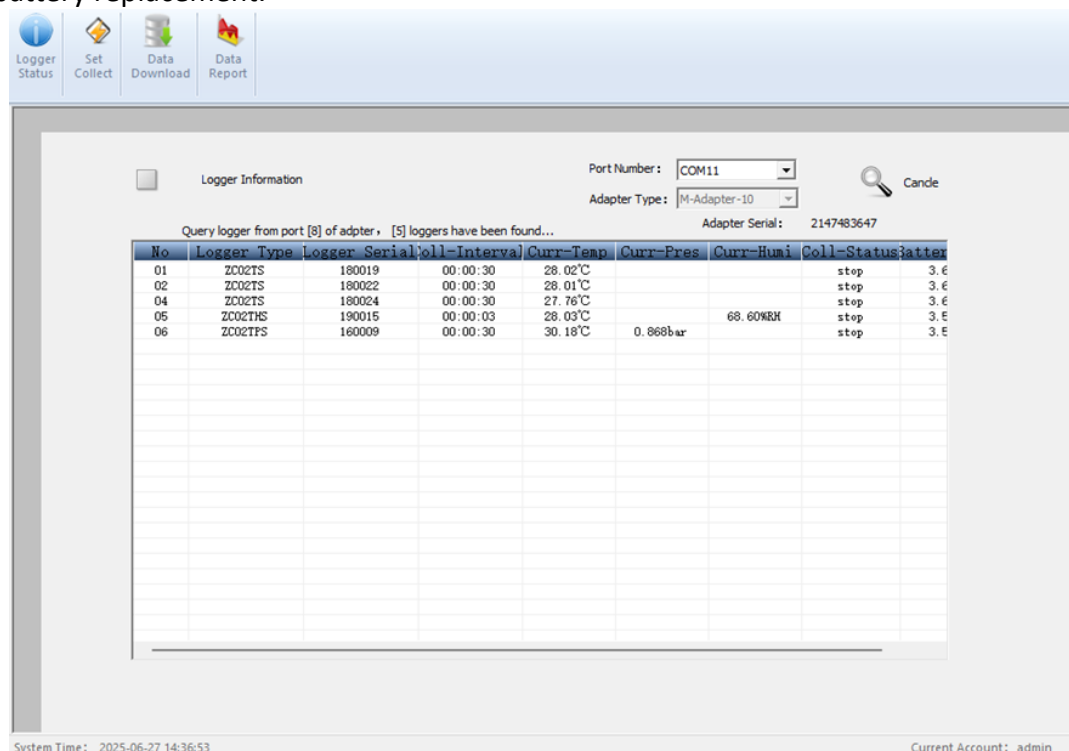
### 3.2.1 Device Status

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  $\leq 16$ );

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.



There are three collection statuses: Stopped, Waiting, and Collecting. The data logger supports scheduled data collection. If scheduled collection is set, the status will display “Waiting” before the scheduled start time. Once the scheduled time arrives-or if immediate collection mode is used-the status will show “Collecting” until the collection is complete. After the collection duration ends or after the data is downloaded, the status will change to “Stopped” .

In summary, the logger stops collecting data in two ways: automatically, when the preset collection duration is reached; manually, by downloading the data before the



scheduled duration ends. Besides, the logger only stores the latest set of data in its internal memory. If a new collection task is started, the existing data will be cleared and replaced with new data.

### 3.2.2 Collection Settings

**Note:** Before configuring data collection, please perform a logger query to ensure that the COM port is correct. Also, check the communication and connection status between the adapter and the data logger. This helps prevent interruptions during the setup process due to communication errors.

**Number of Loggers:** Set the number of data loggers to be used for this collection according to the selected logger type. Make sure the number matches the actual number of loggers placed on the adapter.

**Important:** Do not configure both THS and TPS types at the same time.

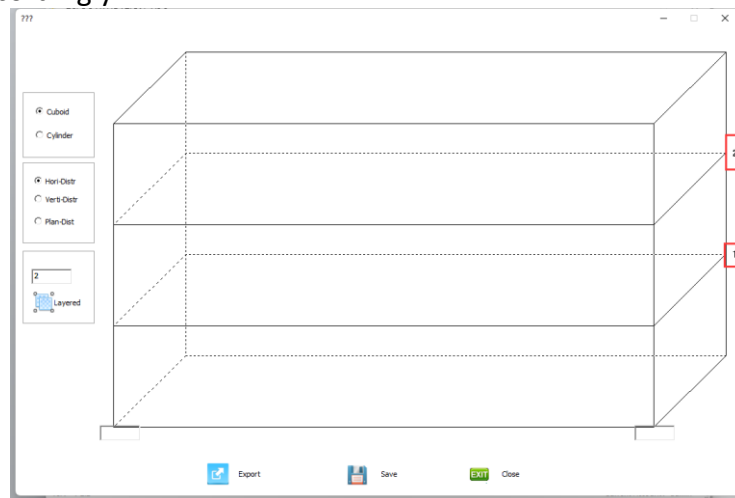
**Collection Interval:** Set by the user, in seconds. The minimum interval is 1 second.

**Collection Duration:** Set by the user. Please note that each logger can store up to 60,000 data records. If the total number of records (duration  $\div$  interval) exceeds this limit, the software will prompt you to reset the parameters.

**Placement Map:** Select an existing placement map from the dropdown menu. If no map is available, click “New” to create one.

**New Placement Map:** Click “New” to enter the placement map configuration interface. In the left panel, set the sterilization environment layout, logger distribution method, number of layers, and map name. After entering the number of

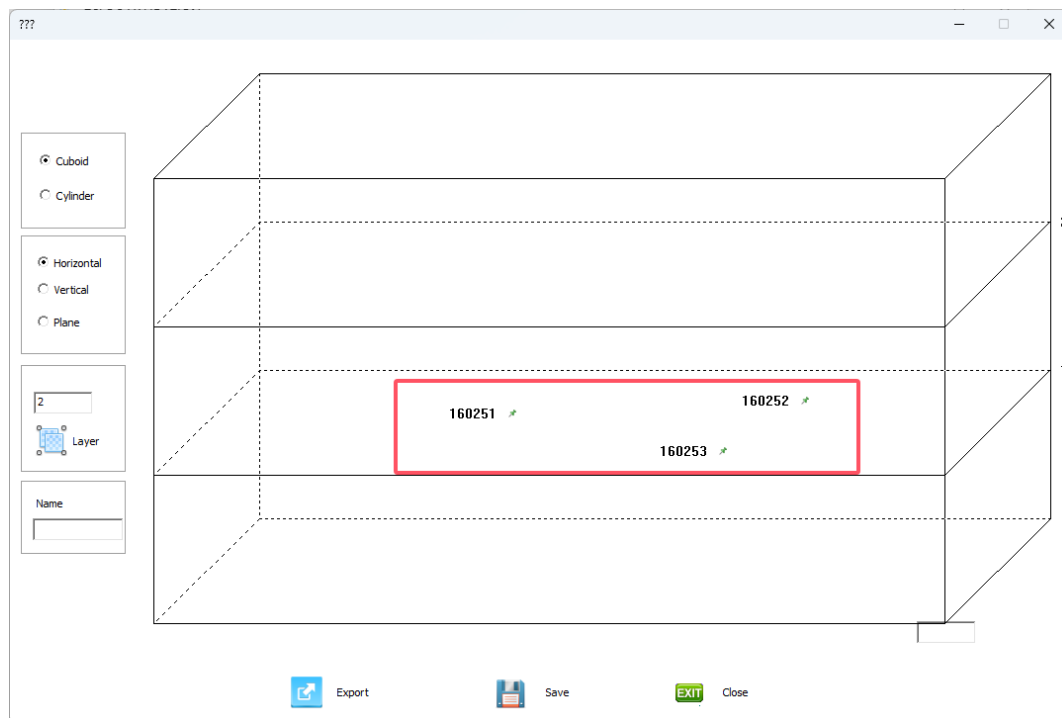
layers, click “Layering”. The right panel will display a simulated environment divided into layers accordingly.



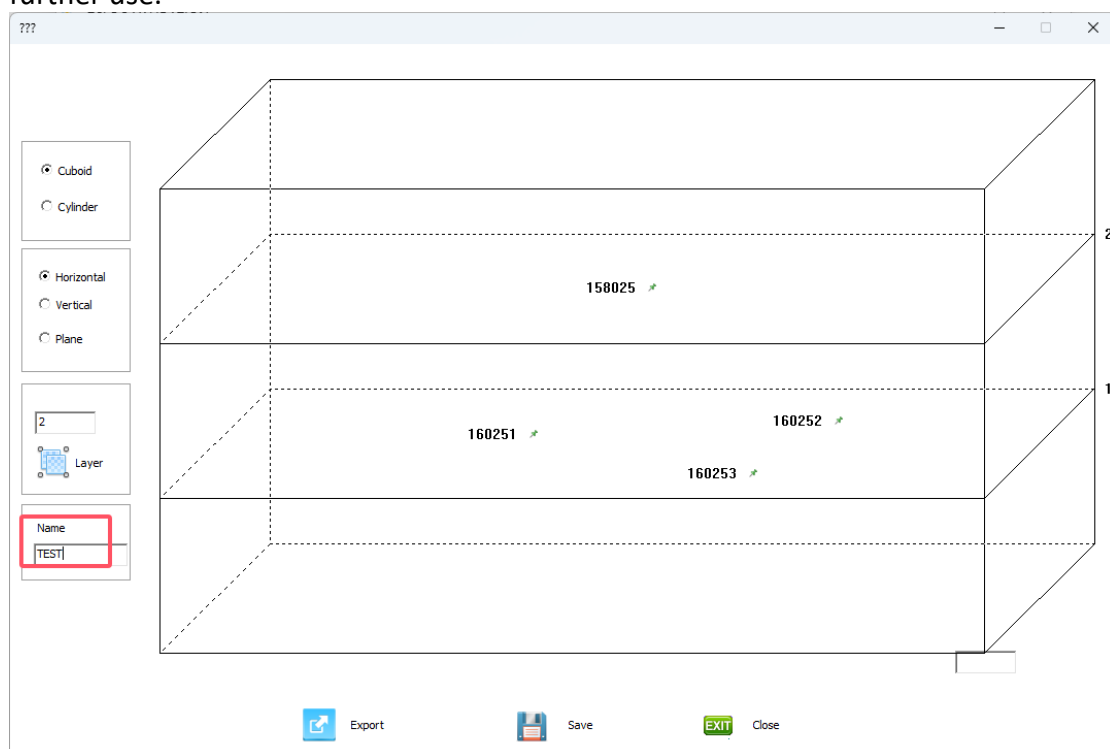
Click the layer button on the right to enter the layout interface for the selected layer, as shown below. In this interface, you can simulate the planar placement of data loggers for the current layer.

Click “Get Logger” to place loggers on the layout and assign serial numbers to simulate their positions. After completing the placement, click “Release Logger”, then click “OK” to exit the placement configuration for the current layer.

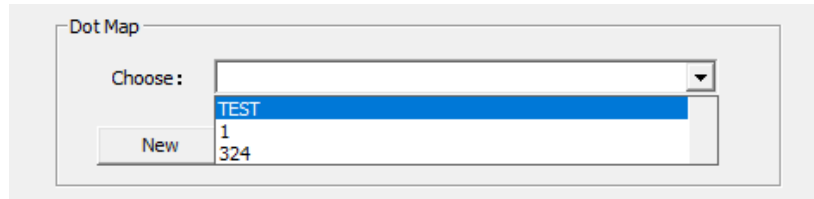




Then proceed with the placement configuration for the second layer. Once completed, the layout will appear as shown below. Enter a name for the placement map and click “Save” to store it. If needed, the layout image can be exported for further use.



After saving successfully, you can select the corresponding placement map from the dropdown menu in the interface shown below.



**Delete:** Select a placement map to delete. Once deleted, any data collection projects that used this map will no longer display the corresponding placement layout in reports.

**Clear All:** Deletes all placement maps. After deletion, any associated collection projects will not display placement layouts in reports.

**Scheduled Collection:** When enabled, the logger will begin data collection at the specified time. The scheduled time must be at least 10 minutes later than the current system time. If this option is not selected, the logger will start collecting data immediately after setup is completed.

**Used for Calibration Adjustment:** Calibration adjustment refers to correcting the measurement accuracy of the logger through a calibration process. When this option is selected, a corresponding calibration source project must be chosen from the dropdown menu. This indicates that the current collection project is intended to adjust the logger's temperature deviation. Setting this will erase the logger's existing calibration coefficients.

**Used for Verification Calibration:** Verification calibration refers to validating the measurement accuracy of the logger and generating a calibration report. When this option is selected, a corresponding calibration source project must be chosen.

In Summary, there are three types of data collection projects: Standard Collection, Used for Calibration Adjustment, Used for Verification Calibration. Please note that most use cases fall under Standard Collection. Do not select "Used for Calibration" or "Used for Verification" unless specifically required. Calibration and verification procedures will be explained in detail in later sections.

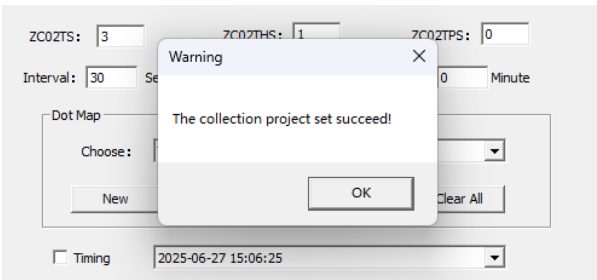
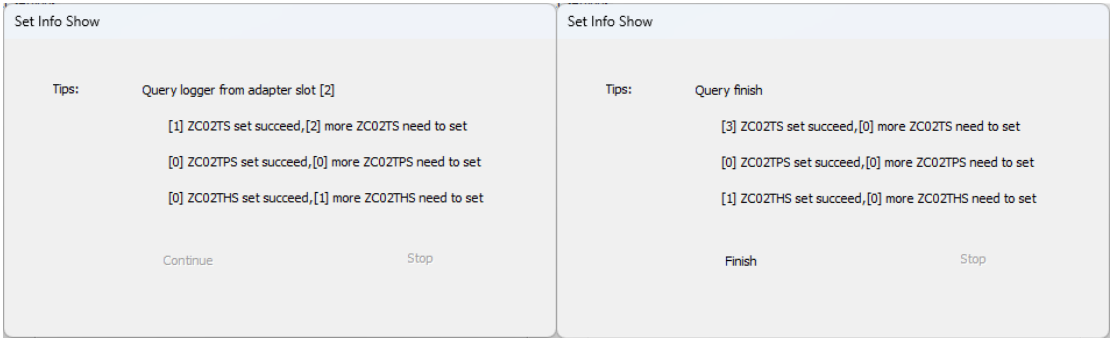
**Project Name:**

Entered by the user; the name must be unique and cannot be duplicated.

