



BATTERY TESTING SYSTEM 8.0
USER MANUAL

Remarks、 Note and Warning

	Remarks: Remarks represent the main information that can help you make better use of the device.
	Note: Note represents the indication that could damage the hardware or result in data loss, and tell you how to avoid such problems.
	Warning: Warning represents the property damage, personal injury and even death.

Note: Please read this manual carefully before using the system for better performance. Due to the continuous upgrading of the system, this manual is for reference only, if there is any change there won't be any notice.

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1. Introduction

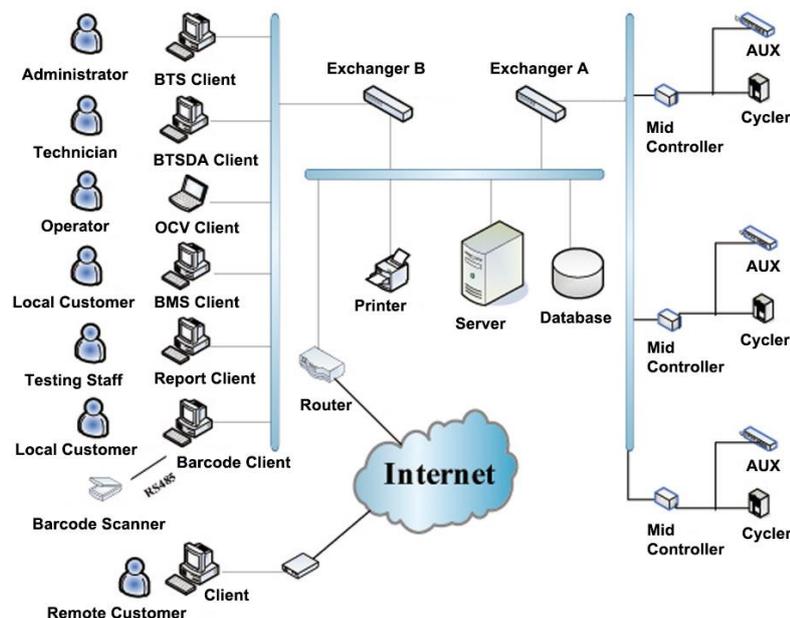
1. 1. Purpose of This Manual

This document is mainly for guidance for customers and related technical personnel to learn the installation and functions of BTS8.0.

1. 2. Software Introduction

BTS8.0 is the client software of BTS battery testing system. BTS battery testing system is a new generation of battery testing system independently developed by Neware through continuous innovation by fulfilling the market demand over the years. This system is an upgraded version which supports the measurement of the voltage and temperature of the single cell in the battery pack, DCIR measurement, pulse working step, SIM working step, constant power charging, etc.

The BTS battery testing system is based on the original office network and the working platform of computer equipment. It is simple to operate. Users can log in the system remotely through the internet to achieve various operations on the equipment. C/S network system structure and database management are adopted to centrally control the connected multiple testing equipment (theoretically with 250 sets and 32000 channels, actually it depends on the user's computer configuration and data record space, generally configured as 800 channels) and to centrally analyze and manage all the data. The following figure shows the network deployment diagram of BTS battery testing equipment.



About the configuration above,

1. BTSCient can support users of different levels to operate it. The system supports adding user groups and users, and setting different operation permissions for user groups through the administrator.
2. BTSCient sends the command to the server, and the server sends the relevant command to the BTS middle machine.
3. BTSDA: BTSDA (Battery Testing System Data Analyzer) has powerful data analysis functions, various data analysis methods, export schemes and drawing functions, supporting powerful curve comparison.
4. Server: Responsible for real-time communication between upper and middle machine, real-time transmission of control instructions and feedback data.
5. Database: Store the current test data and save the historical test data.
6. Barcode management: For tests with barcode, the corresponding test data can be inquired through the battery barcode to ensure the traceability of battery test data.
7. Remote customers can access the data in devices and databases under different servers through BTS8.0.

The applicable products for battery testing system of structure of upper computer, middle machine and lower machine are as follows:
BTS-4000 series, BTS-8000 series, IGBT series.

Upper computer: Edit the test process, send test instructions to the middle machine through the server, display the real-time status and data of the battery, and check and save the test data.

Middle machine: achieve network connection, receive the command from upper computer, control lower machine and transmit real-time data.

Lower machine: receive the command of the middle machine, control the charging/discharging of the channel, collect the voltage, current and other data of the channel in real time.

1. 3. Software Operation Environment

Equipment	Setting
CPU	At least Pentium dual-core
The host frequency	Min.2G
Memory	Min.8G
Hard disk	Min.200G
File format	NTFS
Operation system	At least Microsoft Windows7,64 bit
Communication	Ethernet

1. 4. Software Characteristics

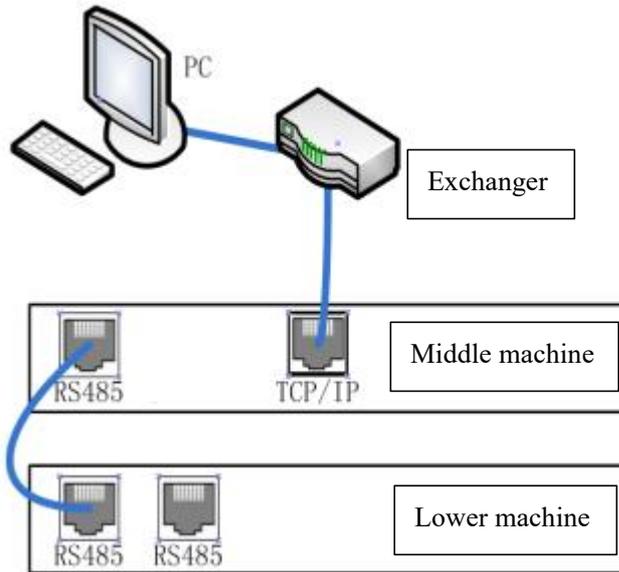
1. C/S framework, based on TCP/IP communication protocol.
2. Multi-user management.
3. Human-computer interface friendly, advanced UI design concept.
4. Powerful test process control function.
5. Flexible and powerful programming test scheme.
6. Perfectly achieve the functions of battery sorting, grading and curve comparison.
7. The system can be expanded and upgraded.

1. 5. Terms

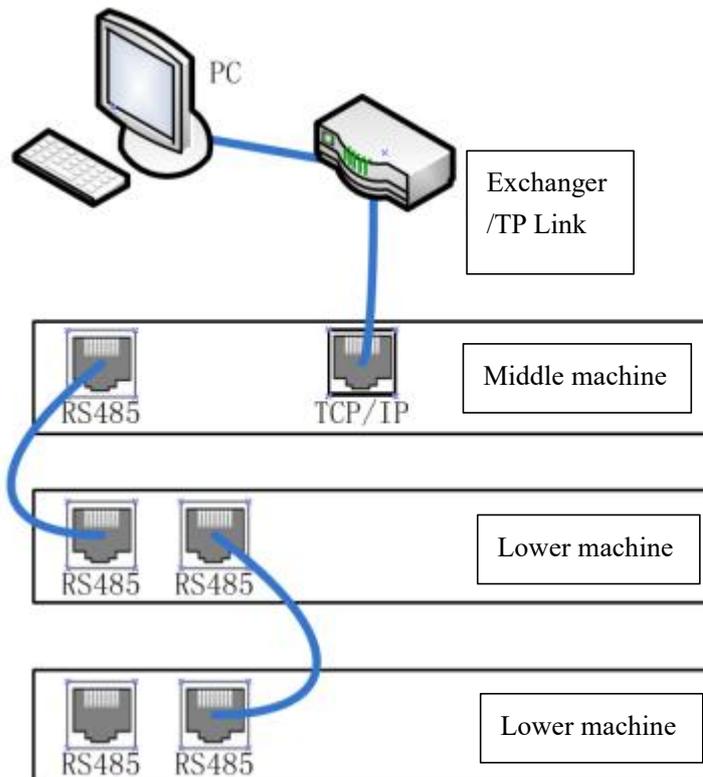
1. **Series:** We have 8000 series,4000 series,which stands for different products;
2. **Unit:** About the channel in 8.0 BTSCient, a row represents a unit, and the number of channels in a unit is determined by the mapping mode;
3. **Channel:** About the channel in 8.0 BTSCient,1-1means the first channel of the first unit, 2-1 means the first channel of the second unit;
4. **Working step:** Working step means the testing steps;
5. **Voltage protection:** Refers to the battery charging and discharging voltage reaches the set voltage upper or lower limit protection value;
6. **Current protection:** Refers to the battery charging and discharging current reaches the set current upper or lower limit protection value;
7. **Version:**
Software version: The BTSCient, server, lower machine, auxiliary channel program version can be viewed through the channel information;
Hardware version: Refers to the hardware model of the middle machine, lower machine and auxiliary channel in the device, which should be viewed through the white label affixed to the physical hardware or the device.

2. Network connection

1. The connection of 1 unit machine is as following,



2. The connection of multi-machine is as following,



3. User Operation

3.1. Introduction

BTS8.0.0 client software mainly introduces the client software installation and uninstallation, the client and the server network connection, and when the software has been successfully installed, how the user runs the software with all the functions, such as cell sorting, setting auxiliary channel mapping and mapping across different middle machines, etc.

3.2. Software Installation

In order not to affect the efficiency of client operation, each computer is allowed to start only one client software.

Note: FAT file system has a high error rate when power is cut off. When installing software, it needs to be installed to NTFS file system. Otherwise, when the power is cut off or the system is shut down illegally, an error may occur in the whole directory, resulting in an error in the work step file, system file or data file. The NTFS system properties is as following.



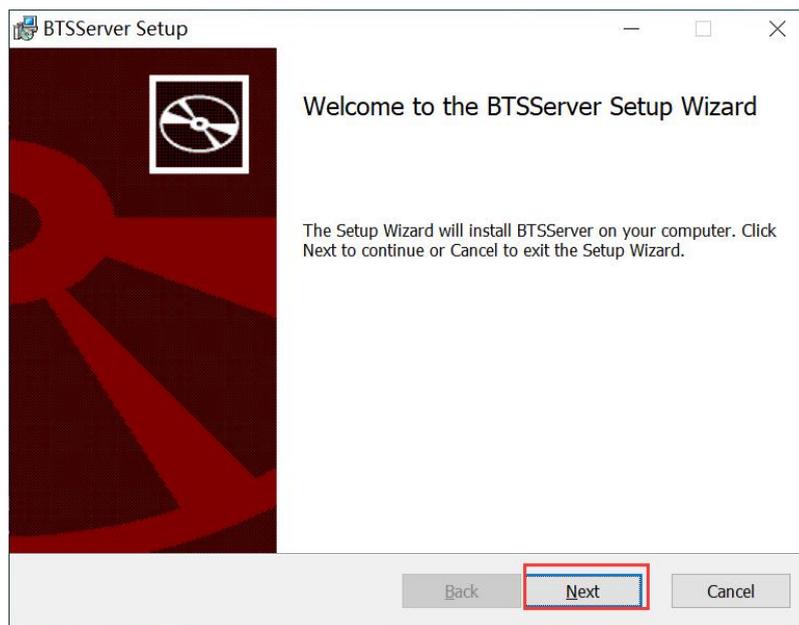
The BTSCient is a green version of the compression package, after decompression double-click BTS.exe can be used.

Note: .net environment is required to run the BTSCient. Please make sure to install Microsoft.net Framework 4.5.1.exe before using it. If not installed, it will fail to start.

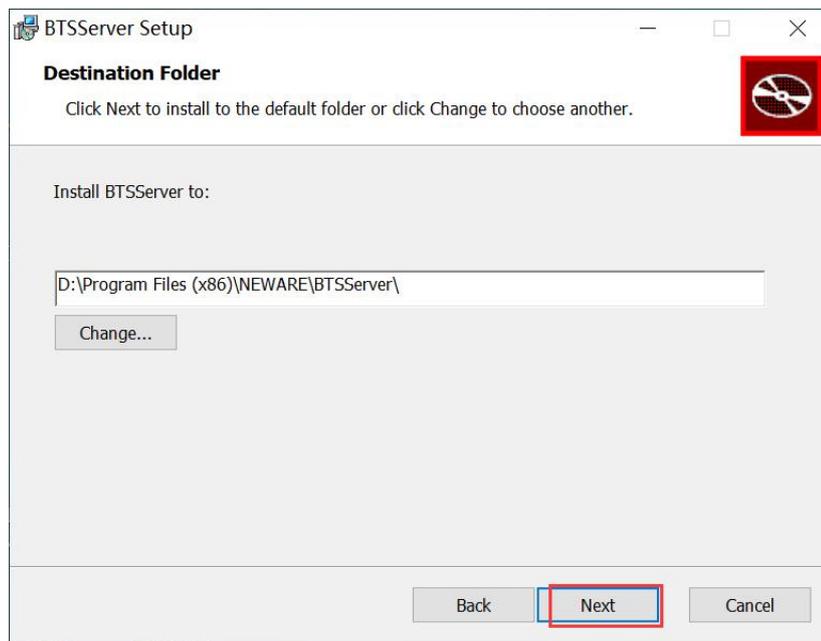
3. 3. BTS Server Installation

Note: If you have installed another version of BTS server on your computer, be sure to uninstall it before installing the new version. Backup data in other versions of the database before unloading.

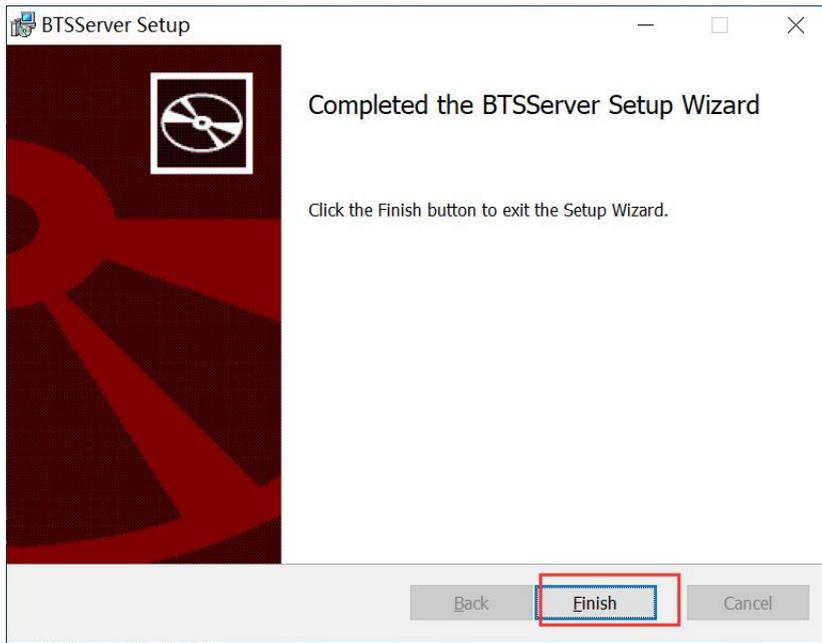
1. Enter the "BTSServer" installation wizard and click "Next", as shown below:



2. Enter the user license agreement, click "Accept", enter the installation file storage path dialog box, and select the server installation path. The default installation path is "D:\Program Files (x86) \Neware\BTSServer".As shown below:



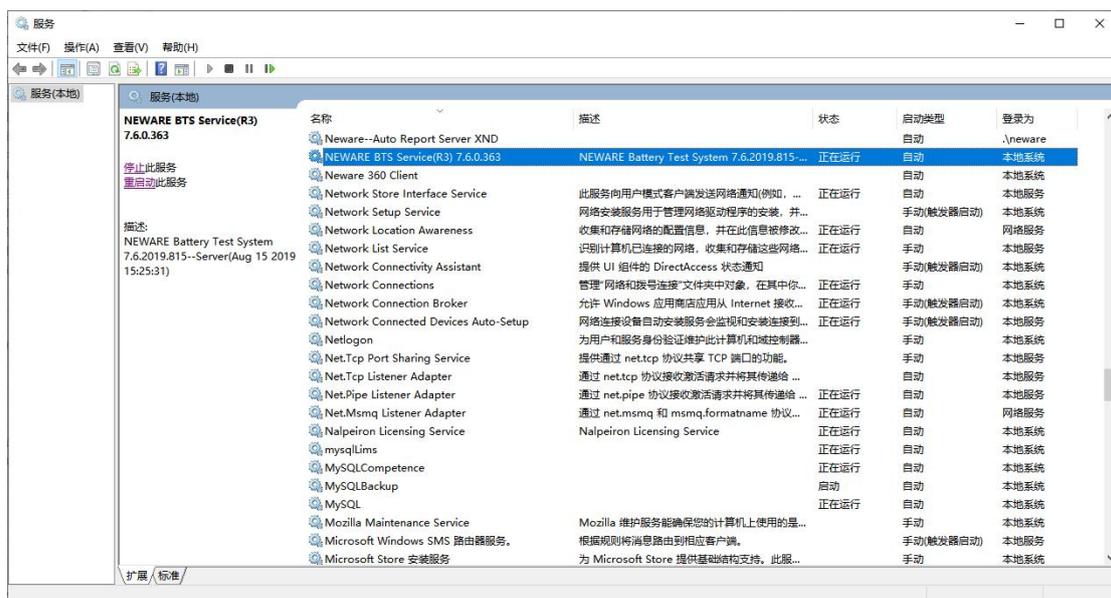
3. The installation progress bar appears (it is normal for two command windows to appear successively when the progress bar runs to the last half). Click "Finish" button to close the window after installation. As shown below:



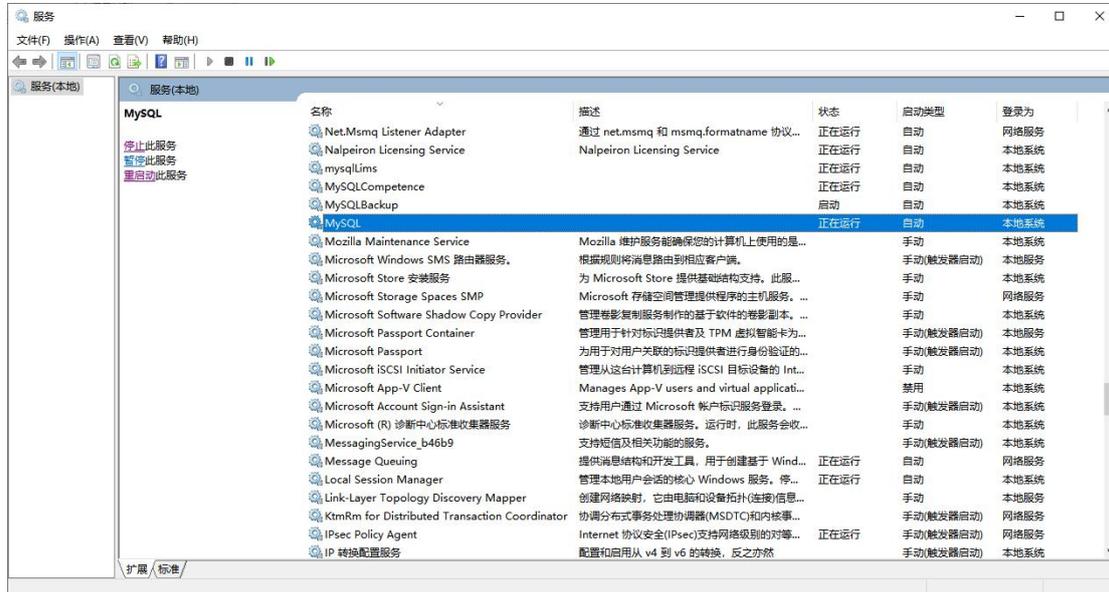
3. 4. BTS Server Installation Confirmation

After the installation is completed, it is necessary to confirm whether the server is installed successfully and the confirmation is as following:

1. Open "Control Panel" → "System and Security" → "Management Tool" interface, select the "Services" option in the interface to see if "MySQL" and "NEWARE BTS Service" are in the list to the right side, and to see if they started. As shown in the following figure (Win10 screenshot) :



3. To ensure that both services are in the "started" state, if either of them is not started, please right-click the menu and select "Start" service. As shown in the figure below:

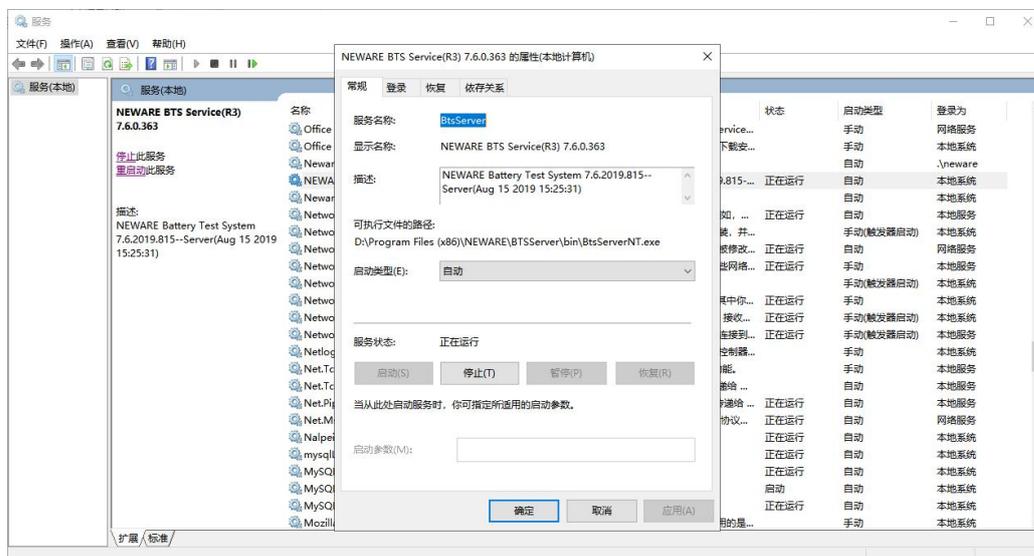


4. If either of the two services "MySQL" and "NEWARE BTS Service" are missing from the list, please uninstall the newly installed server and reinstall it, and confirm with the above steps that the server is installed and started correctly.

5. If you find that the startup type of either of the two services is "manual", please change it to "automatic" according to the management method. For example, if the startup type of NEWARE BTS Service is "manual" (MySQL Service starts the same way as NEWARE BTS Service).

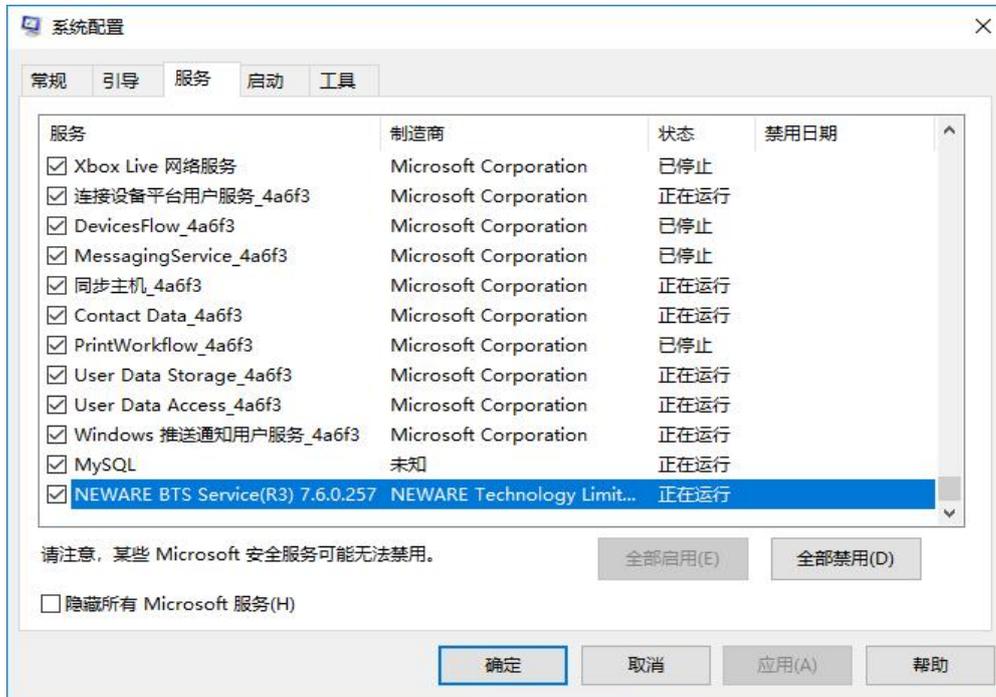
Method 1,

Right click "NEWARE BTS Service" → "properties" → "automatic"



Method 2:

1. Open "Run..." in the start menu, enter "MSconfig" and press enter;
2. Enter the "System Configuration Utility" window, find the "NEWARE BTS Service", tick it, click the "Apply" button and restart the computer, as shown below:



Note: In the computer management window, close the running service by selecting Stop from the right-click association menu. When you need to upgrade the server manually, you need to do this to shut down the running service.

3. 5. Basic Function

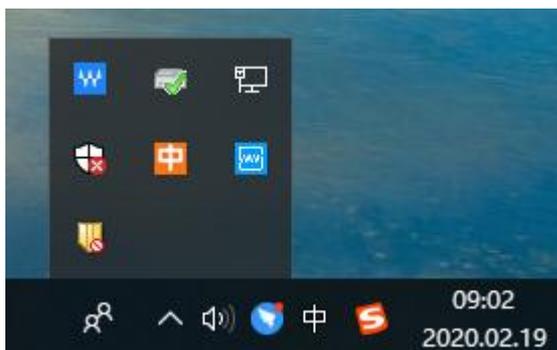
If the BTSclient has no channel display, it needs to reset the mapping. The following figure shows the mapped client interface.



1. BTSClient version
2. The menu bar
3. Channel status color setting
4. View switch
5. Equipment display area
6. Channel display area
7. Current setting and history data switch
8. Information area
9. Shortcut icons

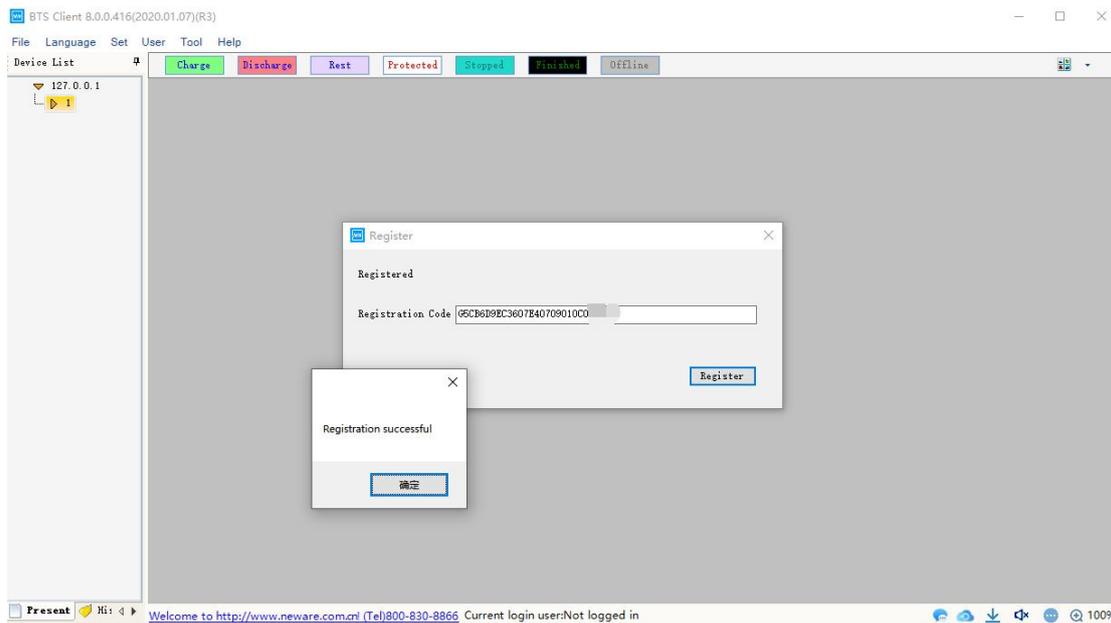
When the software is minimized, the client icon on the taskbar is hidden, and when the client icon is found in the tray list, it is displayed again when clicked. It can also be dragged to the quick launch bar, which is a common feature of popular software.

Note: It can be set through the system setting and the minimization is displayed in the taskbar.



3. 6. Quick Start

1. Register the client. After installing the software, register the client before using it. Please contact Neware after sales for registration code.

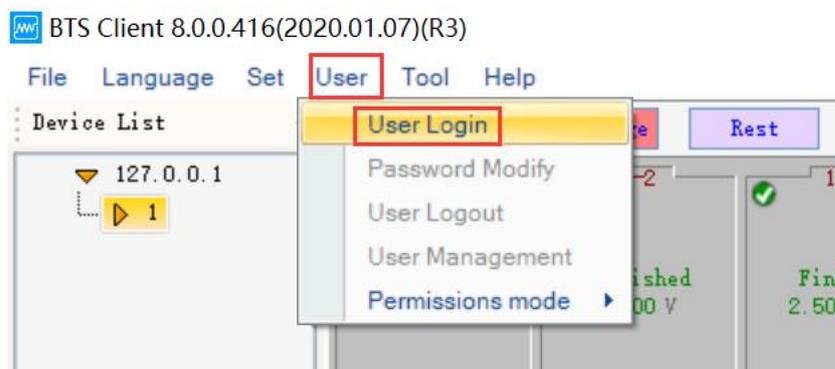


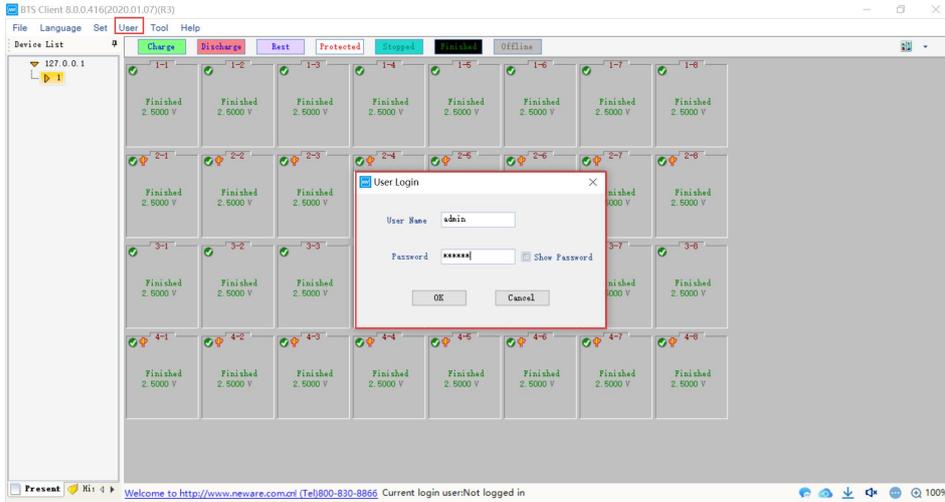
2. User login

The default administrator user password is:

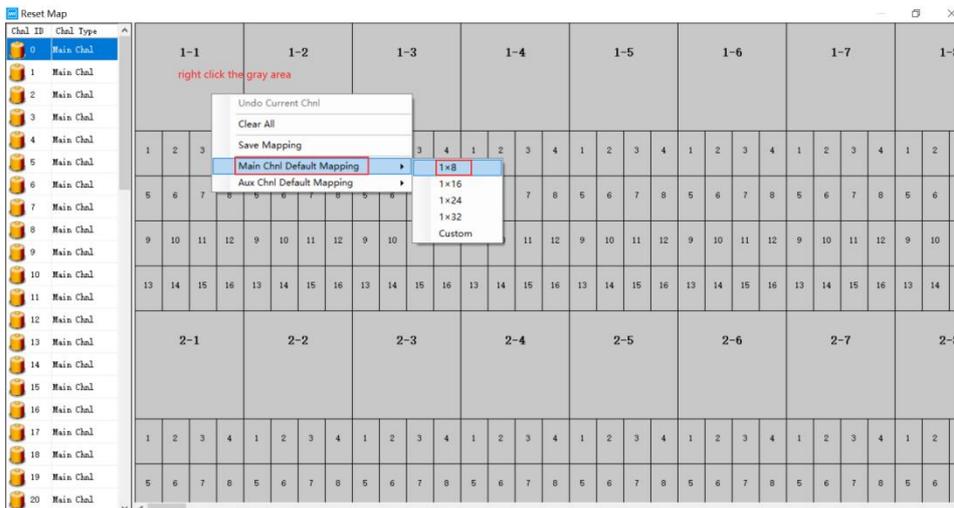
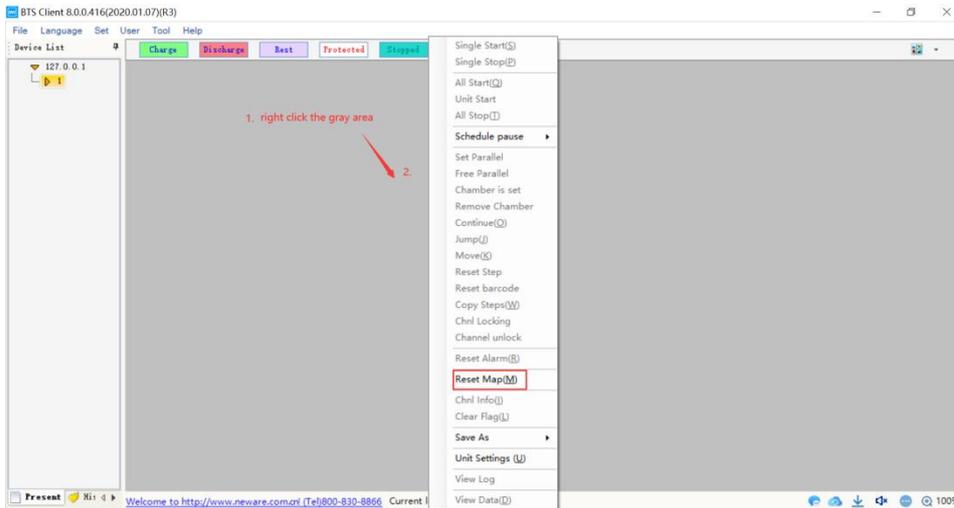
User name: Admin

Password:neware

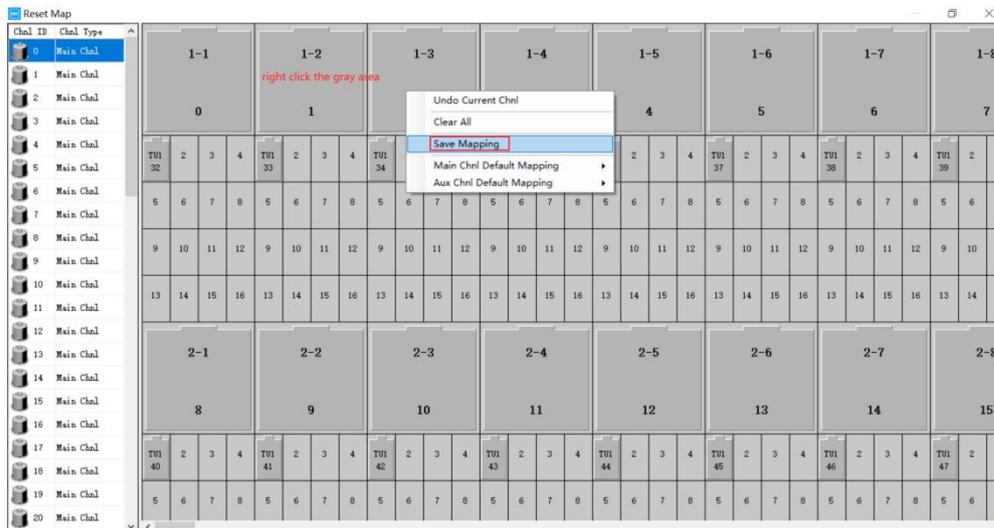
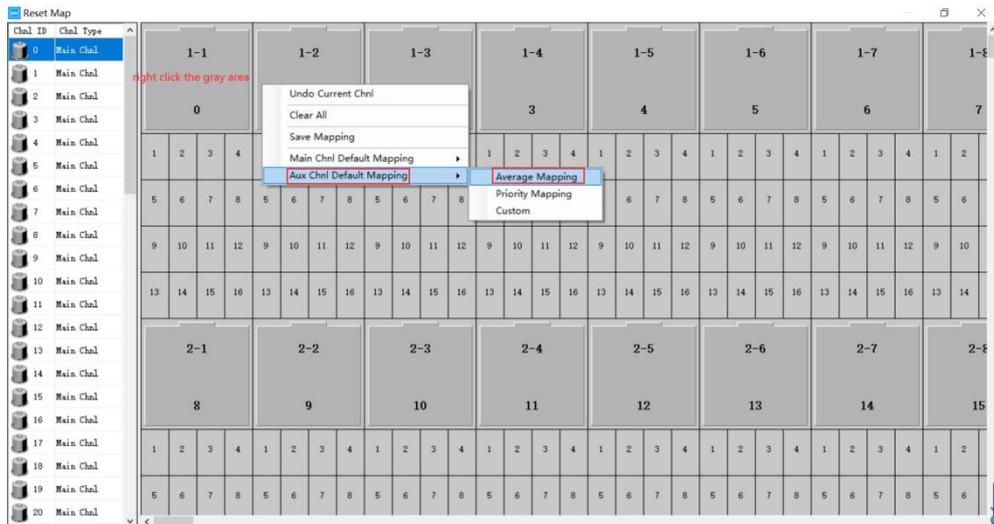




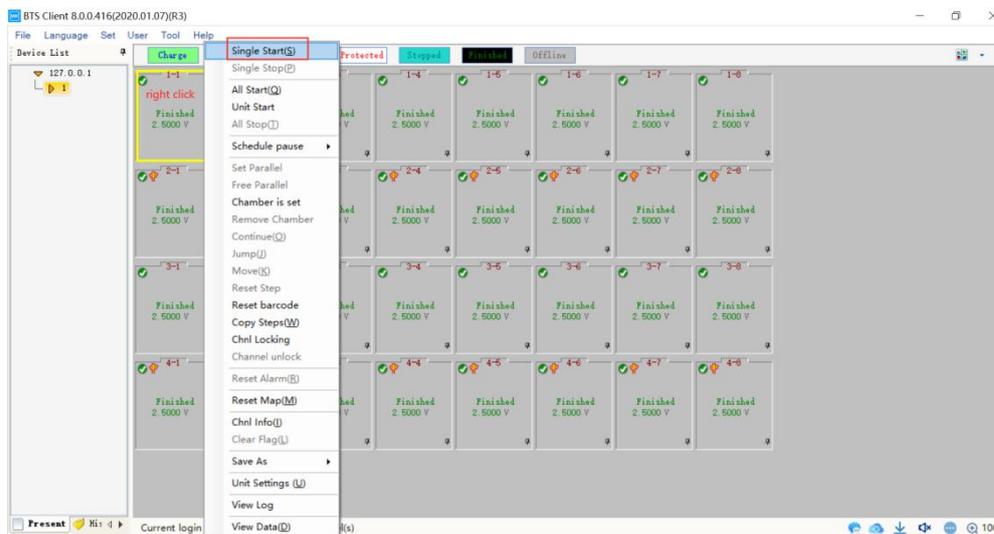
3.Mapping the channels as following:



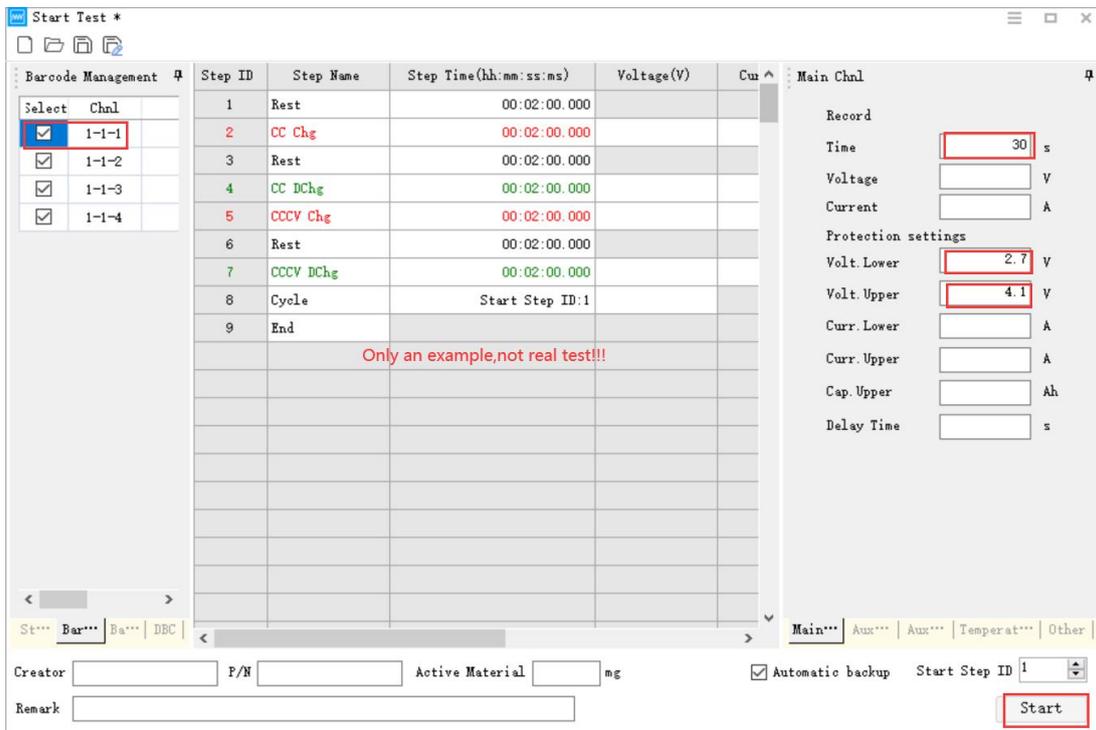
Aux channel mapping



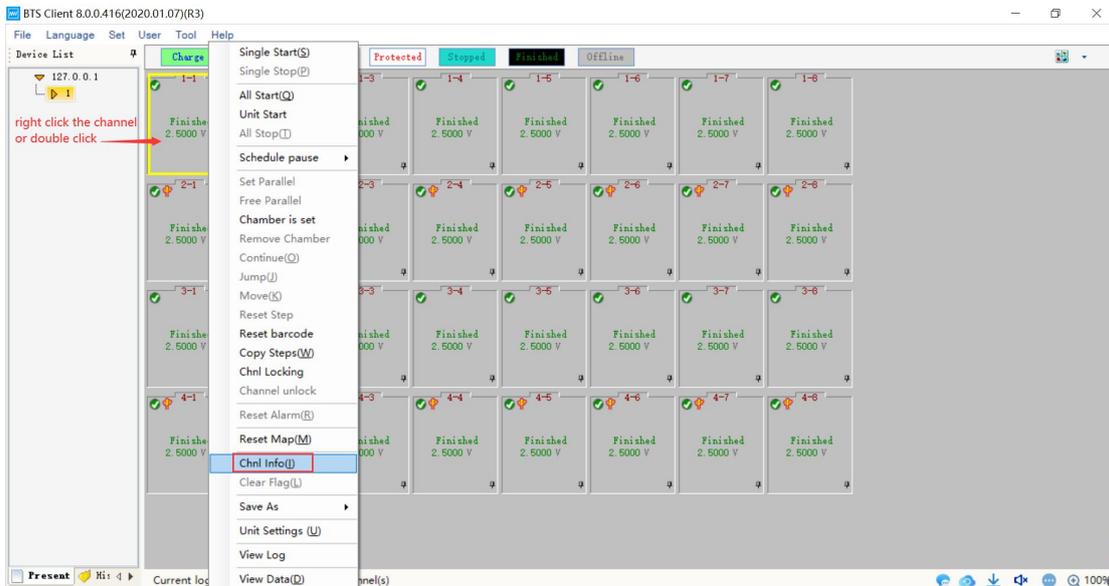
4. Select the channel to be tested, right-click and select “single start”as following,

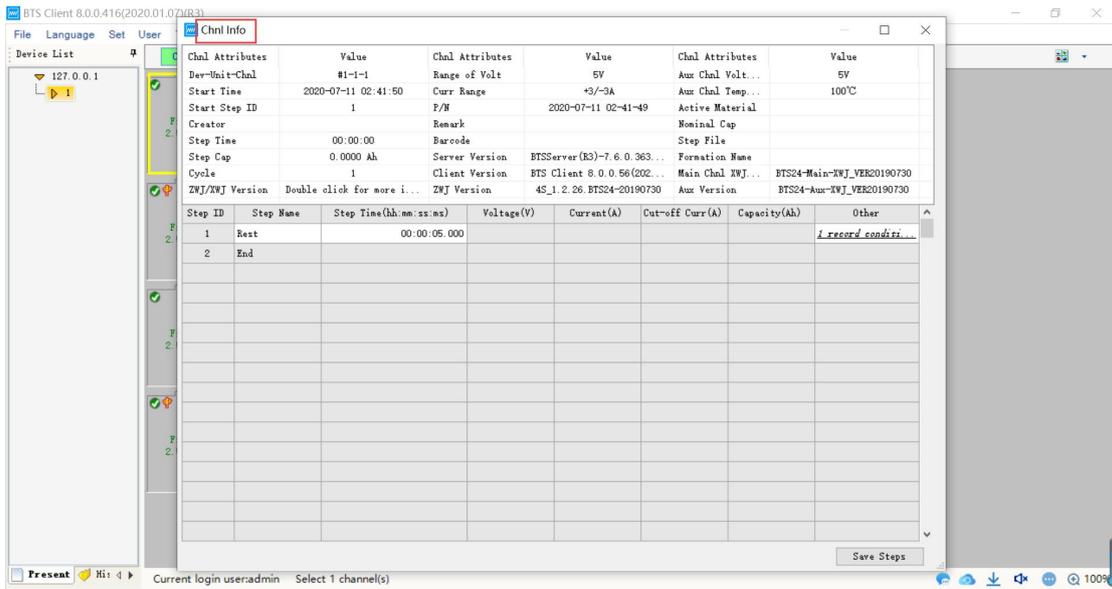


5. For example, set rest, and CC charge mode with 30s data record time, set the upper and lower limit of the voltage to start the test.



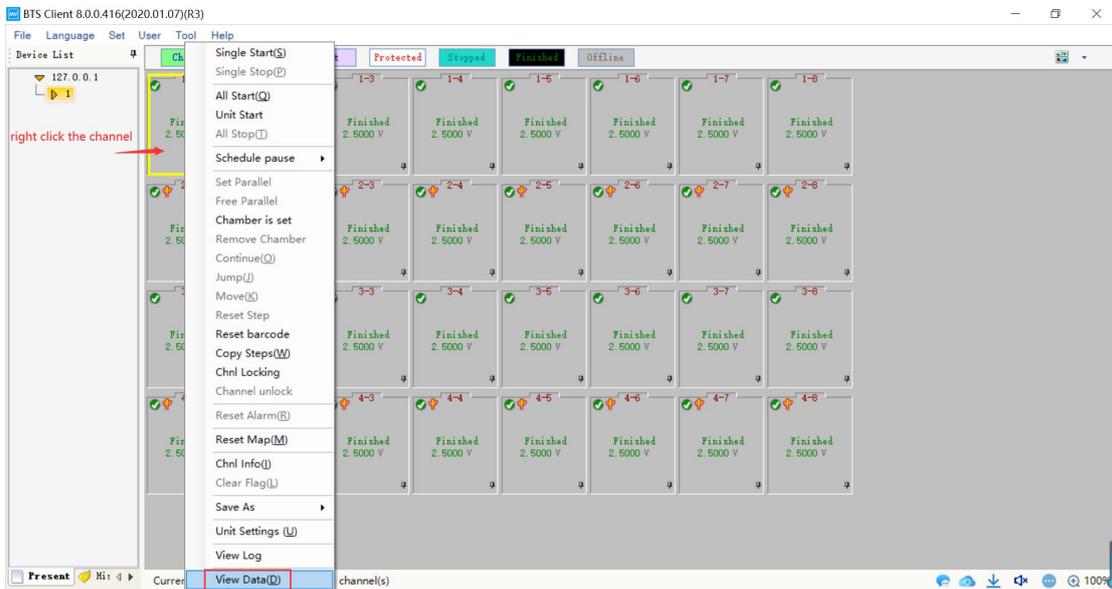
6. Right-click channel information or double-click the channel to open the channel test process and version information, etc. As shown in the figure below:

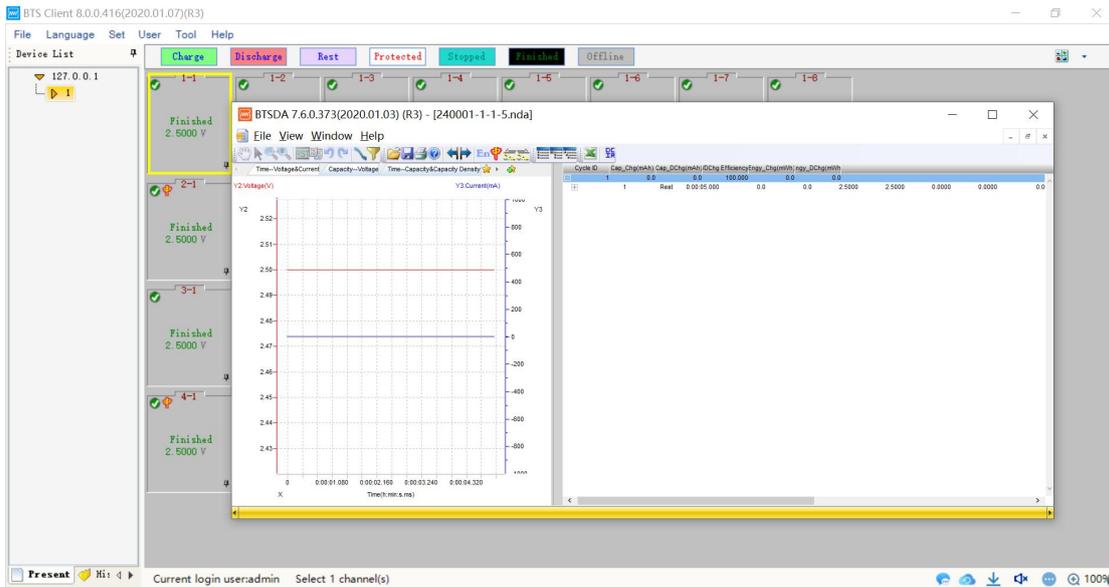




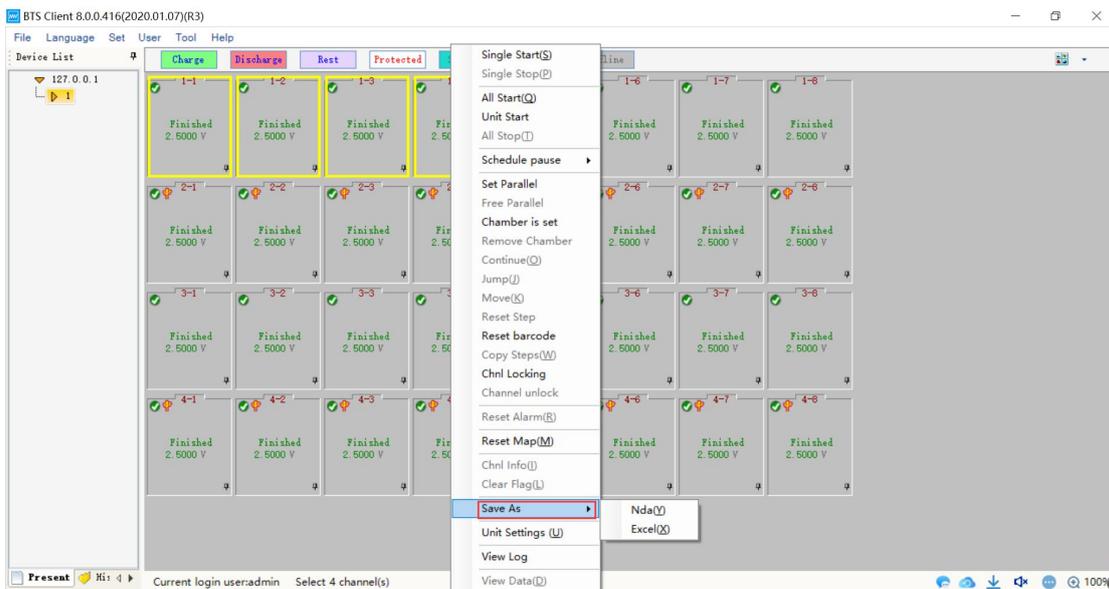
7.View/save test data

Right click -View channel data (select only one channel to open) as shown in the figure below:





Data (NDA,Excel format) can be saved together for multiple channels, as shown in the figure below:



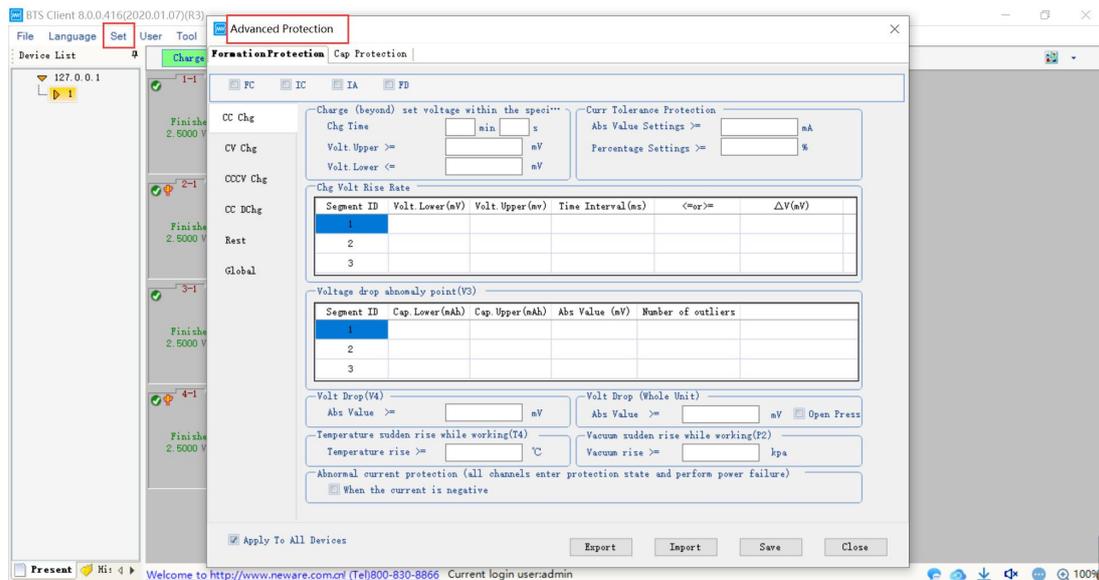
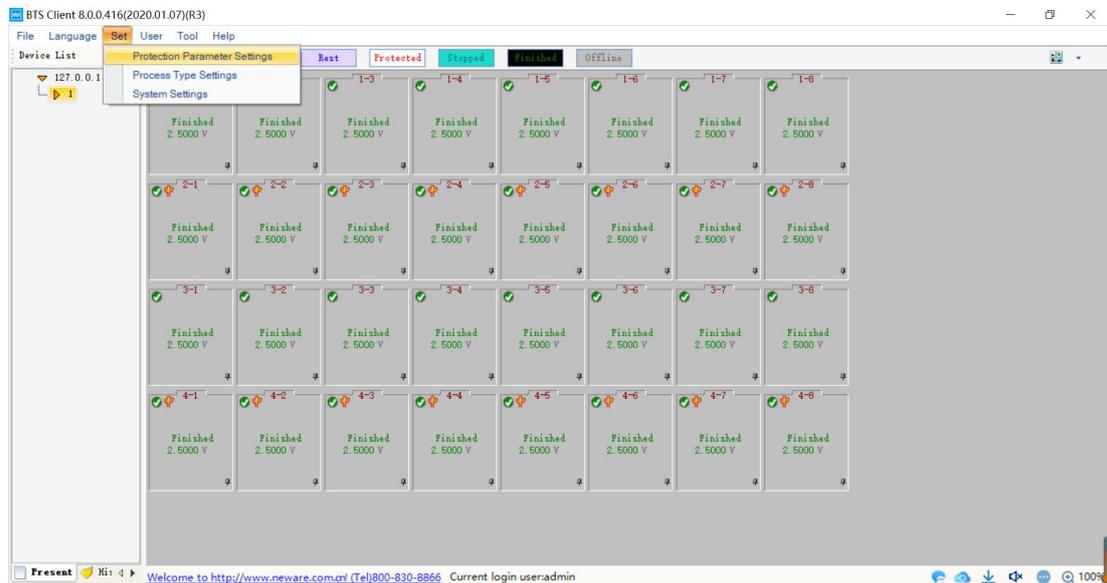
3.7. Setting

3.7.1. Advanced Protection Parameters

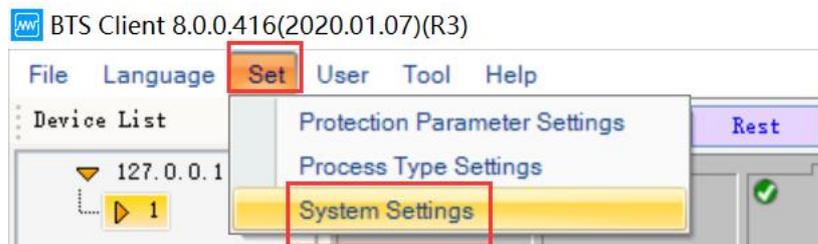
When issuing the work step, in addition to the protection parameters in the work step file, advanced protection parameters can also be set. The work step file can be edited on other computers and then merged with advanced protection parameters when copied to the local use.

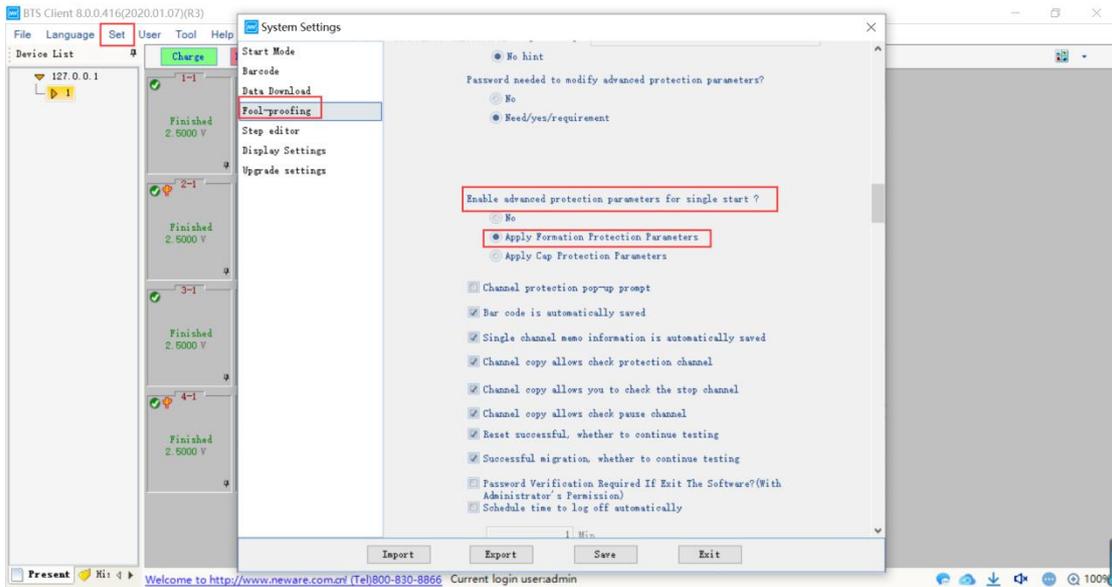
Operation method

1. “Set”-->“Protection parameters settings”,click to edit



2. The System Settings can set “single start” to load advanced protection parameters. After setting, single start will automatically merge advanced protection parameters into the work step file, as shown in the figure below:

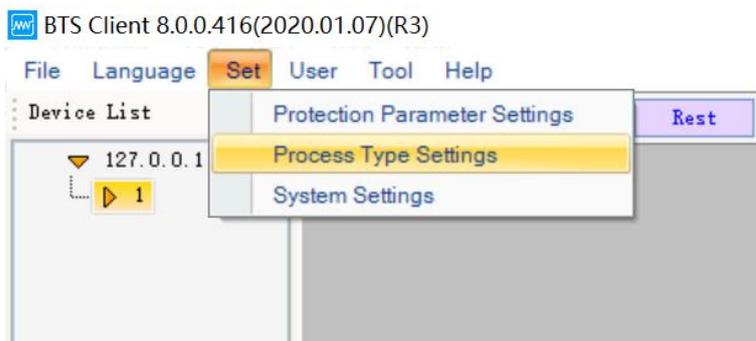


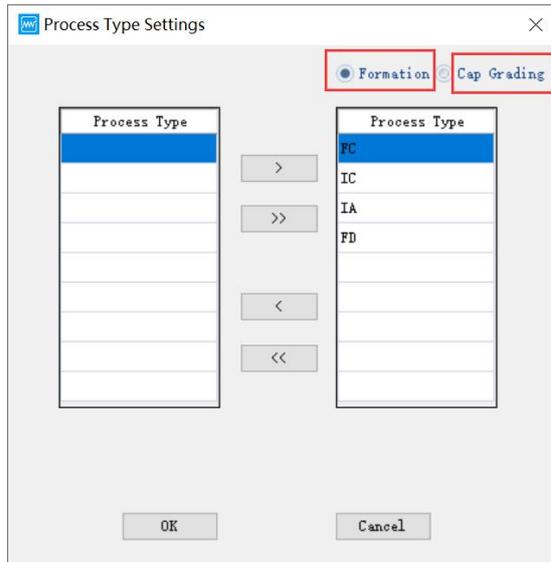


Note: For the specific meaning of advanced protection parameters, see the detailed documentation related to advanced Protection Parameters.

3.7.2. Process Type Settings

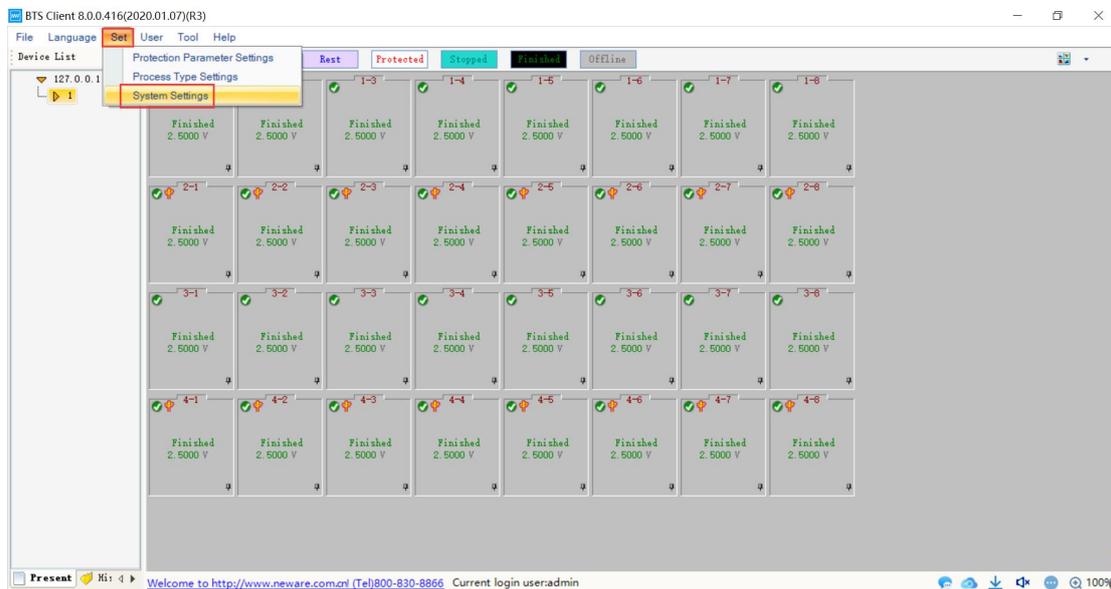
As shown in the figure below, input the type of process to be used on the left. Click '>' and '>>' in the middle to move the type of process on the left to the right. Click '<', '<<' to move the process type on the right to the left. The process type on the right can be chosen as formation type or grading type.





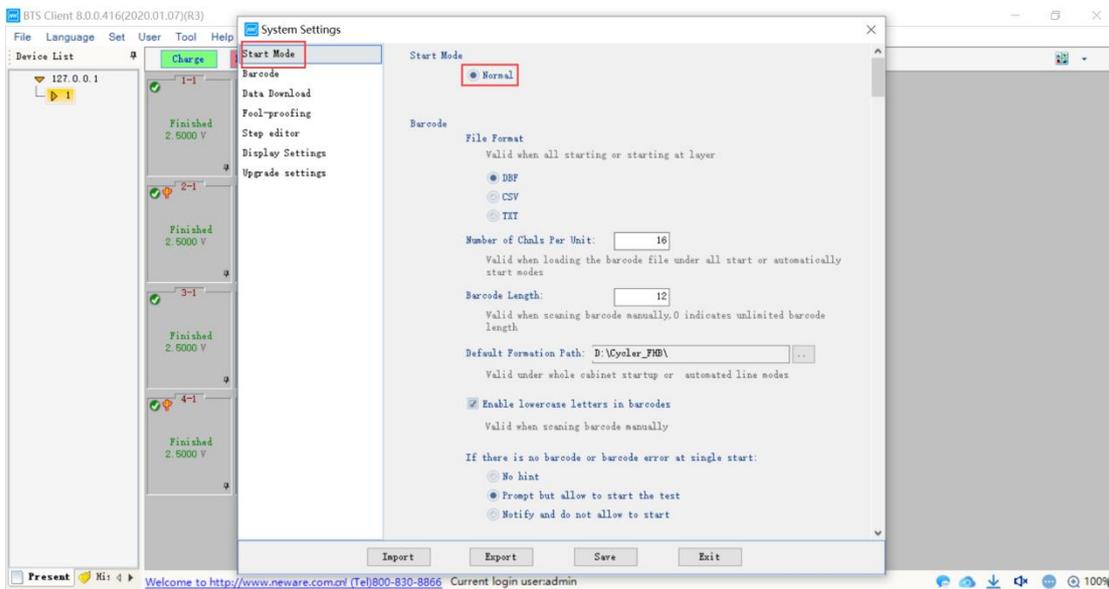
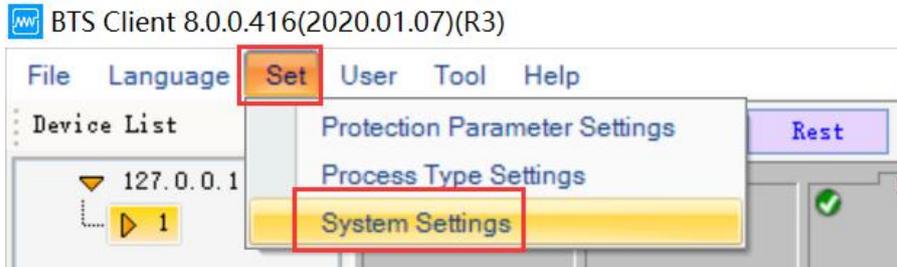
3. 7. 3. System Setting

The system configuration interface will pop up when the software is used for the first time. At other times, the system configuration can also be called up by clicking the menu bar.



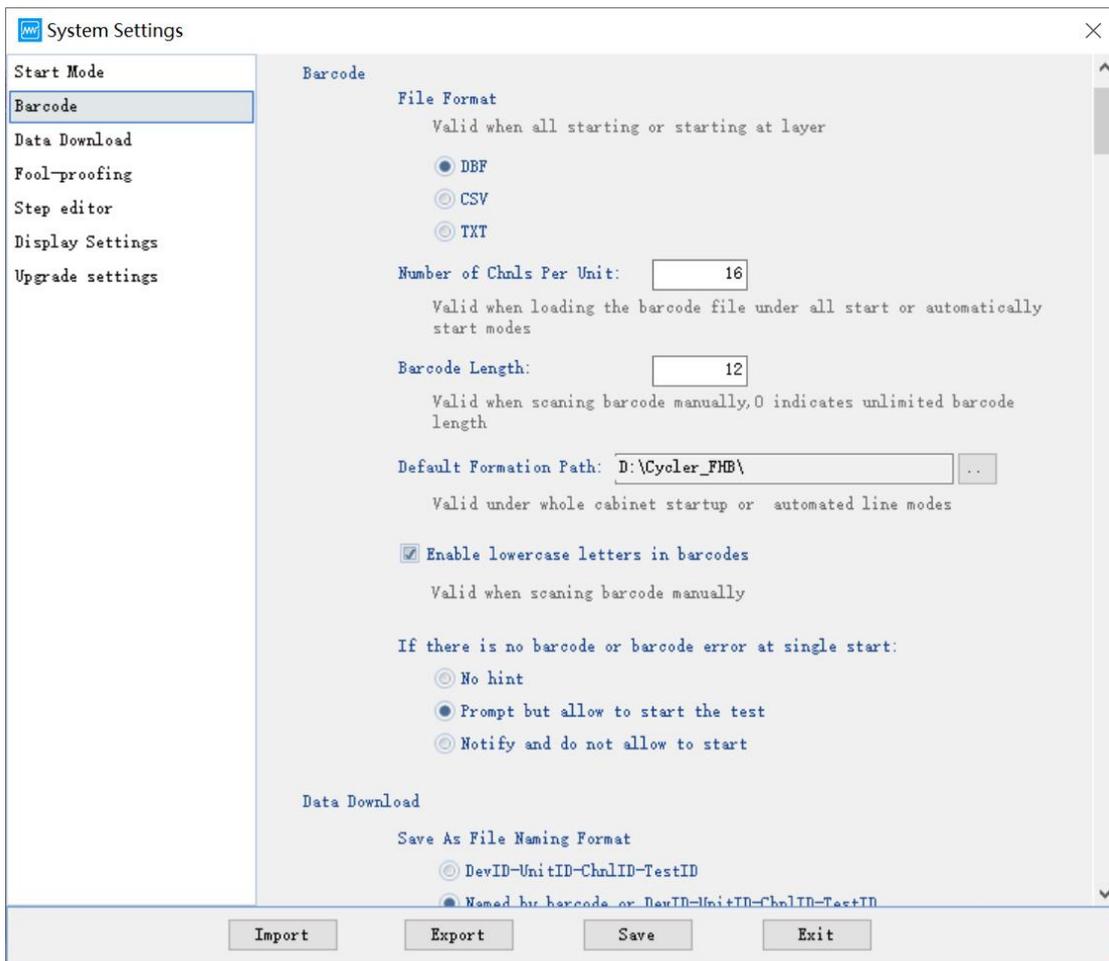
1. Start mode

After the registration, the registered mode will be displayed in the start mode, as shown in the figure below.



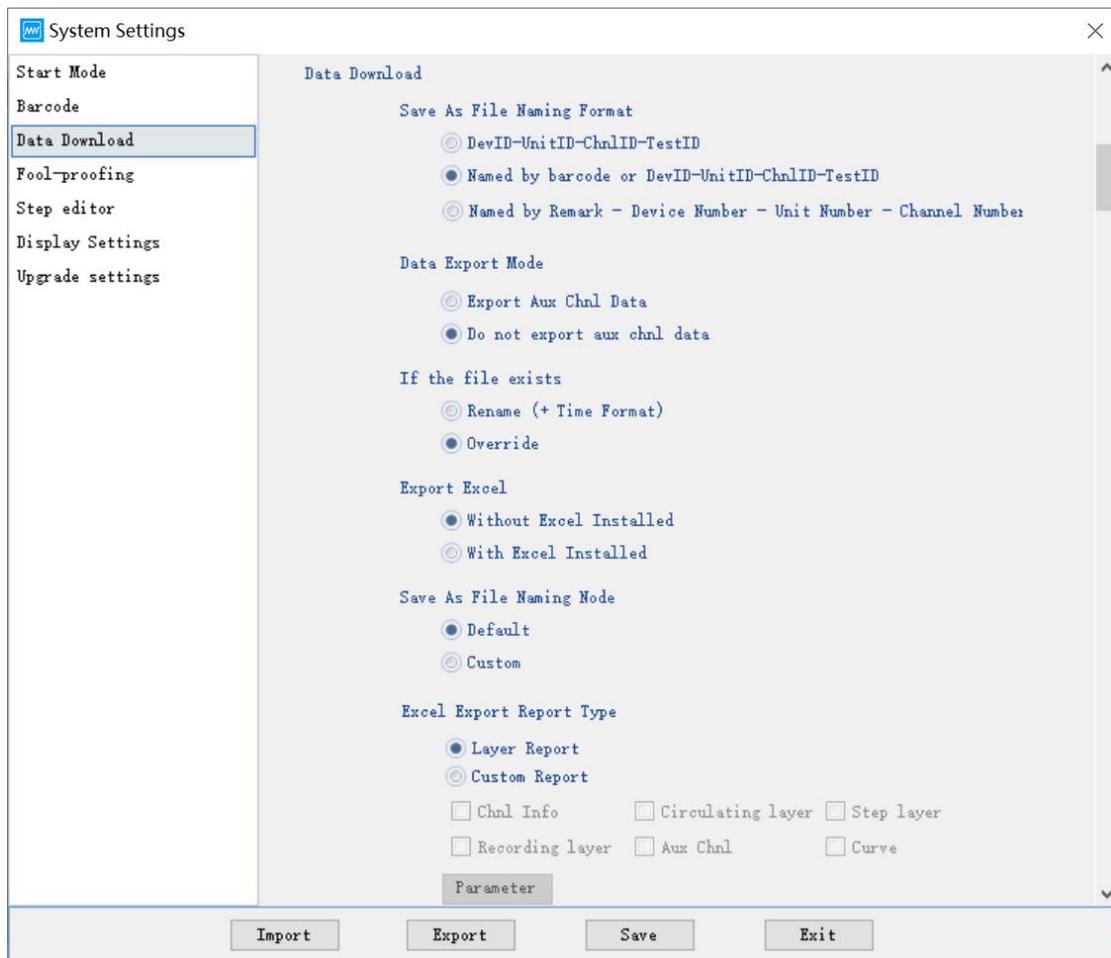
2. barcode

In the Barcode menu, those conditions can be set: Barcode format, number of channels per unit, length of barcode, save path of formation by default, whether barcode is allowed to input lowercase letters, whether the single start step can start if there is no barcode or if the barcode is wrong. It needs to be saved to take effect after it is configured. As shown in the figure below:



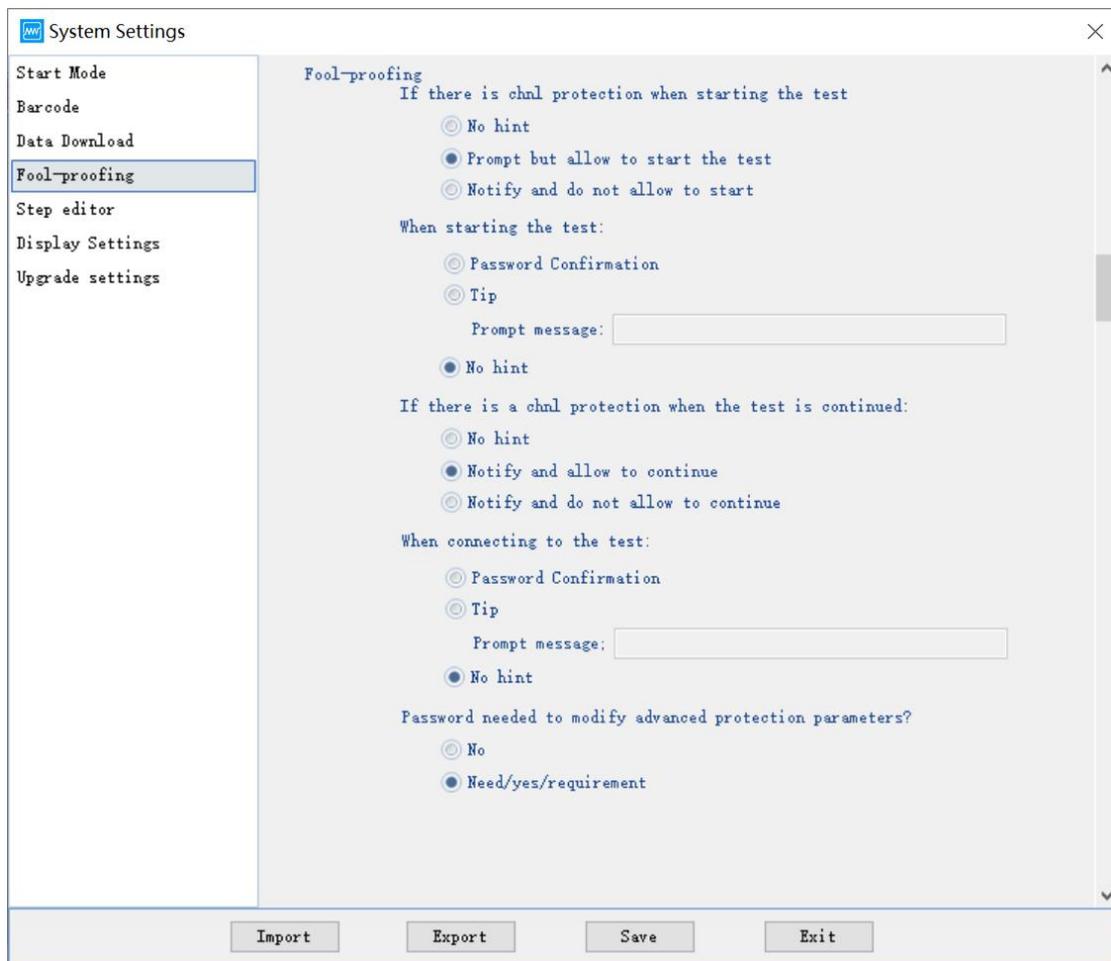
3. Data Download

The file format, export mode, export type and other functions can be set and be saved .As shown in the figure below:



4. Fool proofing

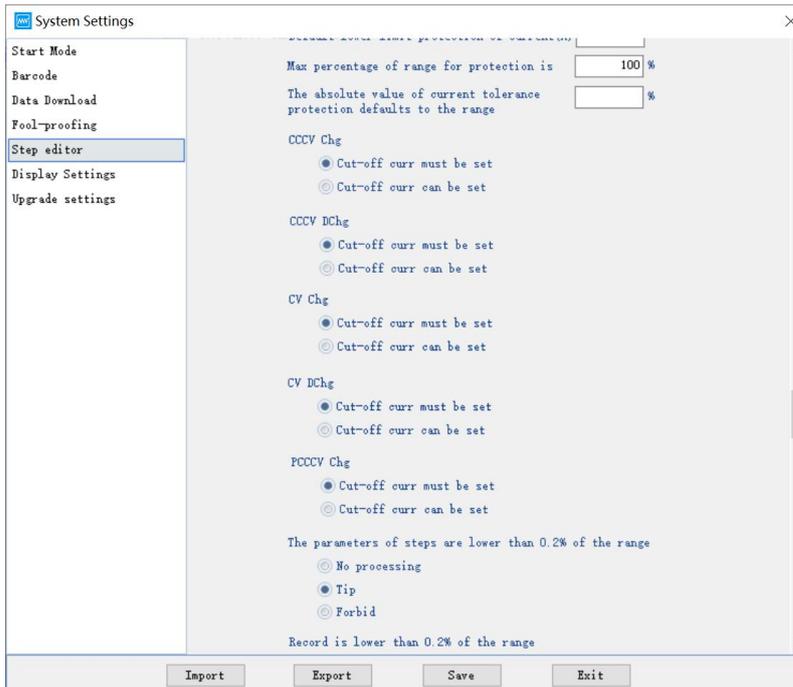
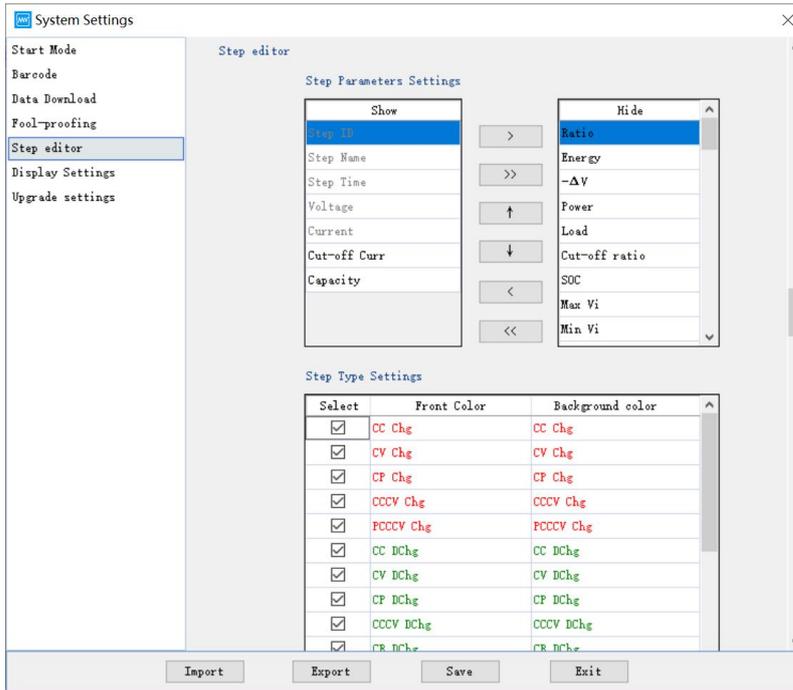
When the test starts,if the channel is in protection mode,whether this is a reminder window or not; whether the password is required for starting test; whether advanced protection parameters are loaded for single start step;whether the password verification is required for exit software, and whether the current user is logged out or switched within a set time.After the fool proofing setting is configured, it needs to be saved to take effect.The setting interface is shown below:



防呆设置界面

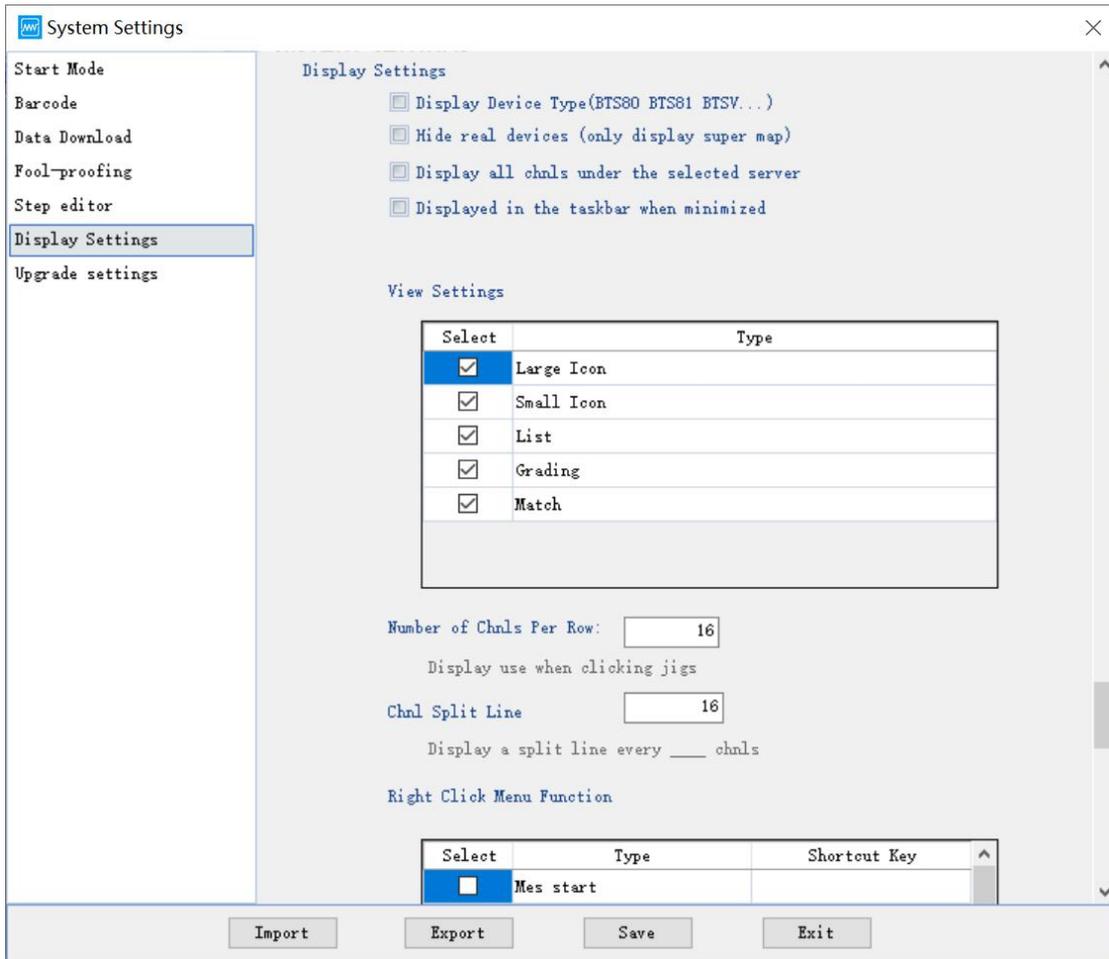
5. Step Editor

Work step parameters setting, work step type setting, work step parameters must set conditions, such as whether to set the creator, batch number, remarks, the default value of voltage current upper and lower limits protection, the default value of work step interval minimum value, whether to set the cut-off current, whether to allow single work step editing with advanced protection parameters and other functions. After the configuration, click save to take effect. The interface is shown as follows:



6. Display Settings

There are main functions such as whether to display device type, view setting , whether to display list and sorting settings, number of rows to display, right-click menu function display, channel color setting, etc. When the configuration is completed, click "save" to take effect. The interface is shown as follows:



3. 8. User Management

3. 8. 1. User Login

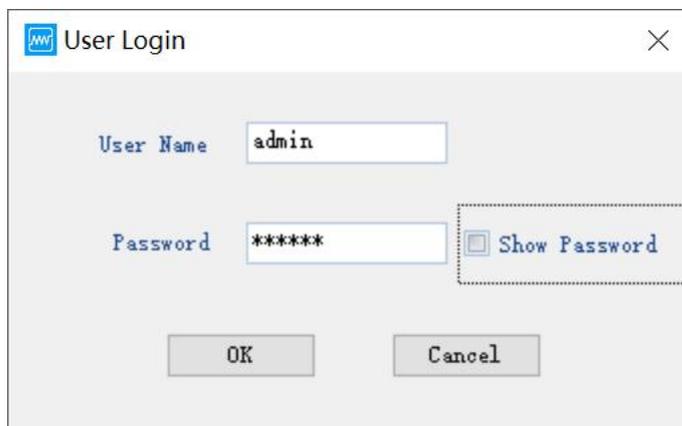
Users must log in to the client software to do operations.

1. Click "User" → "User Login", as shown below

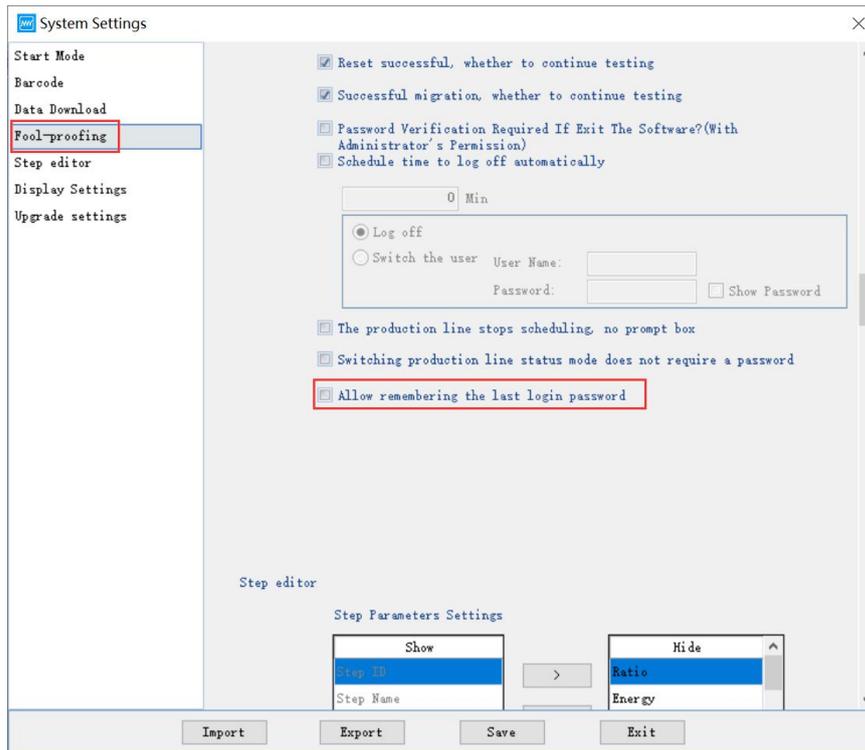


用户登录操作界面

2. User name: admin
Password: neware

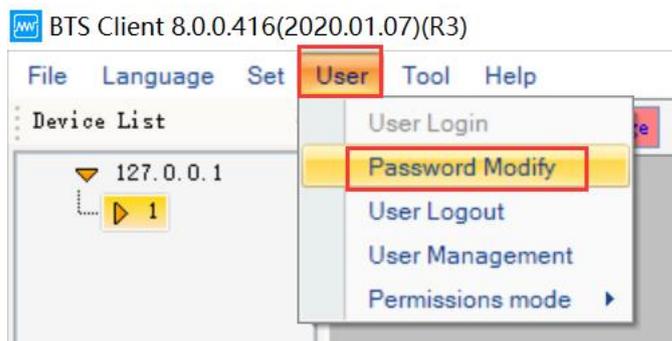


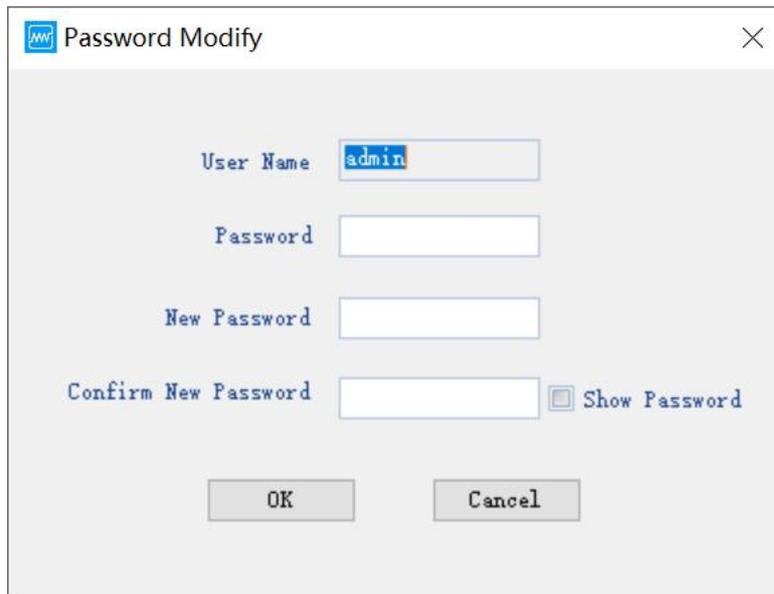
3. System Settings → Fool-proofing → Allow remembering the last login password.
As shown in the figure below.



3. 8. 2. Password Modify

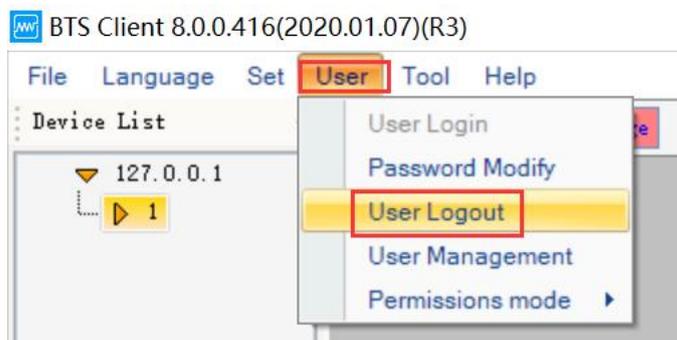
The user can change the current device password, User→ Password Modify,then the window will pop up,please input the original password and set a new password,as shown in the figure below:





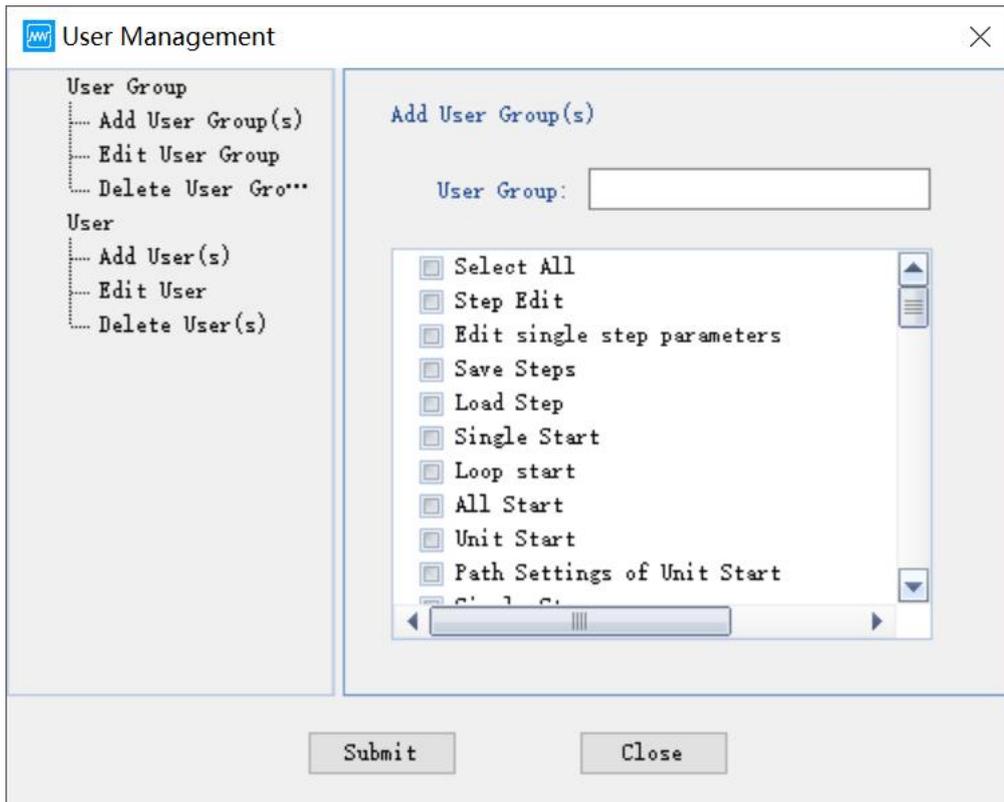
3. 8. 3. User Log Out

Users can log out as showed as following,
Click User -> User logout. If you want to continue operating this system, you need to login again.

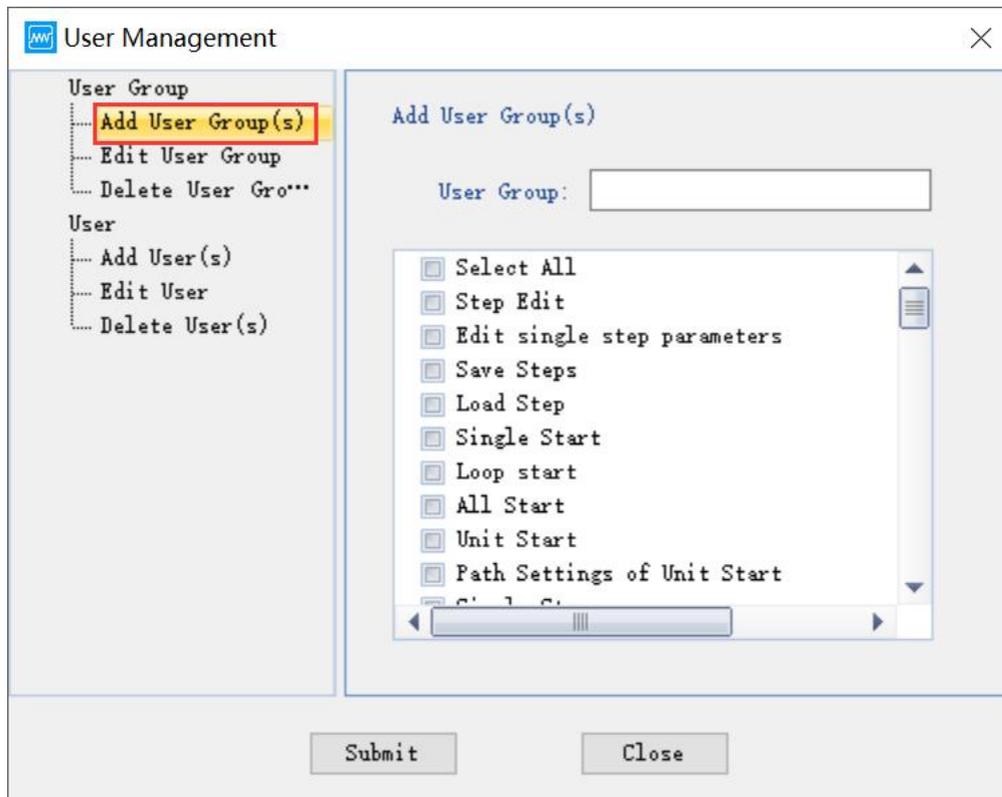


3. 8. 4. User Management

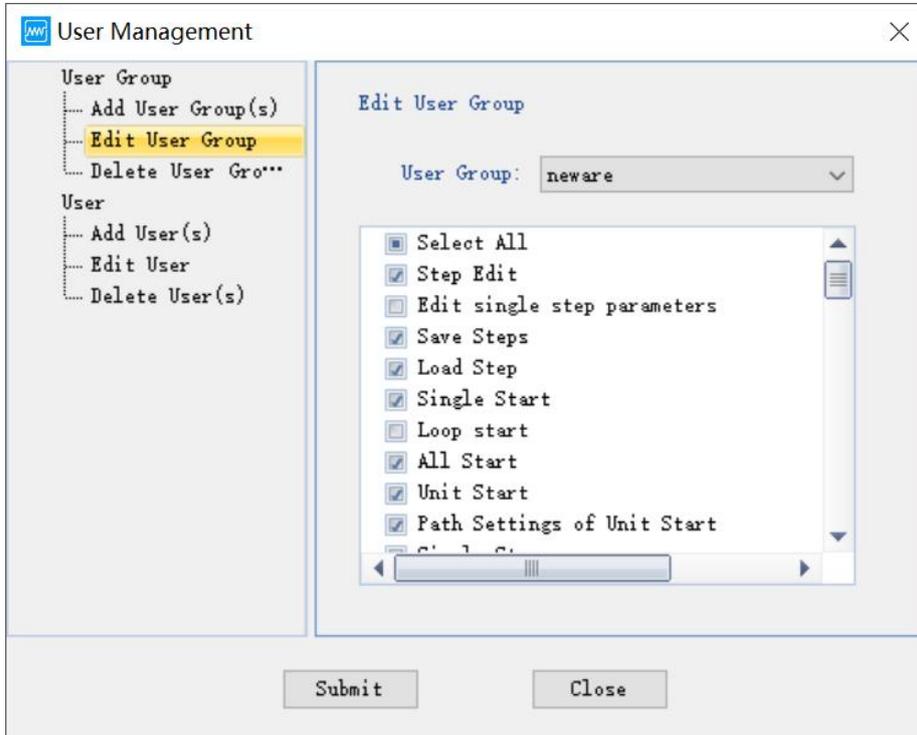
If the current login user is the administrator, then he/she can add, delete, set permission configuration to other users.
Click "user" -> "user management" to enter the user management interface, as shown below:



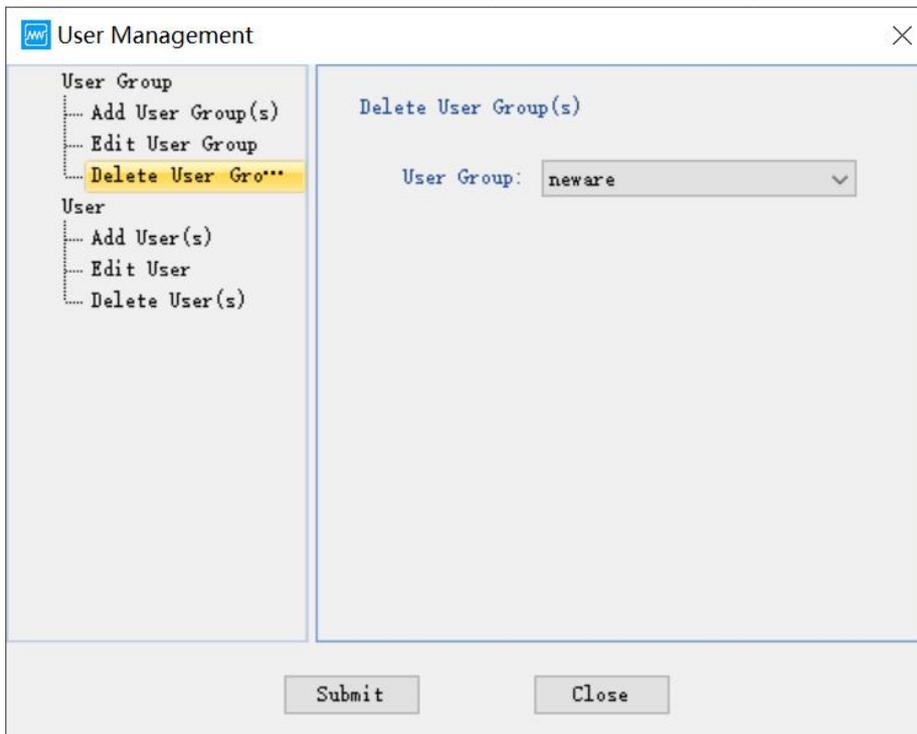
1. Add a new user group: configure the permissions of the new user group by checking the required permissions to submit. As shown in the figure below:



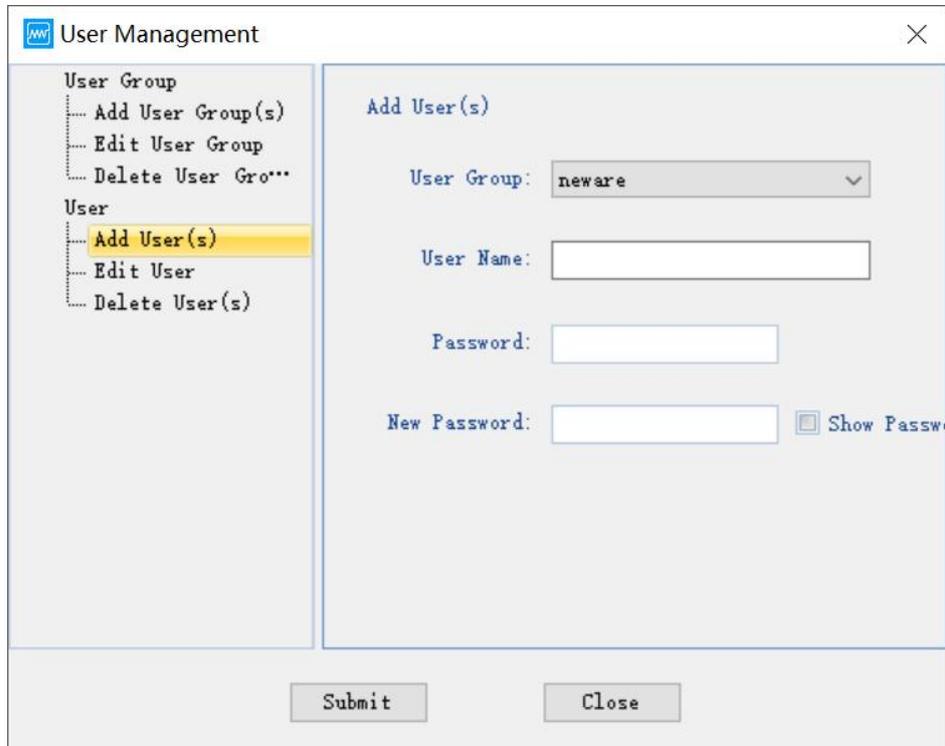
2. Modify user group: select the user group name to modify, check or cancel unwanted permissions and click submit. As the diagram showed below:



3. Delete user group: Click the drop-down box to select the user group to be deleted, and click submit to delete successfully. As shown in the figure below:

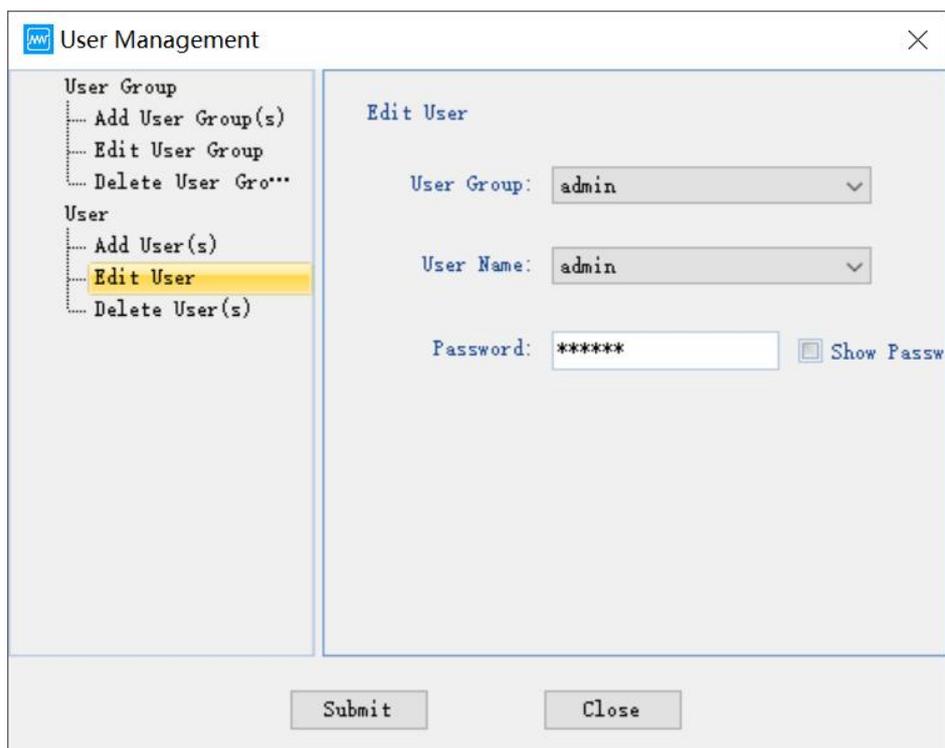


4. Add user: click the drop-down box to select the new user group, enter the new user name and password, and click submit. As shown in the figure below:



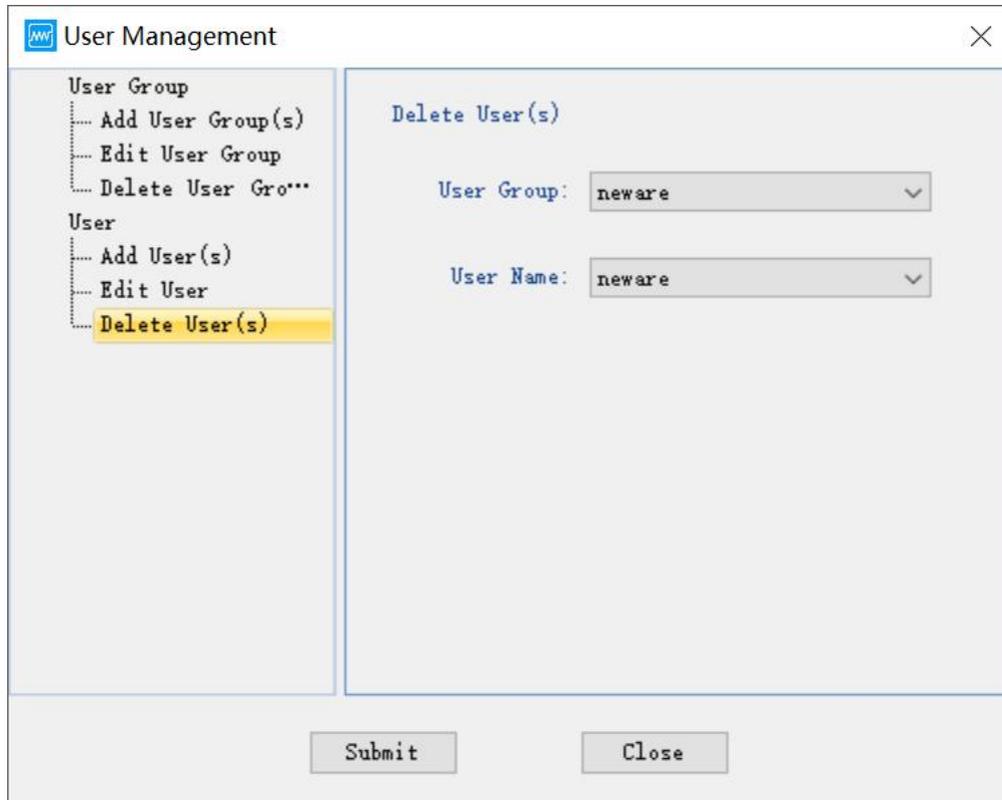
The screenshot shows a window titled "User Management" with a close button (X) in the top right corner. On the left side, there is a tree view with two main categories: "User Group" and "User". Under "User Group", there are three items: "Add User Group(s)", "Edit User Group", and "Delete User Gro...". Under "User", there are three items: "Add User(s)" (which is highlighted in yellow), "Edit User", and "Delete User(s)". The main area of the window is titled "Add User(s)" and contains the following fields: "User Group:" with a dropdown menu showing "neware"; "User Name:" with an empty text input field; "Password:" with an empty text input field; and "New Password:" with an empty text input field and a checkbox labeled "Show Passw". At the bottom of the window, there are two buttons: "Submit" and "Close".

5. Edit user: You can modify the password of any user, select the user group, enter the new password and click submit. As shown in the figure below:



The screenshot shows a window titled "User Management" with a close button (X) in the top right corner. On the left side, there is a tree view with two main categories: "User Group" and "User". Under "User Group", there are three items: "Add User Group(s)", "Edit User Group", and "Delete User Gro...". Under "User", there are three items: "Add User(s)", "Edit User" (which is highlighted in yellow), and "Delete User(s)". The main area of the window is titled "Edit User" and contains the following fields: "User Group:" with a dropdown menu showing "admin"; "User Name:" with a dropdown menu showing "admin"; and "Password:" with a text input field containing "*****" and a checkbox labeled "Show Passw". At the bottom of the window, there are two buttons: "Submit" and "Close".

6.Delete user: select the user group, select the user to be deleted, click submit and delete successfully. As shown in the figure below:



3. 9. Language Switch

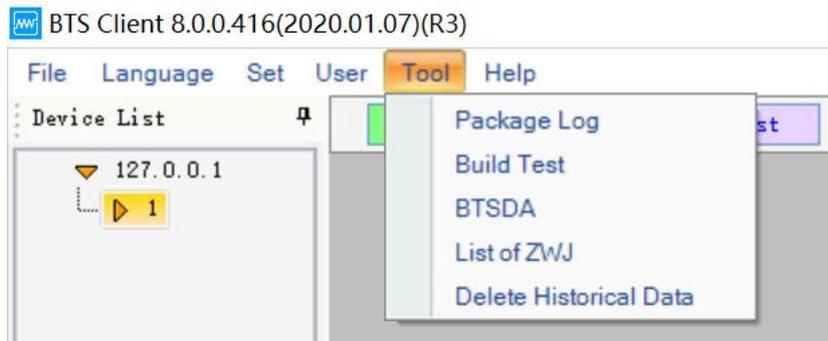
The software supports multi-language switching, currently support simplified Chinese, traditional Chinese, English, Korean.

Menu-->language-->choose language,as shown below,



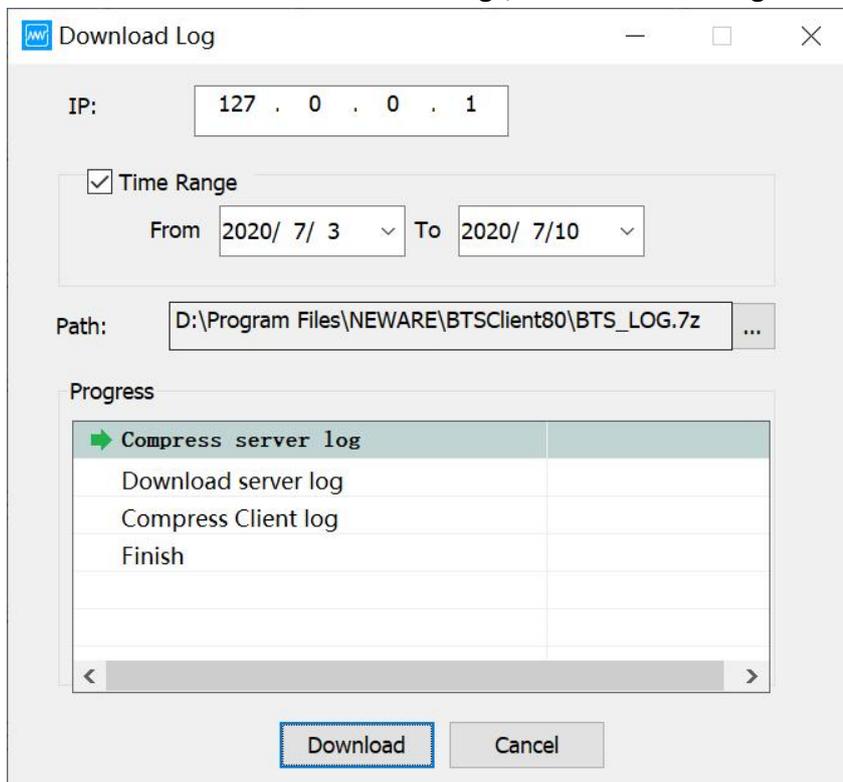
3. 10. Tool

Through the menu bar "tools" option, you can call out other BTS series software.It includes BTSDA software, offline workstep editor, and log download software, as shown in the figure below:



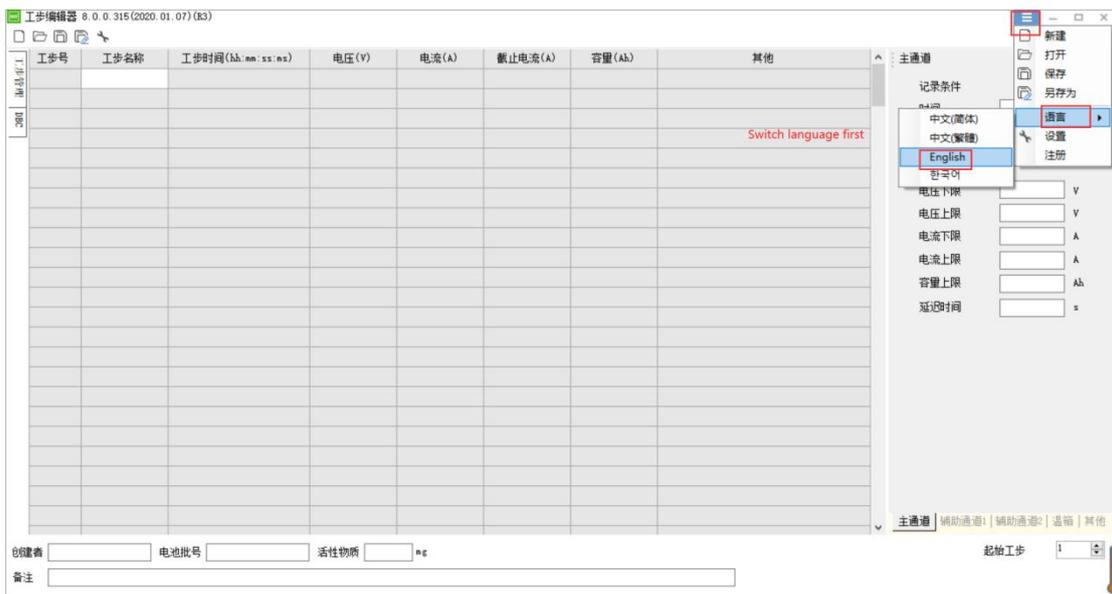
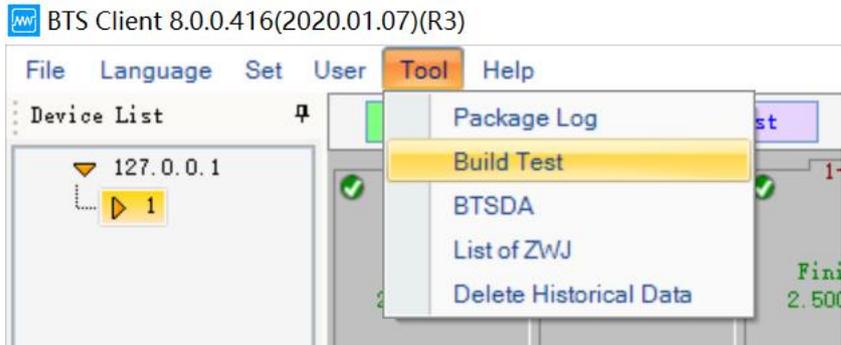
3. 10. 1. Log Download

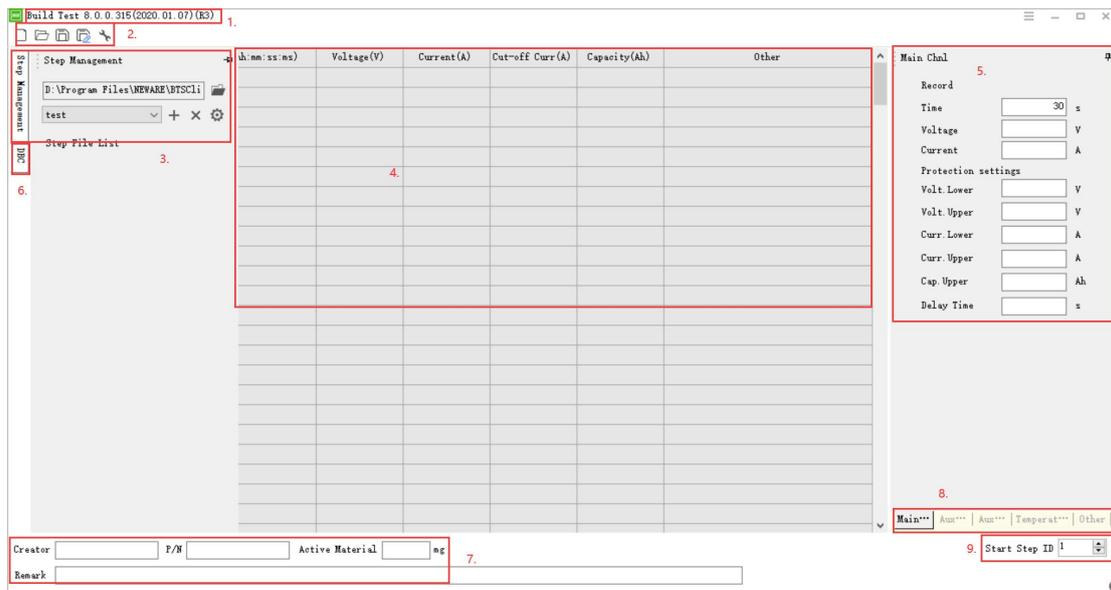
Open the client and select the download log function from the menu bar.Open the log download interface, you can choose the server IP to download the log, the time range to download the log, and the path to save the log download.The log downloads include both client and server logs, as shown in the figure below.



