

DW-DI1500 TOC Analyzer

Operation Manual



Drawell International Technology Limited

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Identity Record

Device No.:

(Displayed on the label at the back of the analyzer)

Date of Receiving & Installing the Analyzer:

Attentions

In order to ensure your safety and avoid unnecessary losses, before the unpacking, installation and operation of the device, please carefully read this operation manual, and especially pay attention to the explanation information on dangerous & cautious matters. Otherwise, it may lead to operating personnel injury and device damage.

Follow all safety tips described in this manual, and pay attention to all information & tips displayed on the control software interface.

1. Installation and Debugging

Before the first startup (debugging), or after the device is not used for a long time or the device is carried out the maintenance, the operator shall ensure that the device and its protective device are in good condition.

2. Safety Guide for Parts

As the protective glass of the UV reactor is used to protect the operator from ultraviolet radiation, please do not remove or destroy the protective glass during the process of operation.

Notice: Please do not stare at the protective glass for a long time, so as to avoid affecting the vision!

Before the UV lamp or peristaltic pump pipe is replaced, the power supply shall be disconnected, so as to avoid electric shock risk.

3. Safety Guide for Repair and Maintenance

3.1 The maintenance personnel or authorized professional personnel who don't belong to our company are not allowed to remove the parts & circuit boards in the device case. Otherwise, the personnel involved in this matter shall be responsible for the device damage consequences.

3.2 This product needs the I-grade safety protection. The power supply must be reliably grounded. Otherwise, it may lead to electric shock accidents or device damage.

3.3 Please use the fuse with the same specification, so as to avoid short circuit or device damage.

3.4 Before the on-line mode is used, it is required to wash the pipe and calibrate the device in the off-line mode.

3.5 After the device is used to test the high-concentration water sample, it is required to wash the pipe with the high-purity water or deionized water with low organic carbon concentration, and the

washing time refers to the manual.

3.6 When the device is used, if the water sample contains visible insoluble particles, please carry out the pretreatment for the sample, so as to avoid that the pipe in the device is blocked. If the content of suspended solid is very high in the water sample which is carried out the on-line test, it is required to regularly replace the filter.

I. Product Introduction

DW-DI1500 TOC analyzer is the device independently developed by Drawell International Technology Limited, specially used to test the total organic carbon in purified water, water for injection, ultrapure water and other deionized water.

The device is controlled by the software  installed on the computer, so as to carry out the analysis and processing for data.

1.1 System Composition

DW-DI1500 TOC analyzer is composed of 5 main parts.

- (1) Shunt
- (2) Oxidation reactor
- (3) Carbon dioxide sensor
- (4) Peristaltic pump
- (5) Control software installed on the external computer TOC-Multi & Simult

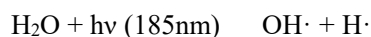
1.2 Shunt

The water sample enters the device through the sample inlet pipe. Then, it is divided into two equal flow paths. One passes through the delay coil and enters the carbon dioxide sensor, and the signal value of the water sample which is not oxidized may be tested. The other passes through the oxidation reactor, and enters the carbon dioxide sensor after the organic substance is decomposed into carbon dioxide under the photo-catalytic oxidation of the UV lamp, and the signal value of the water sample which is oxidized may be tested.

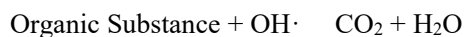
1.3 Oxidation Reactor

The oxidation reactor is composed of the UV lamp and quartz glass. The UV radiation source is directly placed in the reactor. The wavelength adopted by the UV lamp selects 185nm and 254nm, so as to ensure high radiation density and effective decomposition capacity.

The device uses the UV ray to oxidize an organic compound into carbon dioxide. The oxidation reactor is a UV lamp wrapped by the spiral quartz tube. The UV lamp can emit 185nm & 254nm UV ray, so that the water is carried out the photolysis.



The hydroxyl radical ($\text{OH}\cdot$) can completely oxidize an organic compound into carbon dioxide.



1.4 Carbon Dioxide Sensor

The device has two carbon dioxide sensors which are composed of sensor and temperature sensor. When the sample is measured, the double-precision technology is adopted, so as to achieve automatic calibration and temperature compensation.

1.5 Peristaltic Pump

The peristaltic pump is located at the rear end of the device. Its purpose is that, for each measurement, the sample solution is transported to the shunt by the pump, until the liquid is discharged to the liquid waste bottle.

1.6 Control Software

The control software is installed on the computer (provided by the user company), offers the data processing, and ensures the test data completeness, traceability, and electronic signature, as well as the security permission confirmation of computer system.

1.7 Key Parts

No.	Name	Specification	Place of Production
1	UV Lamp	UV-2, 185nm, 254nm	China
2	Teflon Pipe	Outer Diameter 1/16" × Inner Diameter 0.02"(0.75mm)	USA
3	Peristaltic Pump Pipe	Inner Bore 0.8mm × Wall Thickness 1.6mm UK Watson-Marlow	UK

II. Structural Features and Operating Principle

2.1 Structural Features



Figure 2-1 Front View of the Device

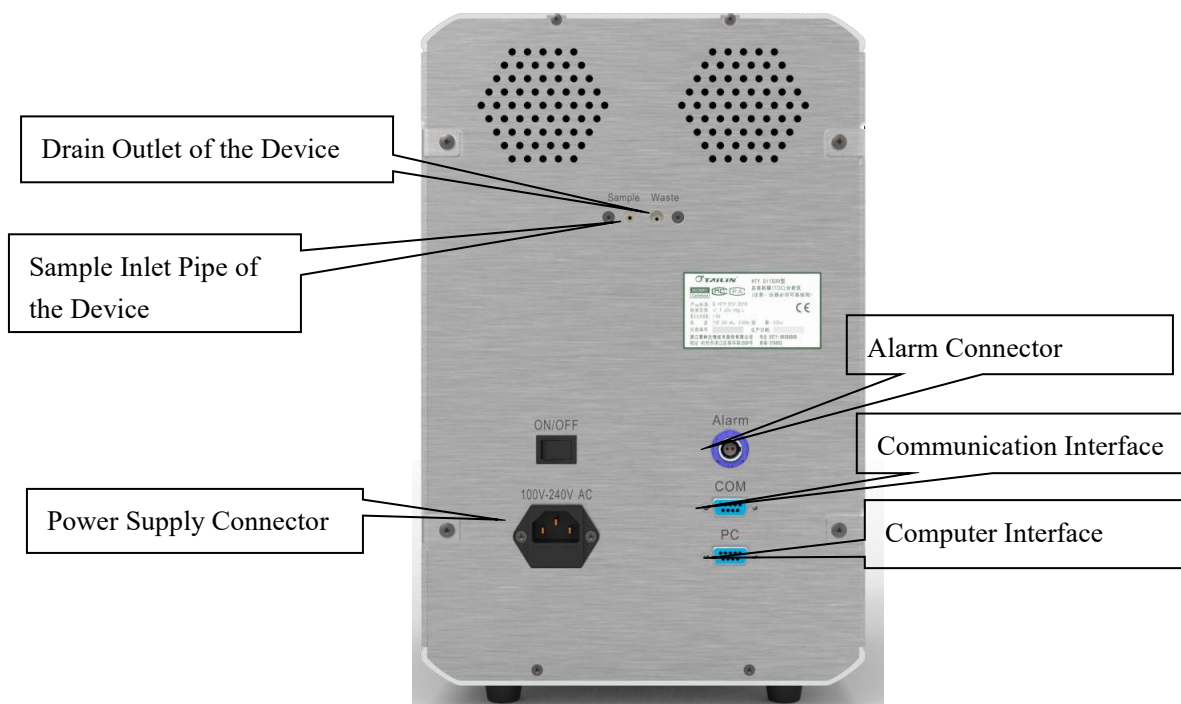


Figure 2-2 Rear View of the Device

2.2 Operating Principle

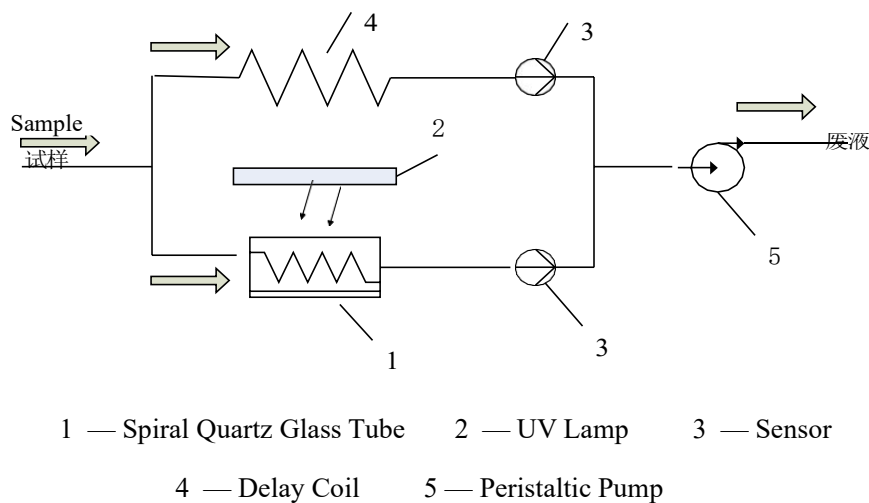


Figure 2-3 Schematic Diagram of the Operating Principle

The water sample enters the device through the inlet. Then, it is divided into two equal flow paths. One passes through the delay coil 4 and enters the sensor 3, and the response value of the sample which is not oxidized may be tested. The other passes through the spiral quartz glass tube 1, and enters the sensor 3 after the organic substance in the water is decomposed into carbon dioxide under the irradiation of the UV lamp 2, and the response value of the sample which is oxidized may be tested. According to the difference between the response values before and after UV lamp oxidization, the TOC value may be obtained by using the corresponding formula. Finally, the liquid waste is discharged from the drain pipe through the peristaltic pump 5.