**Next:** After completing the parameter settings, click "Next" to open the Set Logger interface. The software will begin configuring the loggers, and the progress will be displayed on screen.

During configuration, the software will scan all 10 adapter slots. If not all loggers are configured after the first scan, a "Continue Setup" button will appear. At this point, place the remaining unconfigured loggers into the adapter slots, then click "Continue Setup" to start a new scan and configure the rest. Once all loggers have been successfully configured, click the "Finish" button. A pop-up message saying "Setup

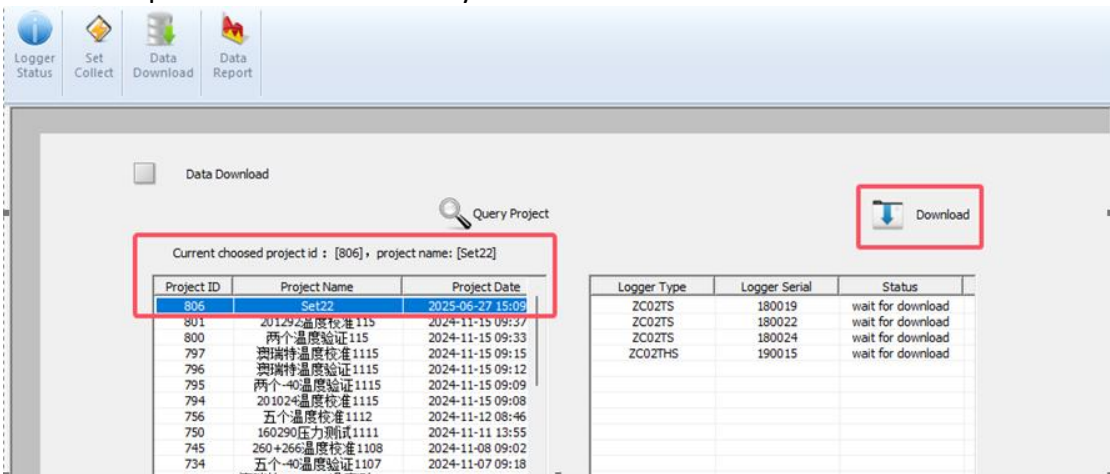
Successful” will confirm that the project setup is complete.

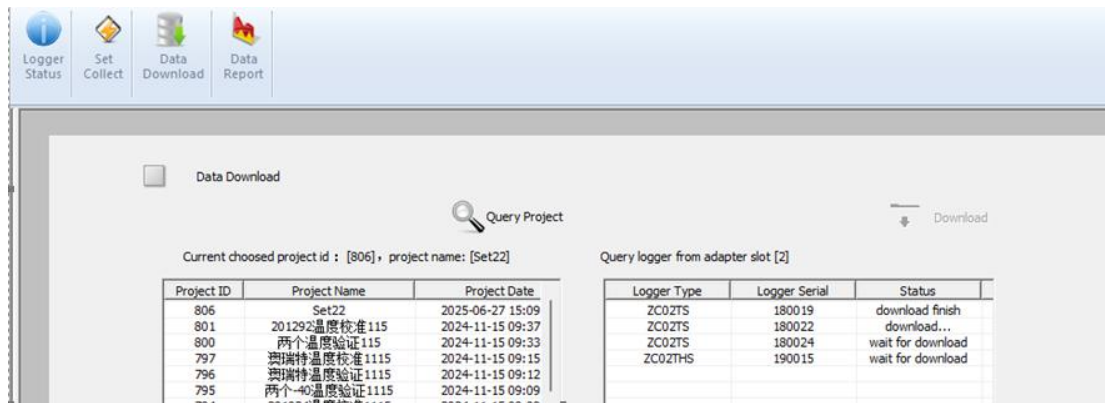


After setup is complete, the loggers can be placed in the target environment (e.g., autoclave, stopper washer, etc.) for data collection. Once the collection is finished, remove the loggers and place them back onto the adapter. Connect to the software to begin data download.

### 3.2.2 Data Download

After completing the “Acquisition Setup” section, any data acquisition tasks that have not yet been downloaded will be displayed in the list box on the left side of the Data Download interface. Select the desired task from the list and click the “Download Data” button on the right to save the data to the database. Once the download is complete, the task will no longer appear in this interface. You can then view the report in the “Data Analysis” section.

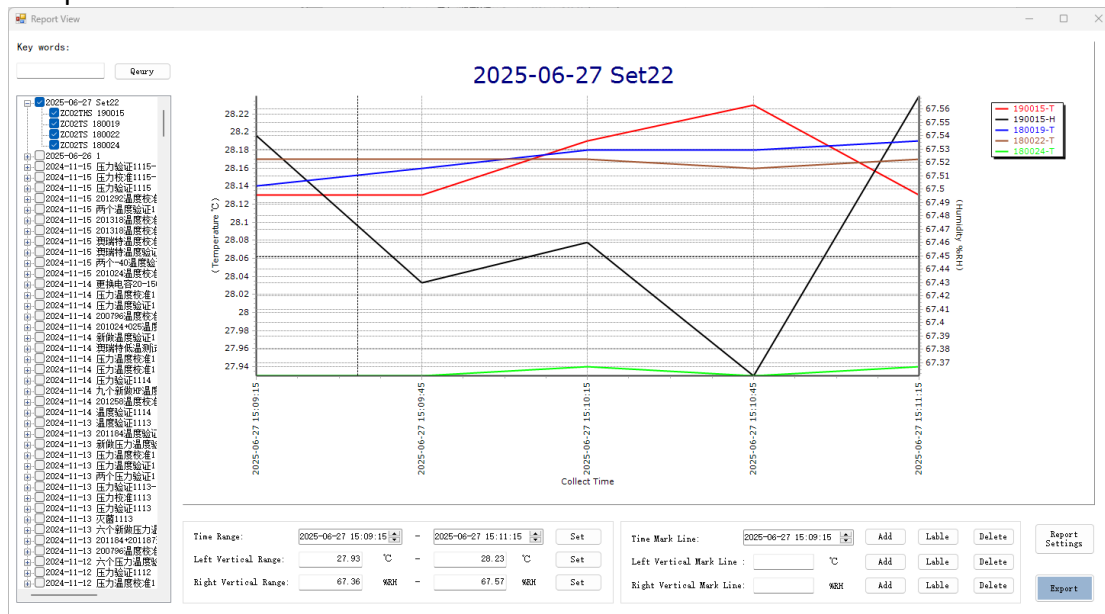




### 3.2.3 Data Analysis

Clicking on “Data Acquisition” - “Data Analysis” will open the report module as shown below. The query box in the upper left corner supports keyword search. If left blank, all acquisition tasks stored in the database will be listed. After selecting a task on the left panel, you can right-click or double-click to view the task data. It is possible to view data from one or multiple loggers under the same task, but data from multiple tasks cannot be viewed simultaneously.

To delete a task, right-click and select “Delete.” Password confirmation is required to complete the deletion.



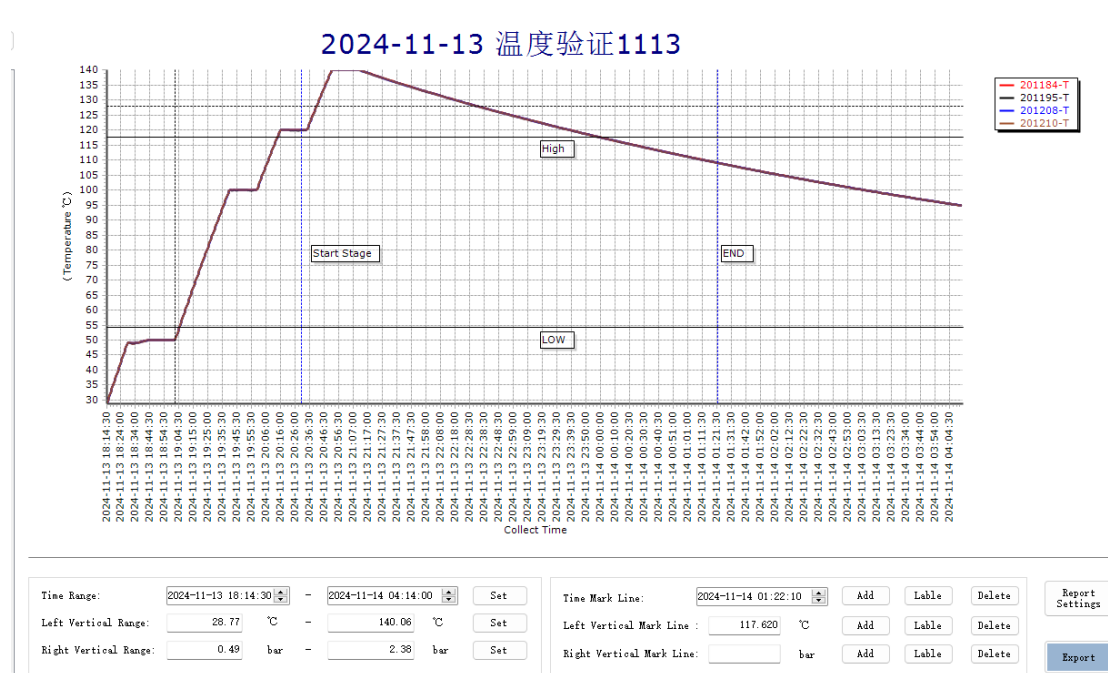
Report module related function introduction:

Time Range:	2025-06-27 15:09:15	-	2025-06-27 15:11:15	Set	Time Mark Line:	2025-06-27 15:09:15	Add	Label	Delete	Report Settings
Left Vertical Range:	27.93	°C	28.23	Set	Left Vertical Mark Line:	2	°C	Add	Label	Delete
Right Vertical Range:	67.36	%RH	67.57	Set	Right Vertical Mark Line:		%RH	Add	Label	Delete

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. The time axis allows up to 14 time marker lines to be added, each with optional remarks. For temperature, pressure, or humidity marker lines, a maximum of two lines can be added. Marker lines are for display purposes only and are used exclusively in the trend chart.



### 3. Report Settings

**Report Settings**

**Analysis Detail**

☒ Temp-Analysis ☐ Temp-Fluctuation-Center Logger  Allowable Error  ☐ Temp-Uniformity Allowable Error

☐ Humi-Analysis ☐ Humi-Fluctuation-Center Logger  Allowable Error  ☐ Humi-Uniformity Allowable Error

☐ Press-Analysis ☐ Press-Fluctuation-Center Logger  Allowable Error  ☐ Press-Uniformity Allowable Error

**Multi-segment Statistics**

Stage Number: 1

Stage1: 2024-11-13 18:14:30 - 2024-11-14 04:14:00

Stage2: 2024-11-13 18:14:30 - 2024-11-14 04:14:00

Stage3: 2024-11-13 18:14:30 - 2024-11-14 04:14:00

Stage4: 2024-11-13 18:14:30 - 2024-11-14 04:14:00

Stage5: 2024-11-13 18:14:30 - 2024-11-14 04:14:00

Stage6: 2024-11-13 18:14:30 - 2024-11-14 04:14:00

Stage7: 2024-11-13 18:14:30 - 2024-11-14 04:14:00

**F Value Analysis**

☐ F Value Analysis ☐ Synchronous Segmentation

F - Type: Moist Heat

F - T0: 121

F - Z: 10

**Signature Settings**

☒ Hand-All ☐ Hand-First\_Last ☐ Elec-Sign

Verifier: Password:

Auditor: Password:

OK Cancel

- This option is enabled via checkbox selection. Once selected, the report will include statistical analysis of temperature data, with optional indicators such as fluctuation and uniformity. If not selected, the report will only display the original data list without statistical results. The temperature data statistics are

shown as illustrated below.