3. 10. 2. Build Test

As shown in the figure, open the client and select the Build Test under the tool from the menu bar to open the offline workstep editing function. You can also run the Build Test yourself by double-clicking the Build Test.exe icon.



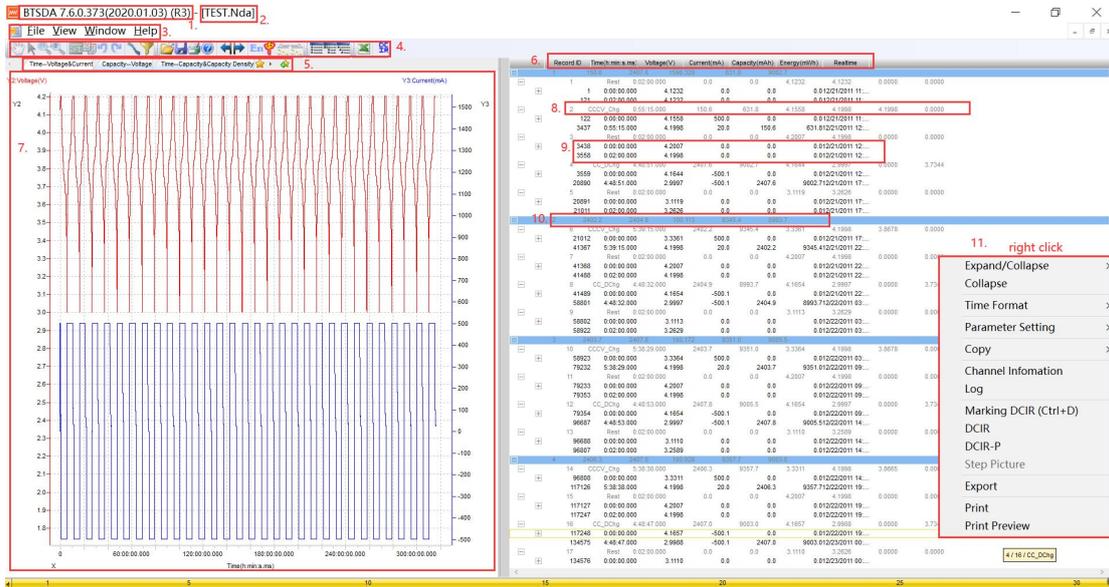


- 1.Offline working step editor;
- 2.New, open, save, save as, set menu bar;
- 3.Work step management interface;
- 4.Working step editing area;
- 5.Parameter setting interface;
- 6.DBC management interface;
- 7.Basic details input box;
- 8.Parameter setting interface switch button;
- 9.Start working step input.

 **Note:** See the BuildTest user manual for instructions on how to use the workstep editor.

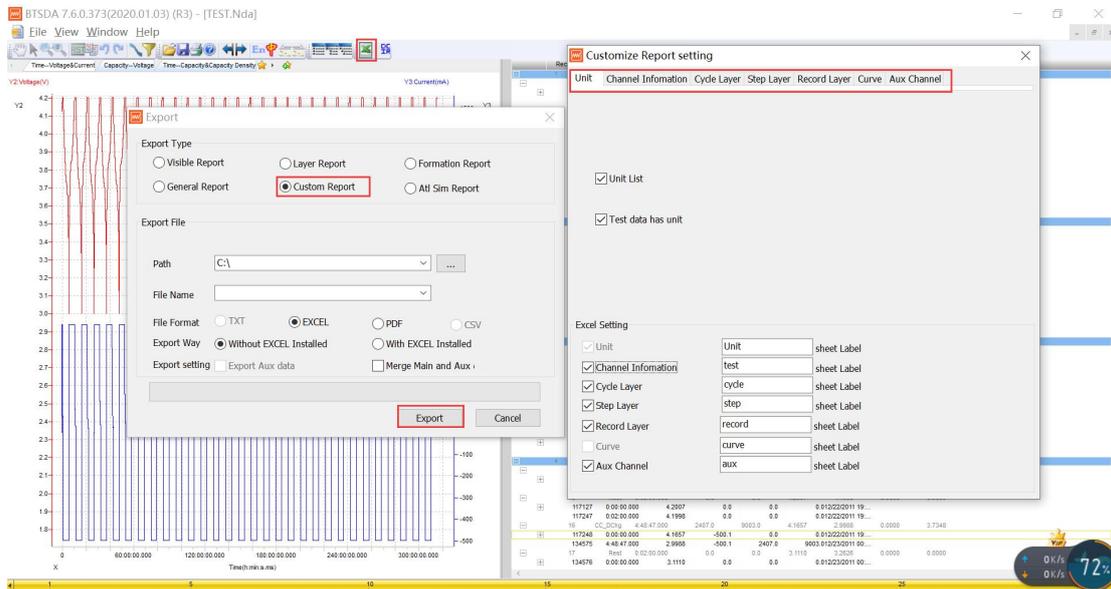
3. 10. 3. BTSDA

1. The client can open the BTSDA interface by right-clicking the channel data, as shown in the figure below,



1. Version
2. Data name (normally tester No.-unit NO.-channel No.-test ID, eg. 24001-1-1-2818577304.nda)
3. Menu bar
4. Menu icon
5. Curve name
6. Curve area
7. Data area menu
8. Step layer data
9. Record layer data
10. Cycle layer data
11. Right click menu

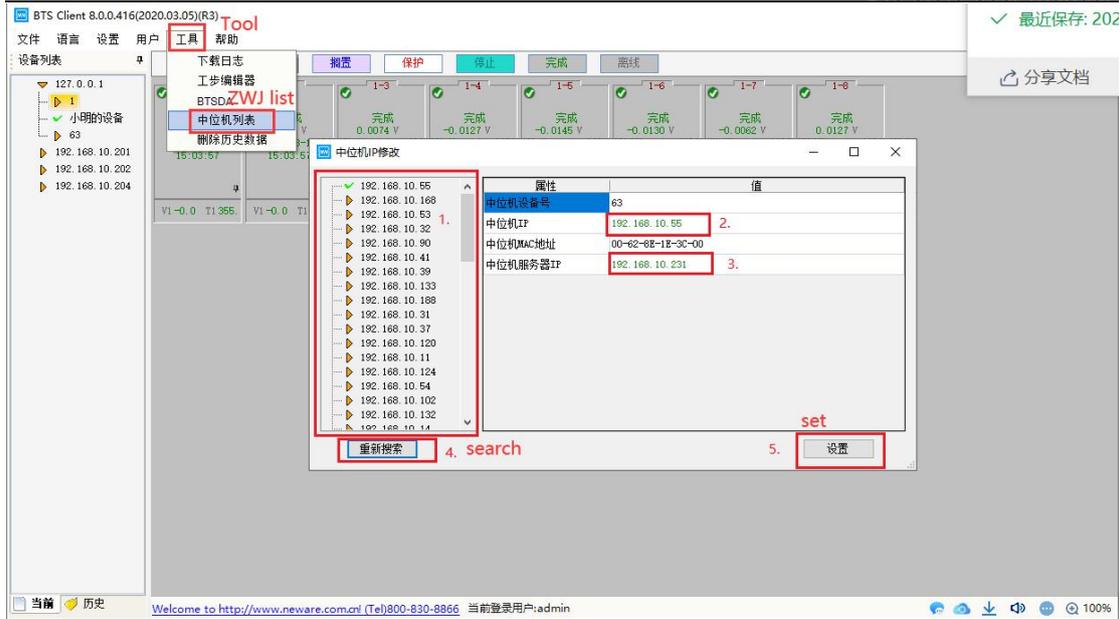
3. Customized report parameter settings, as shown in the figure below,



1. Click the “custom report”
2. Set the parameters to be exported
3. Click the "Export" button, and the default settings of this configuration will be used for the next export

3. 10. 4. ZWJ List (the Middle Machine)

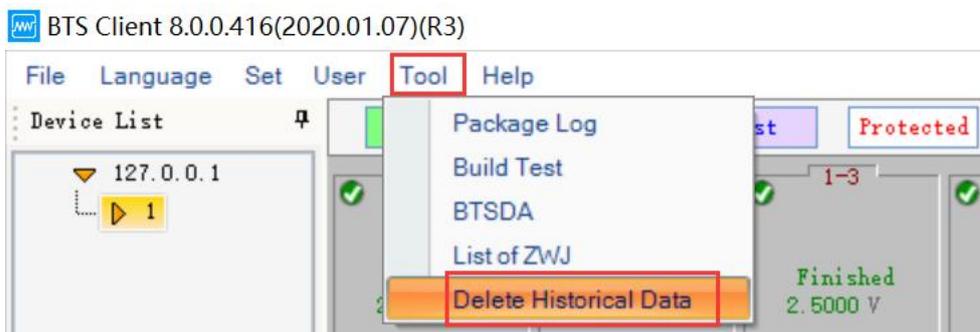
Open the ZWJ list to automatically search the online middle machines under the same router, and modify the IP and server addresses of the middle machines, as shown in the figure below:

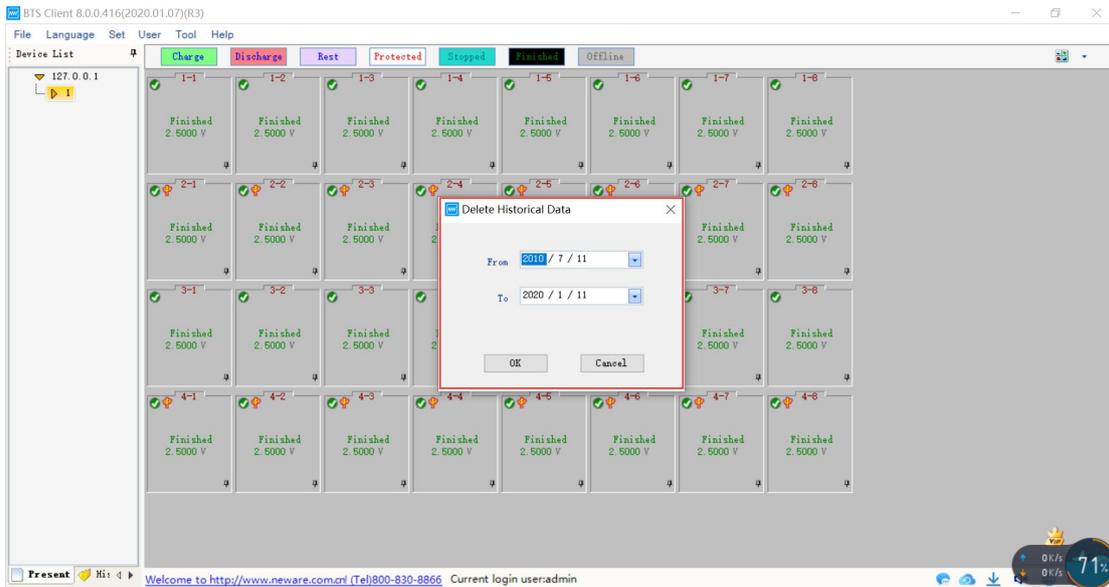


1. In the same network segment
2. Double-click to modify the IP of the middle machine
3. Double-click to modify the middle machine server IP
4. Click to research
5. Click “set” after modification

3. 10. 5. Delete Historical Data

Delete data through time range settings.As shown in the figure below:





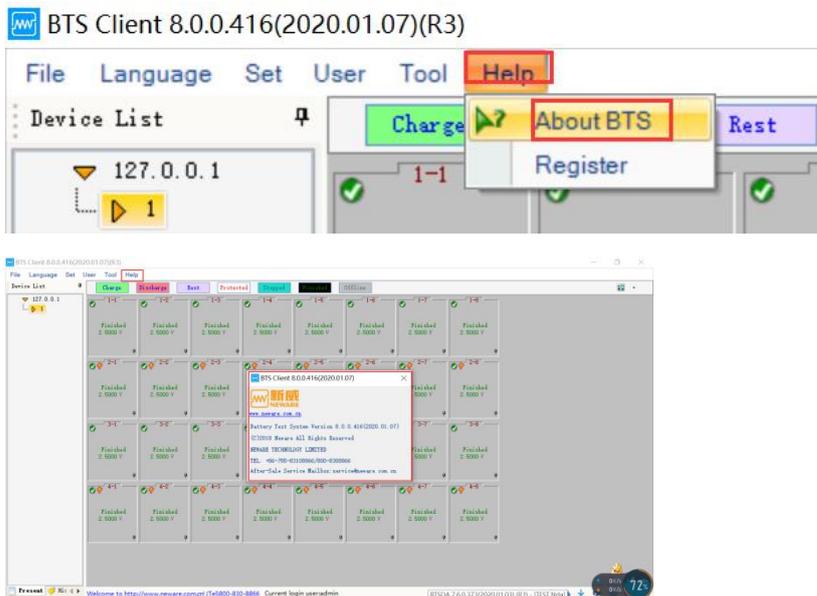
3.11. Help

1. About BTS

The BTS window contains the official website address of our company. Click it and you can directly enter the official website of Neware. There is also version information, contact number and complaint email.

2. Register (Registration needed when installing the software)

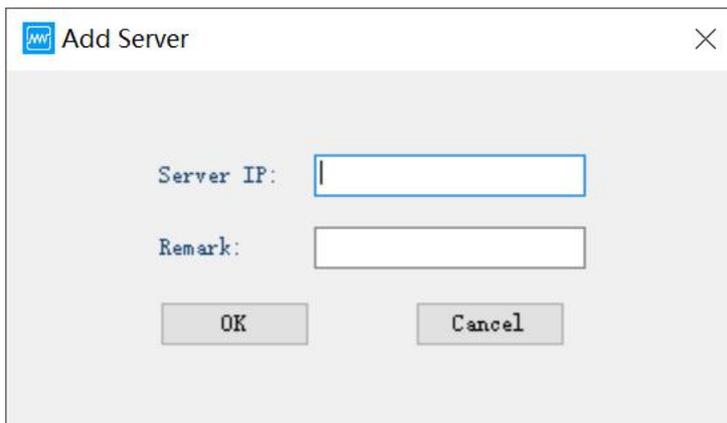
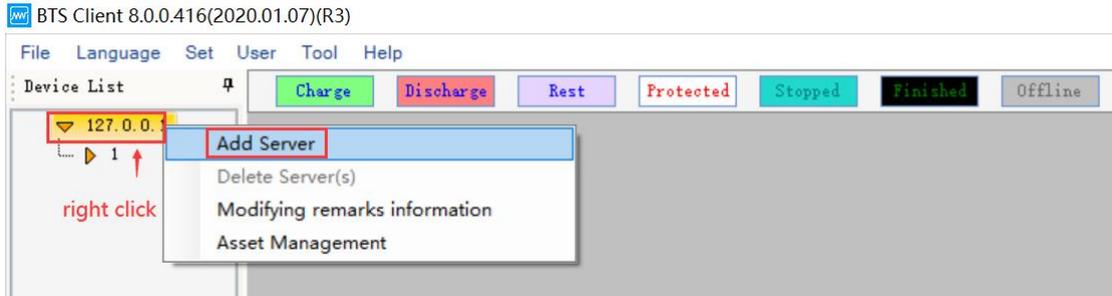
Registration function: for different automation projects, it needs to register the corresponding mode. As shown in the figure below:



3. 12. Device List

3. 12. 1. Add Server

The default configuration of the software is "127.0.0.1" local service. If you need to access other services, select any service IP and right click "add server" to add modification remarks, as shown in the figure below:



Note: Server cannot be added in auto - production mode.

Stop the mouse over the server IP, and the software will display the server version information, as shown in the figure below:

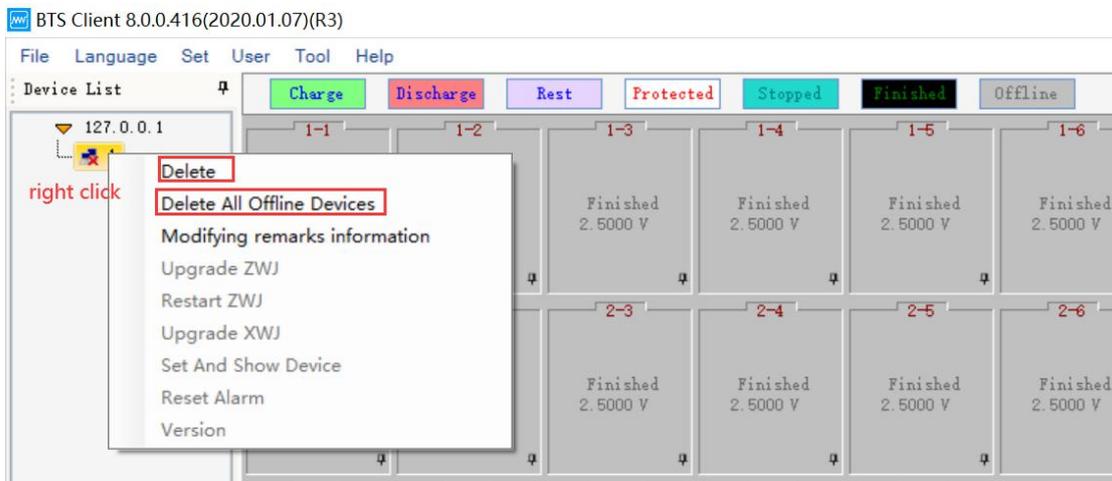


3. 12. 2. Delete Offline Devices

The device is displayed as this when it is offline 

if you do not want to display too many offline devices, you can remove the offline device.

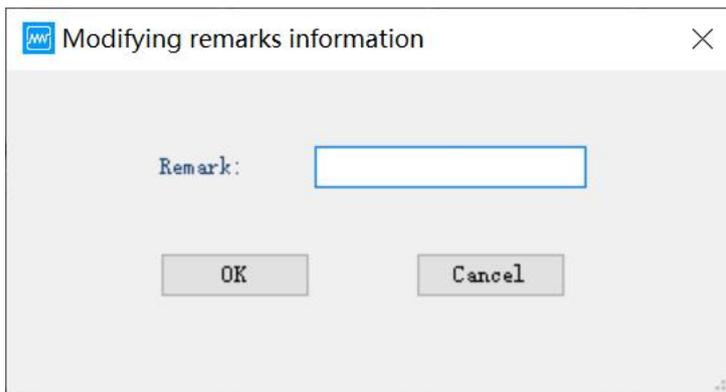
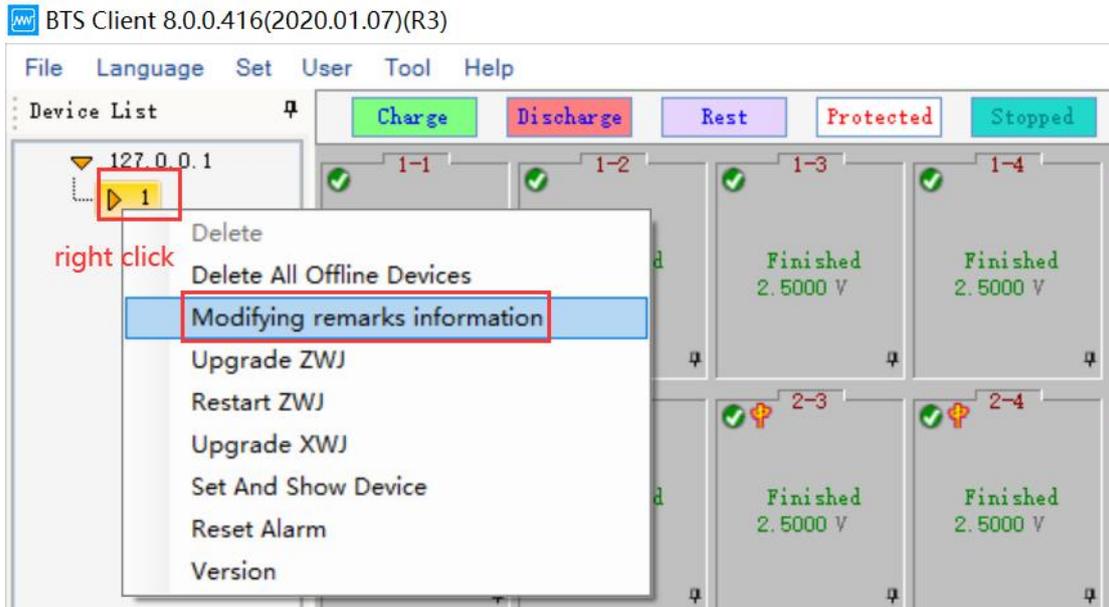
1. Device list-->select offline devices
2. Right click-->“delete” (Deletes the currently selected device) or “delete all offline devices”



 **Note:** Devices that are online will not be deleted.

3. 12. 3. Modify Remarks Information

Select the middle machine, right click and modify the remarks;
The operation is as shown in the figure:



3. 12. 4. Update ZWJ (the Middle Machine)

There is a risk to upgrade the software, please contact after sales

3. 12. 5. Restart ZWJ

The middle machine can send restart commands through the client

- 1.Device list,select device
- 2.Right click-->“restart ZWJ”

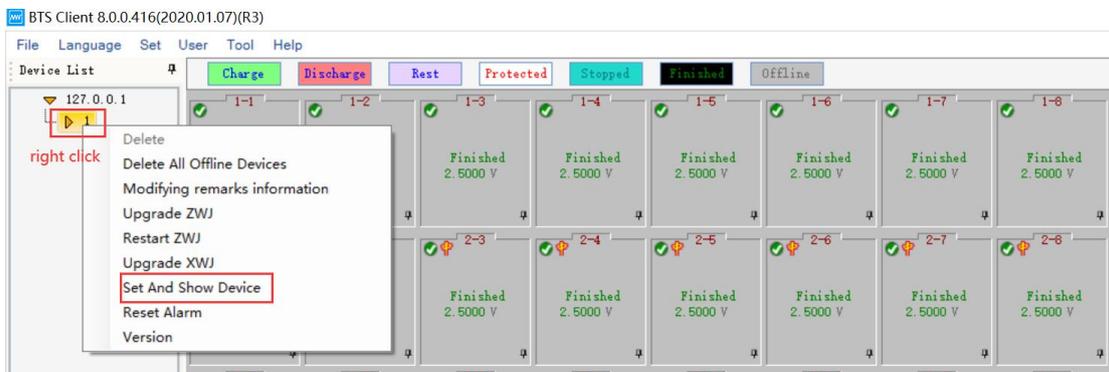
3. 12. 6. Upgrade ZWJ

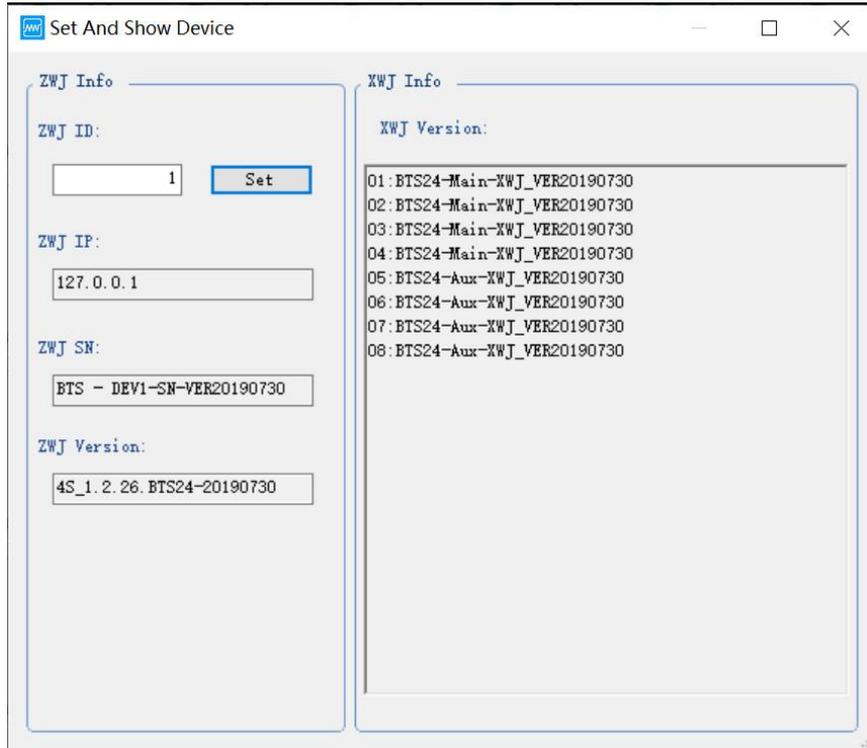
There is a risk to upgrade the software, please contact after sales

3. 12. 7. Set and Show Device

The client software can view the middle and lower machine versions, and it can also modify the middle machine device number.

1. Device list, select middle machine
2. Right click-->“Set and show device”
3. Fill in the new equipment number-->click “set”
- 4.

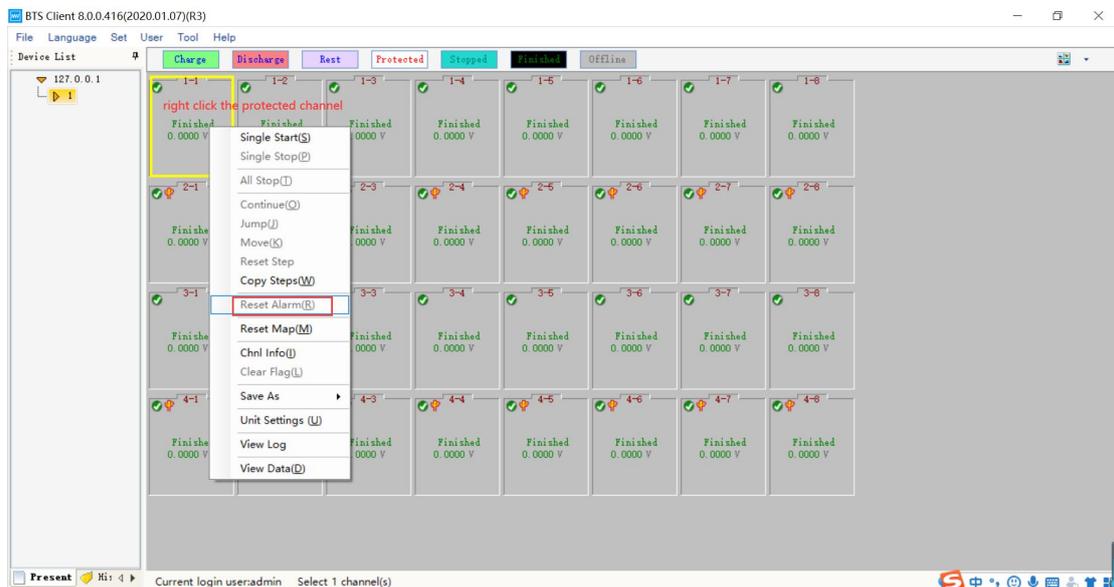




3. 12. 8. Reset Alarm

If the device is connected with a buzzer, the buzzer will send an alarm when the channel is protected. At this time, the alarm can be reset by reset alarm function.

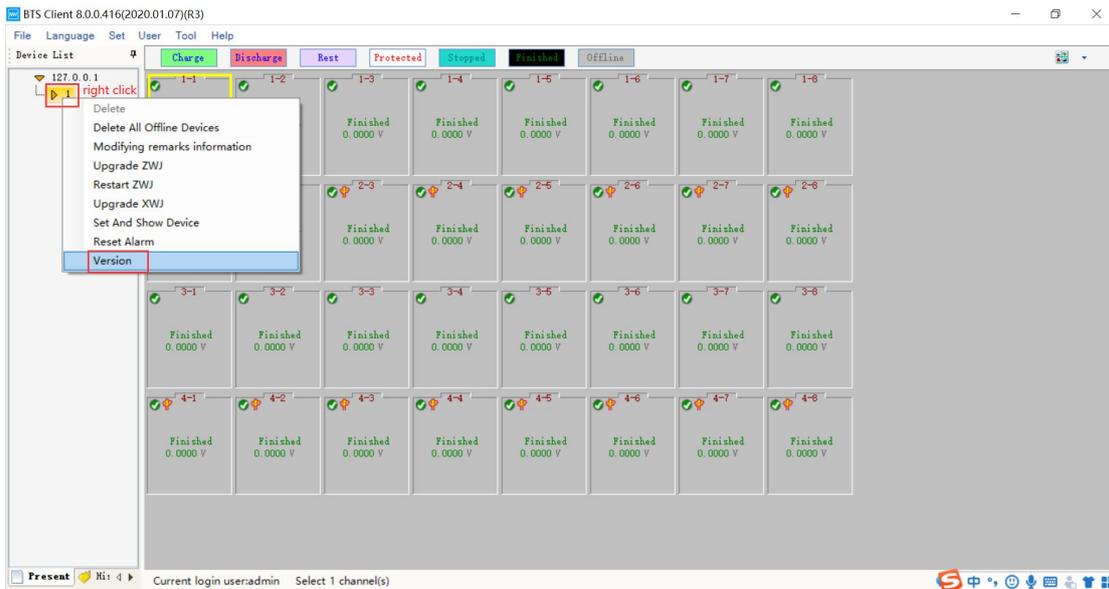
1. Select the protected channel in the channel area or the protected device in the device list area
2. Right click -->"Reset Alarm"



3. 12. 9. Version Information

Check the middle and lower machine’s versions of all channels on a same middle machine

1. Device list -->select the middle machine
2. Right click-->“Version information”



Device Type	Device ID	Unit ID	Main Chn...	Aux Chn ID	ZWJ Version	Client Version	Server Version	Main Chn. ZWJ Version	Aux Vers
BTS82	1	1	1	0	4S_1.2.26. BTS24-20190730	BTS Client 8.0.0.416(2020.01.07)(R3)	BTS Server (R3)-7.6.0.363 (2019.08.15)	BTS24-Main-XWJ_VER20190730	
	1	1	2	0			BTS24-Main-XWJ_VER20190730		
	1	1	3	0			BTS24-Main-XWJ_VER20190730		
	1	1	4	0			BTS24-Main-XWJ_VER20190730		
	1	1	5	0			BTS24-Main-XWJ_VER20190730		
	1	1	6	0			BTS24-Main-XWJ_VER20190730		
	1	1	7	0			BTS24-Main-XWJ_VER20190730		
	1	1	8	0			BTS24-Main-XWJ_VER20190730		
	1	2	1	0			BTS24-Main-XWJ_VER20190730		
	1	2	2	0			BTS24-Main-XWJ_VER20190730		
	1	2	3	0			BTS24-Main-XWJ_VER20190730		
	1	2	4	0			BTS24-Main-XWJ_VER20190730		
	1	2	5	0			BTS24-Main-XWJ_VER20190730		
	1	2	6	0			BTS24-Main-XWJ_VER20190730		
	1	2	7	0			BTS24-Main-XWJ_VER20190730		
	1	2	8	0			BTS24-Main-XWJ_VER20190730		
	1	3	1	0			BTS24-Main-XWJ_VER20190730		
	1	3	2	0			BTS24-Main-XWJ_VER20190730		
	1	3	3	0			BTS24-Main-XWJ_VER20190730		
	1	3	4	0			BTS24-Main-XWJ_VER20190730		
	1	3	5	0			BTS24-Main-XWJ_VER20190730		
	1	3	6	0			BTS24-Main-XWJ_VER20190730		
	1	3	7	0			BTS24-Main-XWJ_VER20190730		
	1	3	8	0			BTS24-Main-XWJ_VER20190730		
	1	4	1	0			BTS24-Main-XWJ_VER20190730		
	1	4	2	0			BTS24-Main-XWJ_VER20190730		
	1	4	3	0			BTS24-Main-XWJ_VER20190730		
	1	4	4	0			BTS24-Main-XWJ_VER20190730		
	1	4	5	0			BTS24-Main-XWJ_VER20190730		
	1	4	6	0			BTS24-Main-XWJ_VER20190730		
	1	4	7	0			BTS24-Main-XWJ_VER20190730		
	1	4	8	0			BTS24-Main-XWJ_VER20190730		

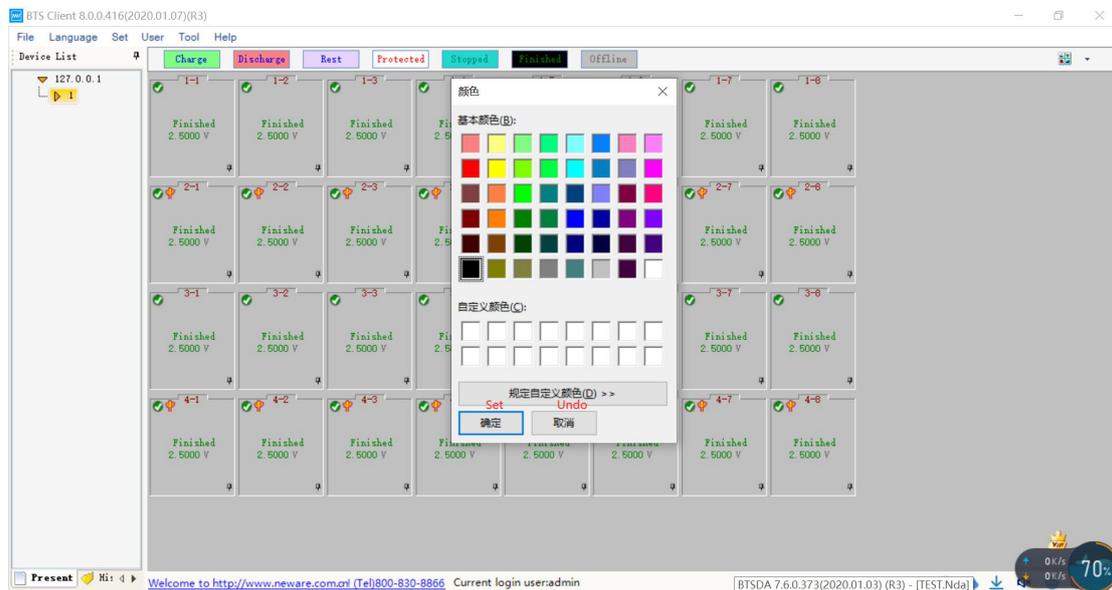
3. 13. Channel Interface

3. 13. 1. Channel Color Setting

The channel color is divided into the background color and the foreground color (font color). We can change the display color according to our preference.

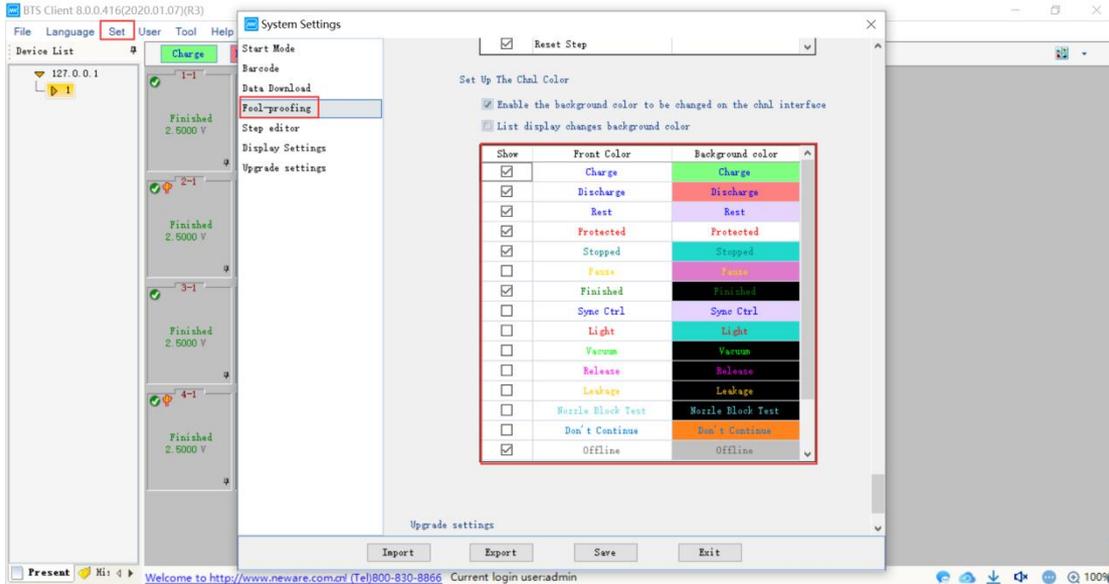
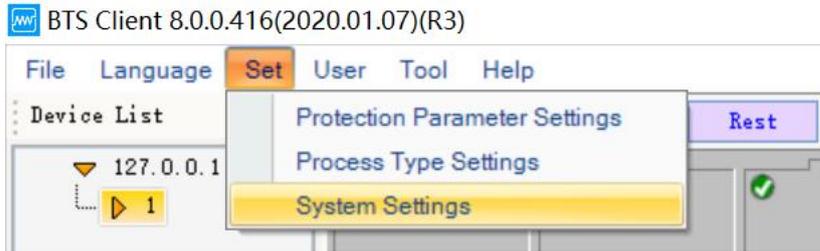
1. Channel background color Settings

To change the background color of the channel, left-click the color box on the state. For example, click the rectangle on "charge" to pop up the color box. Select the color through the color selector, and right click -> "undo" to restore the color to default, as shown in the figure below:



2. Font Color Setting

The font color needs to be modified in the system setting display setting. The channel interface can be set in the system setting to prohibit the modification of the channel color, so as to facilitate unified color management within a company and prevent front-line operators from changing the color on multiple computers to inconsistent. System Settings can also configure the channel display interface to display the background color, and mask the infrequently used state.