2.3 Application Scope

This system is used to test the TOC concentration in purified water, water for injection and high-purity water of the pharmacy industry; suitable for the TOC test of the ultrapure water in the semiconductor industry, power plants, research & development institutions, pharmacy industry, chemical industry, etc.

III. Technical Parameters and Key Parts

3.1 Main Technical Parameters

Description			
Device Type	TOC Analyzer		
Model	DW-DI1500		
Basic Information			
Gross Weight	7.5kg		
Basic Dimension	(23x24x34) cm		
Device Connection			
Power Supply	(100~240) VAC		
Power Supply Frequency	50Hz/60Hz		
Rated Power	100W		
Installation Condition			
Environmental	(10~60) °C		
Relative Humidity	≤85%RH		
Process Parameter			
TOC Test Range	(0~1.500) mg/L		
Repeatability Error	≤ 3%		
Maximum Relative Error	±5%		
Decomposition Principle for Organic Substances	UV ray decomposition		
Wavelength	185nm, 254nm		
Test Liquid Temperature	(1-95)°C		
Control/Assessment	Real-time pattern, measurement results and printed reports		
Conductivity Test Range	(0~5.100) μS/cm		
	Suggestion:	TOC value of the solution to betested	Best conductivity range
		Below 0.200 mg/L	<1.000μS/cm
		(0.200~0.500) mg/L	<3.000μS/cm
		(0.500~0.750) mg/L	<5.000μS/cm
(0.750~1.500) mg/L	<5.100μS/cm		

3.2 System Requirements of the External Computer

3.2.1 Database Server Terminal Configuration

Hard Disk	7×24 -hour online detection or long-time operation, 500G special disk for the server)
DVD ROM	DVD-R disc-carving machine * It may be selected and configured by the user company.
RAM	4GB and above
CPU	2.0GHz, dual-core and above
Network Card	100Mbps and above
Displayer	1360*768*32bit and above
Video Card	1360*768*32bit and above
Mouse	Standard three-key and above
Keyboard	Standard keyboard

3.2.2 Client Terminal Configuration

Hard Disk	500G ordinary disk and above
DVD ROM	DVD -R disc-carving machine * It may be selected and configured by the user company.
RAM	2GB and above
CPU	2.0 GHz, dual-core and above
Network Card	100M and above
Displayer	1360*768*32bit and above
Video Card	1360*768*32bit and above
Mouse	Standard three-key and above

3.2.3 Computer Software Installation Environment

Server Terminal Operating System	Windows 7, Windows 8.1, Windows 10, 32Bit/64Bit
Server Terminal System Partition	The hard disk has at least two partitions
Client Terminal Operating System	Windows 7, Windows 8.1, Windows 10, 32Bit/64Bit

IV. Transportation and Storage

4.1 Transportation

Notice: If there are residues in the pipe when the device is transported, this may lead to the device damage.

Therefore, the device shall be completely emptied before transportation.

Importance: The improper packing material may lead to the part damage!

The device shall be placed in the original package when being transported. The sufficient measures shall be taken so as to ensure the safety of transportation.

4.2 Storage

The TOC analyzer packed shall be stored in the room which is well-ventilated, shady, cool and clean with the relative humidity of not more than 80% and has no corrosive gases. The transportation shall meet the requirements specified in the order contract, and avoid being collided and affected with damp.

If this device is required to be removed and reinstalled, please contact the device manufacturer and ask the professional technician to give necessary assistance to solve the related problems.

V. Environment, Samples and Reagents

5.1 Environmental Requirements

The device shall be placed in the environment which is suitable for operation, with constant temperature & humidity. Avoid direct sunlight and supernormal temperature. If the temperature is too high (more than 104°F/40°C), this may lead to abnormal operation. If the temperature is too low (less than 50°F/10°C), this may lead to large measurement value errors.

Do not directly place the device beside the door or window.

Do not install the device near the electromagnetic radiation source.

Keep the device away from direct sunlight and irradiators: if necessary, it is required to install the air conditioner.

Do not obstruct the ventilation opening of the device.

Importance: Take into consideration enough space demands! The space demands include all constituent parts of workplaces, like computers, displays, printers and other possible accessories.

⚠ Attention

- **The original packing material of the device shall be carefully kept. The installation shall be carried out by the professional technician of the company.**
- **If the device is required to be returned and repaired for reasons, the device must be placed in the original carton so as to avoid that the device is damaged during the process of transportation.**

5.2 Sample Treatment

It is specially noted that, when the ug/L-level concentration solution is prepared and stored, CO₂ and organic gases in the air of the laboratory may lead to the solution change. In order to avoid such circumstance, it is recommended to take the following measures:

The contact area between the solution and air shall be as small as possible;

Avoid that the sample is stored for a long time. Try to immediately use the sample after the sample is obtained;

The sample storage container shall be cleaned up, so as to avoid the secondary pollution;

According to the requirements of the device test principle, try to avoid testing the water sample which has high conductivity & high TOC value and contains the visible insoluble particle, so as to protect the internal test unit of the device from damage. If the conductivity of the water sample is very high, this may cause that the test value of the device is abnormal. Please wash the pipe with the ultrapure water which has the conductivity of less than 1.0μS/cm (25 °C) and TOC of below 0.04mg/L for a long time.

5.3 Reagent Requirements

*** Only the clean glass ware can be used to prepare and store the solution.**

The used reagent must meet the following requirements:

Use the chemical reagent with analytical purity or higher purity;

The ultrapure water is used for preparation of the standard solution, and regarded as the baseline water sample: conductivity < 1.0 $\mu\text{S}/\text{cm}$ (25 °C), TOC < 0.04 mg/L

When the sample is required to be diluted, the baseline value of the water for dilution shall be considered.

The software TOC-Multi & Simult can carry out the independent measurement and calculation for this value. The baseline value of the water for dilution usually changes. Therefore, it is required to re-measure the baseline value of the water before measurement.

VI. Control and Measurement Software TOC-Multi & Simult

6.1 Software Introduction

TOC-Multi & Simult is able to control DW-DI1500 TOC analyzer, and assess the measurement record data by it.

TOC-Multi & Simult is composed of the internal programs of the device, and the external programs of the computer. When the computer is configured for the device, the computer shall install the latest version of TOC-Multi & Simult. The installation environment refers to the Section 3.2.

6.2 Software Initialization

--- Click software desktop shortcut to operate the client terminal software

--- According to the initial operation tips, carry out the installation for necessary client terminal components.

--- g.1 Microsoft System CLR Types For SQL, click -Next|| → -Finish||

--- g.2 Microsoft Report Viewr 2012, click -Next|| → select the item that -I accept the terms in the license agreement||, and click -Finish||.

--- g.3 MySQL Connector 6.9.6, click -Next|| → select -Typical|| → click -Next|| → -Instll|| → click -Finish||.

6.3 Client Terminal Setting

Turn on the switch on the left side of the device. Connect to the computer according to the Figure 2-2.

6.3.1 Server IP Setting

--- If the data server is installed on the local machine, the IP address shall select -localhost|| and click -OK||.


--- Otherwise, click -OK|| after the IP address of the data server is input.

--- The client terminal setting installation is completed.

6.3.2 Database Setting (When the software is firstly installed, it is required to carry out the setting.

Please carry out the operation according to the tips.)

(1) System Setting

---Click the desktop shortcut  to start the software.

---Input the company number.

Notice: Company number input (please carefully input the related information. Otherwise, the errors caused will not be restored.)

(2) Administrator Account Addition


--- According to the tips, input the key information and click —Submitl.

--- Click the —OKll button, pop up the software login interface. On this interface, log into the system or create the new common user.

***Importance: The administrator account can carry out the management for the operation permission of the common user (refer to the Section 7.1.1). The password is the safety guarantee, so as to avoid that the unauthorized personnel operate the device.**

--- Click —OKll to complete the client terminal installation.

6.3.3 User Login/Initial Setting

Enter the login interface after software initialization. It is required to input the user name and password to validate the identity. This process reflects the program safety. Use the  software to validate that you are an authorized user.

The user may utilize the menu item [File]-----[Logout] (refer to the Section 7.1.1) to change the current user. In addition, the new user is required to be carried out the password validation.

6.3.4 Serial Port Selection

The computer is connected to the device by using the communication-to-serial port data line. After logging into the software, click —Setupll, select —Communication serial port settingll, choose the correct serial port, and click —OKll.