Temperature Analysis Sheet									
Analysis Start Time: 2024-11-13 18:14:30					Temperature Unit: °C				
Analysis End Time: 2024-11-14 04:14:00					Humidity Unit: %RH				
Collect Interval: 30 S					Pressure Unit: bar				
Serial	Minimum	Min-Collect Time	Maximum	Max-Collect Time	Average	Max-Min	Max-Avg	Avg-Min	Deviation
201184-T	28.87	2024-11-13 18:14:30	140.06	2024-11-13 20:52:30	107.37	111.19	32.69	78.50	24.25
201195-T	28.81	2024-11-13 18:14:30	139.98	2024-11-13 20:52:30	107.33	111.17	32.65	78.52	24.24
201208-T	28.77	2024-11-13 18:14:30	139.97	2024-11-13 20:52:30	107.34	111.20	32.63	78.57	24.25
201210-T	28.85	2024-11-13 18:14:30	139.99	2024-11-13 20:52:30	107.34	111.14	32.65	78.49	24.24
Temperature Analysis									
Minimum: 28.77		Serial: 201208-T		Collect Time: 2024-11-13 18:14:30					
Maximum: 140.06		Serial: 201184-T		Collect Time: 2024-11-13 20:52:30					
Average: 107.35		Max-Min: 111.29							

This is an optional setting enabled by checkbox. When selected, you must specify the serial number of the central recorder and the fluctuation tolerance (in °C). The fluctuation is calculated using the following formula, in accordance with the standard *JJF 1101-2019: Calibration Specification for Temperature and Humidity Parameters of Environmental Test Equipment*:

$$\Delta t_f = \pm \max[(t_{j\max} - t_{j\min}) / 2]$$

$\Delta t_f$ —Temperature fluctuation, °C

$t_{j\max}$ —Maximum temperature at point j during n times of measurements, °C

$t_{j\min}$ —Minimum temperature at point j during n times of measurements, °C

The temperature fluctuation analysis is displayed in the report as shown below:

Temperature Analysis is Sheet									
Analysis Start Time: 2024-11-13 18:14:30					Temperature Unit: ℃				
Analysis End Time: 2024-11-14 04:14:00					Humidity Unit: %RH				
Collect Interval: 30 S					Pressure Unit: bar				
Serial	Minimum	Min-Collect Time	Maximum	Max-Collect Time	Average	Max-Min	Max-Avg	Avg-Min	Deviation
201184-T	28.87	2024-11-13 18:14:30	140.06	2024-11-13 20:52:30	107.37	111.19	32.69	78.50	24.25
201195-T	28.81	2024-11-13 18:14:30	139.98	2024-11-13 20:52:30	107.33	111.17	32.65	78.52	24.24
201208-T	28.77	2024-11-13 18:14:30	139.97	2024-11-13 20:52:30	107.34	111.20	32.63	78.57	24.25
201210-T	28.85	2024-11-13 18:14:30	139.99	2024-11-13 20:52:30	107.34	111.14	32.65	78.49	24.24
Temperature Analysis									
Minimum: 28.77		Serial: 201208-T			Collect Time: 2024-11-13 18:14:30				
Maximum: 140.06		Serial: 201184-T			Collect Time: 2024-11-13 20:52:30				
Average: 107.35		Max-Min: 111.29							
Temperature Fluctuation									
Center Logger Serial: 201184		Data Amount: 1200			Maximum Temperature: 140.06		Minimum Temperature: 28.87		
Fluctuation Value: 55.60		Allowable Error: 2			Judgement Result: Fail				

Temperature Uniformity Analysis: Uniformity analysis is only available when there are two or more temperature data loggers. The uniformity is calculated using the following formula, in accordance with the standard *JJF 1101-2019: Calibration Specification for Temperature and Humidity Parameters of Environmental Test*



**Equipment:**

$$\Delta t_u = \sum_{i=1}^n (t_{i\max} - t_{i\min}) / n$$

$\Delta t_u$  — Temperature uniformity, °C

$t_{i\max}$  — Maximum temperature measured at each measurement point during the i-th measurement, °C

$t_{i\min}$  — Minimum temperature measured at each measurement point during the i-th measurement, °C

$n$  — Number of measurements

The temperature uniformity analysis is displayed in the report as shown below:

Temperature Analysis Sheet									
Analysis Start Time: 2024-11-13 18:14:30					Temperature Unit: ℃				
Analysis End Time: 2024-11-14 04:14:00					Humidity Unit: %RH				
Collect Interval: 30 S					Pressure Unit: bar				
Serial	Minimum	Min-Collect Time	Maximum	Max-Collect Time	Average	Max-Min	Max-Avg	Avg-Min	Deviation
201184-T	28.87	2024-11-13 18:14:30	140.06	2024-11-13 20:52:30	107.37	111.19	32.69	78.50	24.25
201195-T	28.81	2024-11-13 18:14:30	139.98	2024-11-13 20:52:30	107.33	111.17	32.65	78.52	24.24
201208-T	28.77	2024-11-13 18:14:30	139.97	2024-11-13 20:52:30	107.34	111.20	32.63	78.57	24.25
201210-T	28.85	2024-11-13 18:14:30	139.99	2024-11-13 20:52:30	107.34	111.14	32.65	78.49	24.24
Temperature Analysis									
Minimum: 28.77		Serial: 201208-T			Collect Time: 2024-11-13 18:14:30				
Maximum: 140.06		Serial: 201184-T			Collect Time: 2024-11-13 20:52:30				
Average: 107.35		Max-Min: 111.29							
Temperature Fluctuation									
Center Logger Serial: 201184		Data Amount: 1200			Maximum Temperature: 140.06		Minimum Temperature: 28.87		
Fluctuation Value: 55.60		Allowable Error: 2			Judgement Result: Fail				
Temperature Uniformity									
Logger Number: 4		Data Amount: 1200			Uniformity Value: 0.18				
Allowable Error: 3		Judgement Result: Pass							

Verifier:	Date:	Auditor:	Date:
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The statistical analysis for humidity and pressure follows the same logic as for temperature and will not be repeated here.

- Multi-segment Statistical Settings: Supports 1 to 7 segments for segmented statistical analysis. The segmented statistics function applies to the temperature, humidity, and pressure data analyses mentioned above. It does not apply to raw data, as raw data segmentation is not supported.

Multi-segment Statistics

Stage Number

Stage1  -

Stage2  -

Stage3  -

Stage4  -

Stage5  -


Stage6  -

Stage7  -

After selecting the number of segments from the dropdown menu, the software will automatically divide the time range evenly. Users can then manually adjust the specific time range for each segment as needed. After segmentation, the software performs statistical analysis on the raw data within each segment. The results are displayed in the report as shown below:

ZCLOG VALIDATION

Validation Report



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Project Name: 温度验证114

Company Name:

Project Start Time: 2024-11-14 08:54:25

Project Creator: admin

Project End Time: 2024-11-14 15:39:25

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Temperature Analysis Sheet-Stage 1

Analysis Start Time: 2024-11-14 08:54:25

Temperature Unit: ℃

Analysis End Time: 2024-11-14 09:52:16

Humidity Unit: %RH

Collect Interval: 30 S

Pressure Unit: bar

Serial	Minimum	Min-Collect Time	Maximum	Max-Collect Time	Average	Max-Min	Max-Avg	Avg-Min	Deviation
201184-T	-80.07	2024-11-14 09:19:55	32.04	2024-11-14 08:54:25	-56.44	112.11	88.48	23.63	40.32
201195-T	-80.07	2024-11-14 09:20:25	32.61	2024-11-14 08:54:25	-56.33	112.68	88.94	23.74	40.53
201209-T	28.16	2024-11-14 09:01:25	31.91	2024-11-14 08:54:55	29.77	3.75	2.14	1.61	1.25
201210-T	-80.06	2024-11-14 09:19:55	32.39	2024-11-14 08:54:25	-56.80	112.45	89.19	23.26	39.80

Temperature Analysis

Minimum: -80.07

Serial: 201184-T

Collect Time: 2024-11-14 09:19:55

Maximum: 32.61

Serial: 201195-T

Collect Time: 2024-11-14 08:54:25

Average: -52.96

Max-Min: 112.68

Temperature Fluctuation

Center Logger Serial: 201184

Data Amount: 116

Maximum Temperature: 32.04

Minimum Temperature: -80.07

Fluctuation Value: 56.06

Allowable Error: 2

Judgement Result: Fail

Temperature Uniformity

Logger Number: 4

Data Amount: 116

Uniformity Value: 0.28

Allowable Error: 3

Judgement Result: Pass

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Verifier:

Date:


Auditor:

Date:

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ZCLOG VALIDATION

Validation Report



Project Name: 温度验证114

Company Name:

Project Start Time: 2024-11-14 08:54:25

Project Creator: admin

Project End Time: 2024-11-14 15:39:25

Temperature Analysis Sheet-Stage 2

Analysis Start Time: 2024-11-14 09:52:16

Temperature Unit: °C

Analysis End Time: 2024-11-14 10:50:07

Humidity Unit: %RH

Collect Interval: 30 S

Pressure Unit: bar

Serial	Minimum	Min-Collect Time	Maximum	Max-Collect Time	Average	Max-Min	Max-Avg	Avg-Min	Deviation
201184-T	-80.05	2024-11-14 09:53:55	-8.75	2024-11-14 10:49:55	-46.12	71.30	37.37	33.93	29.55
201195-T	-80.06	2024-11-14 09:53:55	-8.66	2024-11-14 10:49:55	-46.22	71.40	37.56	33.84	29.58
201208-T	10000.00		-1000.00		NaN	-11000.00	NaN	NaN	NaN
201210-T	-80.05	2024-11-14 10:08:25	-8.53	2024-11-14 10:49:55	-46.08	71.52	37.55	33.97	29.54

Temperature Analysis

Minimum: -80.06

Serial: 201195-T

Collect Time: 2024-11-14 09:53:55

Maximum: -8.53

Serial: 201210-T

Collect Time: 2024-11-14 10:49:55

Average: -46.14

Max-Min: 71.53

Temperature Fluctuation

Center Logger Serial: 201184

Data Amount: 116

Maximum Temperature: -8.75

Minimum Temperature: -80.05

Fluctuation Value: 35.65

Allowable Error: 2

Judgement Result: Fail

Temperature Uniformity

Logger Number: 4

Data Amount: 116

Uniformity Value: 0.15

Allowable Error: 3

Judgement Result: Pass

Verifier:

Date:


Auditor:

Date:

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ZCLOG VALIDATION

Validation Report



Project Name: 温度验证114

Company Name:

Project Start Time: 2024-11-14 08:54:25

Project Creator: admin

Project End Time: 2024-11-14 15:39:25

Temperature Analysis Sheet-Stage 7

Analysis Start Time: 2024-11-14 14:41:33

Temperature Unit: °C

Analysis End Time: 2024-11-14 15:39:25

Humidity Unit: %RH

Collect Interval: 30 S

Pressure Unit: bar

Serial	Minimum	Min-Collect Time	Maximum	Max-Collect Time	Average	Max-Min	Max-Avg	Avg-Min	Deviation
201184-T	38.31	2024-11-14 15:37:25	150.11	2024-11-14 15:00:25	130.33	111.80	19.78	92.02	36.15
201195-T	38.99	2024-11-14 15:36:55	150.02	2024-11-14 15:00:25	130.40	111.03	19.62	91.41	35.92
201208-T	10000.00		-1000.00		NaN	-11000.00	NaN	NaN	NaN
201210-T	37.66	2024-11-14 15:37:25	149.99	2024-11-14 15:00:55	130.24	112.33	19.75	92.58	36.17

Temperature Analysis

Minimum: 37.66

Serial: 201210-T

Collect Time: 2024-11-14 15:37:25

Maximum: 150.11

Serial: 201184-T

Collect Time: 2024-11-14 15:00:25

Average: 130.33

Max-Min: 112.45

Temperature Fluctuation

Center Logger Serial: 201184

Data Amount: 116

Maximum Temperature: 150.11

Minimum Temperature: 38.31

Fluctuation Value: 55.90

Allowable Error: 2

Judgement Result: Fail

Temperature Uniformity

Logger Number: 4

Data Amount: 116

Uniformity Value: 0.31

Allowable Result: 3

Judgement Result: Pass

Verifier:

Date:

Auditor:

Date:

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● Sterilization Parameter Statistics Settings

24

**F Value Analysis**

☐ F Value Analysis

☐ Synchronous Segmentation

F - Type

Moist Heat ▼

F - T0

121

F - Z

10

**F Value Statistics Table:** When selected, the report will display F value statistical information.

**Synchronized Segmentation:** This option becomes available only when “F Value Statistics Table” is selected. When enabled, the F value segmented statistics will align with the data segmentation settings. If unchecked, the F value will be calculated based on the original data time intervals.

**Sterilization Type:** Options include Moist Heat Sterilization and Pasteurization, selectable via dropdown menu.

**Reference Temperature T0:** The formula for F value calculation is shown below. For moist heat sterilization, T0 is typically set to 121 °C; for pasteurization, T0 is usually 80 °C.

$$F = \Delta t \sum_{i=0}^n 10^{\frac{T_i - T_0}{Z}}$$

The formula for calculating the F-value is as follows:

**$\Delta t$ :** Sterilization sampling interval, in minutes. For example, if the sampling interval is set to 30 seconds, then  $t = 0.5$  minutes; If the interval is 60 seconds, then  $t = 1$  minute.

**$T_i$ :** Temperature value of the i-th sampling group.


**$T_0$ :** Standard sterilization temperature, a basic parameter.

**$Z$ :** Sterilization rate, a basic parameter.

**Sterilization Z-Value:** Typically set to 10. The F value statistics table is displayed as shown below:

ZCLOG VALIDATION

## Validation Report



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Project Name: 温度验证114
Company Name:

Project Start Time: 2024-11-14 08:54:25
Project Creator: admin

Project End Time: 2024-11-14 15:39:25

F Value Analysis Sheet-Stage 1

F Analysis Start Time: 2024-11-14 08:54:25
F-T0: 121

F Analysis End Time: 2024-11-14 09:52:16
F-Z: 10

Collect Interval: 30 S

Serial	201184	201195	201208	201210					
F Value	0.00	0.00	0.00	0.00					

Maximum F Value: 0
Serial: 201195

Minimum F Value: 0
Serial: 201208

F Value Analysis Sheet-Stage 2

F Analysis Start Time: 2024-11-14 09:52:16
F-T0: 121

F Analysis End Time: 2024-11-14 10:50:07
F-Z: 10

Collect Interval: 30 S


Serial	201184	201195	201208	201210					
F Value	0.00	0.00	0.00	0.00					

Maximum F Value: 0
Serial: 201210

Minimum F Value: 0
Serial: 201208

ZCLOG VALIDATION

## Validation Report



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Project Name: 温度验证114
Company Name:

Project Start Time: 2024-11-14 08:54:25
Project Creator: admin

Project End Time: 2024-11-14 15:39:25

F Value Analysis Sheet-Stage 5

F Analysis Start Time: 2024-11-14 12:45:50
F-T0: 121

F Analysis End Time: 2024-11-14 13:43:42
F-Z: 10

Collect Interval: 30 S

Serial	201184	201195	201208	201210					
F Value	1.26	1.26	0.00	1.30					

Maximum F Value: 1.3
Serial: 201210

Minimum F Value: 0
Serial: 201208

F Value Analysis Sheet-Stage 6

F Analysis Start Time: 2024-11-14 13:43:42
F-T0: 121

F Analysis End Time: 2024-11-14 14:41:33
F-Z: 10

Collect Interval: 30 S

Serial	201184	201195	201208	201210					
F Value	1412.74	1393.91	0.00	1406.72					

Maximum F Value: 1412.74
Serial: 201184

Minimum F Value: 0
Serial: 201208

### ● Signature Settings

Signature Settings

☒ Hand-All
☐ Hand-First\_Last
☐ Elec-Sign

Verifier

Password

Auditor

Password

**Hand-All:** By default, the system uses the full-page handwritten signature mode, which adds blank signature lines to every page of the report. Users must print the report and sign manually.