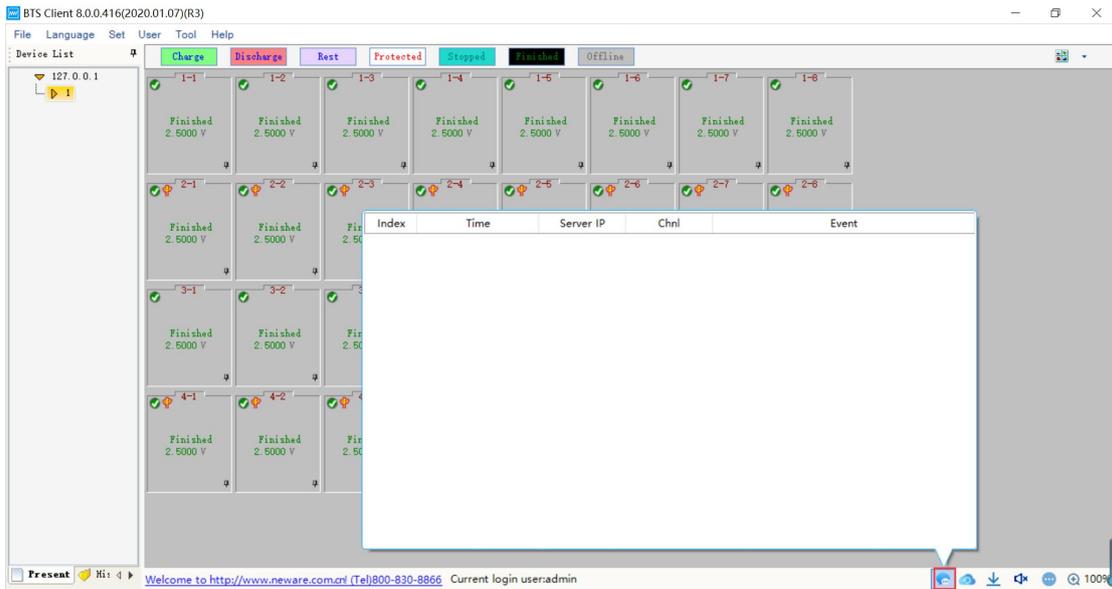
前景色设置

3. 13. 2. Channel Display Setting

1.Channel Protection or Warnings

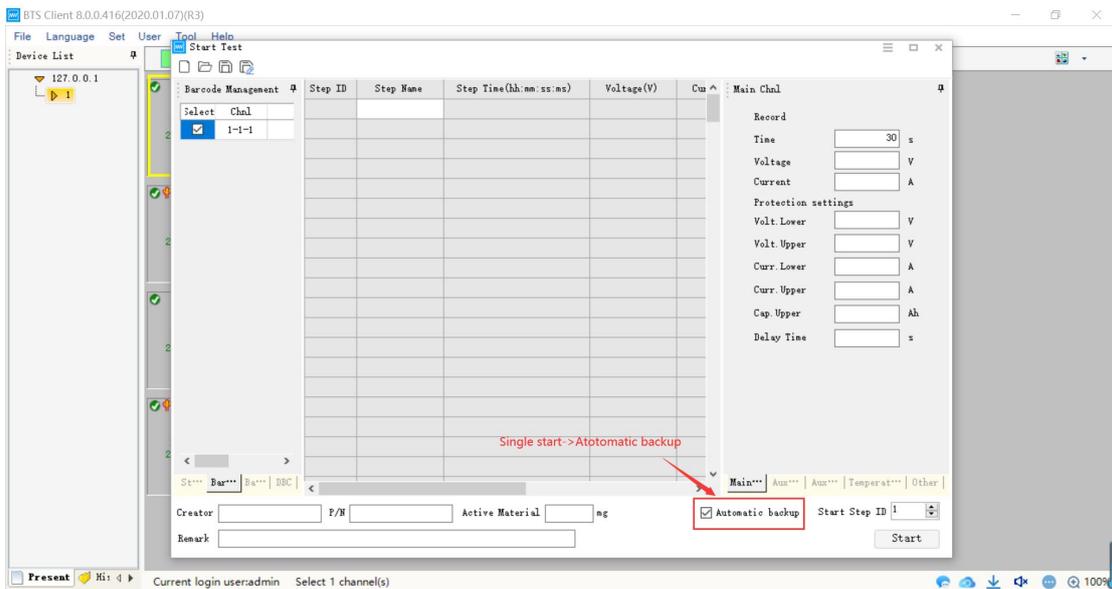
How to view messages:

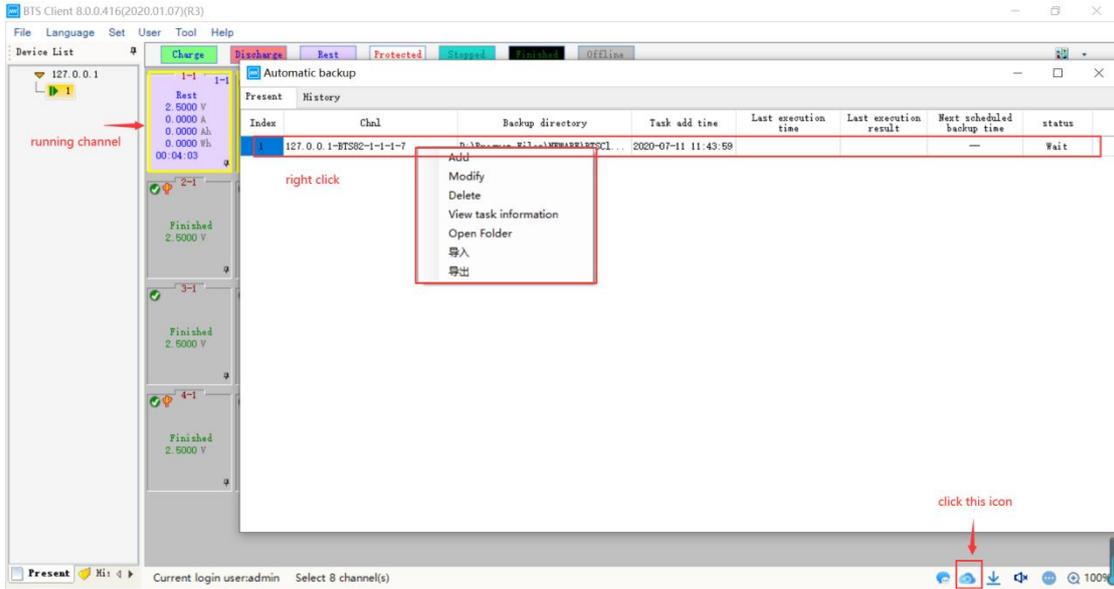
In the lower right corner of the client channel display interface, click  to pop up the message display interface, as shown in the figure below



2. Automatic Backup

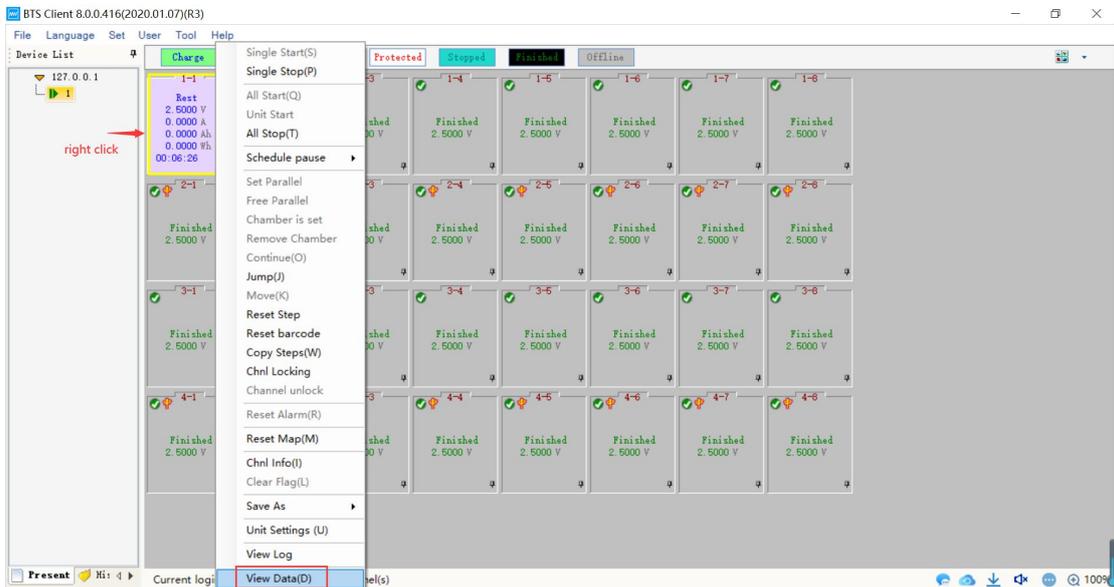
The current and historical backup data can be viewed, and added, modified and deleted after starting the test.

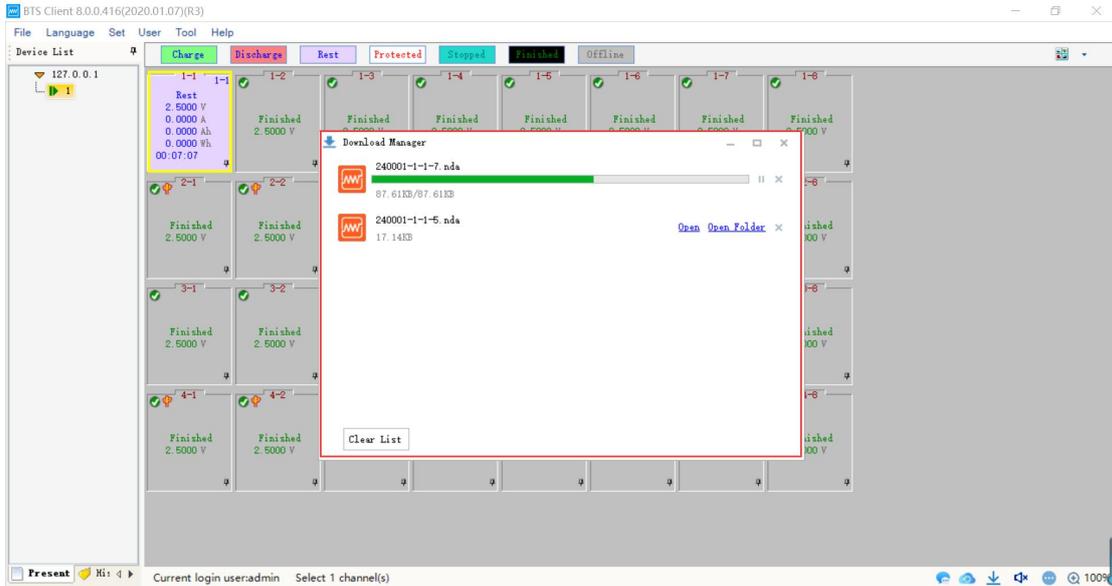




3.Data Download View

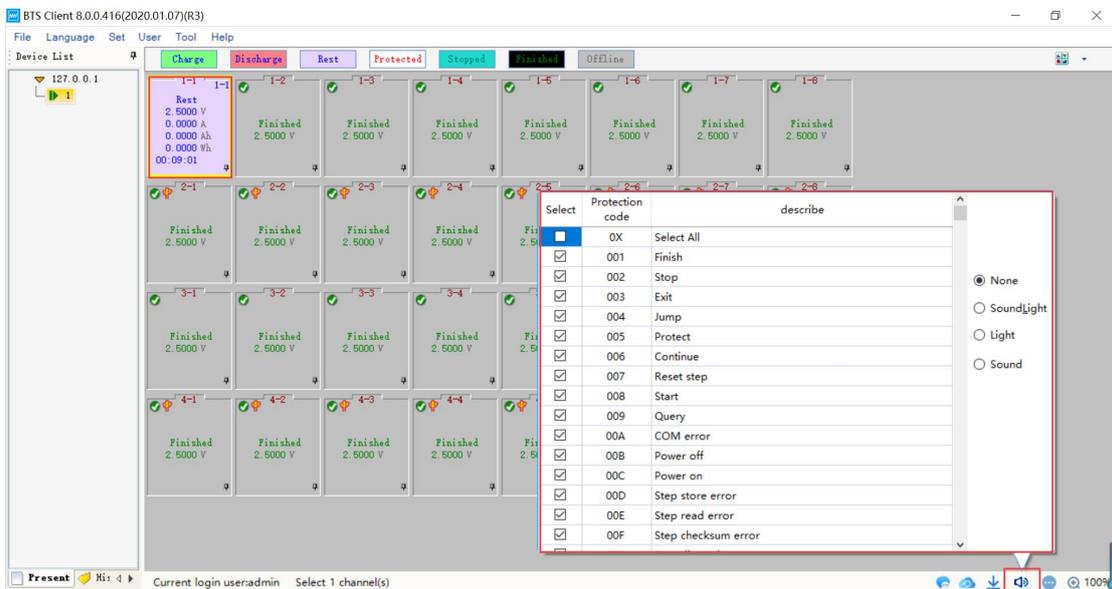
In the lower right corner of the client  channel display interface, click the icon to pop up the download task interface, as shown in the figure below:





4.Sound Alarm

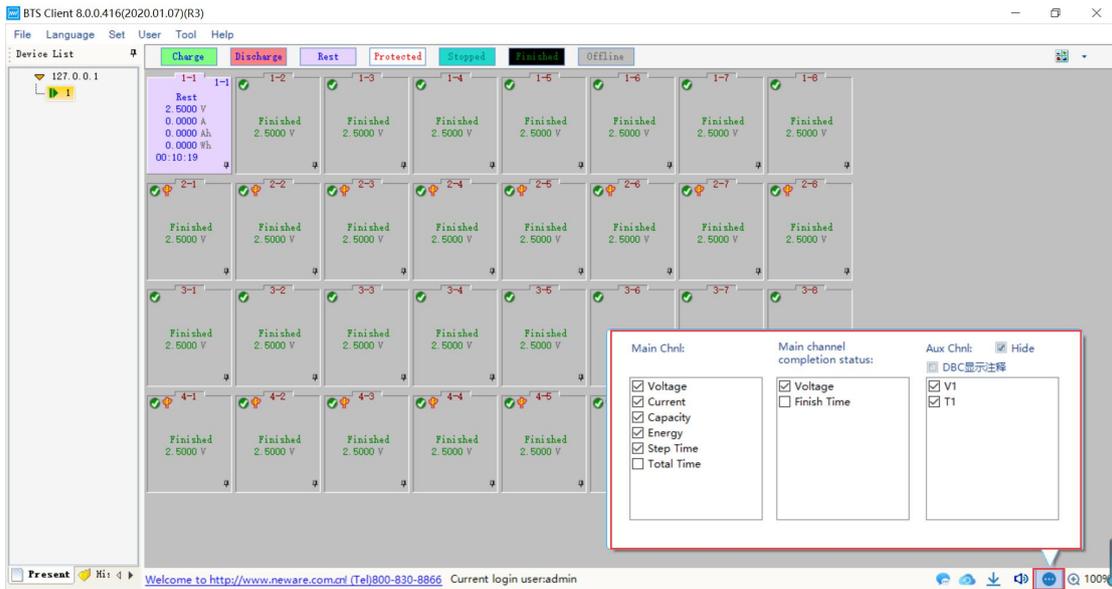
In the lower right corner of the client channel display  interface, click the icon to turn on or off the sound alarm. In the case as shown in the figure, the computer will have the alarm sound when the chose protection of the channel appears.



5.Channel Display Settings

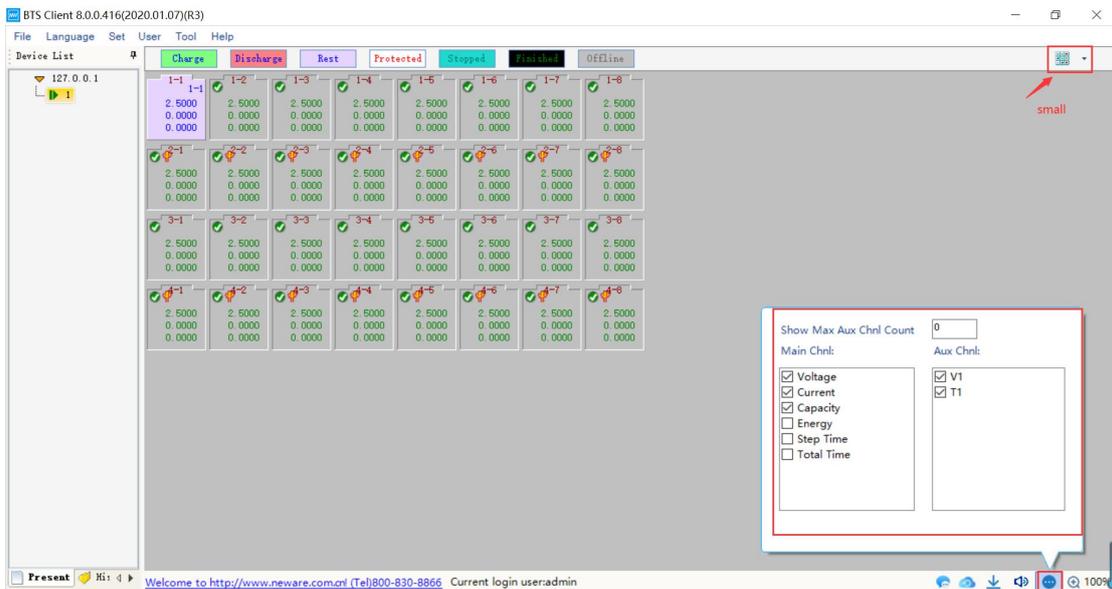
Operation method of large icon parameter display

In the large icon interface, click the  icon in the lower right corner to pop up the parameter configuration interface, as shown in the figure below:



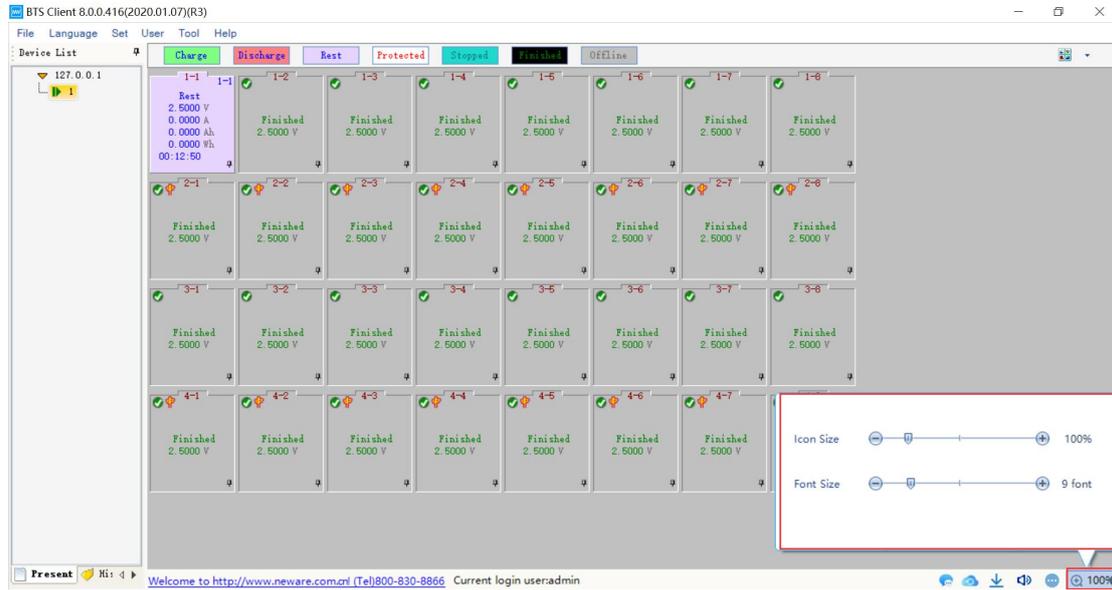
Operation method of small icon parameter display

In the small icon interface, click the  icon in the lower right corner to pop up the parameter configuration interface, as shown in the figure below:

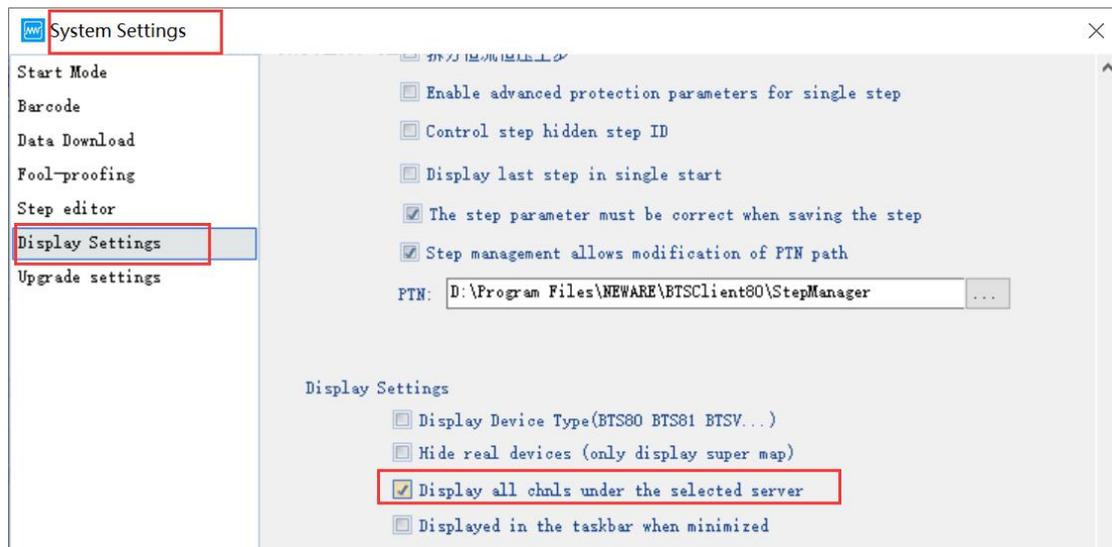


6.Font and Battery Box Size Setting Method

Click the icon  in the lower right corner to pop up the zoom configuration interface, as shown below:



Software defaults to click on the device on the right side of the display corresponds to the equipment in the list of equipment all the channel, click on other nodes does not display the channel, for the user who wants to start multiple devices at the same time, it can be set in the system setting "display all channels under the selected server", click the server after set, click the server node, on the right shows all the channels under the same server, as shown in the figure below:



3. 13. 3. Interface Display Switch

As shown in the picture, you can switch to the interface of large icon, small icon, list, sorting and so on through the upper-right button.



3. 14. Right Click Menu of Channel Interface

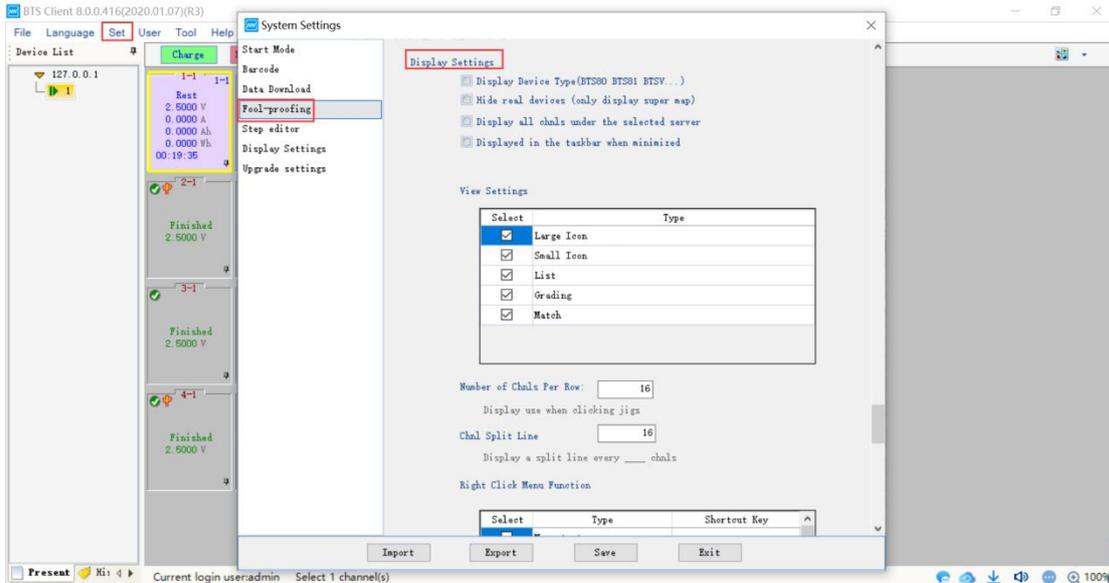
In the channel display area, right click. If the right click window displays in gray, the user needs to log in first and operate the corresponding Settings

If the channel is offline, the corresponding position will be displayed as the offline background color and default to gray, as shown in the figure below:



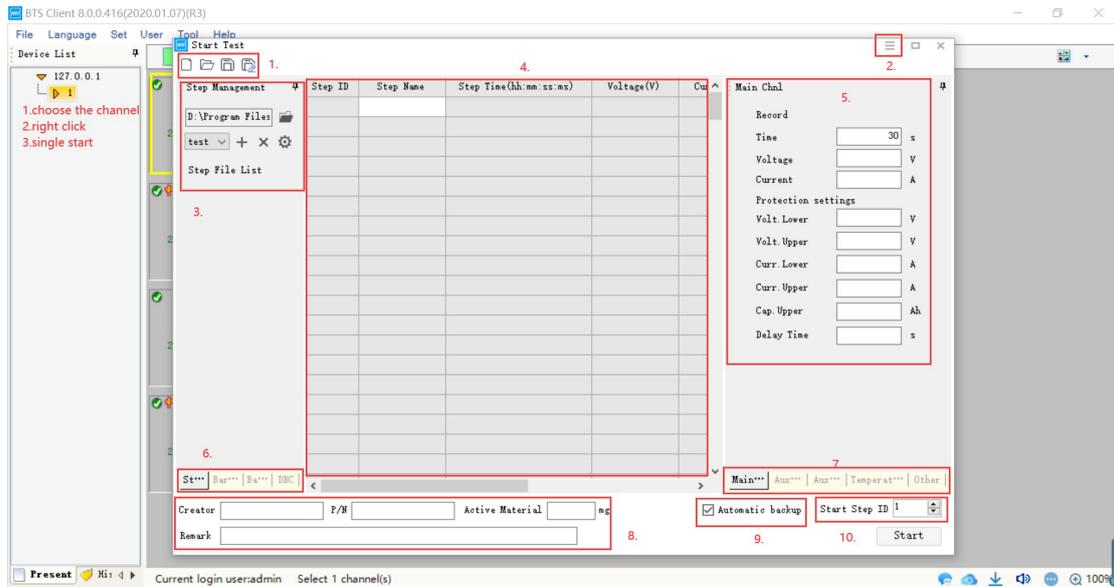
For functions that cannot be operated in the right-click menu, if the mouse stops in the corresponding position, the corresponding reason prompt will pop up.

Right click menu can be set on the system configuration interface to display, and users can screen unused functions according to the actual situation, as shown in the figure below:



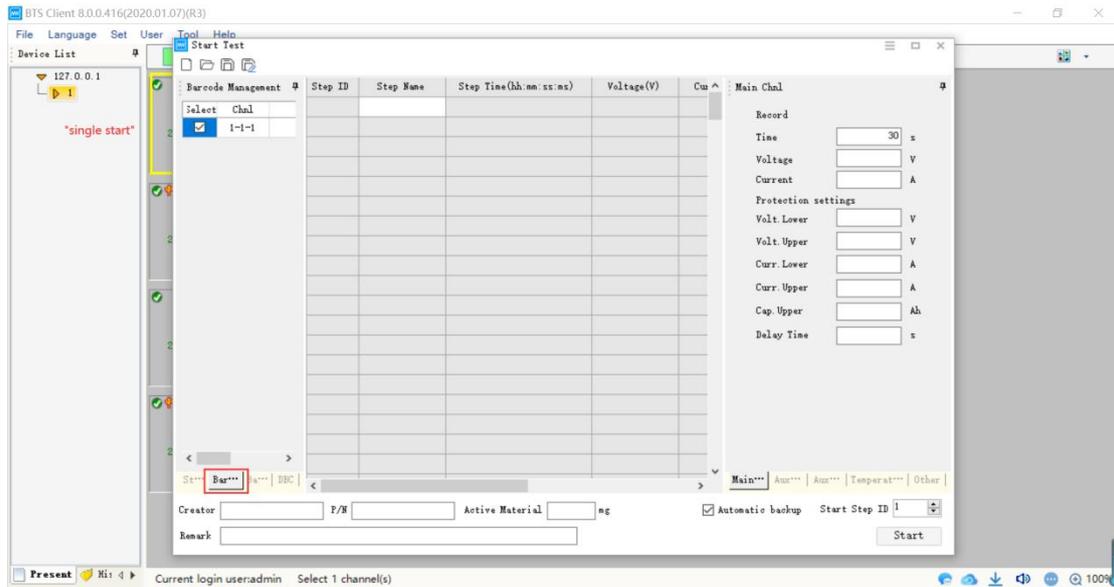
3. 14. 1. Single Start/Stop

Select the channel to be operated → right-click → "Single start";
 Under the "Start" interface (as shown in the figure below), work steps, recording conditions, security protection and other information can be set.



1. New, open up, save, save as
2. New, open up, save, save as
3. Working step management interface
4. Working step editing area
5. Conditions setting area
6. working step management, code bar management, back-up management DBC switch
7. Switch to the condition setting interface
8. Basic information
9. Automatic back-up
10. The initial work step input for operation

The barcode management interface loads the barcode as follows:
 Select the channel requiring input of barcode to start → right click → "Single Start"
 Click the barcode management interface to input the barcode, as shown in the figure below:



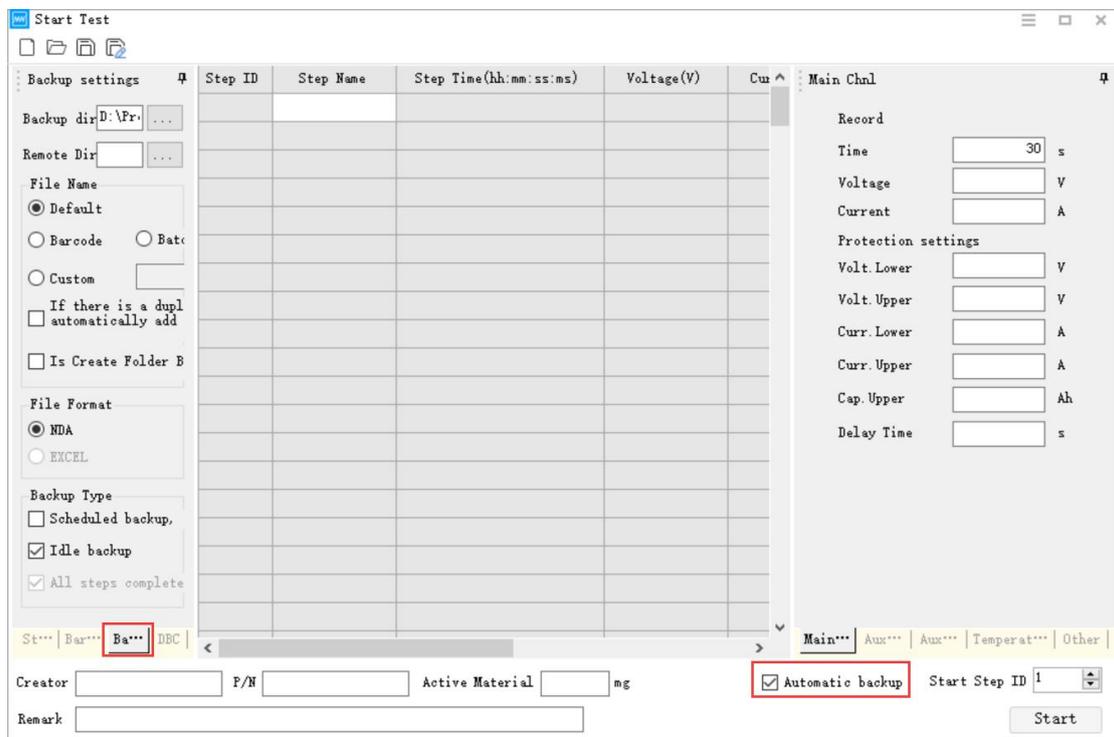
条码管理界面

Back up setting interface

Operation method:

Select the channel to be tested → right click → “single start” → “automatic backup”

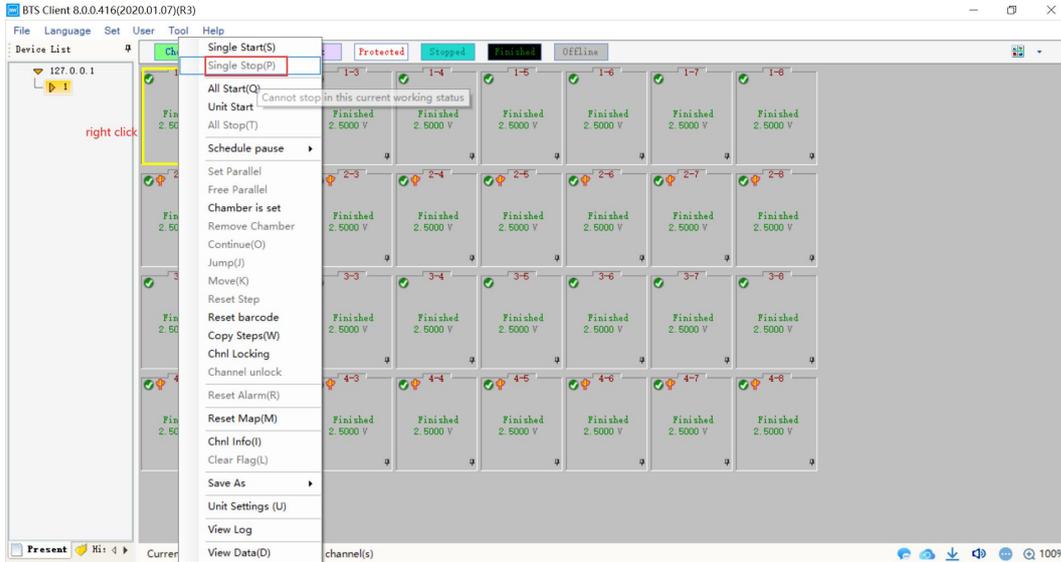
Check the box of automatic backup to start directly, as shown in the figure below:



When we want to reset the work steps of one or several channels, we will stop the running of the channel. The operation is as follows:

Select a single or several channels → right-click → “single Stop”.

At this point, the corresponding channel is to stop the work step manually and enter the stop state.

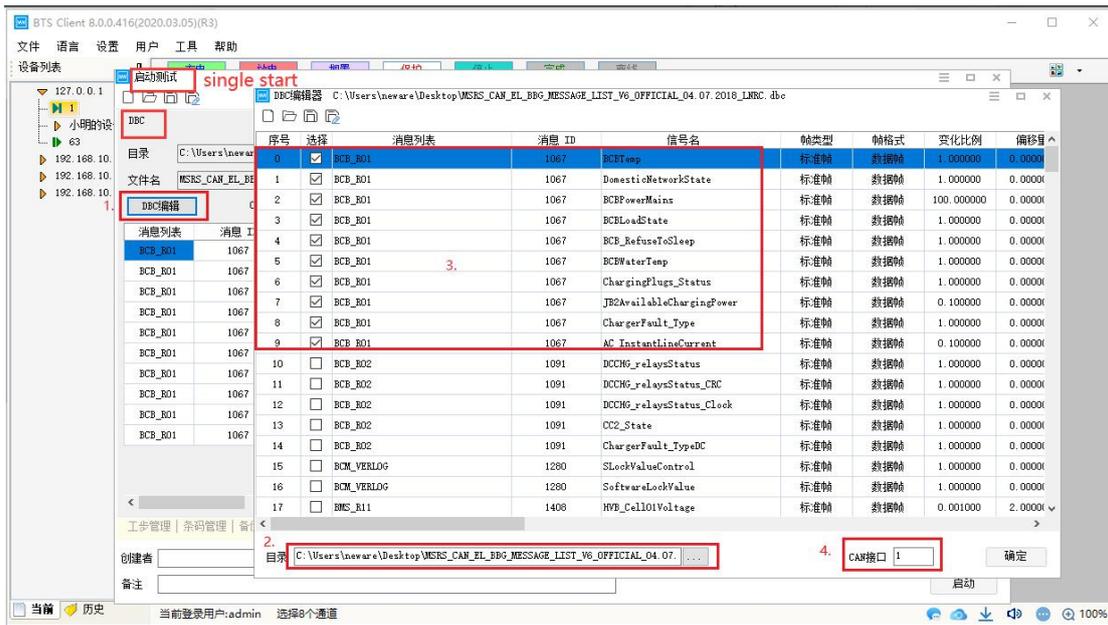


3. 14. 2. DBC Function

1. Get the original data through CAN module
2. The DBC file can be loaded/saved/echoed/executed/edited.

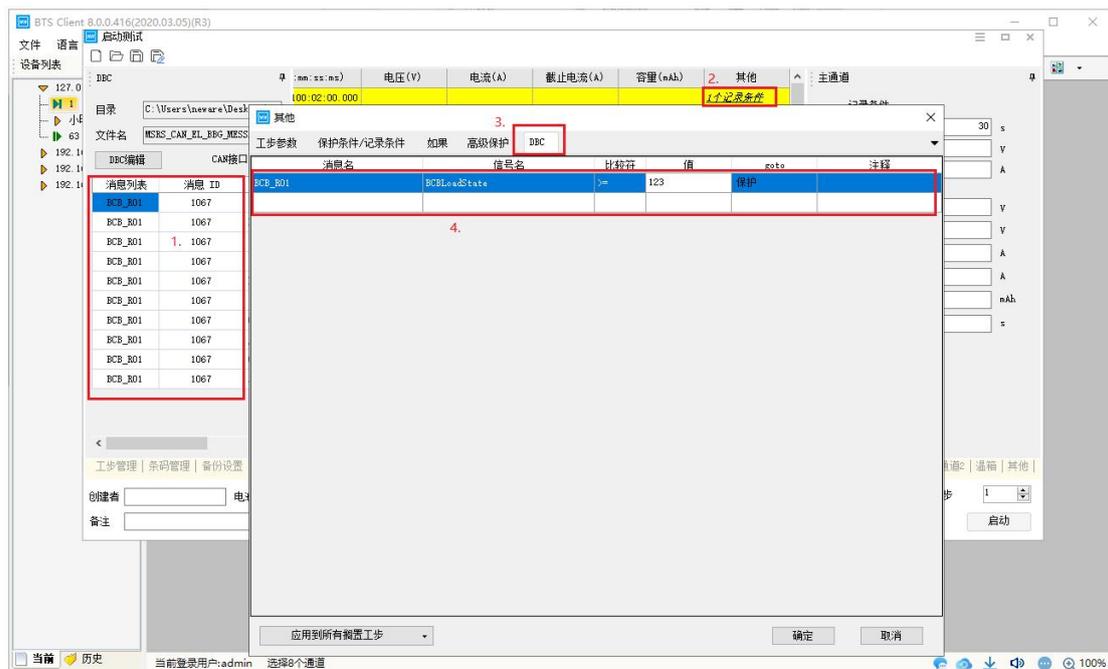


Here you can see the DBC signal data carried in the boot channel.