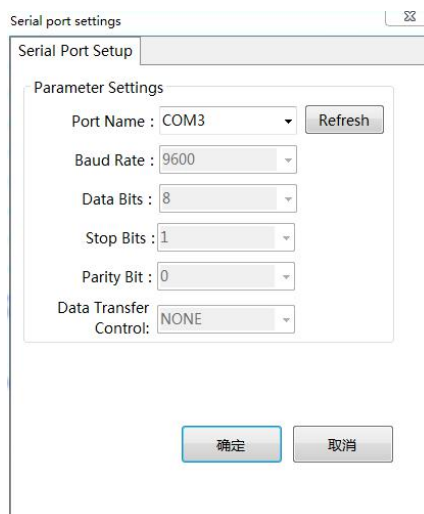



Figure 6-7

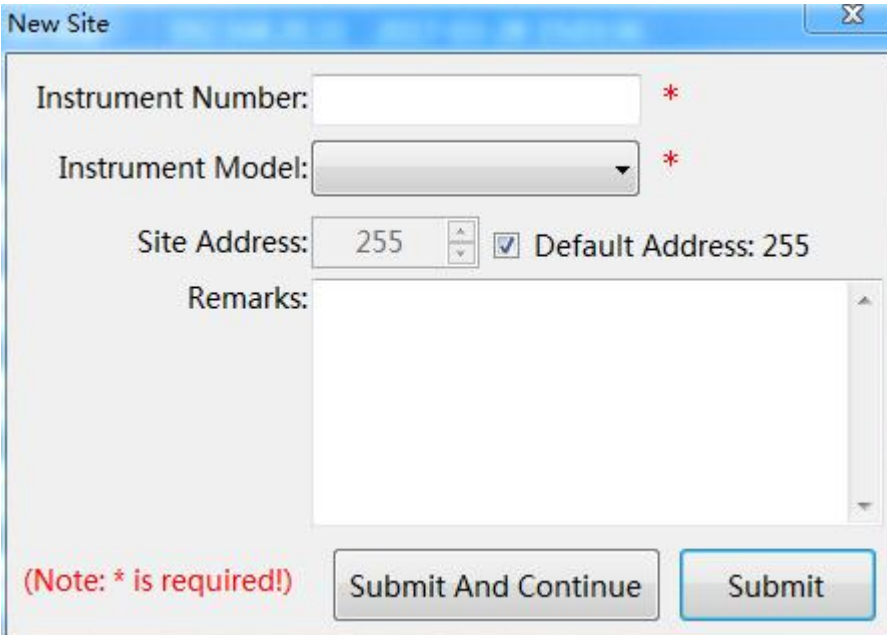
6.2.4.2 New-added Station

When the device is connected, it is required to input the correct information in the station management. The specific functions of the control software will be activated only when the device information is correctly input.

Notice: The device is marked with device model and number.

--- On the main interface, click -Start the serial port

--- On the station management interface, click —Add the new station 



The screenshot shows a 'New Site' dialog box with the following fields and controls:

- Instrument Number:** A text input field with a red asterisk indicating it is required.
- Instrument Model:** A dropdown menu with a red asterisk indicating it is required.
- Site Address:** A spinner control set to the value 255.
- Default Address: 255:** A checkbox that is currently checked.
- Remarks:** A large text area for entering notes.
- Buttons:** 'Submit And Continue' and 'Submit' buttons are located at the bottom right.
- Note:** A red note at the bottom left states '(Note: * is required!)'.

图 6-8 Figure 6-8

--- Input the device number, device type, station address and note

*** Do not select the default address. Please manually input the number of the station address (1-247). Otherwise, the device may not be connected. Every device address is not the same, so as to avoid device address conflict.**

--- Submit/submit and continue

--- Select the new-added station, and click the right button. Then, click -Modify the device address by using the left button, so that the station address is corresponding to the device address.

***When the device address is modified, please ensure that only a device is carried out the on-line connection. Otherwise, other devices connected may change the device address, so as to cause that the device is not connected.**

--- View the device information, and confirm that the device parameter is correct.

VII. Operation


Turn on the switch on the left side of the device, double click  desktop shortcut to enter the software login interface, and input the created name and password to log into the software.



Figure 7-1

After logging into the software, click -Start the communication - select the device station to be started by using the left button - choose -Start this station - by using the right button - enter the main interface for operation (refer to the Figure 7-2).

*If the new TOC device is required to be connected, please add a new station (refer to the Section 6.2.4.2).

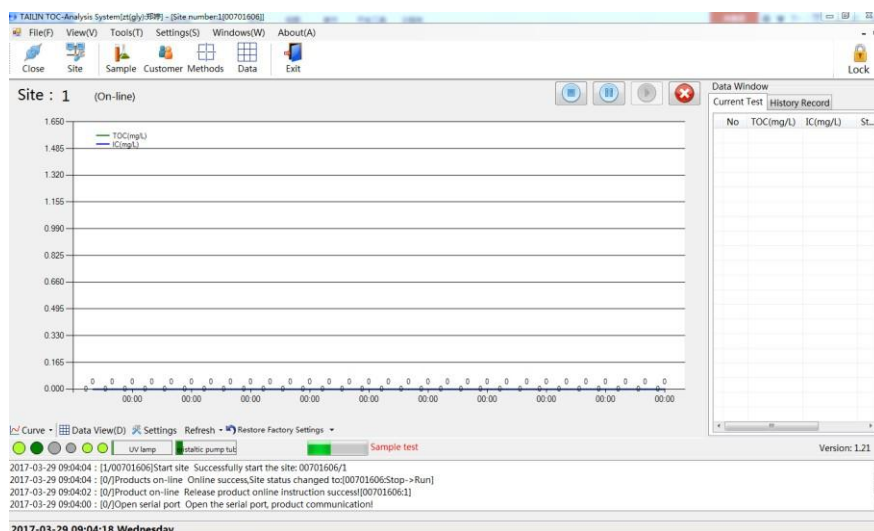


Figure 7-2

After entering the station operation, the station interface is composed of the menu, toolbar, graphic area, data window, sidebar, status window and operation log.

7.1 Menu

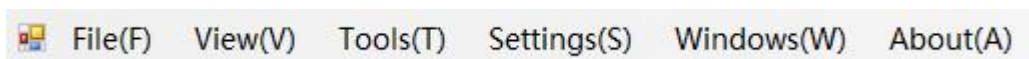


Figure 7-3

The menu includes: File, View, Window, Setting, Tool and About.

7.1.1 File

The file menu contains the following menu items:



Figure 7-4

Logout: Change the current login user

Exit: Exit from the current login user

User: Current user information change/password modification/user management (only the administrator is authorized), as shown in the Figure 7-5.



Figure 7-5

***The administrator account may manage/review/forbid the user permission in the “User management” of the file menu.**

7.1.1.1 User Management * Only the administrator is authorized

In the user management item (refer to the Figure 7-5), by using the left button, select the account name whose permission is required to be modified. Click by using the right button:

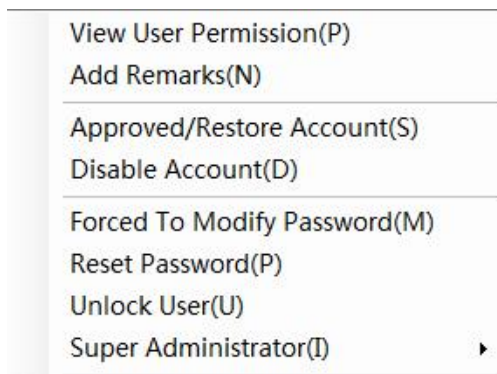


Figure 7-6

View User Permission: View/change the current user permission. Select the permission name. Click and change in the following permission name column.

Add Remarks: Add a note for common users.

Approved/Restore Account : Pass the application by the new user/recover the deactivated account.

Disable Account : Deactivate the current user account so that it cannot log into the software.

Forced To Modify Password : Force the current user to modify the password when it logs into the system next time.

Reset Password: Reset the user password when the user forgets the user password. After logging into the system, modify the password according to the tips. The login password is -123456ll.

Unlock User: Remove has targeted users

User group management: Carry out the user group change for the current user: common user /administrator /super administrator.

* Only the administrator and super administrator are authorized to carry out such change.

7.1.2 View

The view menu contains the following menu items:

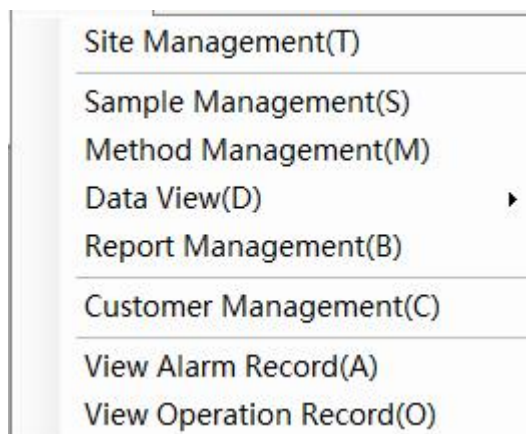


Figure 7-7

Station Management: Manage different DW-DI1500 devices

Sample Management: Add a new sample/view the sample information (the detailed information refers to the Section 8.3.2/8.3.3).

Method Management: Add a new method test/view the method information/preview and print the completed method report (the detailed information refers to the Section 8.3.4).

View Data: Query the data information of the sample whose test has been completed (the detailed

information refers to the Section 8.2.3).

Report Management: Review and submit the completed test method

Customer Management: Add the new client information/manage the client information (the detailed information refers to the Section 7.2.1).

*View Alarm Record : View/export/print the device alarm record (only the administrator account is authorized).

*View Operation Record : View/export/print the operation record of the software (only the administrator account is authorized).