**Hand-First\_Last:** In this mode, signature lines are displayed only on the first and last pages of the report. No signature lines are shown on intermediate pages.

**Eleo-Sign:** When “Eleo-Sign” is selected, signature information must be added below. Select the corresponding user’s signature from the dropdown list, which is based on

the name assigned when the user was created. Electronic signatures require password authentication. The user must enter the correct password for the selected account in order to apply the signature. Once successfully authenticated, the system will automatically fill in the selected signature and timestamp on the signature line at the bottom of the report.

**Signature Settings**

☐ Hand-All   
 ☐ Hand-First\_Last   
 ☒ Elec-Sign

Verifier: JOLE   
 Password: \*\*\*\*\*

Auditor: JACK   
 Password: \*\*\*\*\*

Verifier: JOLE	Date: 2025-06-27 15:43:54	Auditor: JACK	Date: 2025-06-27 15:43:54
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After all settings are configured, click the Confirm button to export the report according to the specified parameters. If the Cancel button is clicked, none of the configured settings will be saved.


Note: All parameters on this interface will automatically revert to their default values the next time the interface is opened.

Click the Export Report button to initiate the report generation. Once loading is complete, a preview window will appear. The loading time may vary from a few seconds to several minutes, depending on the amount of data and the number of statistical segments. Please wait patiently during this process.

The preview interface is shown below:

ZCLOG\_VALIDATION

Validation Report



Project Name: 压力验证1115-1

Company Name:

Project Start Time: 2024-11-15 11:28:00

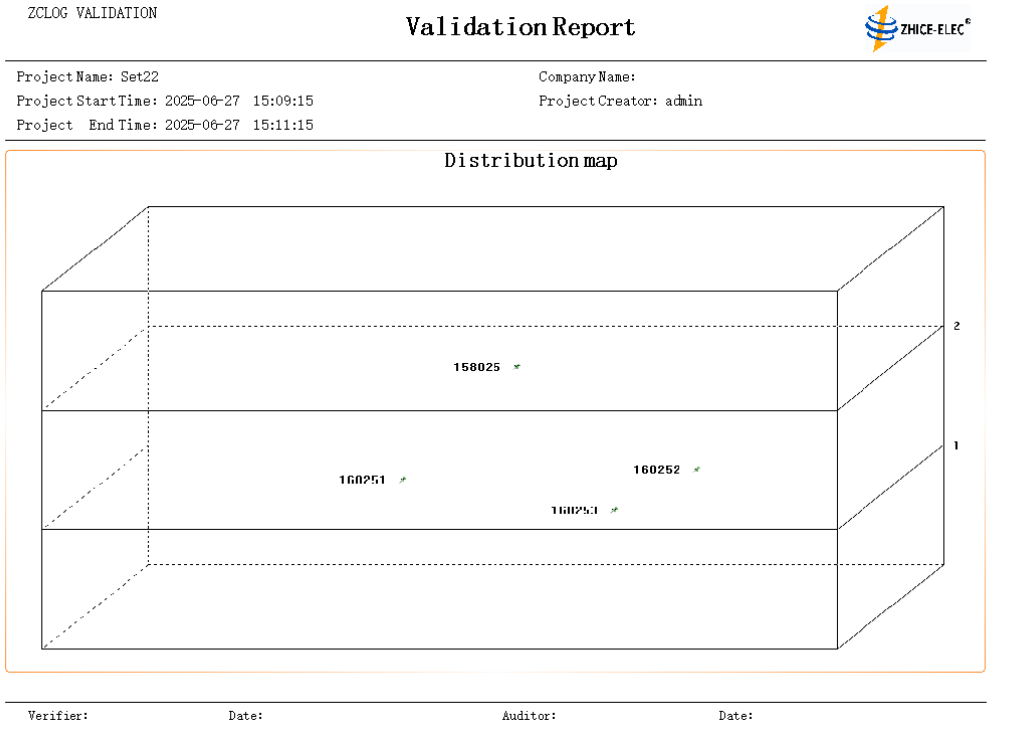
Project Creator: admin

Project End Time: 2024-11-15 11:47:15

Logger List


	Logger Type	Logger Serial	Start Time	End Time	Interval (S)	Sub-Probe	
	ZC02TPS	160262	2024-11-15 11:28:00	2024-11-15 11:47:10	5	2	
	ZC02TPS	160271	2024-11-15 11:28:00	2024-11-15 11:47:15	5	2	
	ZC02TPS	160272	2024-11-15 11:28:00	2024-11-15 11:47:10	5	2	

Verifier:	Date:	Auditor:	Date:
1 — 28			



ZCLOG VALIDATION

Validation Report



Project Name: 压力验证1115-1

Company Name:

Project Start Time: 2024-11-15 11:28:00

Project Creator: admin

Project End Time: 2024-11-15 11:47:15

Collect Data Sheet

Collect Data Start Time: 2024-11-15 11:28:00

Collect Data End Time: 2024-11-15 11:47:15

Collect Interval: 5 S

Temperature Unit: °C

Humidity Unit: %RH

Pressure Unit: bar

Collect Time	160262-T	160262-P	160271-T	160271-P	160272-T	160272-P
2024-11-15 11:28:00	25.41	1.011	25.40	1.011	25.45	1.011
2024-11-15 11:28:05	25.42	1.011	25.42	1.011	25.57	1.011
2024-11-15 11:28:10	26.31	1.011	26.34	1.011	25.60	1.011
2024-11-15 11:28:15	26.94	1.012	26.37	1.010	25.57	1.010
2024-11-15 11:28:20	26.55	1.011	26.15	1.010	25.54	1.010
2024-11-15 11:28:25	26.20	1.011	25.94	1.034	25.51	1.011
2024-11-15 11:28:30	25.95	1.011	25.78	1.011	25.49	1.011
2024-11-15 11:28:35	25.79	0.702	25.75	1.011	25.48	1.011
2024-11-15 11:28:40	25.76	0.477	25.61	0.526	25.48	1.011
2024-11-15 11:28:45	25.65	0.480	25.59	0.477	25.48	0.476
2024-11-15 11:28:50	25.64	0.494	25.56	0.490	25.48	0.477
2024-11-15 11:28:55	25.62	0.495	25.54	0.492	25.49	0.494
2024-11-15 11:29:00	25.61	0.495	25.52	0.493	25.50	0.494
2024-11-15 11:29:05	25.59	0.496	25.50	0.494	25.50	0.495
2024-11-15 11:29:10	25.58	0.496	25.49	0.494	25.50	0.495
2024-11-15 11:29:15	25.57	0.496	25.48	0.495	25.50	0.496
2024-11-15 11:29:20	25.56	0.496	25.48	0.495	25.51	0.496
2024-11-15 11:29:25	25.56	0.497	25.47	0.496	25.51	0.496
2024-11-15 11:29:30	25.55	0.497	25.47	0.496	25.51	0.496
2024-11-15 11:29:35	25.55	0.498	25.48	0.497	25.51	0.497
2024-11-15 11:29:40	25.56	0.498	25.49	0.497	25.51	0.497
2024-11-15 11:29:45	25.55	0.499	25.49	0.498	25.52	0.498
2024-11-15 11:29:50	25.54	0.499	25.49	0.498	25.52	0.499
2024-11-15 11:29:55	25.55	0.499	25.49	0.499	25.52	0.499
2024-11-15 11:30:00	25.55	0.500	25.48	0.499	25.52	0.499
2024-11-15 11:30:05	25.55	0.500	25.47	0.499	25.52	0.500
2024-11-15 11:30:10	25.54	0.500	25.47	0.499	25.52	0.500
2024-11-15 11:30:15	25.54	0.500	25.46	0.500	25.53	0.500
2024-11-15 11:30:20	25.54	0.500	25.46	0.500	25.51	0.500
2024-11-15 11:30:25	25.53	0.500	25.45	0.500	25.51	0.500

Verifier:

Date:

Auditor:

Date:

ZCLOG VALIDATION

## Validation Report



Project Name: 压力验证1115-1

Company Name:

Project Start Time: 2024-11-15 11:28:00

Project Creator: admin

Project End Time: 2024-11-15 11:47:15

## Temperature Analysis Sheet-Stage 1

Analysis Start Time: 2024-11-15 11:28:00  
Analysis End Time: 2024-11-15 11:30:45  
Collect Interval: 5 STemperature Unit: °C  
Humidity Unit: %RH  
Pressure Unit: bar

Serial	Minimum	Min-Collect Time	Maximum	Max-Collect Time	Average	Max-Min	Max-Avg	Avg-Min	Deviation
160262-T	25.41	2024-11-15 11:28:00	26.94	2024-11-15 11:28:15	25.69	1.53	1.25	0.28	0.33
160271-T	25.40	2024-11-15 11:28:00	26.37	2024-11-15 11:28:15	25.58	0.97	0.79	0.18	0.25
160272-T	25.45	2024-11-15 11:28:00	25.60	2024-11-15 11:28:10	25.51	0.15	0.09	0.06	0.03

## Temperature Analysis

Minimum: 25.40

Serial: 160271-T

Collect Time: 2024-11-15 11:28:00

Maximum: 26.94

Serial: 160262-T

Collect Time: 2024-11-15 11:28:15

Average: 25.59

Max-Min: 1.54

## Temperature Fluctuation

Center Logger Serial: 160262

Data Amount: 34

Maximum Temperature: 26.94

Minimum Temperature: 25.41

Fluctuation Value: 0.77

Allowable Error: 2.2

Judgement Result: Pass

## Temperature Uniformity

Logger Number: 3

Data Amount: 34

Uniformity Value: 0.32

Allowable Error: 2.3

Judgement Result: Pass

Verifier:

Date:

Auditor:

Date:

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ZCLOG VALIDATION

## Validation Report



Project Name: 压力验证1115-1

Company Name:

Project Start Time: 2024-11-15 11:28:00

Project Creator: admin

Project End Time: 2024-11-15 11:47:15

## Pressure Analysis Sheet-Stage 1

Analysis Start Time: 2024-11-15 11:28:00  
Analysis End Time: 2024-11-15 11:30:45  
Collect Interval: 5 STemperature Unit: °C  
Humidity Unit: %RH  
Pressure Unit: bar

Serial	Minimum	Min-Collect Time	Maximum	Max-Collect Time	Average	Max-Min	Max-Avg	Avg-Min	Deviation
160262-P	0.477	2024-11-15 11:28:40	1.012	2024-11-15 11:28:15	0.609	0.535	0.403	0.132	0.208
160271-P	0.477	2024-11-15 11:28:45	1.034	2024-11-15 11:28:25	0.619	0.557	0.415	0.142	0.219
160272-P	0.476	2024-11-15 11:28:45	1.011	2024-11-15 11:28:00	0.632	0.535	0.379	0.156	0.227

## Pressure Analysis

Minimum: 0.476

Serial: 160272-P

Collect Time: 2024-11-15 11:28:45

Maximum: 1.034

Serial: 160271-P

Collect Time: 2024-11-15 11:28:25

Average: 0.620

Max-Min: 0.558

## Pressure Fluctuation

Center Logger Serial: 160262

Data Amount: 34

Maximum Pressure: 1.012

Minimum Pressure: 0.477

Fluctuation Value: 0.268

Allowable Error: 0.5

Judgement Result: Pass

## Pressure Uniformity

Logger Number: 3

Data Amount: 34

Uniformity Value: 0.039

Allowable Error: 0.6

Judgement Result: Pass

Verifier:

Date:

Auditor:


Date:

17 — 28



ZCLOG VALIDATION

Validation Report



Project Name: 压力验证1115-1

Company Name:

Project Start Time: 2024-11-15 11:28:00

Project Creator: admin

Project End Time: 2024-11-15 11:47:15

F Value Analysis Sheet-Stage 1

F Analysis Start Time: 2024-11-15 11:28:00

F—T0: 121

F Analysis End Time: 2024-11-15 11:30:45

F—Z: 10

Collect Interval: 5 S

Serial	160262	160271	160272						
F Value	0.00	0.00	0.00						

Maximum F Value: 0

Serial: 160262

Minimum F Value: 0

Serial: 160272

F Value Analysis Sheet-Stage 2

F Analysis Start Time: 2024-11-15 11:30:45

F—T0: 121

F Analysis End Time: 2024-11-15 11:33:30

F—Z: 10

Collect Interval: 5 S

Serial	160262	160271	160272						
F Value	0.00	0.00	0.00						

Maximum F Value: 0

Serial: 160262

Minimum F Value: 0

Serial: 160271

Verifier:

Date:


Auditor:

Date:

24 — 28

ZCLOG VALIDATION

Validation Report



Project Name: 压力验证1115-1

Company Name:

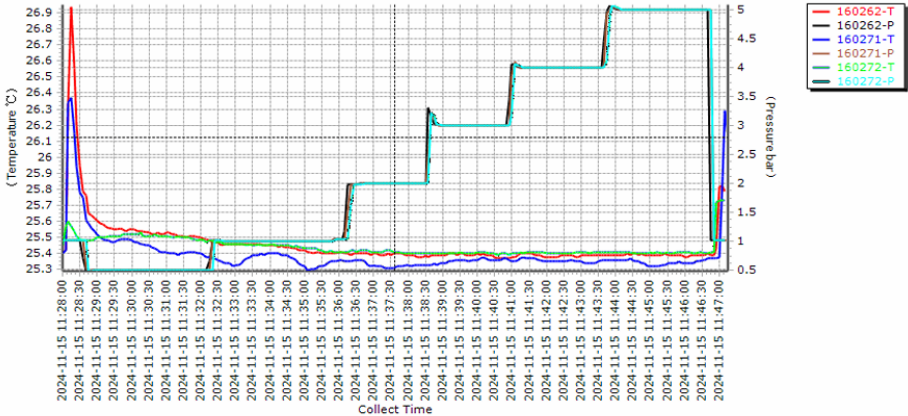
Project Start Time: 2024-11-15 11:28:00

Project Creator: admin

Project End Time: 2024-11-15 11:47:15

Tendency Chart

2024-11-15 压力验证1115-1



Verifier:

Date:

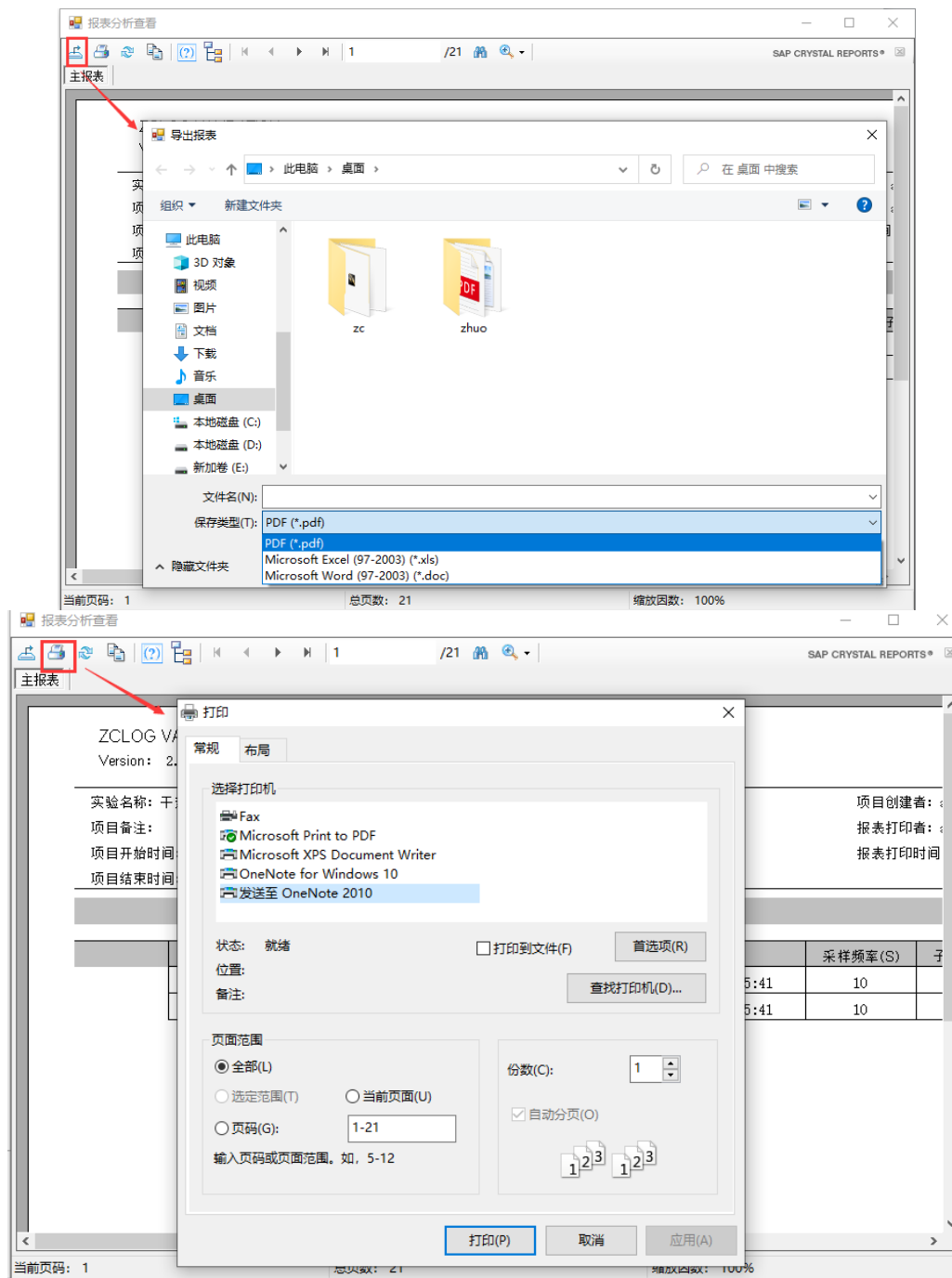
Auditor:

Date:

28 — 28

Each page of the report will display a report header and footer. The data in between is shown based on the items selected in Function Area 3 described earlier.

The toolbar at the top of the preview window includes options such as Export and Print. The Export button allows the report to be saved in PDF, Word, or Excel formats. The Print button enables users to select a printer and print the report directly.



### 3.3 Logger Calibration

#### ● Calibration Overview

Device calibration includes two main functions: recorder calibration and recorder verification.

Calibration is performed to correct the inherent measurement deviations of the recorder, generate calibration parameters, and write them into the recorder's firmware via software. Verification is conducted to confirm whether the corrected results meet the required standards and to generate the corresponding calibration

report.

Calibration Process: Create a calibration project - Create a data acquisition project and check "For Calibration" - Place the recorder and temperature standard into the temperature chamber, the chamber controls temperature ramping and holding according to the set calibration points - Download the acquired data - Recorder Calibration (obtain standard value) - Recorder Calibration (obtain acquired values) - Calculate correction coefficients - Start calibration - Calibration complete.

Verification Process: Create a calibration project - Create a data acquisition project and check "For Verification" - Place the recorder and temperature standard into the temperature chamber, the chamber controls temperature ramping and holding according to the set calibration points - Download the acquired data - Recorder Verification, start verification - Verification complete - Export the calibration report.

### ● Calibration Project Settings

Creation date	Project name	Calibration mode	Calibration points	Calibration type
2024-08-12 08:37:56	-80~150-B2022A0208	Manual	7	ZC02-温度
2024-08-12 08:46:19	-20~140-B2022A0208	Manual	6	ZC02-温度
2024-08-12 18:04:32	0.1-5bar	Manual	7	ZC02-压力
2024-08-13 08:40:41	-80~150-B2022A0207	Manual	7	ZC02-温度
2024-08-13 09:27:30	-20~140-B2022A0207	Manual	6	ZC02-温度
2024-08-13 09:41:57	-40-150	Manual	7	ZC02-温度
2024-08-16 09:50:41	-20-140 临时	Manual	6	ZC02-温度
2024-08-21 16:04:18	-40-150-B2020A0139	Manual	7	ZC02-温度

System Time: 2025-06-27 15:55:22 Current Account: admin

Calibration Project: This project configuration is used for both calibration and verification purposes. It stores the calibration/verification type as well as the corresponding set point information.

Project Name: Entered by the user; duplicate names are not allowed.

Calibration Type Selection: Select from the dropdown menu: ZC02 - Temperature, ZC02 - Humidity, or ZC02 - Pressure.

Calibration Mode: Fixed to Manual, indicating that the environmental chamber and reference equipment are not controlled by the software and must be operated manually by the user.

Temperature Range - Lower Limit: Input by the user.

Temperature Range - Upper Limit: Input by the user.

Number of Calibration Points: Input by the user. For calibration, temperature and pressure support 4 to 10 points; humidity is fixed at 2 points. While for verification, there is no restriction on the number of points.

P1 – P10: Calibration/verification points. The software will auto-generate a list of points based on the input range and quantity. Users may manually edit the values as needed.

Add: After configuration, click the Add button to save the project. The project will appear in the list below.

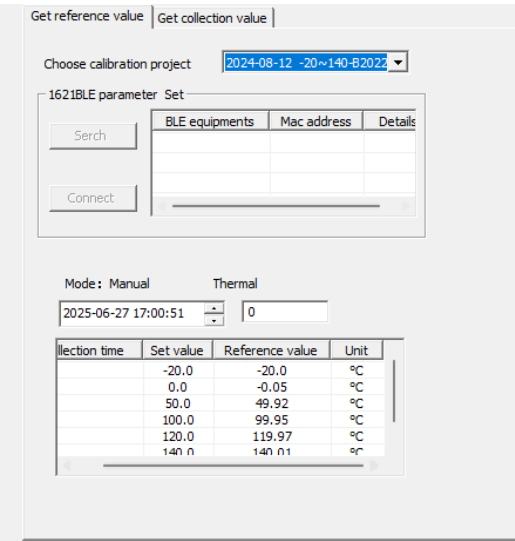
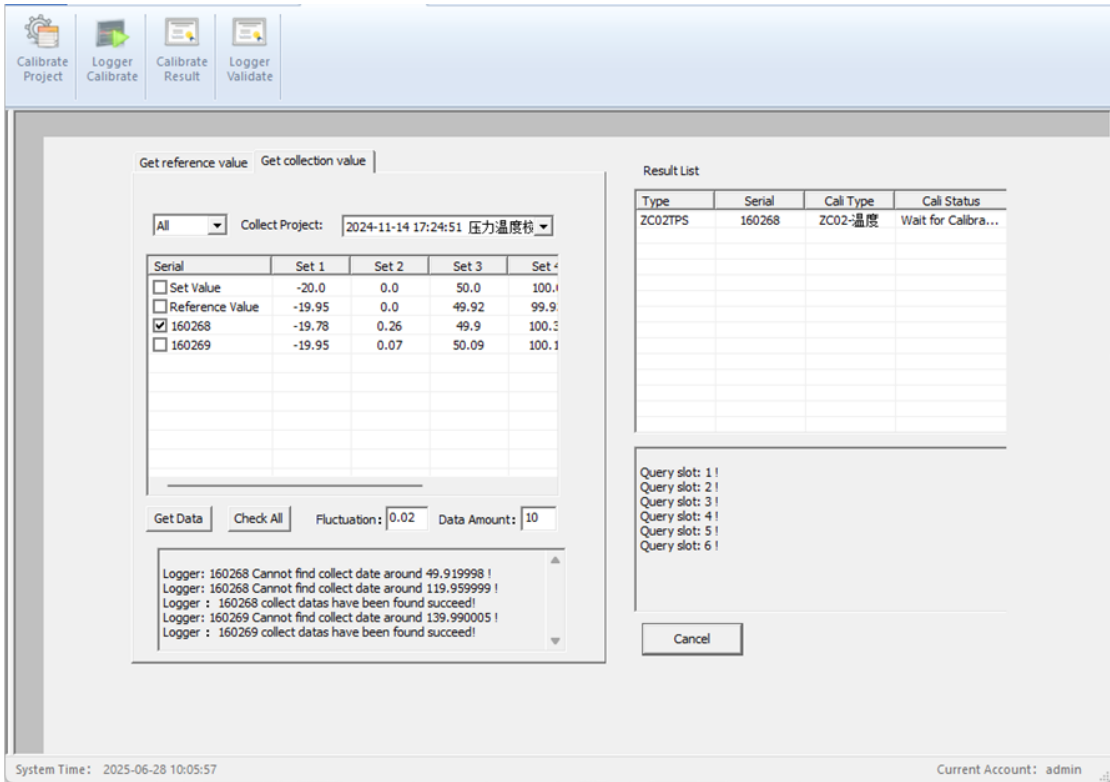
Delete: Select a row in the list and click to delete the corresponding project. Proceed with caution.

Clear All: Deletes all calibration project entries. Use with caution.

#### ● Recorder Calibration

After completing the data acquisition process for recorder calibration and downloading the data, navigate to Device Calibration - Recorder Calibration.

Obtain Standard Values: Select the corresponding calibration project name from the dropdown list. Once selected, the data table below will display the configured set points and their corresponding standard values. If this project has been used for calibration previously, the last recorded standard values will be shown; If this is the first time using the calibration project, the standard value column will be blank. You can double-click the corresponding cells in the list to manually enter the actual standard values for each set point.



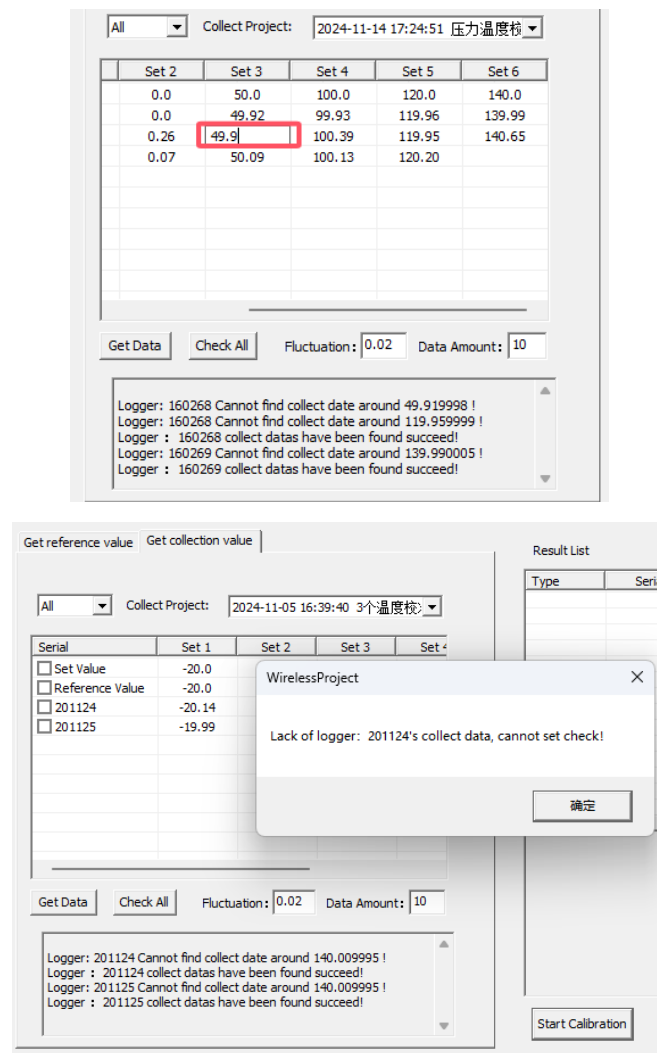
Obtain Collected Values: Select the corresponding acquisition project from the dropdown menu, then click the Get Data button. The software will automatically retrieve the actual collected values for each set point from all recorders and display them in the data list.