1. Click "DBC editor" to enter the DBC editor interface
2. Load the DBC file
3. Check the needed signal
4. Enter the CNA interface and click OK

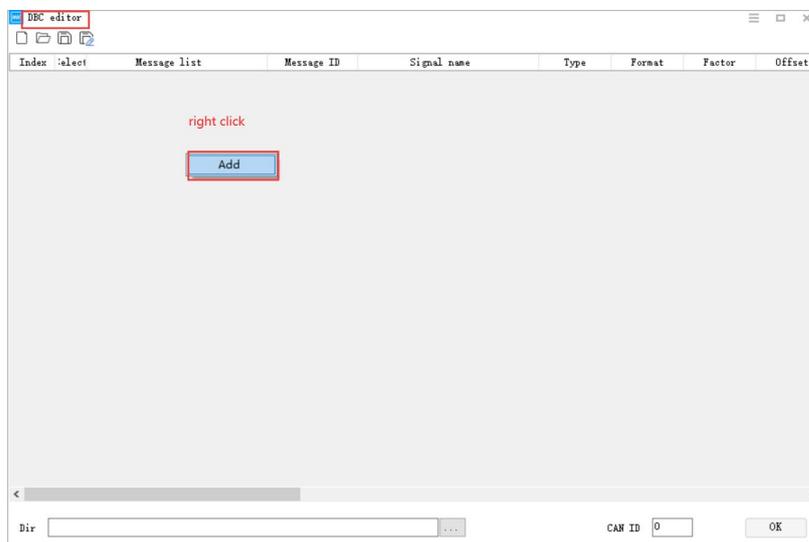
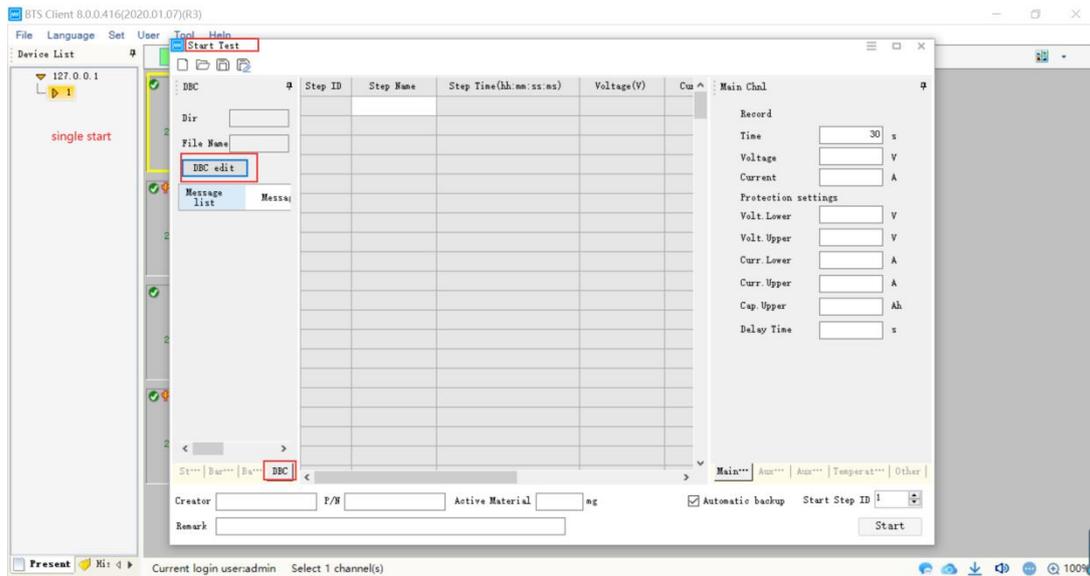
Set the DBC conditional expression

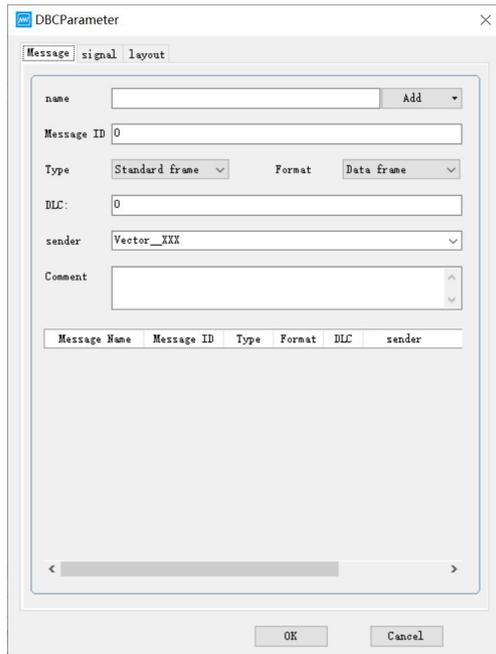


1. Select the DBC signal through DBC editing

2. Double-click “other” to enter the condition setting
3. Select DBC
4. Select the DBC information name and signal name to compare and set the symbol and comparison values
5. Click OK

DBC Editing Function





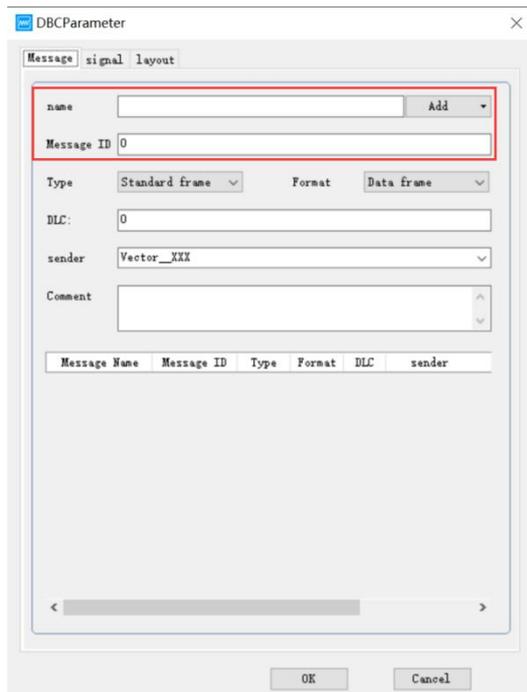
1. Click the DBC editor when editing the work step
2. Right-click to add the DBC editor interface
3. DBC editing interface

Message editing

Enter the message name and click the Add button for the information ID

Note: The message name, information ID must be filled, and cannot exist the same, others according to the protocol to edit.

The following is the message editing interface:



Signal editing

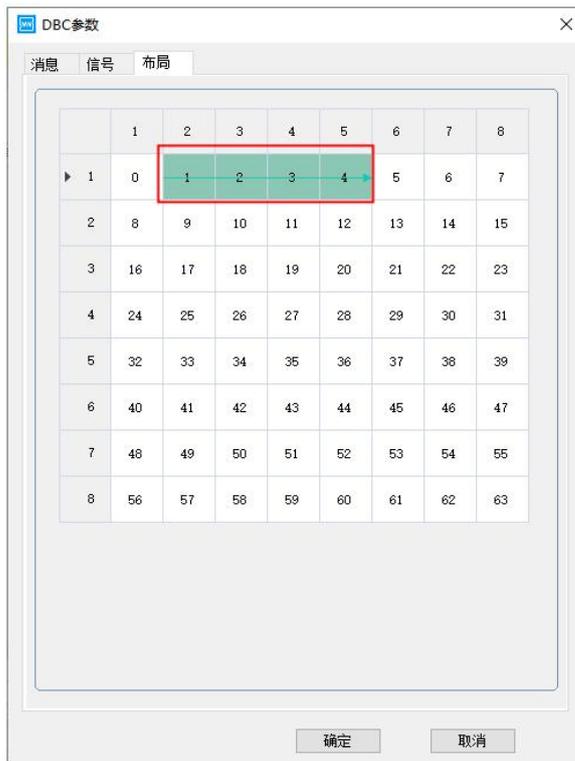
The edit signal must have a message otherwise it cannot be edited (a message carries multiple signals)

Note: If the signal name is blank, it must be filled in. Others are edited according to the protocol.

Layout

The interface layout is determined by the signal starting bit and bit width.

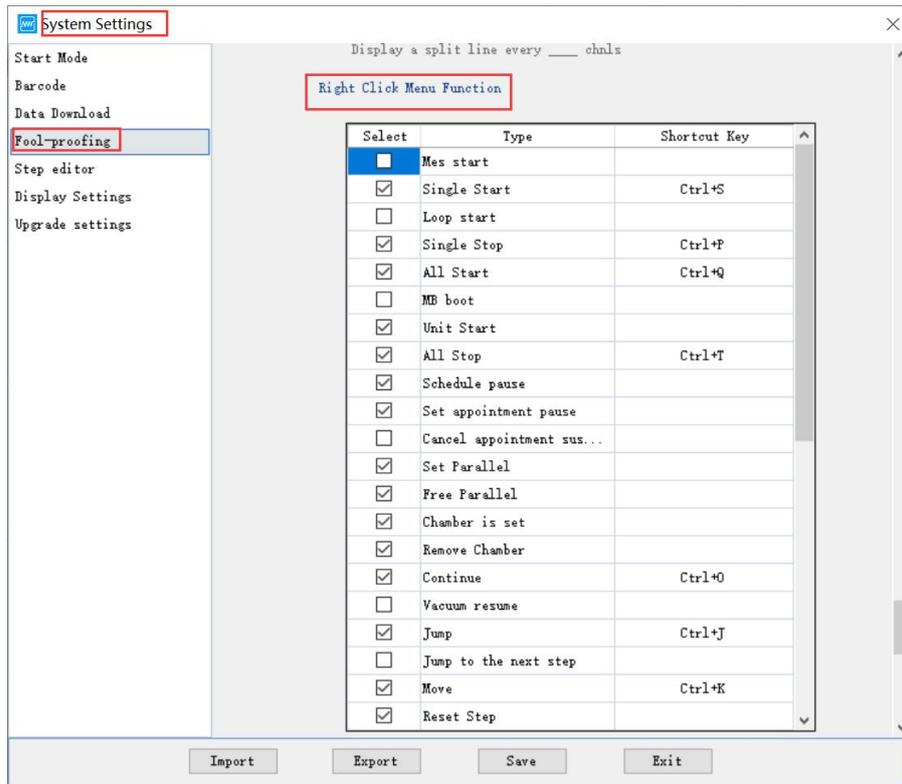
As shown in the figure below, the signal starting bit is 1 and the bit width is 4.



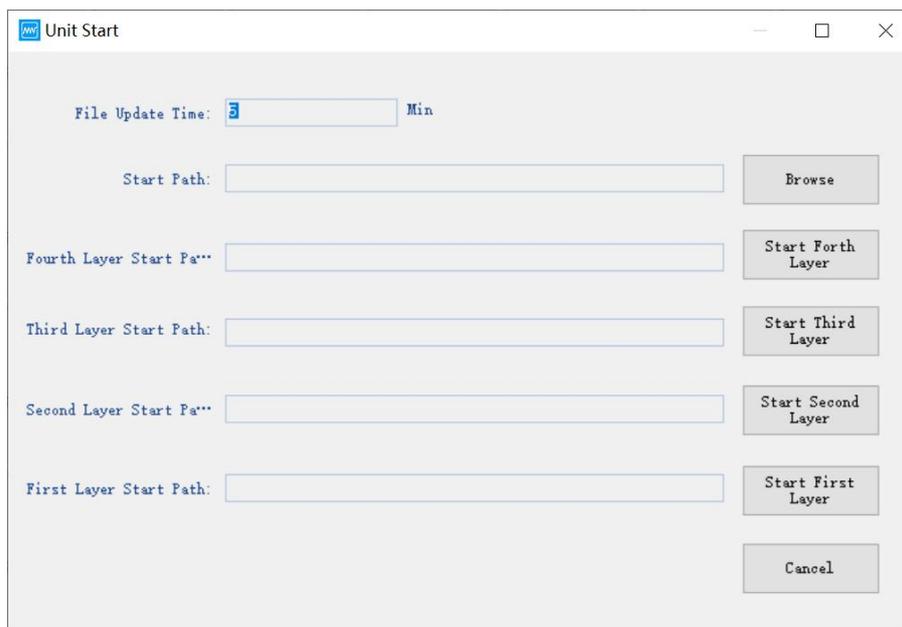
3. 14. 3. Unit Start

When we want to start all the channels available on a certain layer, the operation is as follows:

Note: if right click cannot find "unit start", please go to system setting to add it.



- 1) Click the right mouse button → "Unit start";
- 2) After setting work steps, recording conditions, security protection and other information, click "OK".

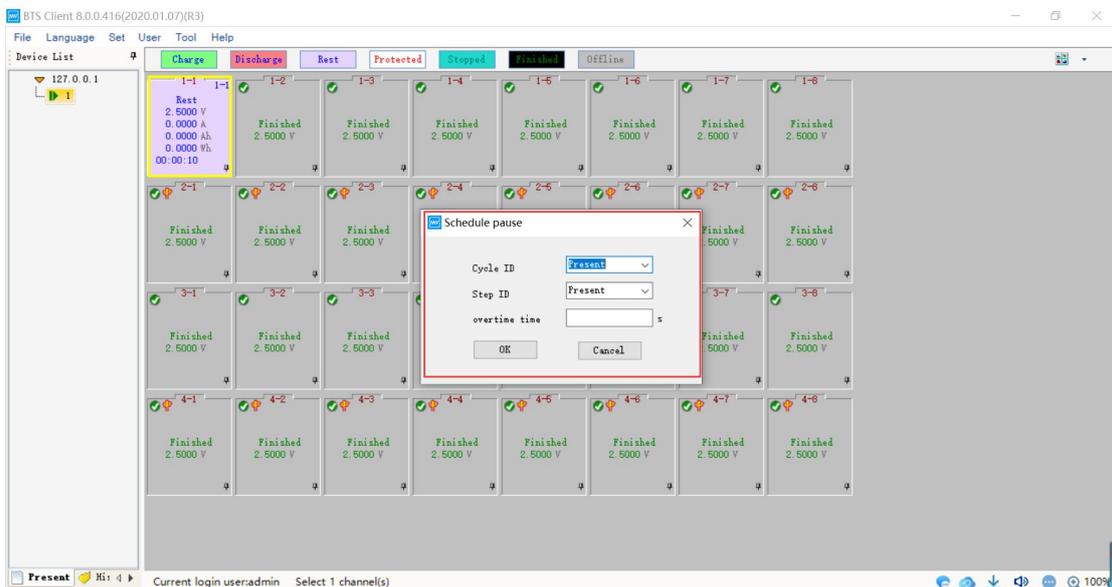
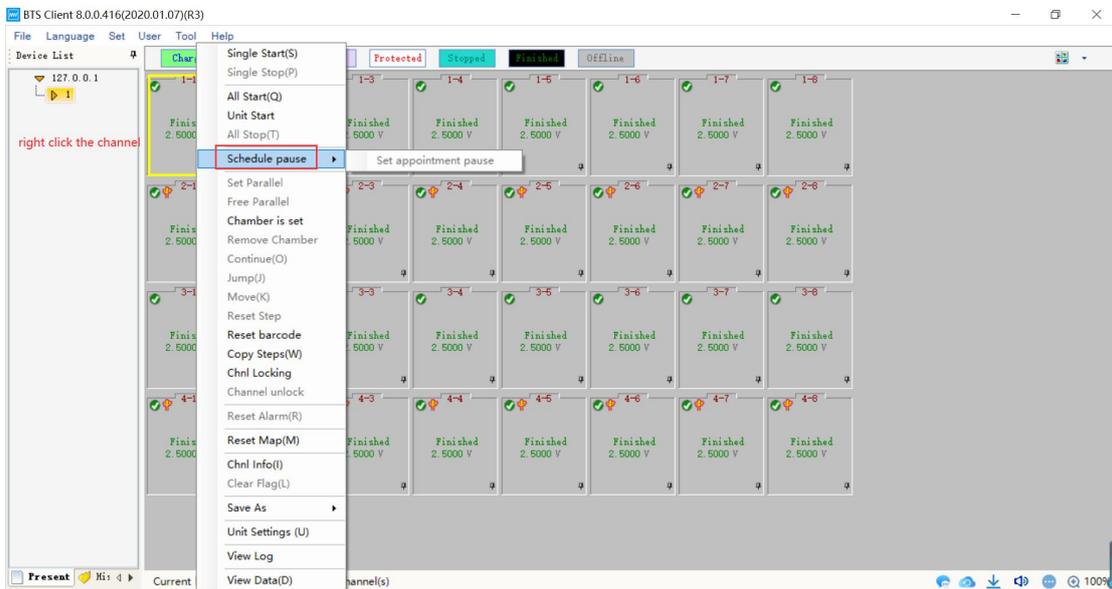


3. 14. 4. All Stop

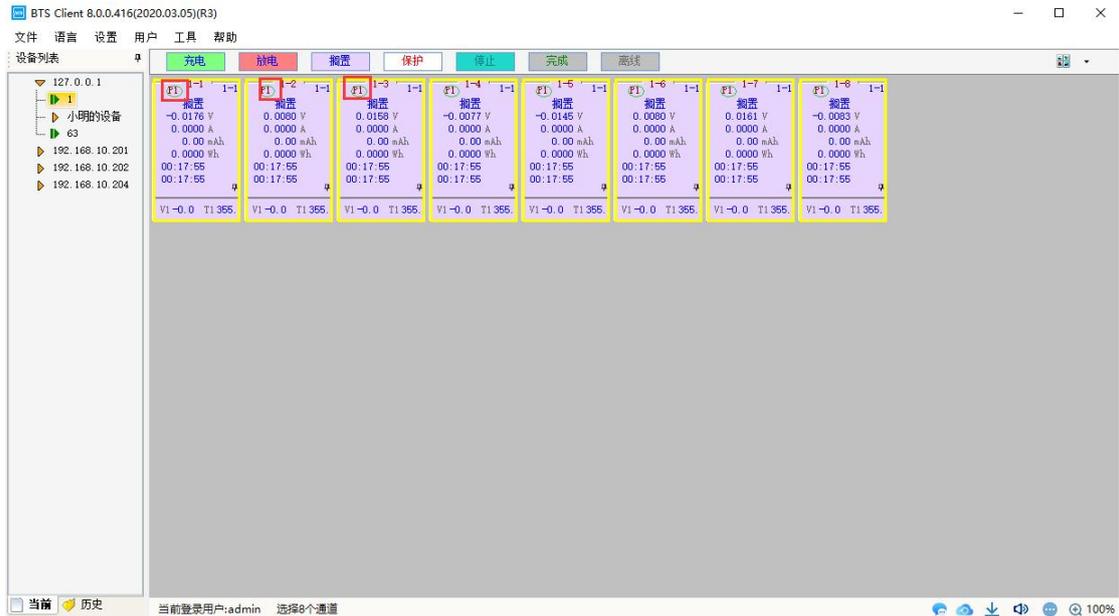
To stop all channels in a certain equipment, the operation is as follows:
 In the channel state display area, click the right mouse button → "All stop".
 Then all the channels on the interface that are being tested will enter the "stop" state.

3. 14. 5. Schedule Pause

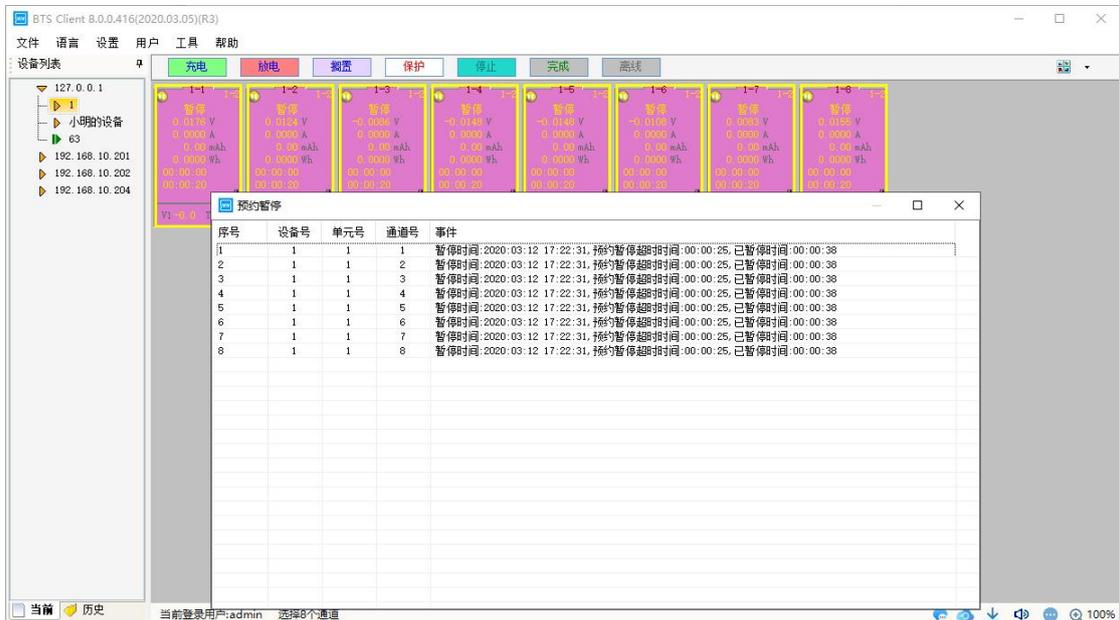
When the user wants to stop the channel operation after the completion of a work step or a loop run, the user can set schedule pause to achieve the function.



After setting, the upper left corner of the channel displays P1 as shown below:



When the reservation is suspended, the channel is suspended, and the timeout prompt is shown in the figure below:



The operation is:

1. Select the channel that needs to be scheduled pause (the selected channel has a yellow box), as shown in the figure;
2. Right click → "Set appointment pause"
3. Right click → "Schedule pause"

When the appointment pause is set, the corresponding channel will display the pause flag , indicating that the current cycle is suspended after completion or the designated cycle is suspended after completion; When a number appears in the lower right corner of the pause sign, it means that the current work step is suspended after completion or the specified work step is suspended after completion. The number represents the work step sequence number. When it is necessary to cancel the suspension setting, select the right menu to cancel the corresponding appointment pause, and the appointment pause sign on the channel will disappear; When the current step or loop is completed, the "pause" message will appear in the channel. The message will be yellow in color.

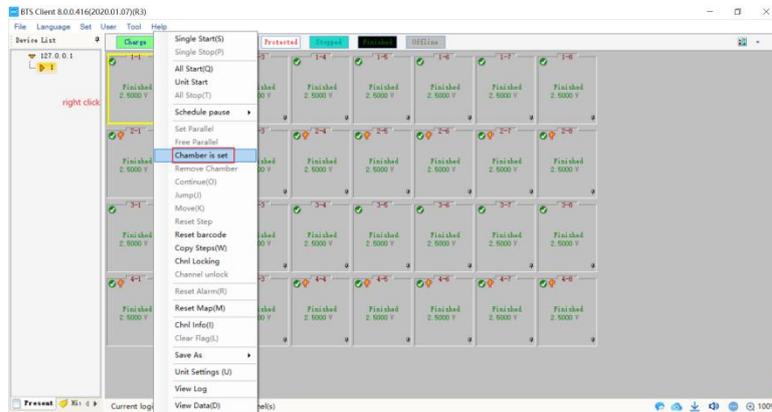
 **Note:** This feature only supports BTS82 and above device types

3. 14. 6. Set Chamber

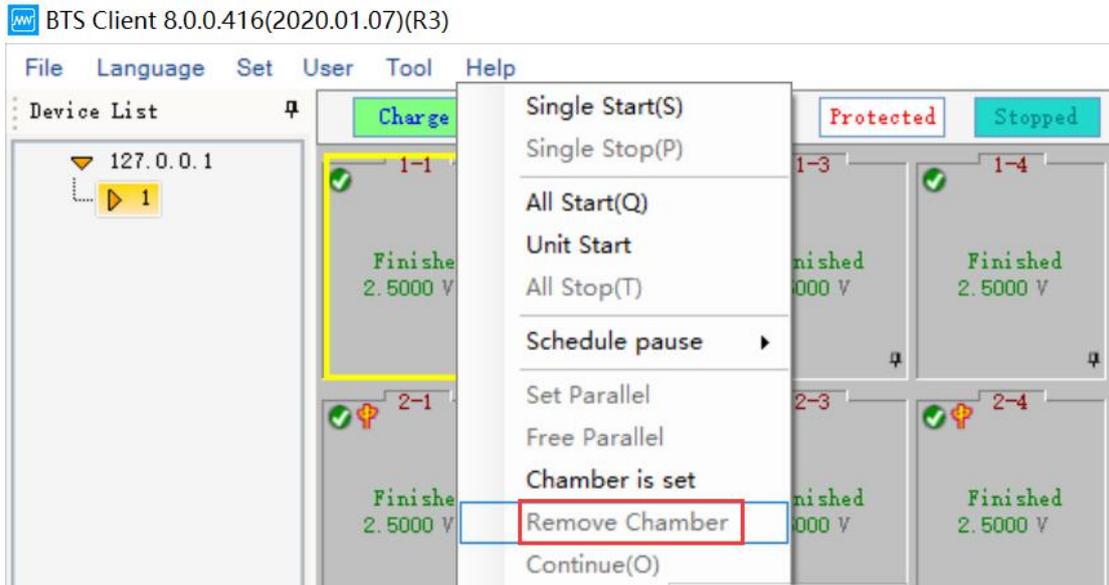
Function: The right button function can be used to set the chamber binding

Operation method:

1. Select the channel to connect the chamber, right click and set the chamber as shown in the figure below:



1. Remove chamber, as shown below,



3. 14. 7. Set/Free Parallel

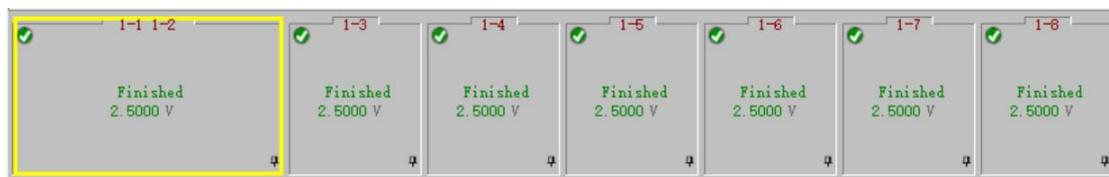
1. Set Parallel

To operate parallel function, operate as follows:

Press Ctrl and select the channel to be parallel → right click → "Set parallel". Click "Set Parallel" on the popup window to confirm and the channel can be parallel.

The following figure shows the interface diagram of channel 2 and Channel 3 in parallel.

Recommendation: The parallel device is more than 50A, and the parallel operation is not recommended below 50A.



Note: The current range can be expanded by setting the channels in parallel, and the maximum of four channels can be parallel. The current after parallel is the sum of the current of each channel. The parallel channel number will be displayed above the parallel channel for the user to check, and the test data of the parallel channel will be stored in the minimum channel number. Only support BTS76 and above equipment type for channels in parallel, only

support the channels in parallel in a same device. All positive poles and negative poles of the parallel channel connect together, which are used as the positive and negative poles of the parallel channel.

2. Free parallel

To cancel the parallel operation, select the channel to cancel the parallel operation → right click → "free parallel". In the pop-up window, click OK to cancel the parallel operation.

3. 14. 8. Continue

The user can connect the "stop" state and the "protection" state channel in the case of power failure of the upper computer to the original unfinished test step, effectively preventing the loss of measurement data.

Operation: Right-click → "Continue", the corresponding channel can be restored to perform work step.

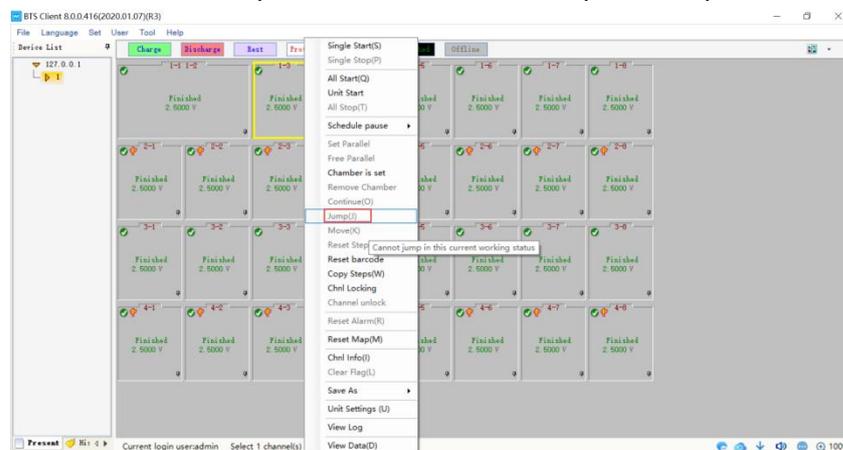
 **Note:** "Stop" and "Continue" work together to enable the pause and restore function of channel test work. The channel where the test is completed will not be able to "continue". After the program exits forcibly or power off, restart the program and the system will automatically connect.

3. 14. 9. Jump

When the channel is executing work step, it can jump to the target work step, which can keep the normal continuation of test data.

Jump method:

1. Double-click the work step to jump, and it will be selected if the work step turns yellow
2. Under the "Jump" interface, fill in the required step number, as shown below:





3. 14. 10. Move

Function: The work step parameters and test data of an unfinished test channel are moved to another completed test channel to continue the test. The purpose is to prevent the test from being interrupted due to channel damage and affecting the test.

Note: Only one channel can be moved at a time. The migration channel must be in the working state and the migrated channel is in the completed state.

Operation method:

1. Select two channels (test channel, target channel of migration) at the same time;
2. Right click → "move"; The migrated channel will be in a stopped state.

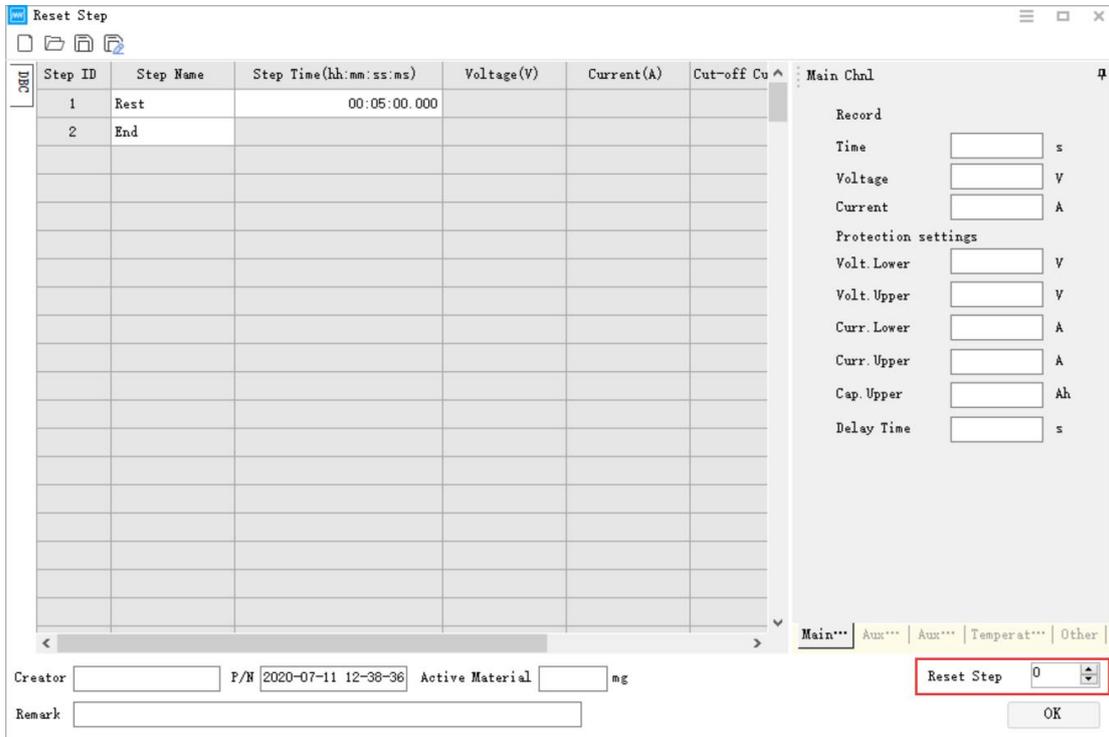
 **Note:** This feature only supports BTS80 and above device types.

3. 14. 11. Reset Step

Reset workstep can only select one channel to reset. When resetting, the current workstep is reset by default without entering the workstep number.

Operation method:

1. Select the channel to be modified (the check mark indicates that the channel has a yellow box);
2. Right click → "Reset step", enter the step editing interface and make corresponding modifications, as shown in the figure below:

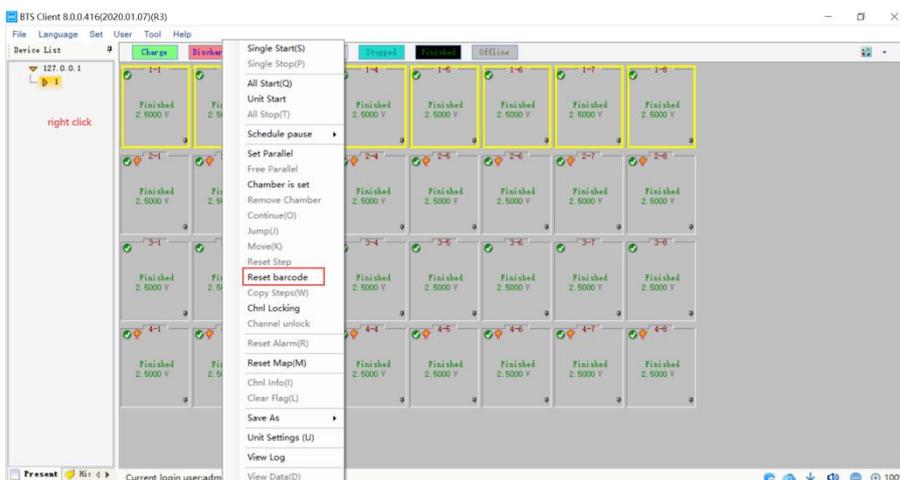


3. 14. 12. Reset Barcode

Function: When the user starts to issue the test and finds the barcode is wrong, it can be modified by resetting the barcode.

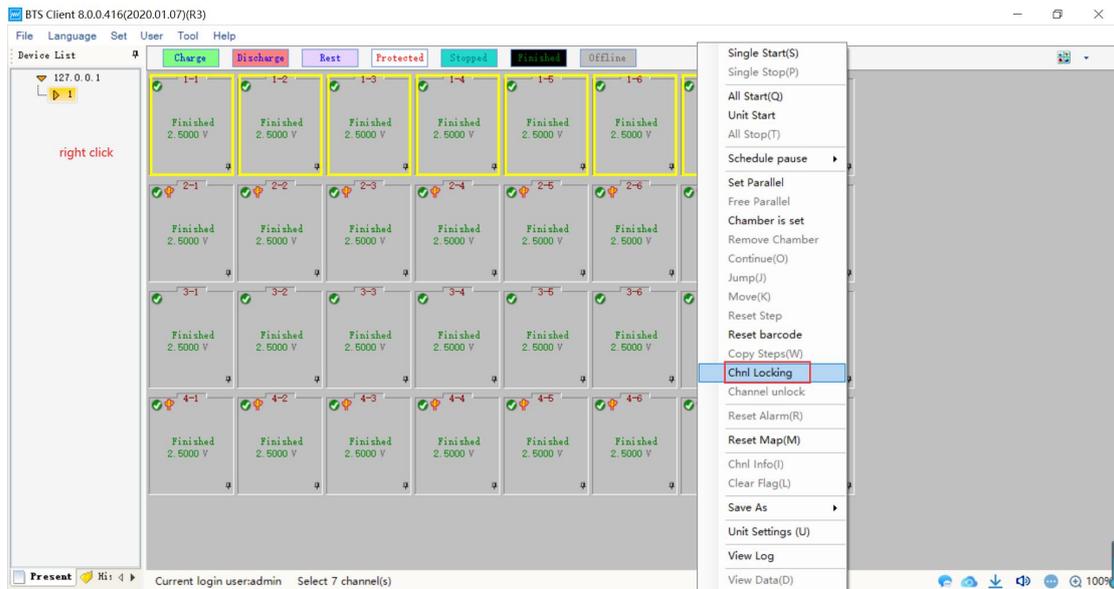
Operation steps:

Select the channel to modify the barcode, right click "Reset barcode", and the modify box will appear, as shown below:

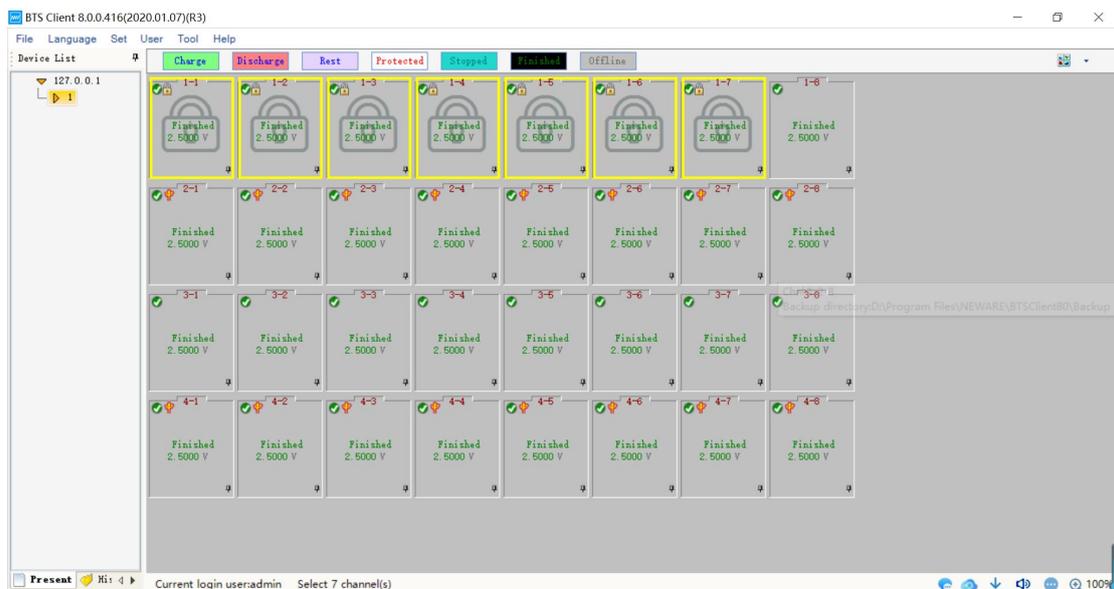


3. 14. 13. Channel Locking/Channel Unlock

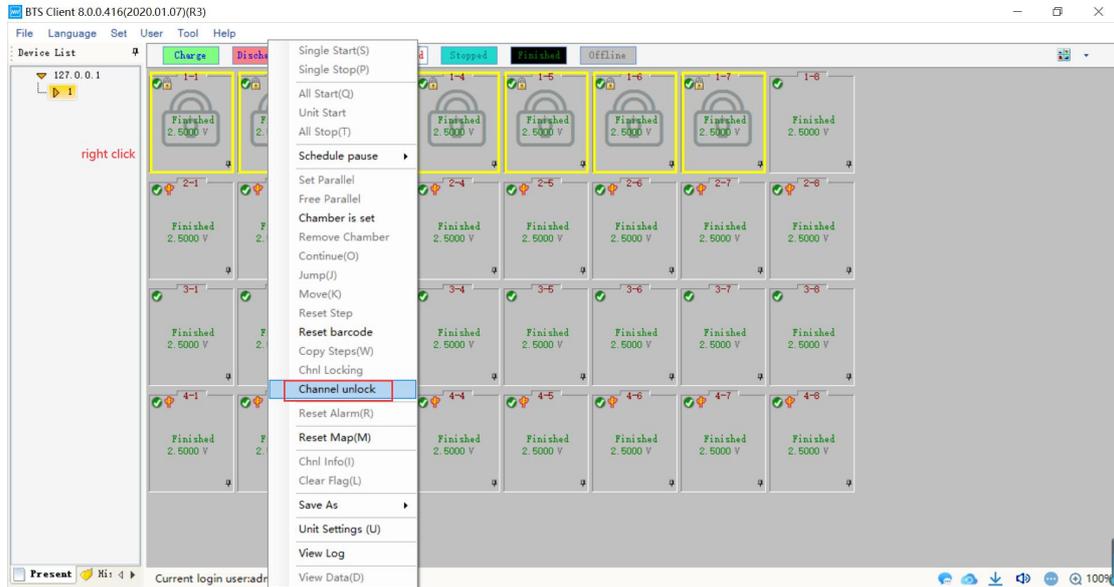
1. Select the channel to be locked. Right click and select “channel locking”.
2. Channel locking requires channel unlocking to perform relevant functions.