7.1.2.1 Station Management

Instrument No.	Instrument Model	Site Address	Site State	Run Model	Login IP	Run Time	Note
00721606	HTY-DI1500-OL	3	Stop	On-line	192.168.20.43	2017-02-08 09:24:18	样机#03
00731606	HTY-DI1500-OL	4	Stop	On-line	192.168.20.43	2017-02-10 16:29:21	样机#04
01741606	HTY-DI1500-OL	31	Stop	On-line	192.168.20.94	2017-02-09 11:25:38	
01751606	HTY-DI1500-OL	32	Stop	On-line	192.168.20.94	2017-03-24 08:13:25	
01761606	HTY-DI1500-OL	33	Stop	On-line	192.168.20.94	2017-03-24 08:13:33	
01771606	HTY-DI1500-OL	34	Stop	On-line	192.168.20.94	2017-03-24 08:13:25	
01781606	HTY-DI1500-OL	35	Stop	On-line	192.168.20.94	2017-03-24 08:13:37	
01791606	HTY-DI1500-OL	36	Stop	On-line	192.168.20.94	2017-03-27 11:47:01	
01801606	HTY-DI1500-OL	37	Stop	On-line	192.168.20.94	2017-03-27 14:52:06	
01811606	HTY-DI1500-OL	38	Stop	On-line	192.168.20.94	2017-02-23 10:05:28	
01821606	HTY-DI1500-OL	39	Stop	On-line	192.168.20.94	2017-02-23 09:57:07	
01831606	HTY-DI1500-OL	40	Stop	On-line	192.168.20.94	2017-03-24 08:13:54	

2017-03-29 09:23:48 : [0/0]Open serial port Open the serial port, product communication!
 2017-03-29 09:18:46 : [0/Login User(zt(gly)) login success!-192.168.20.31

2017-03-29 09:24:25 Wednesday

Figure 7-8

* In the station management, carry out the management for stations. A device is corresponding to a station. Through the station operation, test the sample, view the data and manage the permission.

New: Add a new device station (the detailed information refers to the Section 6.2.4.2).

Delete: Delete the station which is not used.

* Only the user who adds a new station may delete the station. The administrator and other users cannot delete the station. The station used cannot be deleted.

Open All Available: Start all stations displayed on the page.

Show Hidden Sites: Display the information of hidden stations on the interface.

Show Disabled Sites: Display the information of forbidden stations on the interface.

Select the station to be operated by using the left button. Click by using the right button:

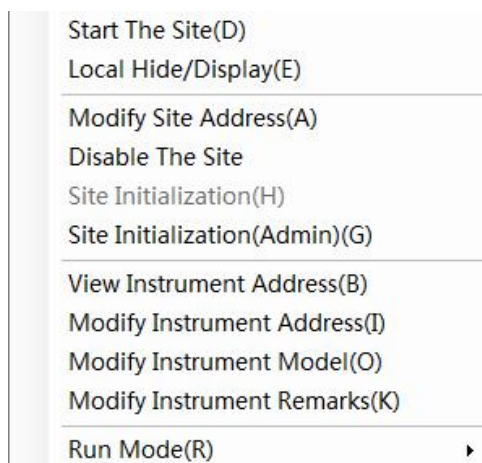


Figure 7-9

Start This Site: Start the current station selected.

Locally Hide/Display: Locally hide/display this station information, and also select –Display the hidden stationl on the current interface.

Modify Site Address: Modify the current station address.

*** After the current station address is modified, please click the “Modify the device address” of the current menu, so that the device address is consistent with the station address, in order to avoid abnormal communication.**

Disable The Stie : Forbid the current station, and hide the station in the station management. Select

–Display the forbidden stationsll on the current interface when it is required to view the forbidden stations.

Site Initialization: After the software abnormally quits, when the station status displays RUN (the station is operated), the station cannot be loaded, and it is required to initialize the station and restart the station. (*** The connected computer can be carried out such operation only when the software abnormally quits.**)

Site Initialization(Admin): Initialize all stations connected to one server. (*** Only the administrator is authorized.**)

View Information Address: View the current device information: test calibration time, zero calibration time, peristaltic pump pipe time, UV lamp timing, device number and device model.

Modify Instrement Model: Modify the device address according to the current station address.

*** Please ensure that the device address is modified only when one device is carried out the on-line connection.**

Modify Instrument Remarks: Modify the device model and device note (* only the administrator is authorized).

Run Mode: Select the on-line/off-line mode.

7.1.3 Window

The window menu contains the following menu items:

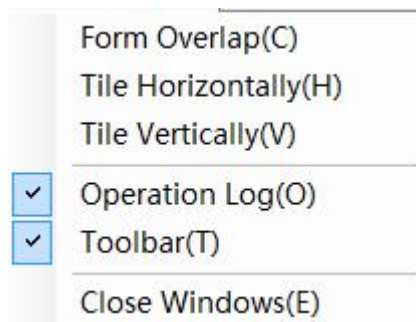


Figure 7-10

Form Overlap /Tile Horizontally/Tile Vertically : Arrangement mode when many interfaces are opened;

Operation Log/Toolbar: Display/hide the operation log on the interface;

Display/hide the toolbar on the interface;

Close Window: Close the window except the station.

7.1.4 Setup

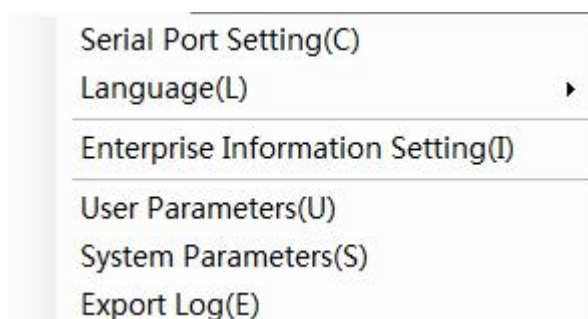


Figure 7-11

Serial Port Setting : Set the address of the device port connected to the PC.

Language:Language switching Simplified Chinese/English

Enterprise Information Setting: Complete and view the enterprise information of the user.

User Parameters: Set the user parameter.

System Parameters: Set the system parameter .

Export Log : Export the system log. * **Only the manufacturer is authorized to carry out such query.**

7.1.4.1 Log Export

Click the log export, and view the log required to be exported by month. Click by using Shift+ left mouse button to select more than one date, or click the date to export the log. * **At most, select to export the log of 10 days, so as to avoid that the file is too large.**

7.1.4.2 System Parameter (* Only the administrator is authorized to operate this item)

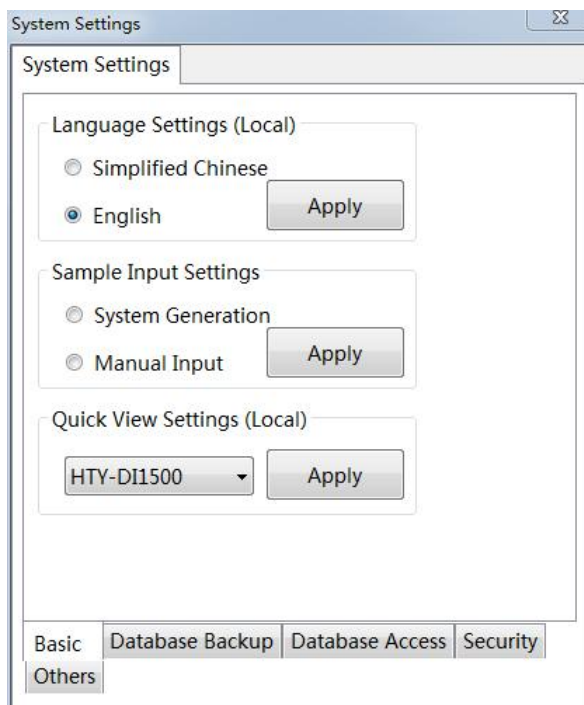
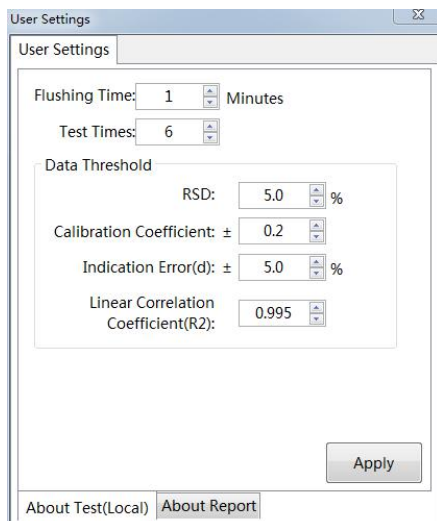


图 7-12 Figure 7-12


Basic	Language settings	Language switching Simplified Chinese/English
	Sample input settings	In the new-added sample information of sample management, carry out the setting that, when the sample number is input, the sample number is given priority to be input into the system and generated or manually input.
	Quick view settings	In the -Data view of the toolbar, set -Only view the data of one device model
Database backup	Database services	<p>Set the database backup time every day.</p> <p>Set the backup path. *The setting is only carried out on the computer with the server terminal.</p> <p>*When the set time is reached, the database will be automatically backed up, so as to avoid data loss.</p>
Database access	Database services	Database access restrictions
Security	Security Settings	When the computer is not operated within the set time, the software will be automatically locked. The unlocking needs the current login user password. The factory default is 10 minutes.
		If the number of forced password change days are set, after the set number of days is exceeded, when the user logs into the software, the system will automatically remind the user to change the login password. The factory default is 15 days
others	Calculation method	Reference error/relative error

7.1.4.37.1.4.3



About Test (local)	Parameter Settings	Flushing time
		Test time
		Data Threshold
About Report	Report format is set	Display Approver
		Display Manufacturer's Logo

7.1.5 Practical Tool

 Calculation(D)

Numerical Calculation: After the numerical value is manually input, the system may automatically calculate the average value/indication error/repeatability, and carry out the abnormal value judgment.