The software retrieves the corresponding collected values based on the following criteria:

1. The deviation between the collected value and the calibration point must be within the allowable tolerance range;
2. A number of consecutive data groups (defined as the stability group count) must show fluctuations within the specified stability threshold;
3. One value from the stable data set that meets the above conditions will be selected as the actual collected value.

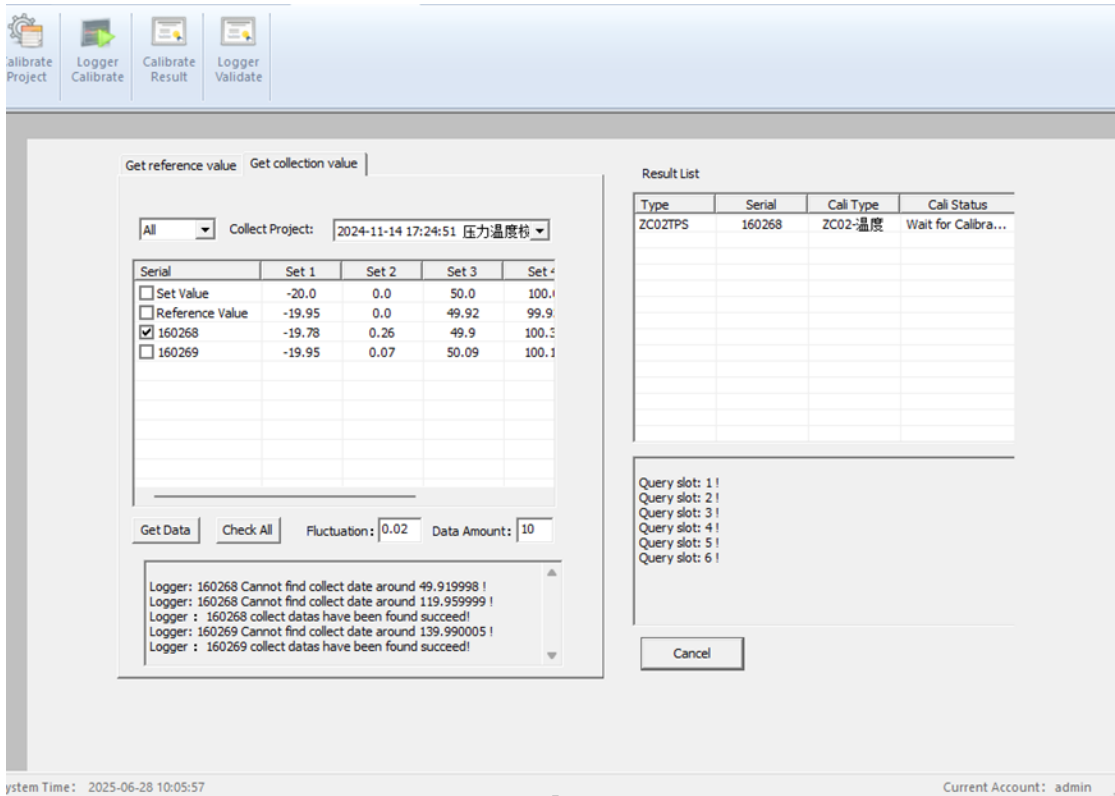
	ZC02TS (°C)	ZC02THS-Humidity (%RH)	ZC02TPS-Pressure (bar)
Error (Fixed)	3	5	0.6
Fluctuation (Adjustable)	0.02	2	0.03

Example: In a real calibration process, if the temperature chamber does not maintain stability long enough at a calibration point (e.g., 40 ° C), the recorder may not contain sufficient stable data. As a result, the software may be unable to retrieve the corresponding collected value using the default stability criteria. In such cases, you can manually increase the fluctuation threshold and reduce the required number of stable groups, then click to retrieve the data again. If the software still cannot automatically obtain a valid collected value, it is also possible to manually enter the value by double-clicking the corresponding cell in the data list. Only when data for all calibration points are complete can the calibration process proceed to the next step.



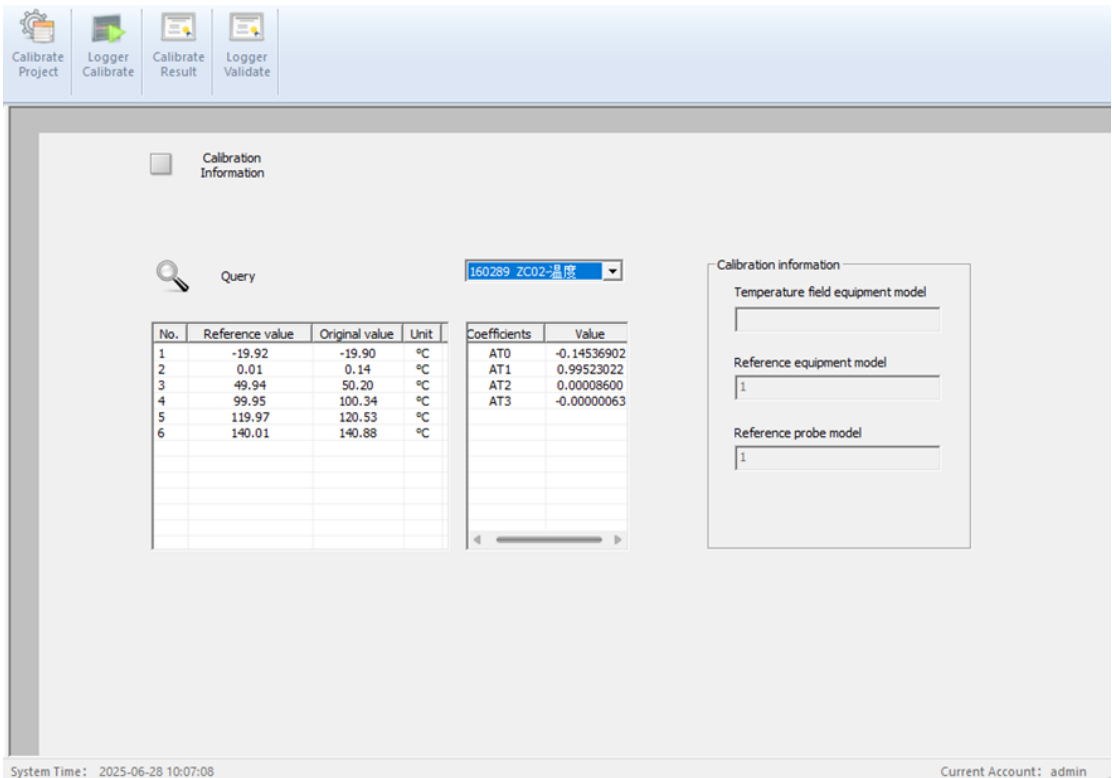
**Select All:** Click this button to select all recorders whose calibration data is complete. Recorders with incomplete data will not be selected.

**Start Calibration:** Manually select, or use “Select All,” to choose the serial numbers of the recorders to be calibrated. Only recorders with complete data can be selected—an alert message will appear if an attempt is made to select one with incomplete data. Once selected, click the Start Calibration button on the right. The software will locate the corresponding recorders by serial number and write the new correction coefficients into each device, completing the calibration process.



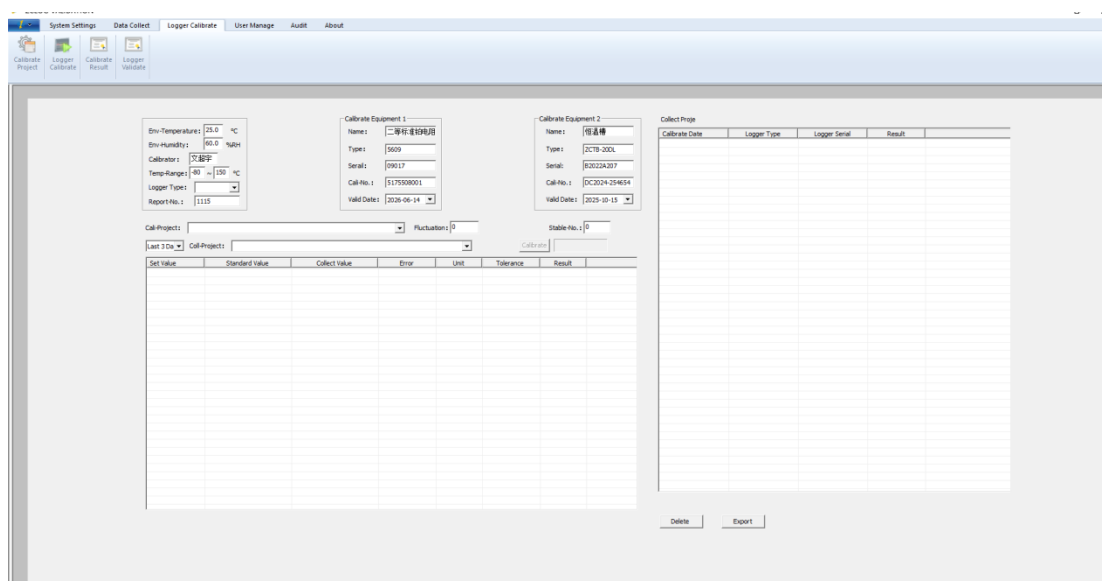
### ● Calibration Results

This interface allows users to view the calibration history. Click the Query button, then select a recorder from the dropdown list on the right to display its calibration data. The left panel shows the original calibration data, while the right panel displays the corrected coefficients after calibration.





## ● Recorder Verification



After configuring the calibration environment information and device parameter details, these settings will be included in the calibration report.

Select the corresponding acquisition project name from the dropdown list. Click the Calibrate button to begin. The software will automatically search for the collected values of all recorders under this project at each calibration point and perform data processing. The results will be displayed in the Results List on the right. In the results list, recorders with passed calibration are shown in black, and those with exceptions are shown in red. Click a specific recorder in the list to view its detailed calibration data.

Note: For ZC02THS recorders, if humidity parameters have also been calibrated, the left-side data table will simultaneously display the humidity calibration data when viewing detailed results.

In the calibration results interface, you can click to select a row for export or deletion. The pass/fail criteria for calibration results are based on the system's default tolerance settings. The accuracy requirements are as follows:

产品型号	温度记录仪-短探针 ZC02TS-P	温度记录仪-硬探针 ZC02TS-HP	温度记录仪-软探针 ZC02TS-SP	温湿度记录仪 ZC02THS	温度压力记录仪 ZC02TPS
温度范围	-40°C~150°C/0°C~150°C (两种温度范围)			-40°C~125°C 0~100%RH	-20°C~140°C 0~5bar(绝压)
分辨率	0.01°C			0.01°C, 0.01%RH	0.01°C, 1mbar
精度	±0.1°C			≤±0.3°C(5~60°C) , ≤±2.0%RH(0~90% RH@25°C)	±0.1°C, ±10mbar

Env-Temperature: 25.0 °C  
Env-Humidity: 60.0 %RH  
Calibrator: 文超宇  
Temp-Range: 40 ~ 150 °C  
Logger Type: ZC02TPS-P  
Report No.: 1031

Calibrate Equipment 1  
Name: 二等标准铂电阻  
Type: S609  
Serial: 09017  
Call-No.: S175508001  
Valid Date: 2026-06-14

Calibrate Equipment 2  
Name: 恒温槽  
Type: ZCTB-200L  
Serial: B2022A208  
Call-No.: DC2024-254654  
Valid Date: 2025-10-15

Collect Project: 2024-08-12 ~20~140-82022A0208  
Fluctuation: 0.04  
Stable-No.: 10

Calibrate

Set Value	Standard Value	Collect Value	Error	Unit	Tolerance	Result
-20.0	-19.97	-20.0	-0.03	°C	±0.1	P
0.0	-0.02	-0.03	-0.03	°C	±0.1	P
50.0	49.93	49.94	0.01	°C	±0.1	P
100.0	99.97	99.92	-0.05	°C	±0.1	P
120.0	120.01	119.93	-0.08	°C	±0.1	P
140.0	140.03	139.98	-0.05	°C	±0.1	P

DeleteExport

Collect Project: 2024-10-31

Calibrate Date	Logger Type	Logger Serial	Result
2024-10-31	ZC02TPS	201033	P

The exported calibration report is shown as illustrated below:

报告编号Report No: 1030



ZC02TPS 校准报告

CALIBRATION REPORT

校准依据Calibrated According to: 《JJG 875-2019 数字压力计检定规程》

标准器	仪器名称	型号规格	出厂编号	证书编号	有效期至	
Standard	Instrument Name	Type	Serial	Certificate No	Valid Date	
Instrument	二等标准铂电阻	S609	09017	S175508001	2026-06-14	
	恒温槽	ZCTB-200L	2000A0101	DC2024-254654	2025-10-15	
校准地点 Calibration Address: 合肥智测电子						
环境温度T: 25.0°C 相对湿度H: 60.0%RH						
委托单位	设备名称	设备型号	出厂编号	制造单位	测量范围	
Company	Device Name	Type	Serial	Manufacture	Range	
智测电子	温度压力记录仪	ZC02TPS	160283	智测电子	-20.140 °C / 0.5 bar	
温度校准方法 Temperature Calibration Method:						
将ZC02TPS记录仪设置开始采集,采集间隔30秒,然后将标准温度计和被校ZC02TPS记录仪一同放置恒温槽中,被校记录仪浸入恒温槽的深度不小于7.5cm,并使被校记录仪尽可能靠近标准温度计,恒温槽恒定温度偏离校准点不超过0.2℃点,以标准温度计为准。待恒温槽温度稳定并至少保持15分钟后,记录标准温度计读数。待全部温度点校准完成后,使用软件读取记录仪测量数据。						
校准结果: 通过 (P), 不通过 (F)						
压力校准方法 Pressure Calibration Method:						
将ZC02TPS记录仪设置开始采集,采集间隔5秒,将被校准的ZC02TPS温度、压力记录仪连接至压力校准装置,连接完成后,按照50kPa、100kPa、200kPa、300kPa、400kPa、500kPa顺序依次设置标准压力计的输出压力,待压力输出稳定后稳定至少保持2分钟以上;然后依次进行剩余校准点的校准工作。待所有校准点校准完成后,使用软件读取记录仪的压力测量的压力测量数据。						
校准结果: 通过 (P), 不通过 (F)						
温度校准数据 Temperature Calibration Data						
设定值 Set Value (°C)	-20.0	0.0	50.0	100.0	120.0	140.0
标准值 Standard Value (°C)	-19.97	-0.02	49.93	99.97	120.01	140.03
测量值 Actual Value (°C)	-20.15	-0.13	50.2	100.89	121.3	142.03
偏差 Error (°C)	-0.18	-0.11	0.27	0.92	1.29	2.0
允差 Allow Error (°C)	±0.1					
校准结果 Calibration Result	F	F	F	F	F	F
压力校准数据 Pressure Calibration Data						
设定值 Set Value (kPa)	0.5	1.0	2.0	3.0	4.0	5.0
标准值 Standard Value (kPa)	0.5	1.0	2.0	3.0	4.0	5.0
测量值 Actual Value (kPa)	0.504	1.003	2.002	3.001	3.999	5.0
偏差 Error (kPa)	0.004	0.003	0.002	0.001	-0.001	0.0
允差 Allow Error (kPa)	±1					
校准结果 Calibration Result	P	P	P	P	P	P

校准员 Calibrator: 文超宇 校准日期 Calibrate Date: 2024-10-30

### 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.

[illegible]

### 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.

☐ Create Account:

Account Name :

Password :

Check password :

Electronic signature :

Account Level : Administrator

Account Status :

Connect Telephone :

Create Date : 2025-06-28

Expired Date : 2100-01-01

Note :

Authority

Account Level : Administrator

☒ Company-Modify

☒ Calibration Project-Add

☒ User Security-Modify

☒ Calibration Project-Delete

☒ Environment-Add

☒ Calibration-Calibrate

☒ Environment-Modify

☒ Calibration Report-Query

☒ Environment-Delete

☒ Calibration Report-Export

☒ Collect-Set

☒ Account - Query

☒ Data download-Query

☒ Account - Add

☒ Data download-Download

☒ Account - Modify

☒ Report-Query

☒ Account - Delete

☒ Report-Export

☒ Audit - Query

☒ Report-Delete

☒ Audit - Export

Default

Set

Cancel

The image shows two side-by-side 'Authority Detail' windows. The left window is for 'Operator' and the right is for 'Guest'. Both windows have a list of permissions with checkboxes. The 'Operator' window has most permissions checked, while the 'Guest' window has some permissions unchecked, such as 'User Security-Modify', 'Environment-Delete', 'Account - Query', 'Account - Add', 'Account - Modify', 'Account - Delete', 'Report-Delete', and 'Audit - Export'. Both windows have 'Default', 'Set', and 'Cancel' buttons at the bottom.

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-Query	Calibration Report-Export	Account - Query	Account - Add	Account - Modify	Account - Delete	Audit - Query	Audit - Export
Operator	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Guest	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The initial permission details are shown below. After making modifications, click Confirm to apply the permissions to the newly created user. Functions disabled for a user will appear as grayed-out buttons in the software interface. As shown in the example below, when creating the user “TESTC,” the Add User permission was disabled. Therefore, after logging in as “TESTC” and accessing the user management interface, the “Create” button appears grayed out, indicating that this user does not have permission to add new users.

The image shows a 'Create Account' form. It has fields for Account Name, Password, Check password, Electronic signature, Account Level, Account Status, Connect Telephone, Create Date, and Expired Date. There is a 'Note' field at the bottom. A red box highlights the 'Create' button, which is grayed out, indicating it is disabled. An 'Authority' icon is visible next to the Account Level dropdown.

Create Account:

Account Name:

Password:

Check password:

Electronic signature:

Account Level:  Authority

Account Status:

Connect Telephone:

Create Date:

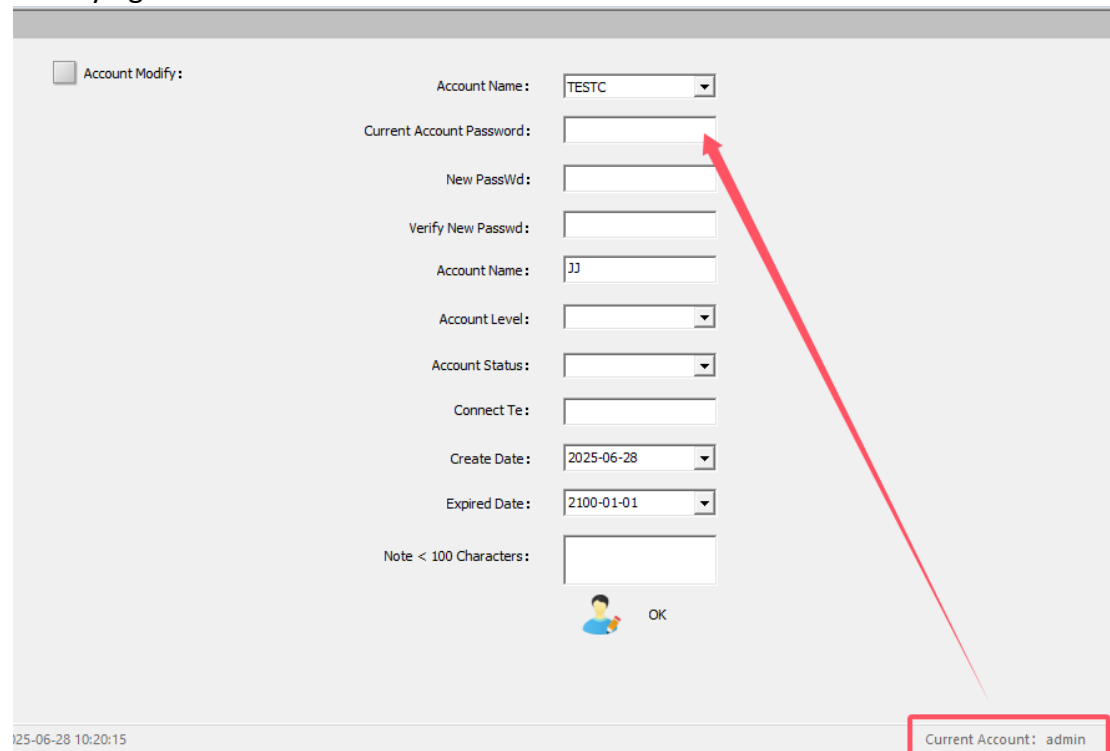
Expired Date:

Note:

### 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.

Current Account Password: Please note that this refers to the password of the currently logged-in account, not the original password of the account you are modifying.



Account Modify:

Account Name: TESTC

Current Account Password:

New PassWd:

Verify New Passwd:

Account Name: JJ

Account Level:

Account Status:

Connect Te:

Create Date: 2025-06-28

Expired Date: 2100-01-01

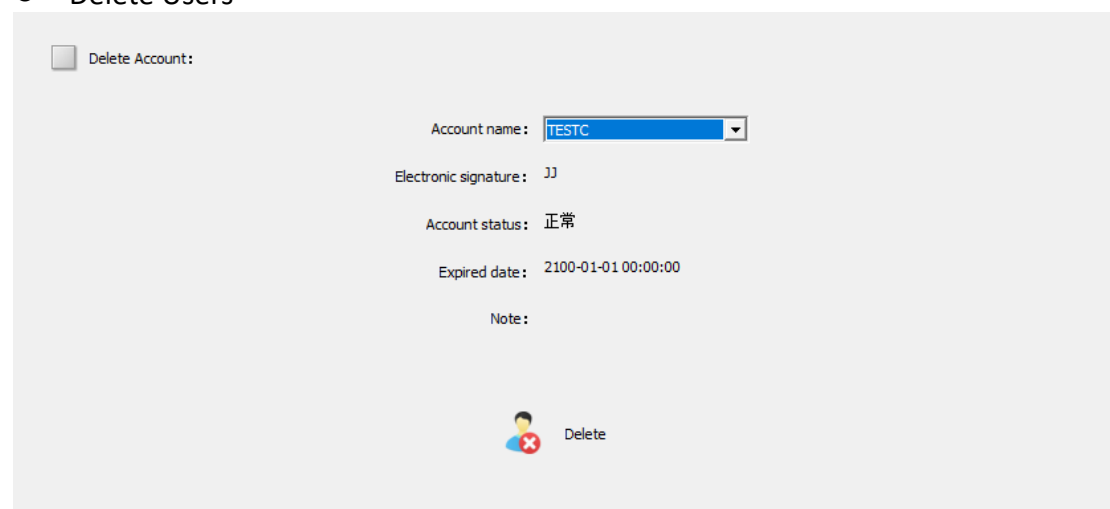
Note < 100 Characters:

OK

25-06-28 10:20:15

Current Account: admin

#### ● Delete Users



Delete Account:

Account name: TESTC

Electronic signature: JJ

Account status: 正常

Expired date: 2100-01-01 00:00:00

Note:

Delete

Select the user to be deleted from the dropdown list and click the "Delete" button. The currently logged-in user cannot be deleted.

### 3.5 Audit Trail

You can view log records based on various criteria to check user operation details. Click the "Download" button to export the logs as a PDF file.

The screenshot displays the 'Audit Log' window. At the top, there are search filters: 'Start Date' (2025-06-28), 'End Date' (2025-06-28), 'Operate Type' (empty), and 'Operator' (empty). Below these are 'Query' and 'Download' buttons. The main area contains a table with the following data:

Operate Time	Operator	Operate Type	Details
2025-06-28 10:27:49	admin	Audit-View	Entry Audit log interface
2025-06-28 10:27:43	admin	User-Delete	Entry>User-Delete"interface
2025-06-28 10:27:39	admin	User-Modify	Entry>User-Modify"interface
2025-06-28 10:27:38	admin	User-Add	Entry>User-Add"interface
2025-06-28 10:27:34	admin	User-Query	Entry>User-Query"interface
2025-06-28 10:27:32	admin	Logger Status-View	Entry Logger Status interface
2025-06-28 10:27:30	admin	User Security-View	Entry>User Security"interface
2025-06-28 10:27:29	admin	Company-View	Entry"Company information"interface
2025-06-28 10:27:28	admin	User-Delete	Entry>User-Delete"interface
2025-06-28 10:27:27	admin	User-Modify	Entry>User-Modify"interface
2025-06-28 10:27:25	admin	User-Add	Entry>User-Add"interface
2025-06-28 10:27:24	admin	User-Query	Entry>User-Query"interface
2025-06-28 10:27:17	admin	Audit-View	Entry Audit log interface
2025-06-28 10:27:09	admin	Log In	Log in
2025-06-28 10:25:04	admin	Audit-View	Entry Audit log interface
2025-06-28 10:25:00	admin	Log In	Log in
2025-06-28 10:23:31	admin	Exit	Exit
2025-06-28 10:23:18	admin	Audit-View	Query audit log
2025-06-28 10:23:06	admin	Audit-View	Entry Audit log interface
2025-06-28 10:23:05	admin	User-Delete	Entry>User-Delete"interface
2025-06-28 10:23:01	admin	Log In	Log in
2025-06-28 10:21:09	admin	Exit	Exit
2025-06-28 10:20:50	admin	User-Delete	Entry>User-Delete"interface

At the bottom, the status bar shows 'System Time: 2025-06-28 10:28:01' and 'Current Account: admin'.

**Query:** As shown in the figure above, you can set query conditions such as start and end time, operation type, and operator. If no query conditions are set, all log records will be displayed by default.

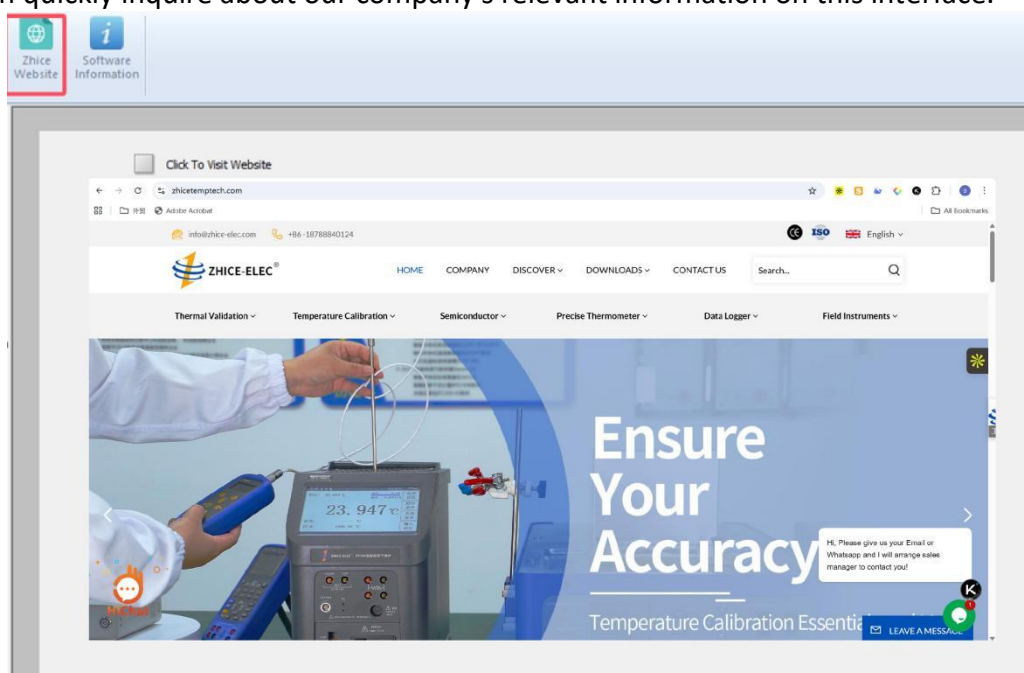
**Download:** Export log records as a PDF file.