Click the channel lock flag to pop up a prompt



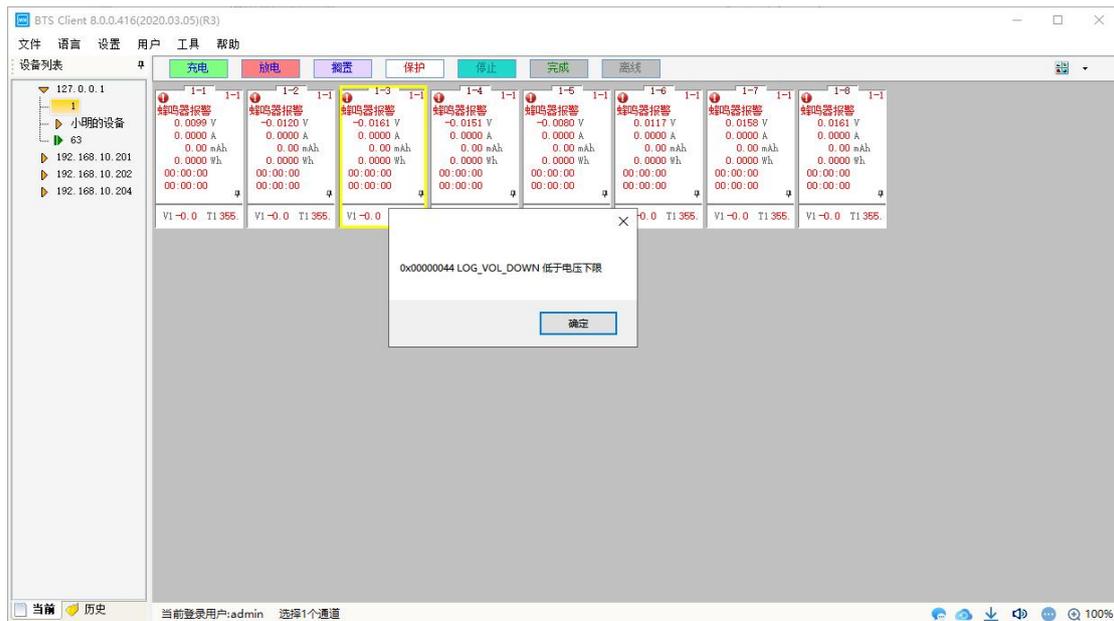
Select the channel you want to unlock for channel unlocking.



3. 14. 14. Reset Alarm

Channel protection

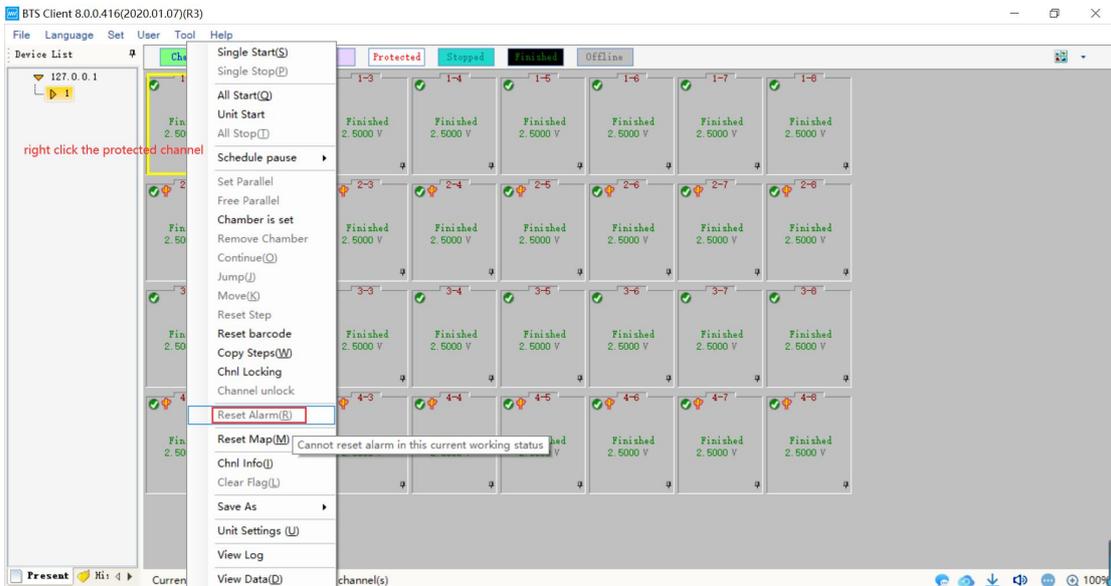
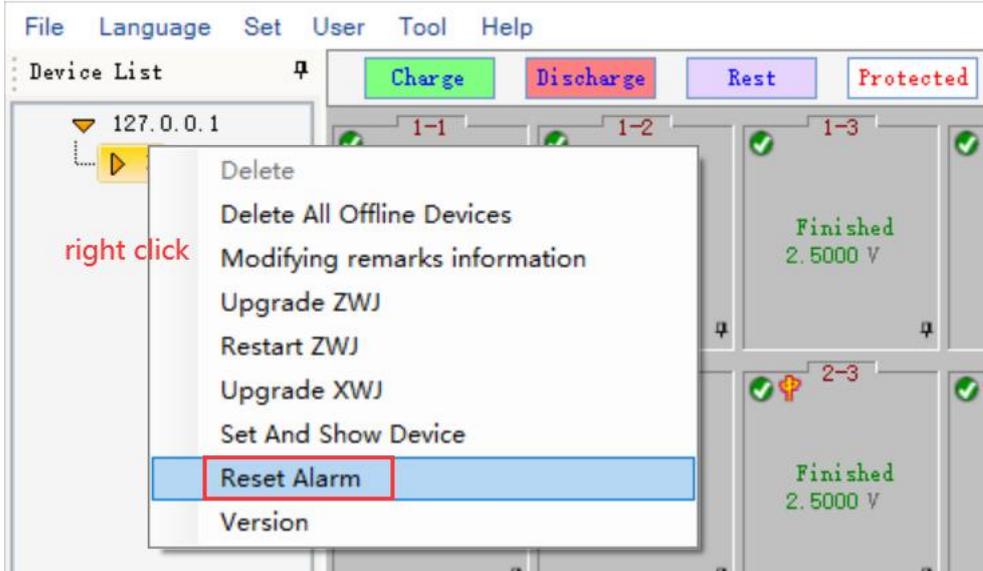
For example, the voltage upper limit protection is set when starting the test, and the channel protection is provided when the battery voltage exceeds the voltage upper limit, as shown in the figure below:



Reset alarm:

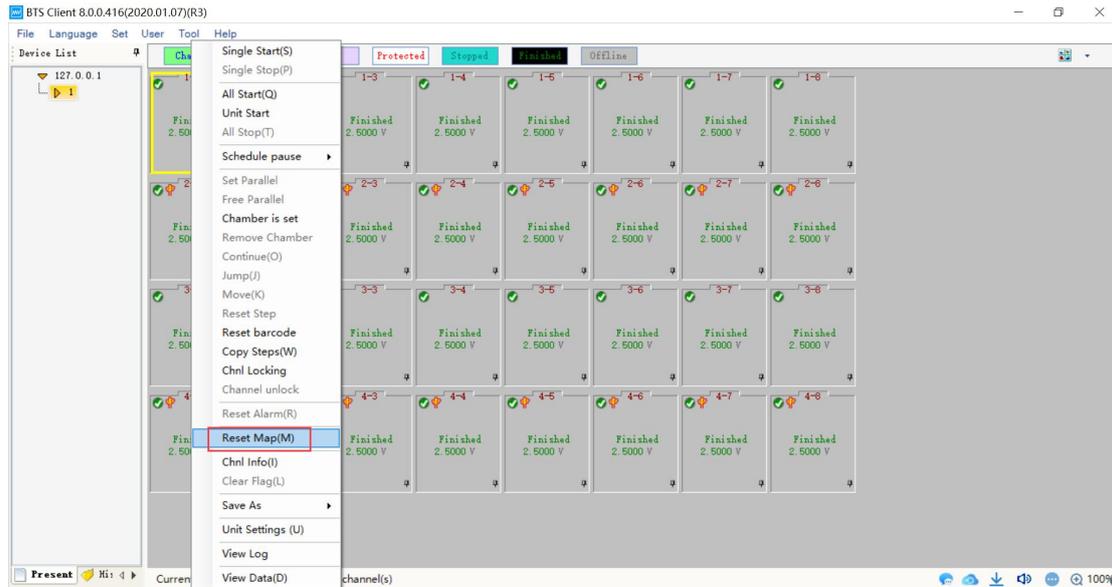
- 1 Select the protected channel, right click to select reset alarm, which can only reset the selected channel.
- 2 Select the device with a protective channel and right click on the device number to reset the alarm. This way is to reset the entire device.

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3. 14. 15. Reset Map

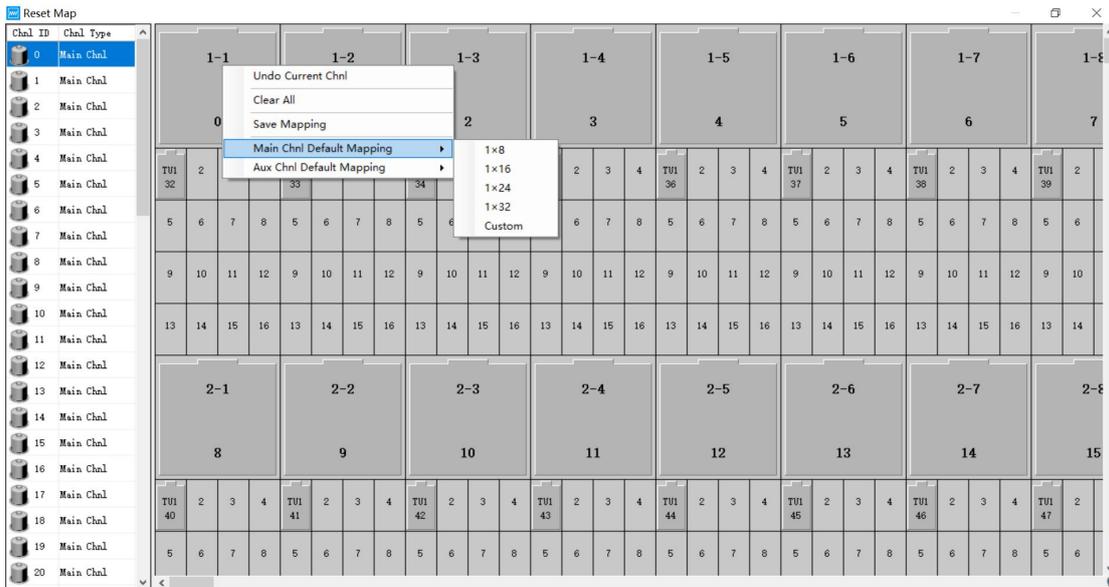
To set the mapping for the middle machine that has never been set, select the middle machine to be mapped (select from the device list, as shown in the figure below), and click the right mouse button in the blank area on the right side of the interface → "Reset mapping"



Main Channel Mapping:

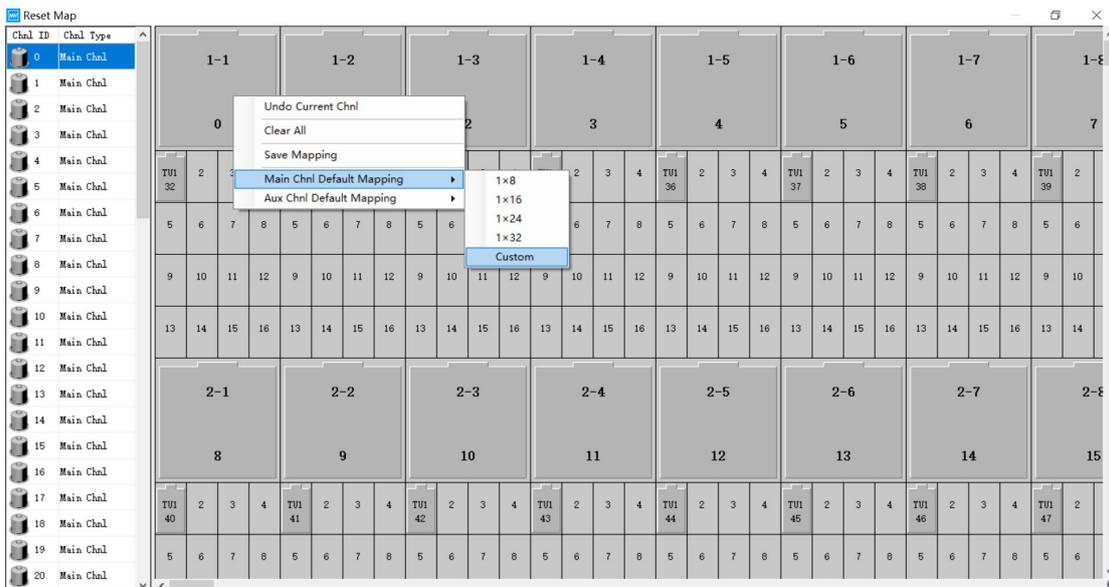
The mapping of the main channel and the channel on the interface can be arbitrary, and the location of the mapping of the main channel is the location of the large box on the mapping interface.

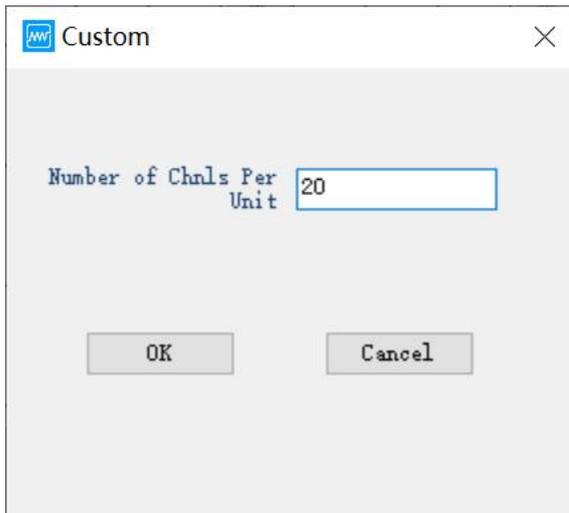
Select a channel and select "Default mapping for main channel". There are five Settings: 1*8, 1*16, 1*24, 1*32 and custom. Select one of the mapping modes, and the system will complete all the main channel mapping, as shown in the figure below. To cancel a mapping channel, right-click on the channel and select "Undo current Channel". To cancel all mapping relationships, select "Clear all".



The default mapping for the main channel 1x8 means that the main interface channel shows 8 channels on one row, and 1x16 means that the main channel shows 16 channels on one row, 1x24 represents a row with 24 channels and 1x32 represents a row with 32 channels. The following 1x8 interface.

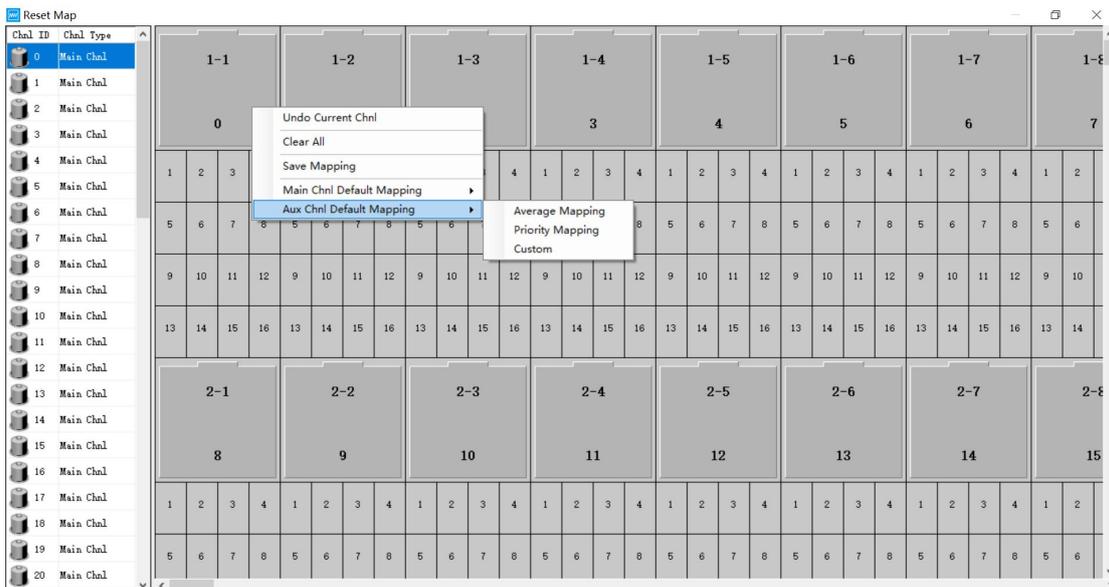
Customize mapping for the main channel. Enter 20 to show the number of channels on a row on the main interface. The maximum number of channels on the main interface is 32.





Auxiliary channel mapping: select a channel and select "Aux Channel Default Mapping" with the right mouse button to select "average mapping". After the mapping is completed, right-click → "Save mapping".

As shown below:



- 

Note:  The yellow icon represents the unmapped main channel,  the purple icon represents the unmapped aux channel, whether it is the main channel or the aux channel, the gray icon of the battery indicates that it has been mapped and cannot be mapped again.
- 

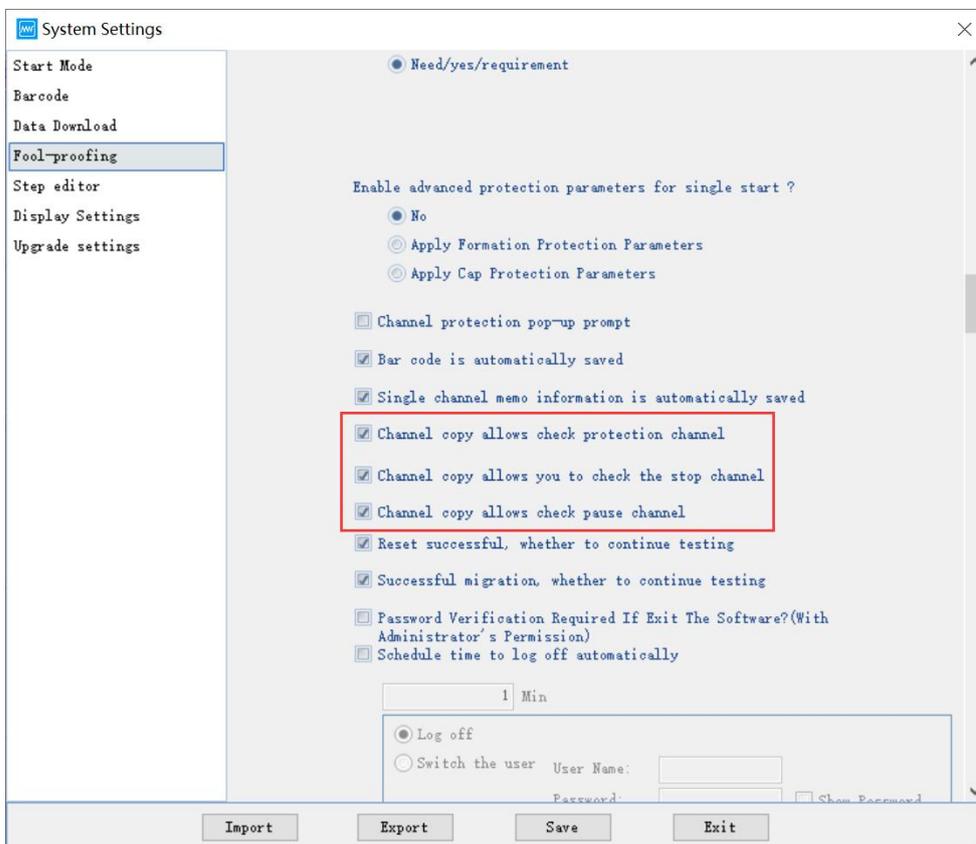
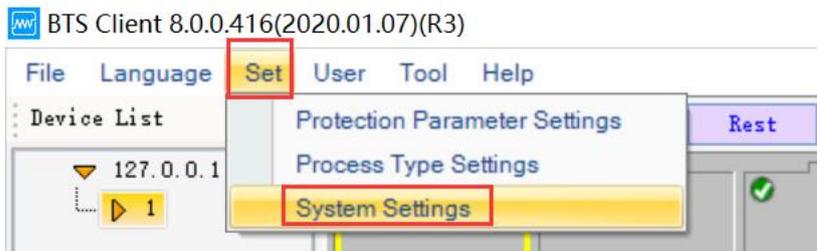
Note: The battery icon of mapped main channel changes from yellow to gray, that meanss it is not remapped;To cancel the current mapping channel, click the right mouse button on the channel and select "undo current channel".If you select "clear

	all”, all mapping channels will be canceled.
	Note: To unmap an aux channel, right-click on that aux channel and select “Undo Current Channel”. To unmap all, select “Clear All”, then all mappings of main and aux channels are cleared.

3. 14. 16. Copy Steps

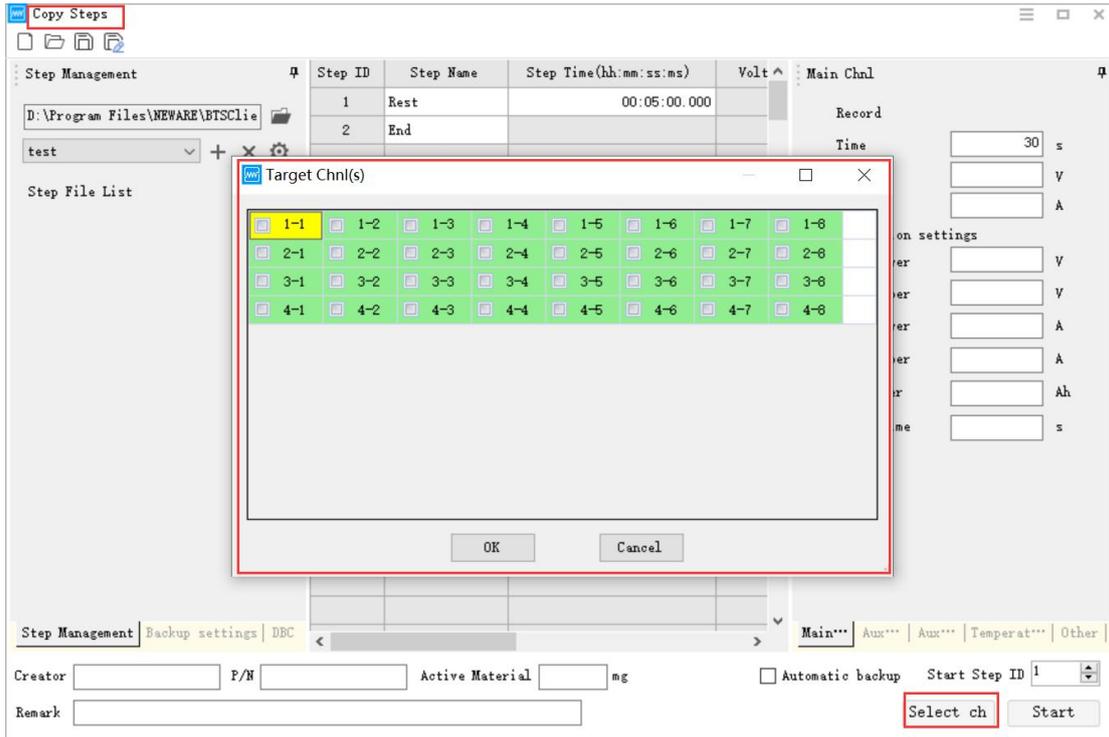
Function: copy the working step parameters of one channel to another or more channels with the same channel range.

System configuration: channel replication settings through system settings - fool-proofing



Operation method:

1. Select the target channel;
2. Right click → "Copy steps" to enter the channel replication interface, as shown in the figure below;
3. Click "Select Channel" in the lower right corner of the interface to enter the channel selection interface;
4. Select the channel number to be copied.



3. 14. 17. Clear Flag

Some functions need to operate when the channel is complete. For protected or stopped channels, the clear flag is used to change the channel state to complete.

Operation method:

1. Select the target channel in the channel area
2. Right click "Clear flag"

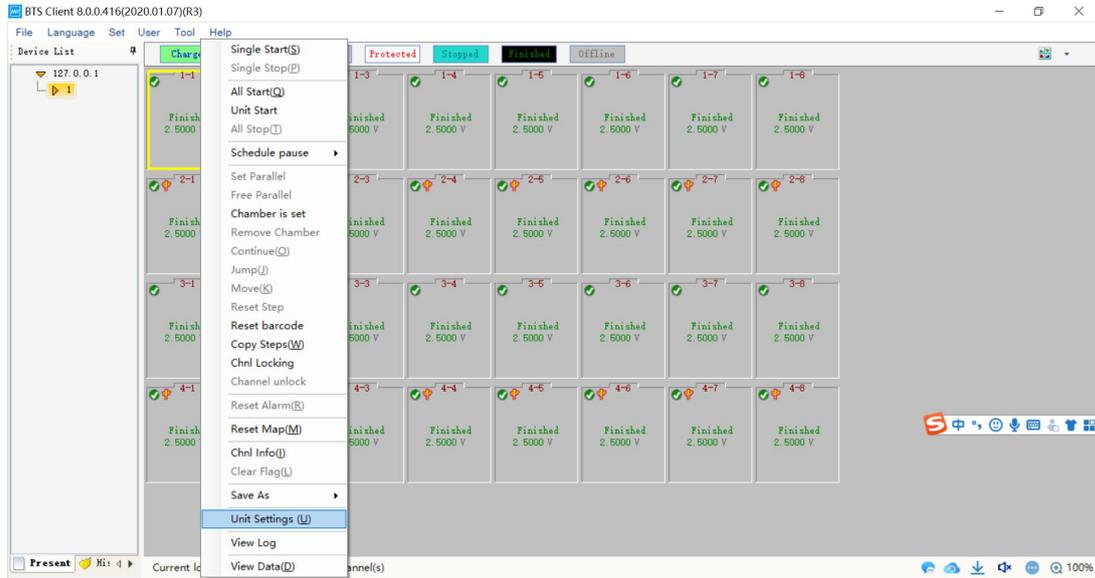
3. 14. 18. Unit Settings

According to the different purposes of user testing to set the corresponding unit parameters, BTSClient provides a flexible and simple setting platform.

Operation method:

Right-click on the channel --> "Unit Settings", select the unit to be set-->"Ok". As shown in the figure below,

Add decimal number to set channel interface display parameters;



 Unit Settings
✕

	Unit	Decimal Places
Time	s	<input type="text"/>
Voltage	V	<input type="text"/>
Current	A	<input type="text"/>
Capacity	Ah	<input type="text"/>
Energy	Wh	<input type="text"/>
Power	W	<input type="text"/>
IR	mΩ	<input type="text"/>
Temperature	°C	<input type="text"/>
Weight	mg	<input type="text"/>
Capacitance	F	<input type="text"/>
Air Pressure	kPa	<input type="text"/>
Pressure	kg	<input type="text"/>
Step editing time	hh:mm:ss:ms	
Display Time	hh:mm:ss	

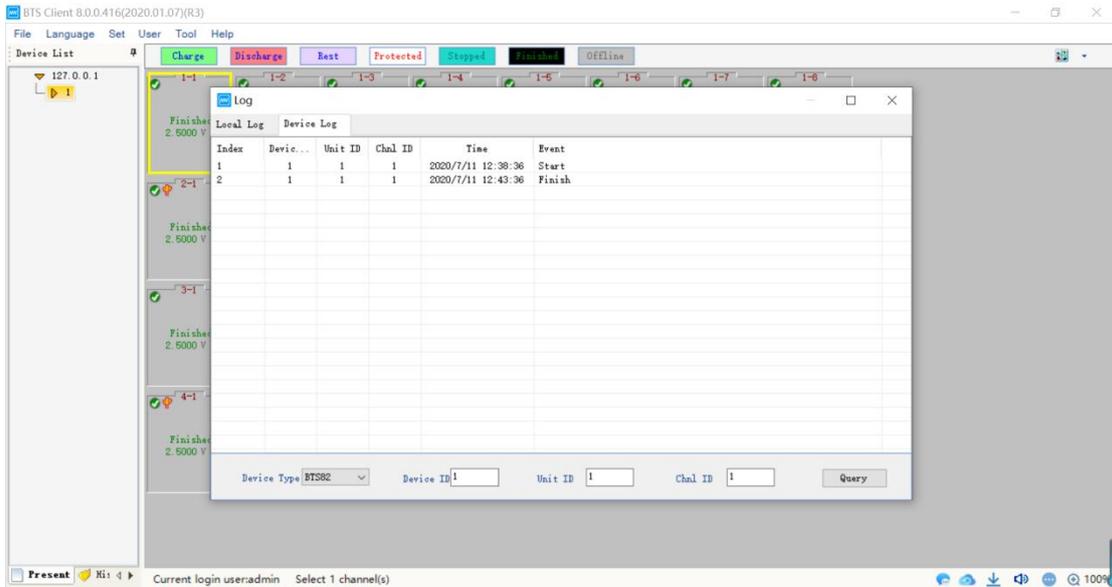
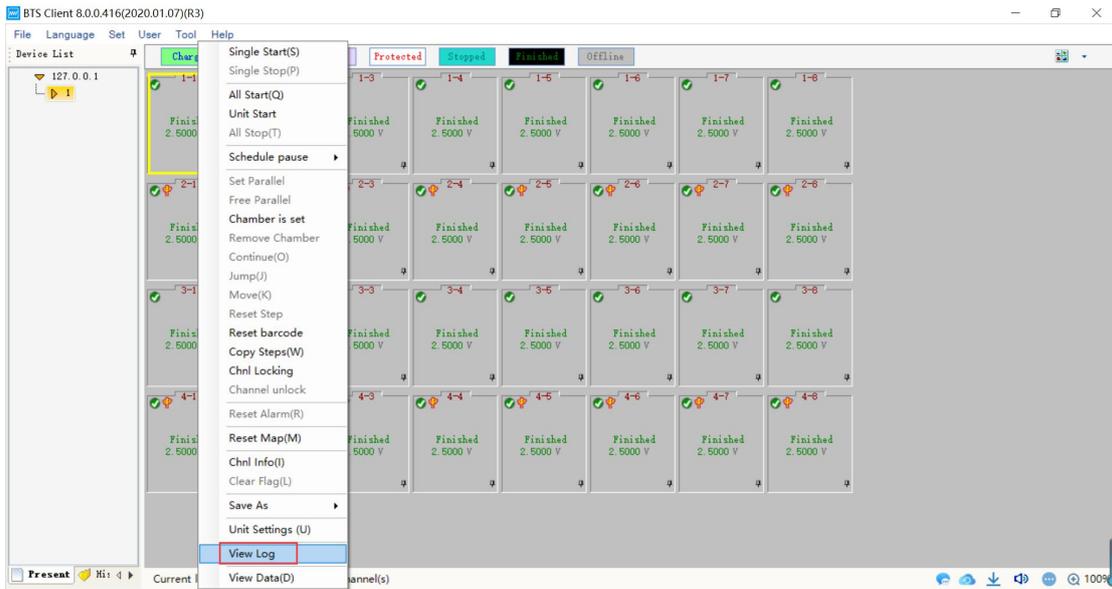
OK
Cancel

3. 14. 19. View Log

The log can be divided into local log and device log. The local log is the user's various operations recorded by the client, while the device log is the channel test state change recorded by the middle machine as well as the exceptions and prompt information during the test.

Operation method:

Select the channel and right click --->"View log", the log list will open as shown in the figure below:

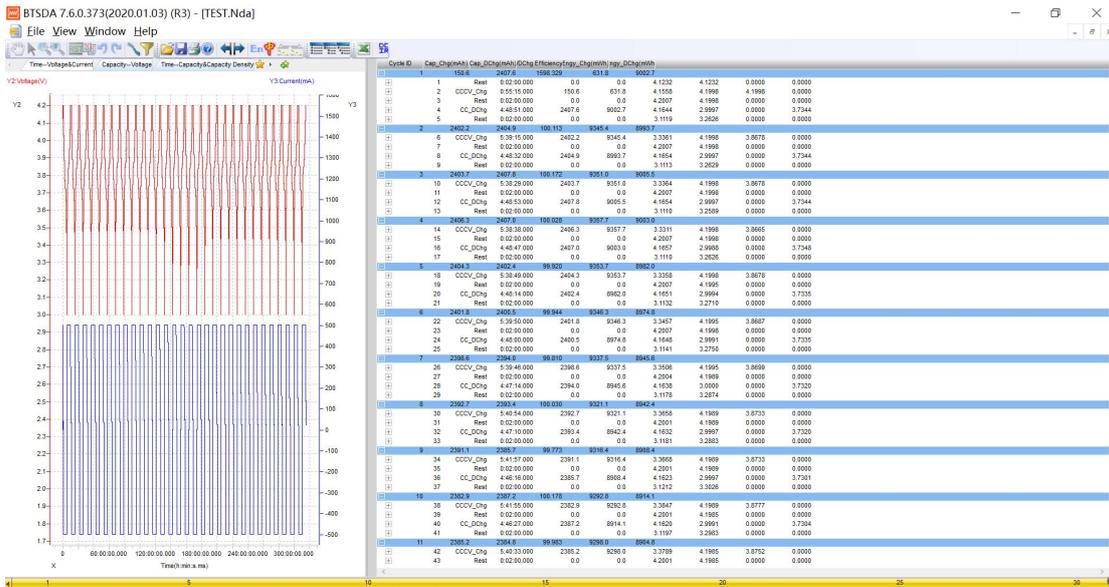


For local logs, some can double-click to see further information, such as reset mappings to see the mapping information before and after the mapping, as shown in the figure below:



3. 14. 20. View Data

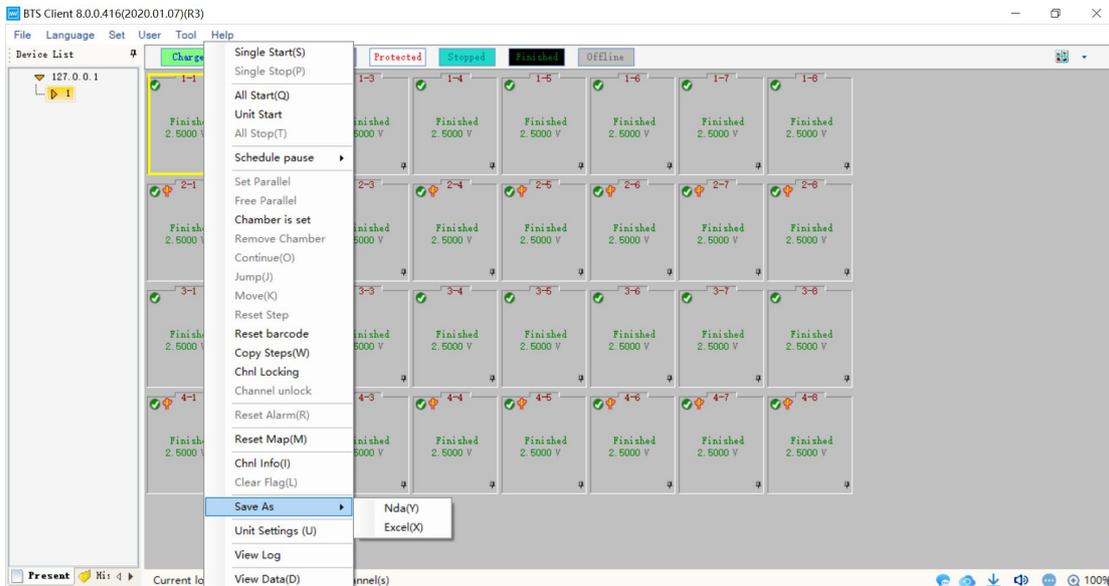
Right-click → "View data" to open the test data for the selected channel. The corresponding channel test data can be analyzed. The interface is as shown in the figure below. Click  and the interface of curve setting will appear. The default parameter setting is: X stands for "time", Y1 stands for "empty", Y2 stands for "empty", Y3 stands for "empty", Y4 stands for "empty". Then click the color under the label property to set the color of the curve displayed in the graph area . The menu bar also includes shortcut keys,  curve comparison,  data filtering,  data expansion of cycle layer,  data expansion of work step layer,  data expansion of record layer,  export Excel report,  calculation of DCIR,  switching between data area and graph area, etc.