Input the numerical value required to be calculated. Click the Add key or Enter key to obtain the average value.

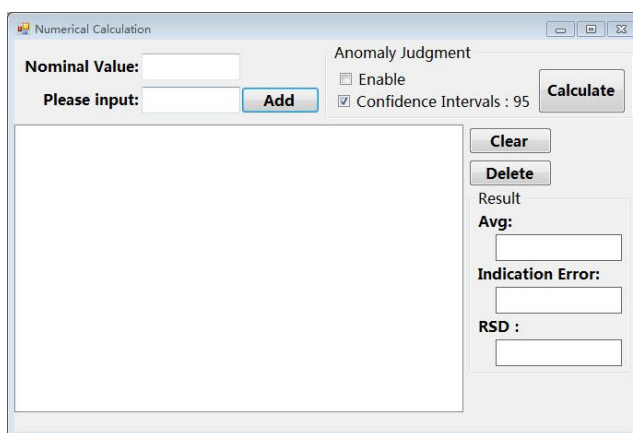


Figure 7-13

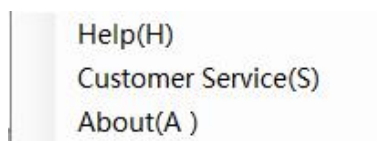
---- After the abnormal value judgment is selected, the system will automatically calculate and eliminate the abnormal values in the data.

---- After the nominal value is input, the system will automatically calculate the indication error.

---- After over 3 data are input, the system will automatically calculate the average value and RSD (relative standard deviation).

***Abnormal Value: Adopt the discrimination method of the Grubbs criterion to carry out the judgment;**

7.1.6 About



About: Introduction and contact method about Drawell International Technology Limited ,

Help: Query and search for software functions

Customer Service:After contact Call/Fax/Homepage/WeChat/QQ/E-Mail

7.2 Sidebar



Figure 7-14

Open /Close : Connect/close the communication with the device.

Site: Add/manage the information of the device connected to the PC port software

Sample : Add a new sample /manage the sample information

Customer: Add the new client information/manage the client information


Methods : Add a new method test/manage the method information/preview and print the completed method report

Data : Query the data information of the sample whose test is completed

Data backup: Manually back up the data to the local hard disk or mobile hard disk

*** Only the server terminal and administrator are authorized.**

Exit: Exit from the current login user.

Lock/: Manually lock/unlock the software interface operation.

7.2.1 Client Management (Only the administrator is authorized)

In this menu item, add the new client information, in order to be convenient for the user to carry out the management for the samples of external clients.

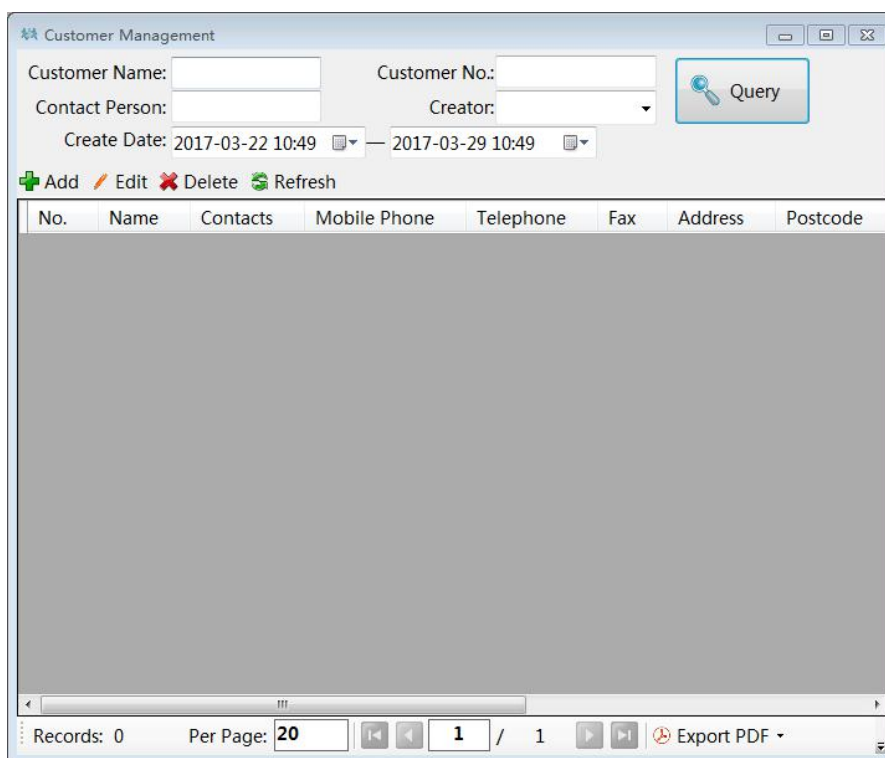


Figure 7-15

Enter the client management interface. Click Add – input the client information on the new client interface: the item with * must be filled in –click –Submit or –Submit and continue to add so that the new client information is successfully added.

In the added client information, modify and delete the client information.


---Delete the client information: In the new-added sample information, the associated client information cannot be deleted.

---Modify the client information: Modify the created client information: contact person, mobile phone, company telephone, fax, address, postal code, e-mail, home page and note.

--- Export the PDF, Picture and Excel formats (the content of the PDF and picture formats cannot be modified).

---Print the current page/all pages.

In the new-added sample (refer to the Section 8.3.2), input the number of the client presenting the sample, and click –Submit so as to add the new client sample information.

In the sample management, click the pull-down item  on the right of the interface, and input the client number, sample type, configuration data and other query conditions, in order to query the sample information of the client presenting the sample, and carry out the management for samples which are not loaded.

7.2.2 Data Backup (* only the server terminal and administrator are authorized)

On the computer with the server terminal, the administrator is authorized to manually back up the data to the computer or hard disk.

7.3 Station Operation Interface

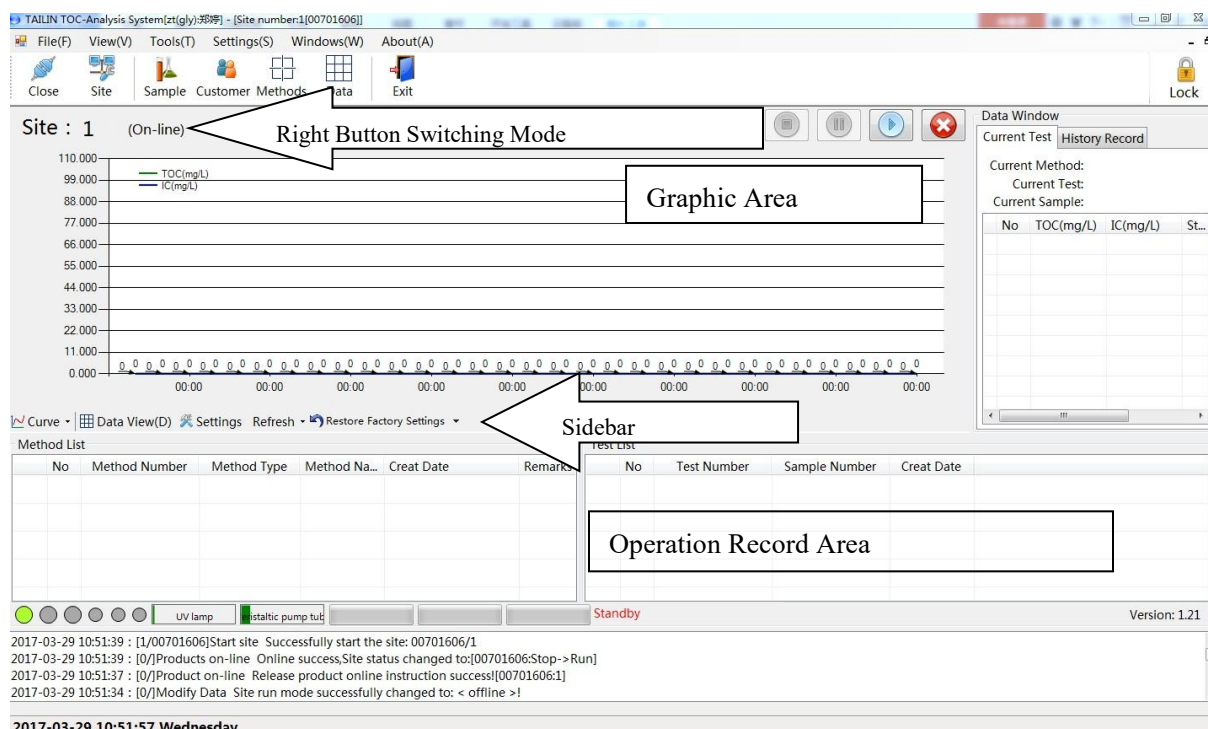


Figure 7-17

Mode Change: Move the mouse to the character (on-line mode). Click by using the right button to change the on-line mode/off-line mode.