Audit Log Details			
Operate Time	Operator	Operate Type	Details
2025-06-28 10:33:16	admin	Audit--View	Query audit log
2025-06-28 10:33:04	admin	Audit--View	Entry Audit log interface
2025-06-28 10:32:56	admin	Log In	Log in
2025-06-28 10:29:49	admin	Audit--Download	Download audit log
2025-06-28 10:28:00	admin	Audit--View	Query audit log
2025-06-28 10:27:49	admin	Audit--View	Entry Audit log interface
2025-06-28 10:27:43	admin	User--Delete	Entry "User-Delete" interface
2025-06-28 10:27:39	admin	User--Modify	Entry "User-Modify" interface
2025-06-28 10:27:38	admin	User--Add	Entry "User-Add" interface
2025-06-28 10:27:34	admin	User--Query	Entry "User-Query" interface
2025-06-28 10:27:32	admin	Logger Status--View	Entry Logger Status interface
2025-06-28 10:27:30	admin	User Security--View	Entry "User Security" interface
2025-06-28 10:27:29	admin	Company-View	Entry "Company information" interface
2025-06-28 10:27:28	admin	User--Delete	Entry "User-Delete" interface
2025-06-28 10:27:27	admin	User--Modify	Entry "User-Modify" interface
2025-06-28 10:27:25	admin	User--Add	Entry "User-Add" interface
2025-06-28 10:27:24	admin	User--Query	Entry "User-Query" interface
2025-06-28 10:27:17	admin	Audit--View	Entry Audit log interface
2025-06-28 10:27:09	admin	Log In	Log in
2025-06-28 10:25:04	admin	Audit--View	Entry Audit log interface
2025-06-28 10:25:00	admin	Log In	Log in
2025-06-28 10:23:31	admin	Exit	Exit
2025-06-28 10:23:18	admin	Audit--View	Query audit log
2025-06-28 10:23:06	admin	Audit--View	Entry Audit log interface
2025-06-28 10:23:05	admin	User--Delete	Entry "User-Delete" interface
2025-06-28 10:23:01	admin	Log In	Log in
2025-06-28 10:21:09	admin	Exit	Exit
2025-06-28 10:20:50	admin	User--Delete	Entry "User-Delete" interface

## 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.



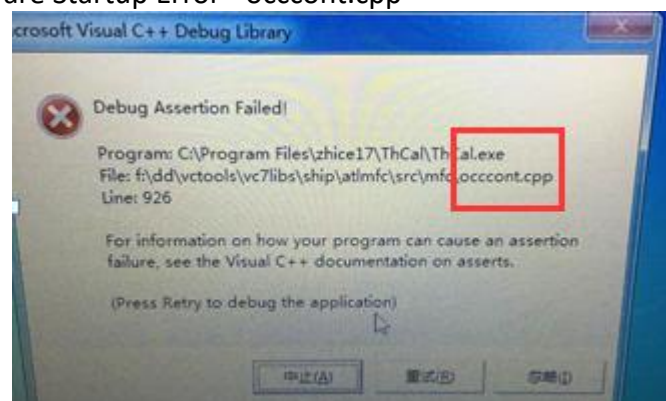
### 3.6.2 About Software

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



### Common Issues and Troubleshooting Methods

#### Abnormal Software Startup Error - occcont.cpp

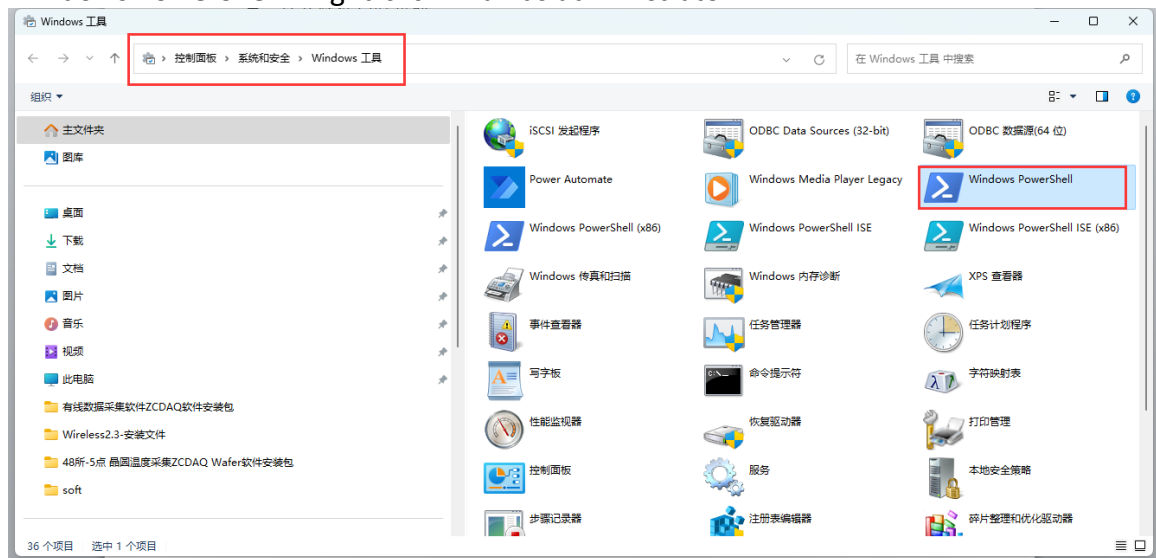


The error message containing the keyword “occcont.cpp” indicates a failure in registering certain system components during software installation. To resolve this, manually register the required components by following these steps: Right-click the software icon and select “Open file location.” Locate the ocx folder, then copy the files `mscomm32.ocx` and `teechart5.ocx` from this folder to the `C:\Windows\SysWOW64` directory.

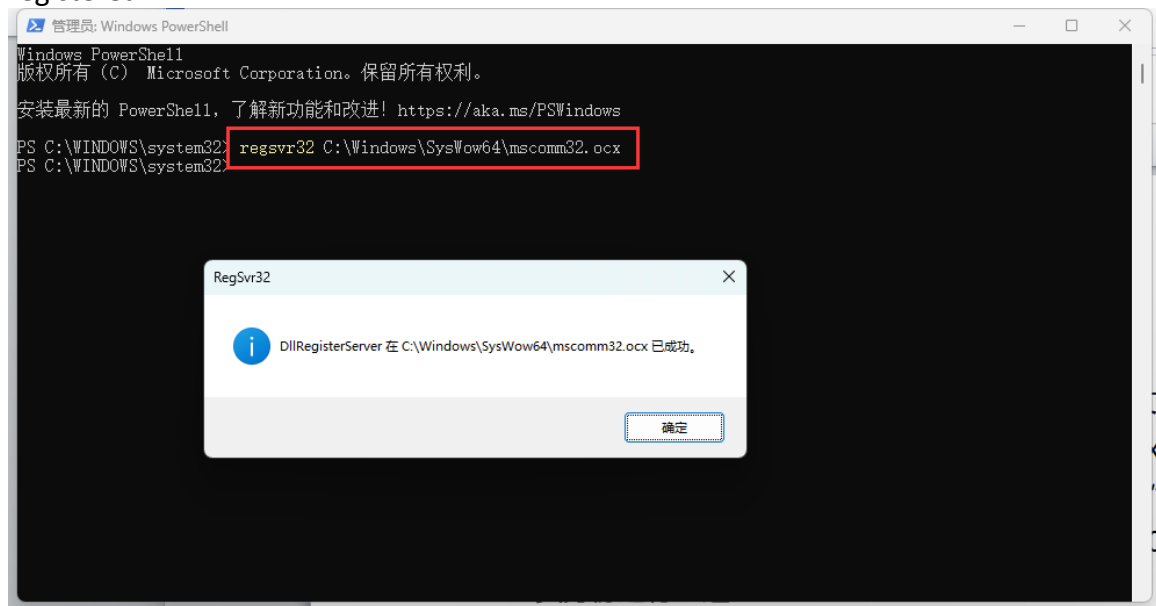
名称	修改日期	类型	大小
mscomm32.ocx	2014-01-02 13:44	ActiveX 控件	102 KB
TeeChart5.ocx	2015-04-24 13:34	ActiveX 控件	2,542 KB



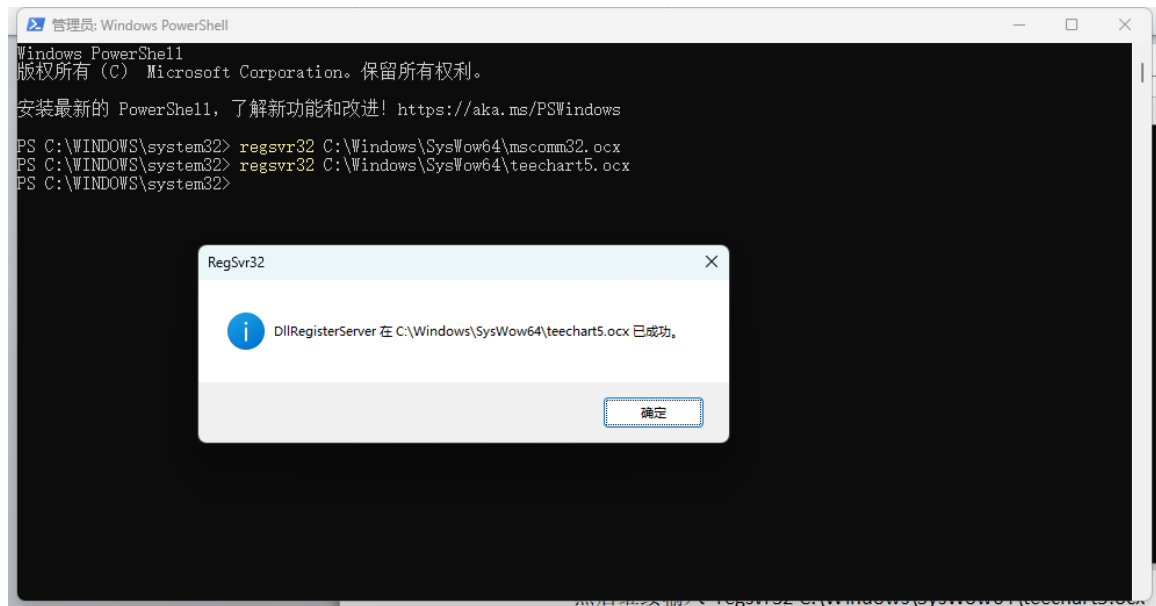
Computer - Start Menu - Control Panel - System and Security - Windows Tools - Windows PowerShell - Right-click - Run as administrator.



In the pop-up window shown below, type `regsvr32 C:\Windows\SysWow64\mscomm32.ocx` and press Enter. If a message appears stating “XXX was successful,” it indicates the component has been successfully registered.



Then enter `regsvr32 C:\Windows\SysWow64\teechart5.ocx` to register the other component. Once the success message appears, the software can be launched normally.



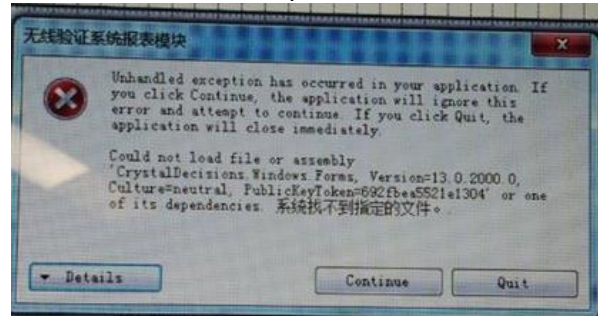
### User Locked or Disabled - Unable to Log In

Abnormal operations may cause the current user account to be locked. If this is the only user account in the system, please contact us for assistance. If there are other accounts with the same or higher access level and the "User Edit" permission, you can log in with one of those accounts, go to "User Management - Edit User," and change the locked or disabled account status to "Active." The user will then be able to log in normally.

“Download Failed” or “Failed to Save XXX” Message During Data Download

If the logger is detected in the “Device Status” interface but fails to download in the “Data Download” interface, first try downloading again. If the download continues to fail, it is likely due to a hardware malfunction or internal data loss. In this case, the logger must be reconfigured for data acquisition before attempting to download data again.

#### Error “XXX - The system cannot find the specified file” When Generating Reports



This error is caused by a missing or failed installation of the report component SAP Crystal Report during software setup. To resolve it, navigate to the software installation directory, locate the “CRRuntime\_64bit\_13\_0\_25.msi” file in the “Data” folder, and run the installer. Once the installation is successful, reports can be exported normally.

#### “Load Report Failed” or “Unable to Create Directory or File” Error When Generating Reports

##### Cause:

Insufficient space in the temporary file directory, leading to a Crystal Reports error.

##### Solution:

Delete files from the directory C:\Documents and Settings\Administrator\Local Settings\Temp. After clearing the temp folder, try generating the report again.

##### 原因：

临时文件目录下的空间不足，水晶报表出错。

##### 解决方法：

将C:\Documents and Settings\Administrator\Local Settings\Temp目录下的文件删除掉就OK了。

#### “Page Size Too Small” or “Page Header/Footer Too Large” Error When Generating Reports

Computer - Printers - Set the default printer to a virtual printer