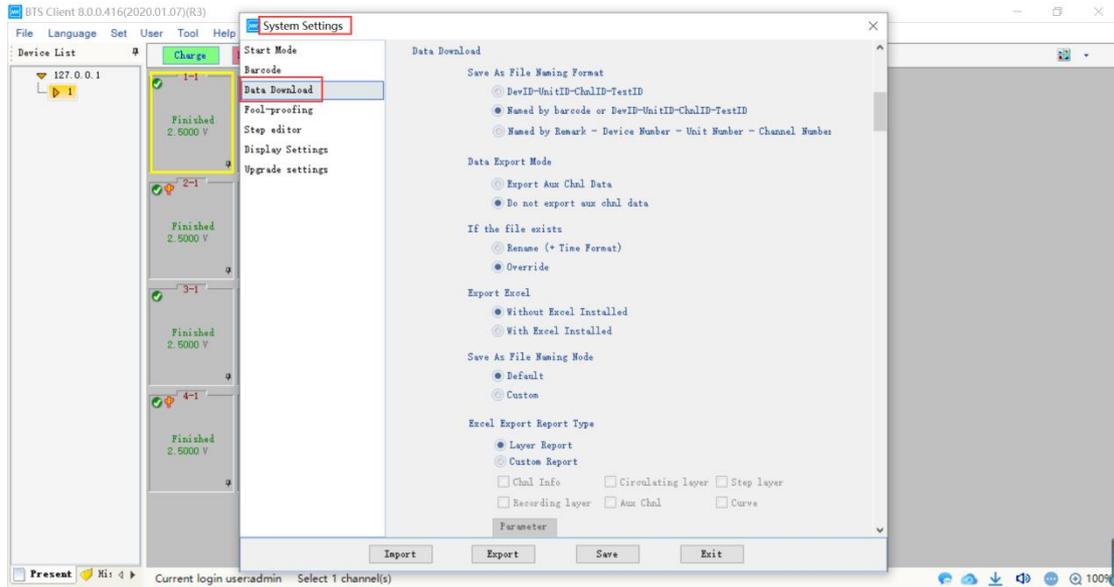
3. 14. 21. Test Data Save As

Data “saved as”operation method:

Right-click menu -->"Save as", select "Nda file" or "Excel file" and then select the export path, as shown in the figure below:



The naming format of data storage file can be configured through system settings, as shown in the figure below:



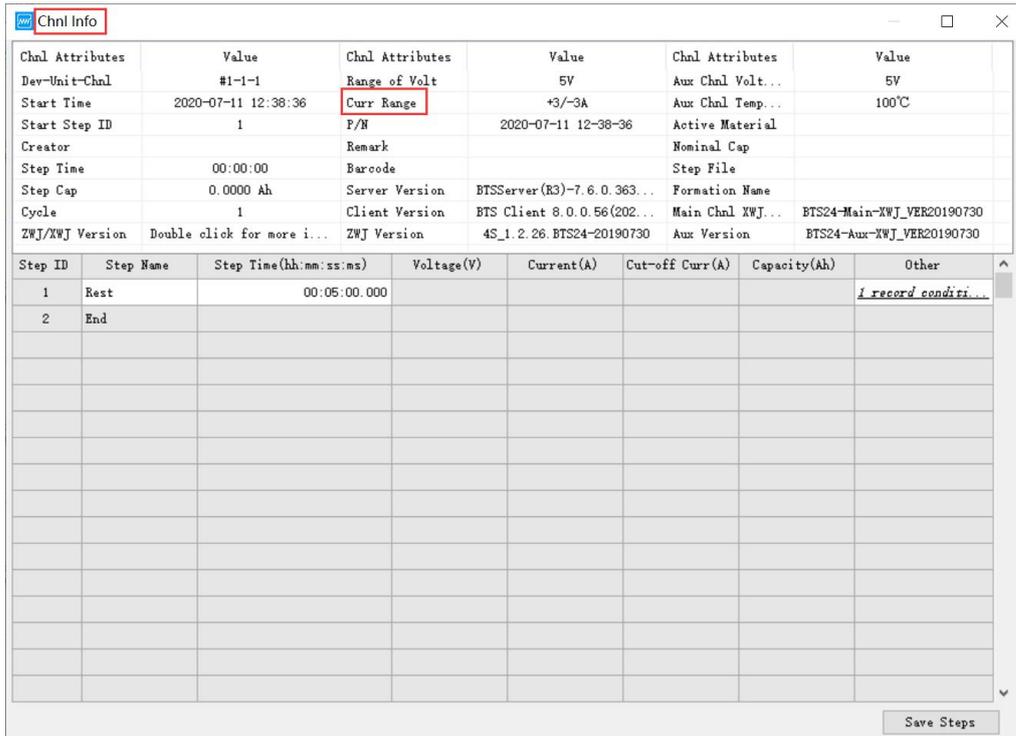
数据另存为设置

3. 14. 22. Channel Info

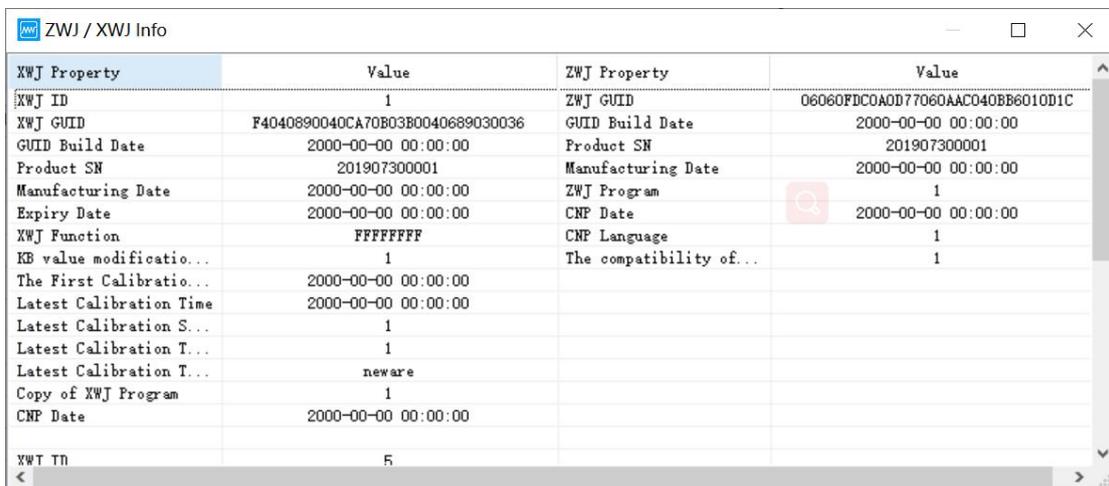
By inquiring channel information, you can know the details of the selected channel. For example, you can view the current channel range, channel number, execution work step, software version and other details.  indicates the currently executed work step.

Operation method:

1. Select the channel to view (the selected channel has a yellow box);
2. Double-click or right-click "Channel Info".
3. The range information of the dual-range device can be viewed through the “current range information” of the channel information interface.



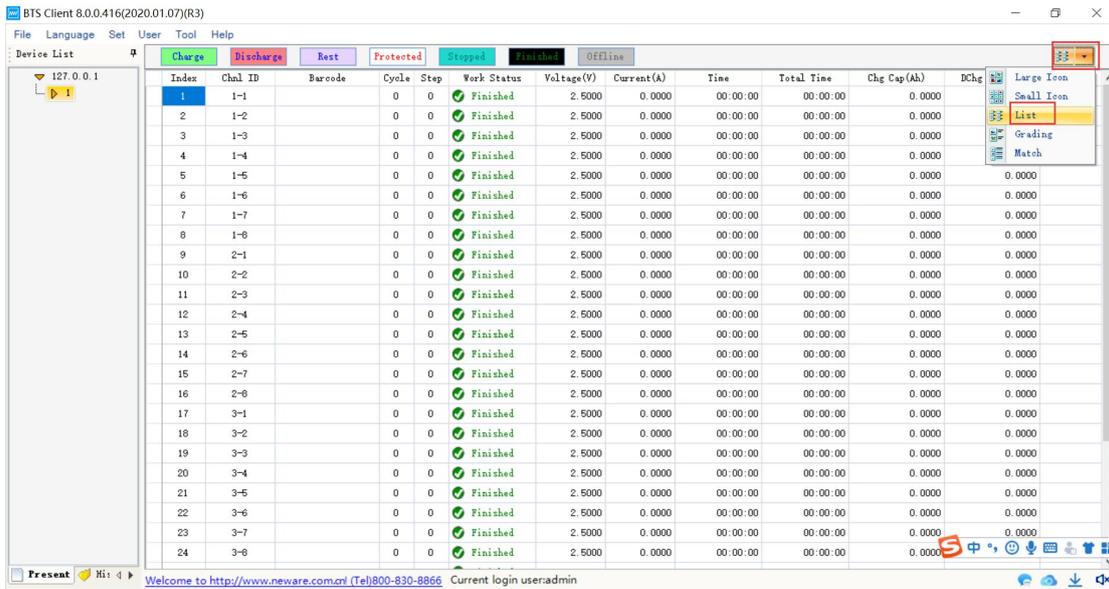
In the "Channel Information" interface, double-click the item "ZWJ/XWJ Version" to view more detailed information, as shown in the figure below:



Click "save" to save the current working step

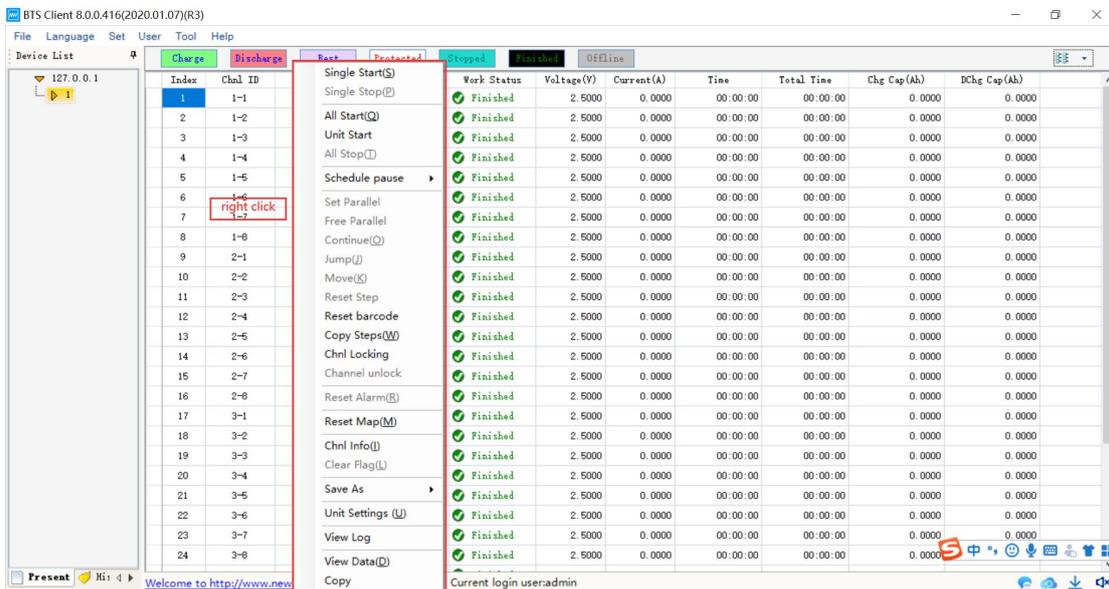
3. 15. List

Channel status parameters are displayed in the form of list, and the list display interface has the same functions as the channel graphical display interface, such as starting test, stopping test, viewing data, etc.



3. 15. 1. Right Click Menu

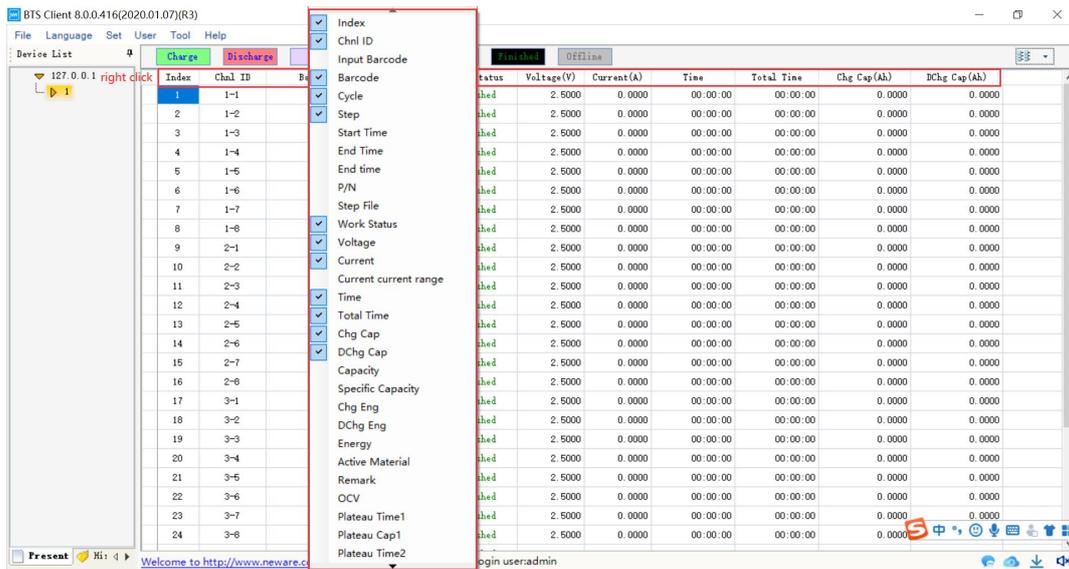
The list interface has the same right-click menu function as the channel graphical interface, as shown in the figure below:



3. 15. 2. Display Parameter Configuration

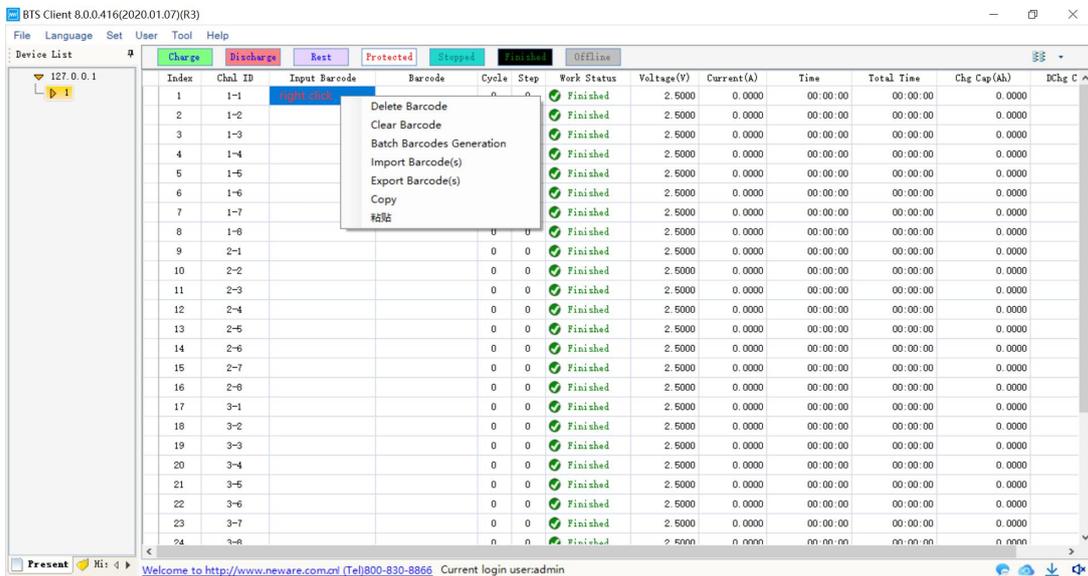
The list shows that you can set the column parameters to display. Operation method:

1. Put the mouse over the head of the table;
2. Right click -->Check the parameters to display.



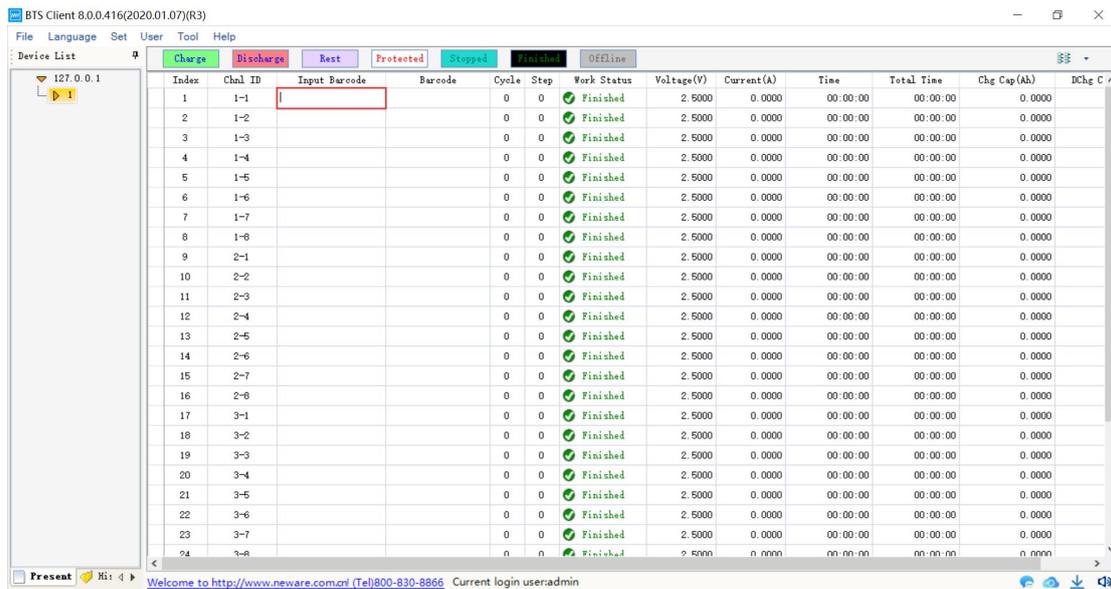
3. 15. 3. Barcode

List display has barcode input function, right click barcode input column : delete barcode, clear barcode, batch barcode generation, import barcode, copy/export barcode and other functions.



Barcode input

After manual input or scanning barcode input, start test by”single start”, and bound the barcode to the the corresponding channel.



Index	Chnl ID	Input Barcode	Barcode	Cycle	Step	Work Status	Voltage(V)	Current(A)	Time	Total Time	Chg Cap(Ah)	DChg C
1	1-1			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
2	1-2			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
3	1-3			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
4	1-4			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
5	1-5			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
6	1-6			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
7	1-7			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
8	1-8			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
9	2-1			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
10	2-2			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
11	2-3			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
12	2-4			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
13	2-5			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
14	2-6			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
15	2-7			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
16	2-8			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
17	3-1			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
18	3-2			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
19	3-3			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
20	3-4			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
21	3-5			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
22	3-6			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
23	3-7			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	
24	3-8			0	0	Finished	2.5000	0.0000	00:00:00	00:00:00	0.0000	

Operation method:

- (1) Check "input barcode" (new input barcode for next test) and "barcode" (currently testing barcode);
- (2) Input the barcode manually and press “enter” or scan the barcode with a barcode gun;
- (3)The edit box will automatically skip to the next selected channel and continue scanning the barcode;
- (4) ”Single start” the corresponding channel after scanning is completed.

Note:

1. Barcode scanning will be automatically saved. As long as the test is not started, the scanned barcode will still exist after switching back to other devices or software restart.
2. When selecting "input barcode" menu, the display box of other columns cannot be selected, otherwise the corresponding right-click menu will not be displayed.
3. The channel that does not select "input barcode" cannot scan the barcode. If the channel that selects input barcode is discontinuous, after scanning the current channel, it will jump to the next input channel instead of the serial number of the next channel.
- 4.The "input barcode" column can be imported and exported, and the "barcode" column can be exported.

Delete the Barcode

In the input barcode column, select the channel and right click to delete the barcode.

Clear Barcode

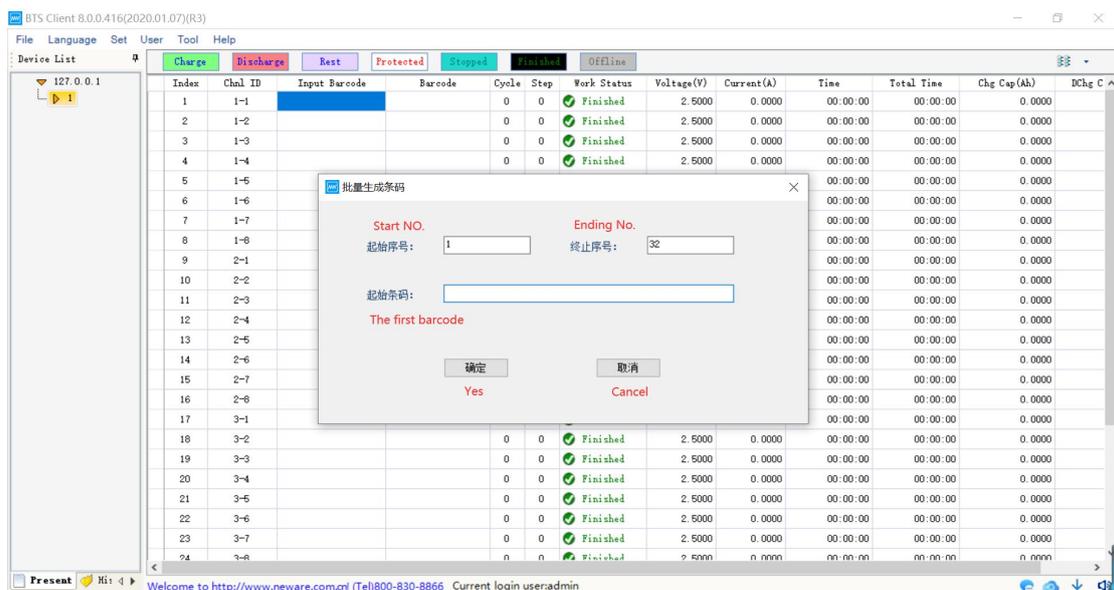
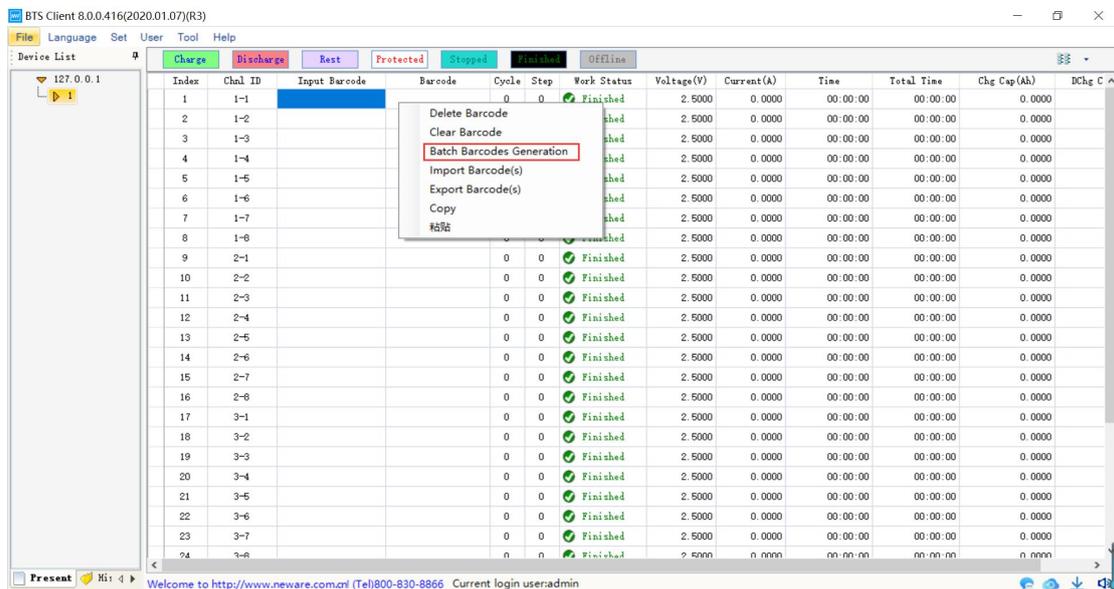
In the input barcode column, right-click and select “clear barcode”, it will clear all barcodes in the input barcode column.

Batch barcode generation

Software can batch generate continuous barcodes for easy testing

Operation method:

1. Select "input barcode";
2. Right click -> "batch barcode generation";
3. Fill in the first barcode -> click “Yes”



Import barcode

Select the barcode input column, select the channel to import the barcode for the first one, right-click to import the barcode file

 **Note:** Barcode import starts with the selected channel.

Export Barcode

Select input barcode or barcode column, right click to select export barcode, the whole column of barcode will be exported and saved as TXT file.

Copy

Select the barcode to be copied, right click to copy.

3. 16. Capacity Grading

During capacity grading, the battery is graded according to its performance conditions. The software can set the grading conditions and view the grading results.

3. 16. 1. Grading Conditions

Grading is calculated using the test data of the last cycle.

Description of grading conditions:

Discharge capacity: The discharge capacity of the last step in the last cycle;

Discharge time: The discharge time of the last step in the last cycle;

Plateau time: In the last cycle, the time when the last step reaches the specified plateau voltage;

Plateau capacity: In the last cycle, the capacity of the last discharge step when the specified plateau voltage is reached;

Open-circuit voltage: In the last cycle, the voltage of the first recorded data;

Median discharge voltage: In the last cycle, the voltage corresponding to half of the discharge capacity of the last discharge step;

CC charge time: In the last cycle, the time taken by the last constant current charging step;

Charge discharge efficiency: In the last cycle, charging working capacity/discharging working capacity;

Recovery voltage: In the last cycle, the termination voltage of the last rest step;

Final voltage: In the last cycle, the last voltage of the discharging step.

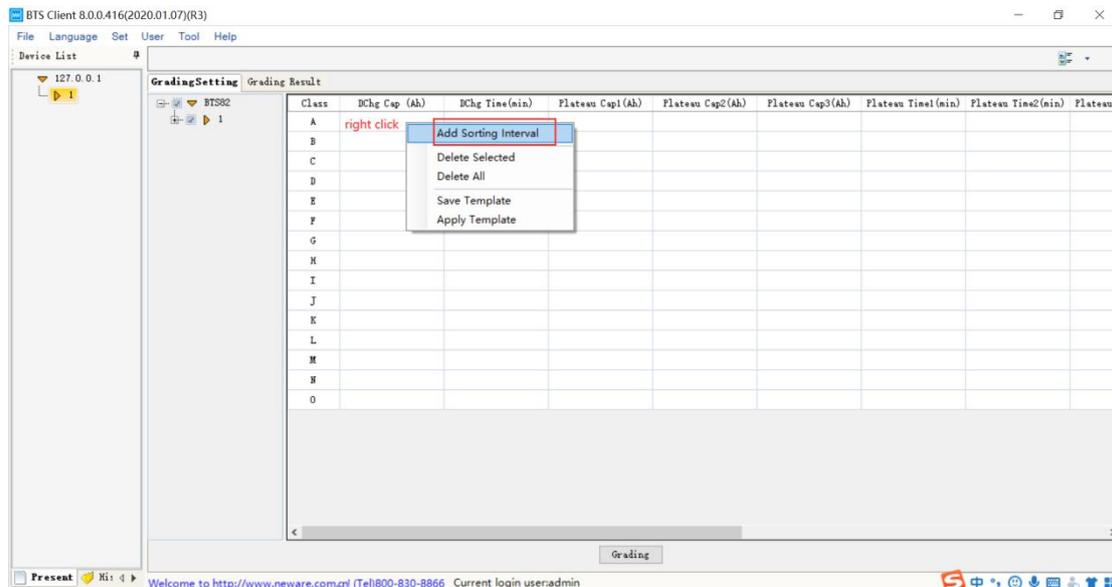
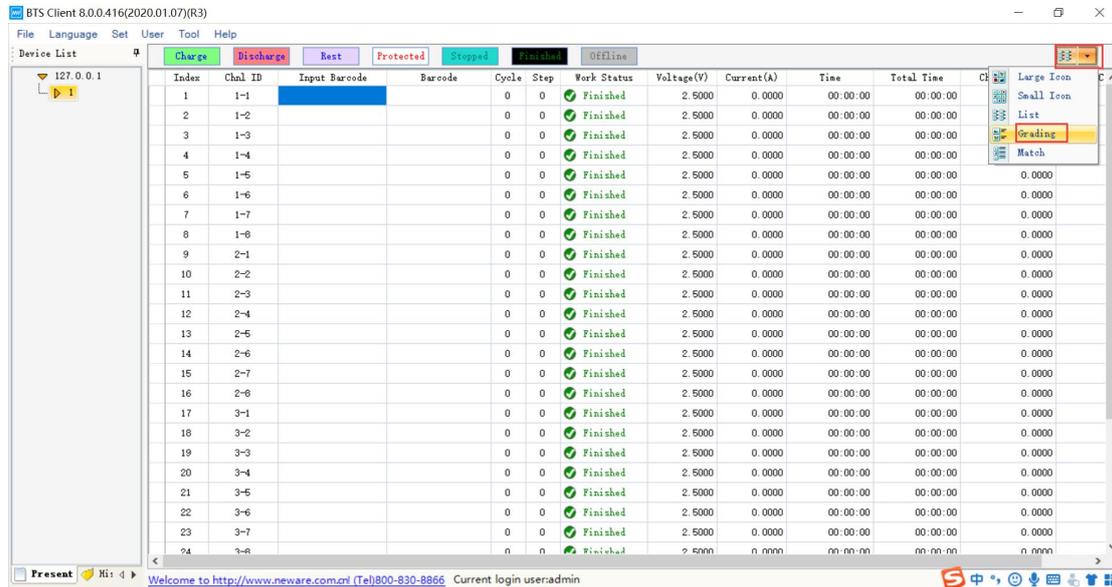
Grading interval setting:

Method 1: Double-click the edit box to enter the edit state and input each interval in the format of XX-XX (minimum-maximum)

Method 2: right-click --> "add sorting interval"

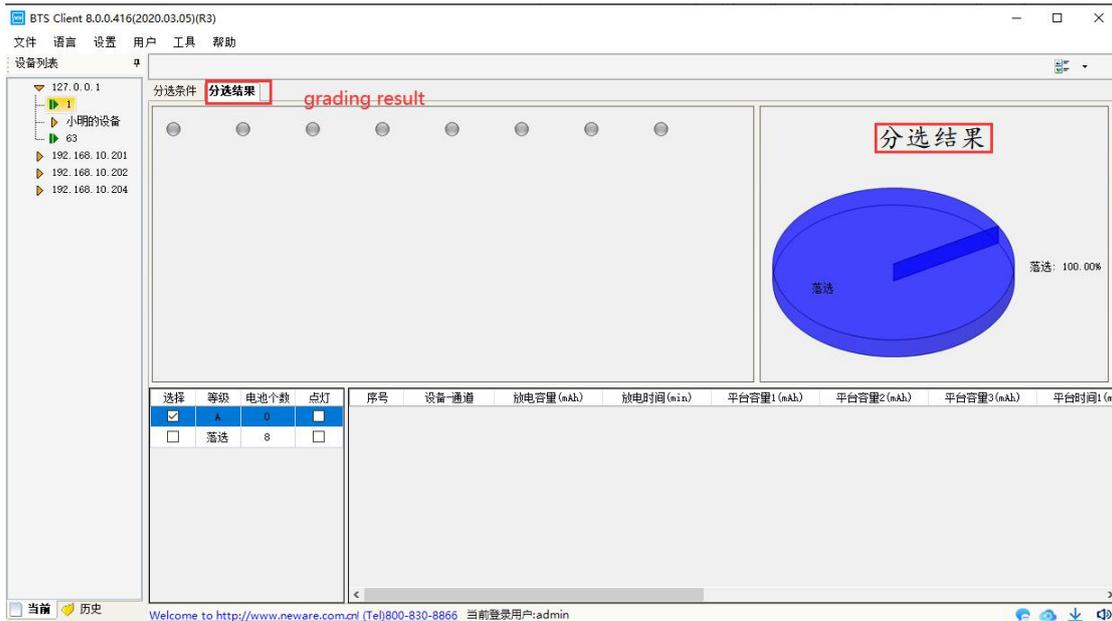
You can either save the sorting criteria to a file or load the saved sorting criteria from a file.

Sorting can operate on multiple devices at the same time. The default is to operate only on the current device. To operate on multiple devices, check the corresponding device in the device list on the left.



3. 16. 2. Grading Result

After setting the sorting conditions, click the "sorting" button, and the software will sort according to the set conditions. After completing the sorting, the software will automatically jump to the sorting results interface. In the sorting results interface, the channel can be lit to facilitate users to take away the battery according to the sorting results, as shown in the figure below:

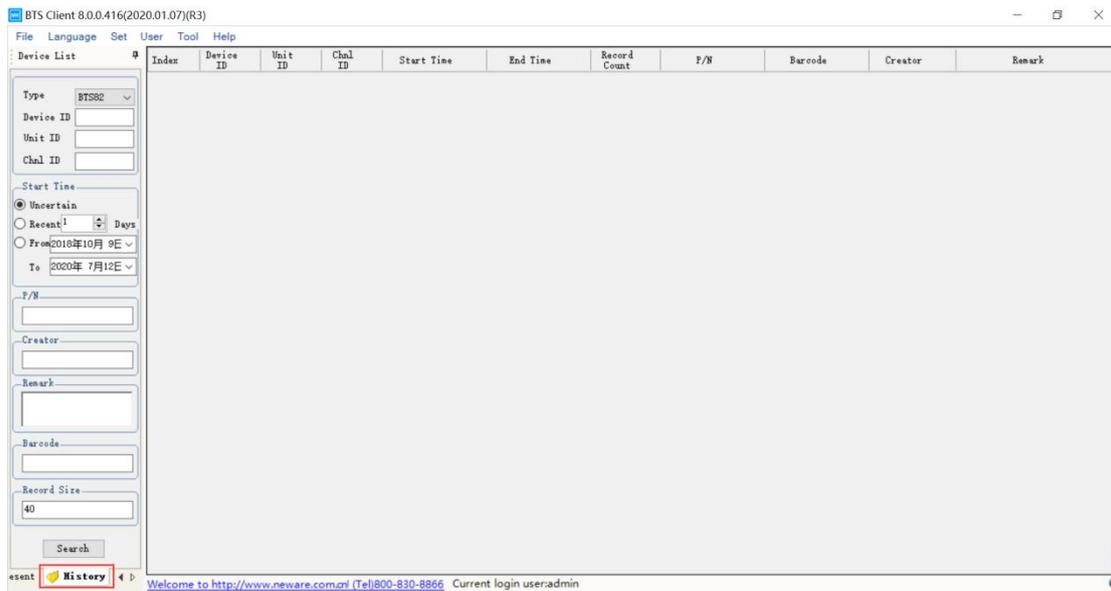


分选结果

3. 17. History Query

The history interface provides functions such as searching historical data, viewing historical data and exporting historical data

Click “history” of the device list interface to enter the history interface, as shown in the figure below:



Specific search operations are as follows:

1. Setting query condition, such as type selection: BTS82, device number input: 01, unit number input: 1, click “search”, the corresponding search results will be displayed in the list.
2. Settings query condition, such as input startup time, battery batch number, creator, remarks and other conditions, each text box can also input fuzzy conditions, click “search”, the corresponding search results will be displayed in the list, pay attention to the search conditions is the logical "and" relationship.

4. Appendix

4. 1. Attentions

Before using Neware products, please note the following:

- Please select the type of power cord according to the power of the equipment and check the rating voltage before connecting the equipment to the power socket to ensure that the required voltage and frequency match the actual power supply.
- Do not mix new and old batteries or batteries of different models.
- When working with multiple devices, do not bring the devices too close together, which may easily lead to air backflow or air preheating and is not convenient for equipment maintenance.
- Do not disassemble and install the circuit board without authorization to avoid communication errors or damage to the equipment.
- Please electrify the device before use to check whether the device is normal and whether the probe of the battery clamp is damaged. If it is damaged, please do not use it and paste labels for comments and timely maintenance.
- When the battery is installed on the device, please pay attention to the correct connection between the positive and negative poles of the battery and the positive and negative poles of the device.
- When the battery is put in, the space between the upper and lower jig should be adjusted, and the lower jig should be pressed down by at least half to ensure good contact.
- Easy to scratch batteries if the space between upper and lower jig is too small;The accuracy of test data would be affected if the space is too large.
- During the test, please set the working step correctly, otherwise the battery will be damaged or even cause a safety accident.
- When the internal temperature of the device exceeds 50°C, please check whether the fan is working normally.
- If abnormal voltage and current data of a channel are found during the use, the channel shall be stopped immediately, labeled, and the after-sales department of Neware shall be contacted for maintenance.

4. 2. Maintenance

The equipment you are using is of excellent design and workmanship and should be used with care. The following Suggestions will help you effectively use the warranty service.

- In order to ensure the best performance and accurate test accuracy of the equipment, it is recommended to conduct calibration operation every year.
- When upgrading or reinstalling the new version of the software, please uninstall the previous version, and make sure the test data is well saved.
- Please use the equipment according to the instructions in this manual. Do not try other methods unless following Neware engineers' professional guidance.
- Keep the equipment dry. Rain, moisture, and various liquids or moisture may corrode electrical circuits.
- Equipment should be kept clean and should not be used or stored in dusty or dirty places, where can damage its removable parts and electronics.
- Do not store the equipment in an overheated place, as the high temperature will shorten the life of the electronic equipment.
- Do not store the device in a place that is too cold. Otherwise, when the temperature of the device rises to room temperature, moisture will form inside the device, which will destroy the circuit board.
- Do not knock or vibrate the equipment. Rough handling of the equipment can damage the internal circuit boards and delicate structures.
- Do not clean equipment with strong chemicals, detergents or strong detergents.
- When replacing parts, only matching or approved parts shall be used. Unauthorized parts, modifications or accessories can affect the performance of the equipment and even damage the equipment.
- Make a backup of the data that needs to be retained (such as test data, grading data).
- Proper use and maintenance of equipment will help you to better play the product performance. Our long-term customer investigation and after-sales service practice have shown that the equipment failure in many cases is caused by improper operation or careless maintenance methods. If the equipment cannot work normally, we suggest you to read the user manual of this product carefully or contact Neware customer service for consultation.

4. 3. After sales service

- Free technical training: the company provides free technical training before and after sales, and specialized technical engineers are at your service at any time. We sincerely welcome you to visit and investigate.
- Neware Telephone support: When using Neware products, users can call the service hotline of the company for consultation if they encounter difficulties. The consultation time will be based on the work time of Neware company.
- Troubleshooting support: After receiving the customer's notice about the fault or abnormal operation of Neware products, if the fault cannot be corrected by Neware telephone support, Neware will solve the problem as soon as possible within the service time, restore to the normal operation, and correct, repair or adjust or replace the problem parts of the products.
- Response time: Neware shall make reasonable efforts to solve customer's problem at the first priority. The company has set up an 800 free service hotline: 800-830-8866.

4. 4. Contact NEWARE

Thank you very much for trusting Neware products. We hope that Neware products can become your right-hand man in the future. We provide you with a variety of self-service, to help you more quickly solve the problem that equipment encounters in the operation. In order to solve the problem quickly and effectively, we suggest that you contact us in the following ways in time when you encounter problems.

Company Service Hotline: 800-830-8866

Visit NEWARE Website: <https://newarebattery.com/>

Business Hotline: 0755-83108866, 83108867, 83108868

After-sales Service Hotline: 0755-83128100, 83128600, 83128900

Contact person's email: lulu@newarebattery.com