7.3.1 Right Button

Move the mouse to the graphic area. Click by using the right button.

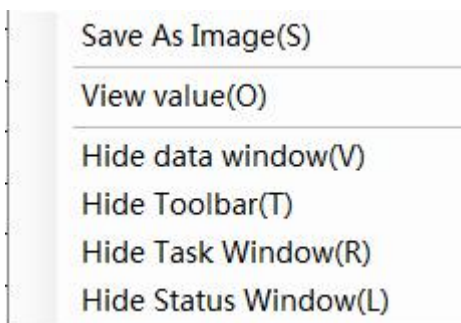


Figure 7-18

Save as a picture: Save the current test curve and data as the picture.

Display the value: Display/hide the test value; only display the curve graph.

Hide the data window: Display/hide the data window

Hide the sidebar: Display/hide the sidebar

Hide the status window: Display/hide the status window

7.3.2 Sidebar

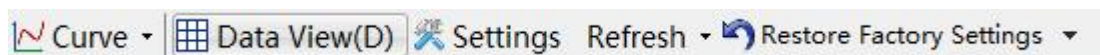
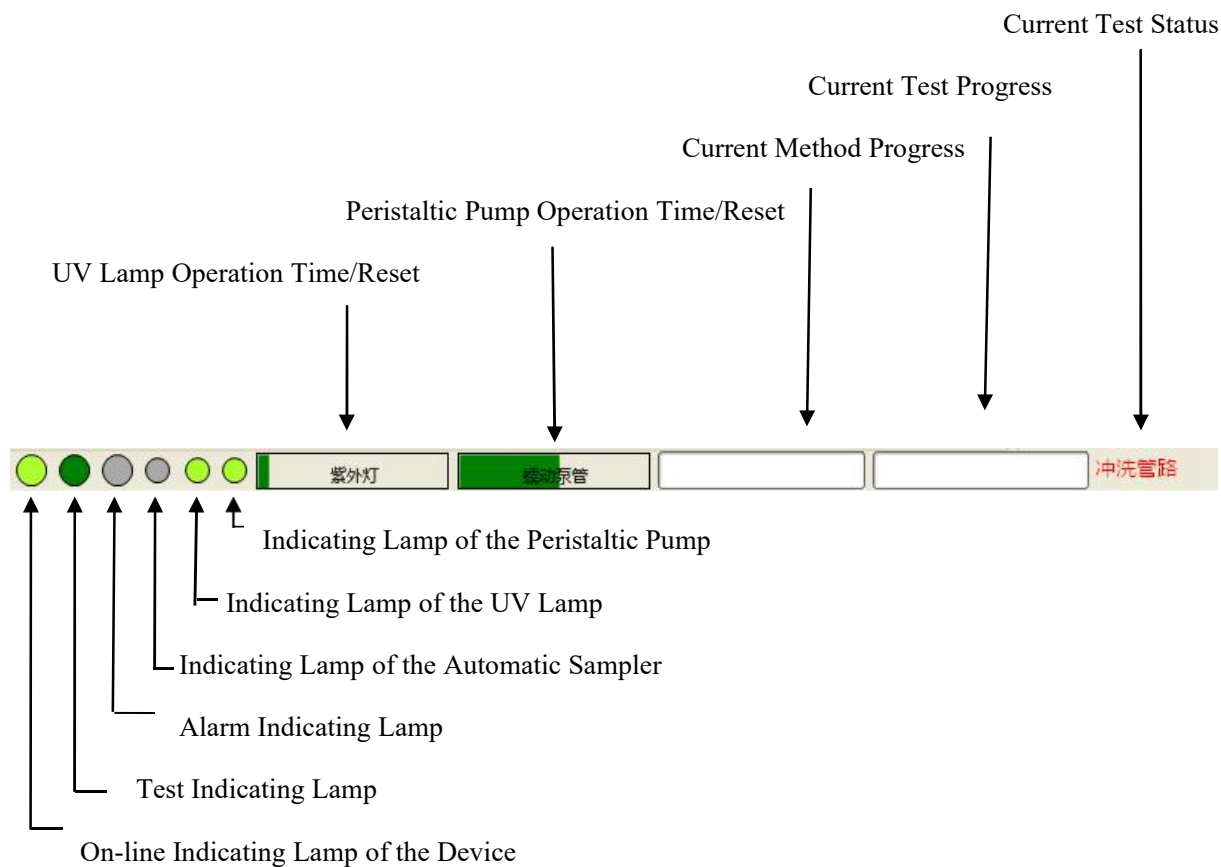


Figure 7-19

Curve		View the completed user operation curve record of the current station.
Data View		Shortcut to enter the data view
Settings	Off-line setting	Change the start status of the automatic sampler, as well as the abnormal value judgment information of every group of values.
		Preparation/startup of the automatic sampler.
	On-line setting	Change the startup information – start the test status.
		Set data test interval
		Set the on-line washing time (the washing data will not be included in the result report).
		Threshold value setting – set the threshold value range of the on-line data. When the related value exceeds the range, the system will give an alarm.
		When the related value exceeds the range, the treatment method may select to: only give the alarm output and continue the test; or give an alarm (the

		upper limit of alarm may be selected) and stop the test.
	Working Curve*	Select to use the system operation curve or user operation curve to calculate the test result.
	* (Restart the station after the completion of setting)	Click...input the completed user operation curve (the user operation curve plotting method refers to the Section 8.5.3.)
	General Settings	Change the test time interval (second) and product preheating time (minute). 4-20mA setting: The user may set the threshold value of the device. Click to obtain the current parameter – select the parameter to be changed – click the setting.
	Alarm	Alarm function: The selected item will carry out the alarm output.
Refresh	Part status	Refresh the UV lamp & peristaltic pump status.
	Automatic sampler (optional configuration)	Refresh the status of the automatic sampler. (* Do not refresh the status during the test process.)
Factory Setting	Import from the file	Import the ex-factory information of the device from the file. For the file, please consult the manufacturer. (* Only the administrator is authorized.)
	Restore from the device	Connect the device. Import the ex-factory information of the device. (* Only the administrator is authorized.)

7.3.3 Status Bar



7.3.3.1 Indicating Lamp

Move the mouse to the indicating lamp to view the function of the indicating lamp;

The indicating lamp is green, which indicates that the connection is normal. The indicating lamp is red, which indicates that the system is in the alarm status. The indicating lamp is grey, which indicates that this function is not used. The indicating lamp is green and flashing, which indicates that the system is being running.

Indicating Lamp 1	On-line status of the device	
Indicating Lamp 2	Test status	
Indicating Lamp 3	Alarm status	When the indicating lamp is red, double click the indicating lamp to view the alarm and abnormal treatment suggestions (refer to the Section X Fault Maintenance); After selecting the alarm content, click by using the right mouse button and select -Have readl, and then close the alarm.
Indicating Lamp 4	Automatic sampler running status	
Indicating Lamp 5	UV lamp running status	
Indicating Lamp 6	Peristaltic pump running status	

7.3.3.2 Part Status Bar

Move the mouse to the status bar to view the remaining operation time of the UV lamp & peristaltic pump pipe.

The total operation time of the UV lamp is 5,000 hours; the total operation time of the peristaltic pump pipe is 180 days. * **The replacement method refers to the Section X.**

Operation Time	80%~90%	The indicating lamp of the UV lamp/ peristaltic pump pipe is orange. Give an alarm once every other 60 minutes, so as to remind the user to replace the UV lamp/peristaltic pump pipe.
	90%~98%	The indicating lamp of the UV lamp/ peristaltic pump pipe is red. Give an alarm once every other 30 minutes, so as to remind the user to replace the UV lamp /peristaltic pump pipe.
	Over 98%	The indicating lamp of the UV lamp/ peristaltic pump pipe is red. Give an alarm once every other 10 minutes, so as to remind the user to replace the UV lamp /peristaltic pump pipe.

7.3.4 Operation Record Column

Operation record/alarm record information column: Display the software operation record & alarm record.

Importance: If the current software has many on-line devices, when the operation is carried out, the order may be delayed and it is required to wait a moment.

7.3.5 Time

The software time is corresponding to the time of the computer with the server. Before the software is started, please confirm the accuracy of computer time so as to avoid that the software makes mistakes.

7.3.6 Data Window

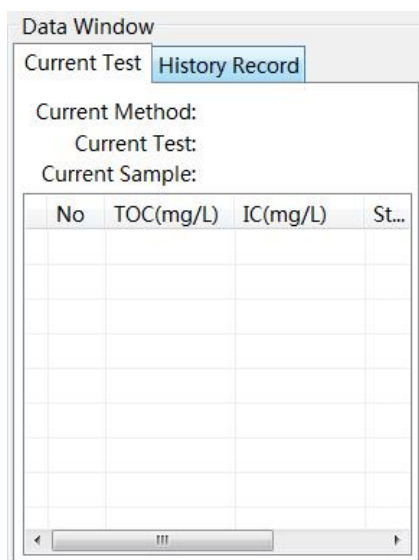


Figure 7-20

Display the current test data records and historical records. If the current station is closed, the current record information will be removed.

In the off-line mode, the completed sample data will be emptied. The related information may be queried in the historical data.

In the status bar, the item with “X” shows the washing data which will not be included in the result; if eliminating the abnormal value is selected, the eliminated abnormal value status displays “X”.

7.3.7 Off-line Mode

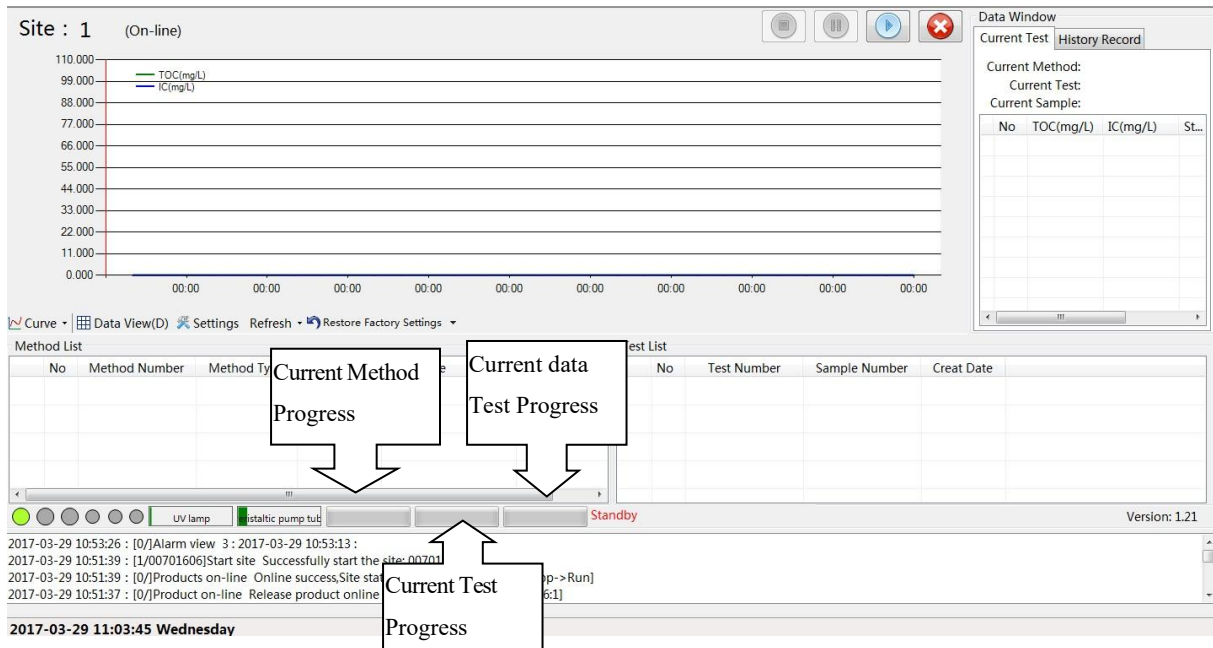


Figure 7-21

Method list: Indicate the sequence of the current test method. In the method list, click by using the right button – load the method.

Test list: Indicate the sample sequence of the current test method.

Current method progress bar: Indicate the method progress of the method list.

Current test progress: Display the test progress of the current test method.

Current data test progress:

7.4 Server Terminal Operation * Such operation can be only carried out on the computer with the server terminal.

Open the server terminal

Click —Start—>Program/all programs—>ZJTL folder —>click —dataservice.exell to operate the database.

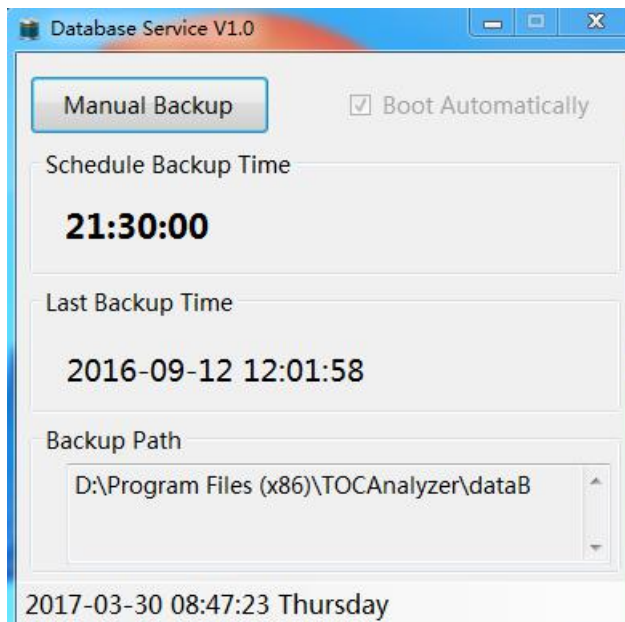


Figure 7-23

After starting the database service, manually back up the related data and select the database which can be automatically started when the device is started.

After click —Close, minimize the database service in the system bar (refer to the following figure). Double click the server terminal icon for recovery

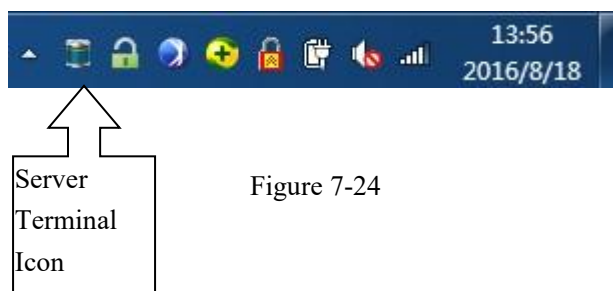


Figure 7-24

VIII. Startup Test

8.1 Device Preparation

8.1.1 Check Prior to Startup:

---The drain pipe is connected to the liquid waste bottle, and unobstructed. The liquid waste bottle has the sufficient volume (check when the device is normally started).

---Inspect if the water in the liquid storage tank is sufficient.

---The conduit is correctly connected, and it is in good condition.

8.1.2 Sample Preparation and Startup Steps:

---Start the computer.

---Turn on the switch on the left panel of DW-DI1500 device, so that the device starts to be initialized.



---Start the software.

Importance: After the software is started, it will take about 1 minute to initialize the key parts.

If the initialization is still not ready within 5 minutes, please check the line connection of the device, and refer to the Section X Fault Maintenance.

8.2 Off-line Mode

The off-line test is to analyze the sample based on the added sample management and method management.


8.2.1 Station Startup:



On the main interface of the software, click -Start the communication. Then, the software enters the station management. Click the station required to be started: right button - operation mode - off-line, right button - start this station.

Also click the station required to be started: right button - start this station. On the station interface, change the (on-line mode)/ (off-line mode) by using the right button.

8.2.2 Sample Addition

Click the sample management (refer to the Figure 8-1) ---  enter the sample addition

(refer to the Figure 8-2).

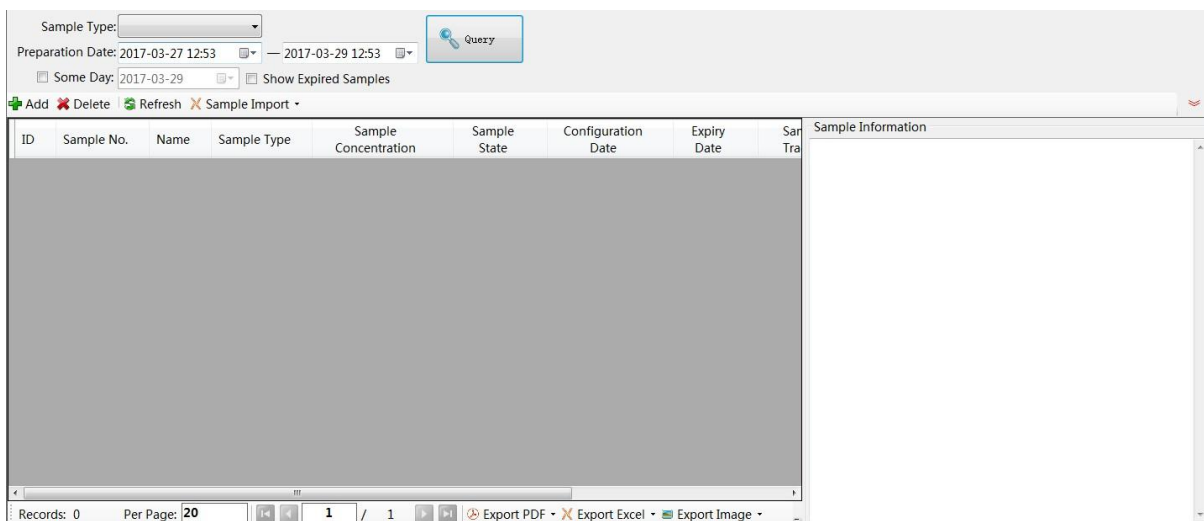


Figure 8-1

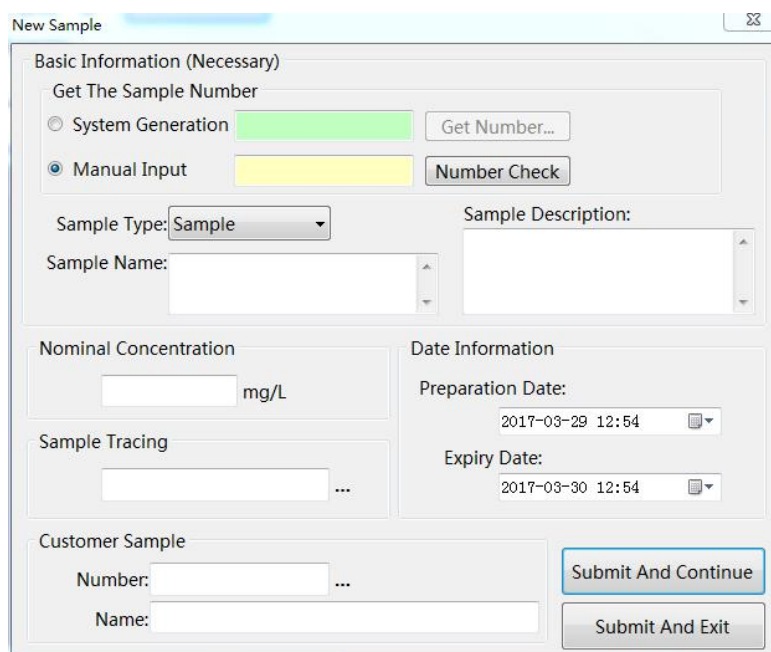


Figure 8-2

Input the basic information of the sample according to the tips.

(* After the sample number is manually input, please check the number, so as to avoid that the number is repetitive to cause the input information dislocation of the sample.)

Sample Type: Sample, standard sample and blank sample. * The nominal concentration must be indicated for the standard sample.

Sample Tracking: Track the existing sample, and show the related information in the sample information.

Click -View the sample according to the condition. Double click to add the

information of the sample tracked.

Client Number: Carry out the management for client samples; reflect the client number and client name in the sample information.

Click -View the client information according to the condition. Double click to add the client information.

8.2.2.1 Batch Import of the Sample

Enter the sample management interface (refer to the Figure 8-1). Click —Sample import in the toolbar.

—Click -Obtain the template.

—Load the sample import template.

-- Open the sample import template. Input the sample information and save the EXCEL table. *

indicates that the content must be input.

Serial Number	Import the serial number of the sample.
Sample Number	Do not input the content. The system will automatically generate the number by default. Or manually input the sample number. * If the number is manually input, please confirm that the number which is manually input is not repetitive.
Sample Type	Select the standard sample/sample/blank sample *
Sample Concentration	The nominal concentration must be input for the standard sample *
Sample Description	Note information of the sample *
Preparation Date	The date exceeding the current software time cannot be input * (The format is year-month-day, e.g. 2016/08/12)
Effective Date	The effective date cannot be earlier than the preparation date * (The format is year-month-day, e.g. 2016/08/12)

—Return to the software interface and click -Sample import.

—Click -Batch import.

—Select the edited -Sample import template.

—Import to the database to complete the batch import of the sample data.

ID	Sample Number	Sample Type	Sample Name	Sample Description	Sample Concentration (mg/L)	Sampling Date	Expiry Date
0		Standard Sample	123456	321	0.1	2017/3/29	2017/3/30
0		Standard Sample	123457	321	0.3	2017/3/29	2017/3/31
-1			123463				

Notice: After the database is imported, the serial number column will show the import information result: 0 successful import; -1 sample information error (please check the sample information, for example, standard sample’s nominal concentration and preparation date); -2 sample number repetition (please recheck the sample number).

8.2.3 Sample Information Management (Only the administrator is authorized.)

When there is the sample information input error, select the created sample, and click by using the right button to carry out the sample change: sample name/sample concentration/sample tracking/client presenting the sample; also select the sample, and click by using the right button to delete the sample. * **Only the sample which is not loaded may be deleted.**

8.2.4 Method Addition

Click the method management--- Add enter the new-added test method information.

Basic Information

Test Method: Sample Test

Test Item: TOC

Flushing Time: 1 Minutes

Test Times: 6

Blank Test

Display report after completion

Method Name: [Text Field]

Remarks : [Text Field]

Exception Handling

Out Of Range: No alarm

Threshold Setting(0--No Request)

RSD: 5.0 %

Zero Calibration: 0

Test Calibration: Coefficient ± 0.0

Verification Test: ± 0.0 %

System Suitability: ± 0.00

Working Curve: R 0.000

Flush: TOC Default 0.000 mg/L

Association Test

Add Delete Clear Down Up Save

No	Sample Number	Sample Na...	Nominal ...	Sample Information

Figure 8-4

According to the tips, input the method information and test exception treatment information.

Test Method	Report Treatment
Sample Test	The system will automatically calculate the sample's average value and RSD, and the related information will be shown in the test report.
Test Calibration	After test completion, automatically calculate the calibration value. No test report is generated.
Validation Test	The system will automatically calculate the sample's average value, indication error and RSD, and the related information will be shown in the test report.
System Applicability Test	The system will automatically calculate the sample's average value, RSD and response efficiency.
Operation Curve Plotting	The system will automatically calculate the sample's average value, RSD and operation curve plotting result, and no test report is generated.
System Washing	Wash the device: When the related value reaches below the TOC preset value, the system will automatically stop washing, and no test report is generated.

--Test exception treatment: When the related value exceeds the set value range of threshold values, the user may select that the device doesn't give an alarm, but it can only carry out the alarm output.

--Washing Time: Every time, before the test method is carried out, and after the sample is changed, the system will automatically wash the pipe. The washing data will not be included in the result.

Importance: As the internal pipe of the device is very long, in order to avoid that the pipe is not cleanly washed, please set the washing time of more than 8 minutes.

---Number of times for the test: For the number of times for sample test, the minimum number of times for the test is 3.

---Click -Add of -Associated test to enter the sample management.

---According to the condition, query the edited sample, press and hold the Shift key on the keyboard, continuously select more than 1 sample information item by using the left mouse button. Click by using the right button and select -Import to the test, so that the related information is imported to the -Test import column on the right side of the interface.

Or press and hold the Ctrl key, select more than 1 sample information item by using the left mouse button. Click by using the right button and select -Import to the test, so that the related

information is imported to the -Test import column on the right side of the interface.

---After the sample addition is completed, click —Import to the test of —Test import, so that the new-added test information is added to the method.

***In the “Test Import” column, the user may carry out the management for edited samples: delete/empty the samples in the “Test Import” column.**

---After —Associated test is completed, the user may change the current sample sequence. Move up/move down/empty the list.

---After the method creation is completed, save the method to complete the edition work of the test method. Enter -Method management, and click -Refreshing.

8.2.5 Test Method Change

When there is the test method information input error, the user may enter —Method management to change the edited test method.

8.2.5.1 Click and select the test method required to be changed. Select -Change the method parameter and method note information by using the right button.

*** The user may change the method parameter only when the method status is “Not loaded”.**

*** Change the associated test item: The user may change the associated test item only when the method status is “Not loaded”.**

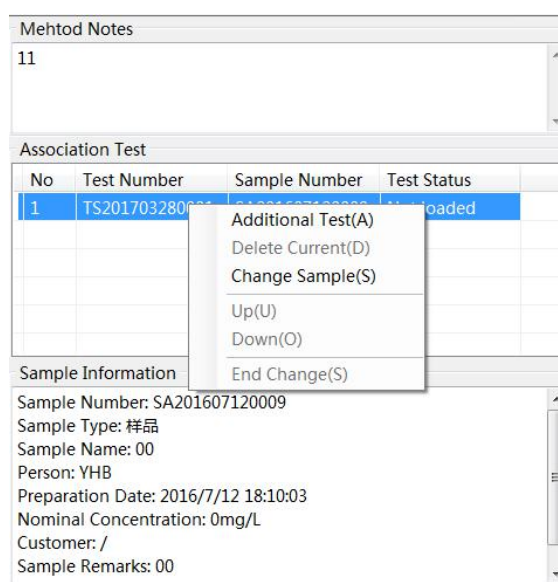


Figure 8-5

8.2.5.2 Change the Associated Test Item

Select the method required to be changed by using the left button. In the associated test item on the right side of the interface, click the sample test information required to be changed.

Click by using the right button.


- Add the test: Add the test sample: The user may add the related information to the added sample or add a new sample.
- Delete the test: Delete the selected test sample.
- Change the sample: Change the selected test sample: The user may replace the sample required to be changed with the added sample or new-added sample .
- Move up/move down: Edit the test sample sequence.


After the change is completed, click —Finish the change to complete the related operation.


8.2.6 Start the Test

After the method edition is completed, on the off-line mode interface (refer to the Figure 7-17), click in the blank of the method list by using the right button – load the method — double click the test method required to be loaded/select the test method required to be loaded and click –OK or click —Add (the steps to add a new test method refer to the Section 8.3.2/8.3.4).

In the method list, the user may carry out the management for the loaded method information: delete the selected method/empty the method list/add a new method.


The user may load more than 1 method, and click the Start Button  to start the test after the user determines that the loading procedure is completed.

 Suspend: Suspend.

 Stop: Stop the current test method and empty the method list. Change the method status –Not loaded→Testing.

*** After the test method is suspended / stopped, when the current uncompleted test method is restarted, the system will wash the pipe again and test the uncompleted sample.**

After the test method is completed, the system will automatically pop up the analysis report conclusion. The method status will be changed to be **completed**. In the method management, the user may query the completed test method report (refer to the Section 8.2.7).

After the operation is completed, please close the station: click the upper right corner  of the station interface, and then close the software.

8.2.7 Report Query

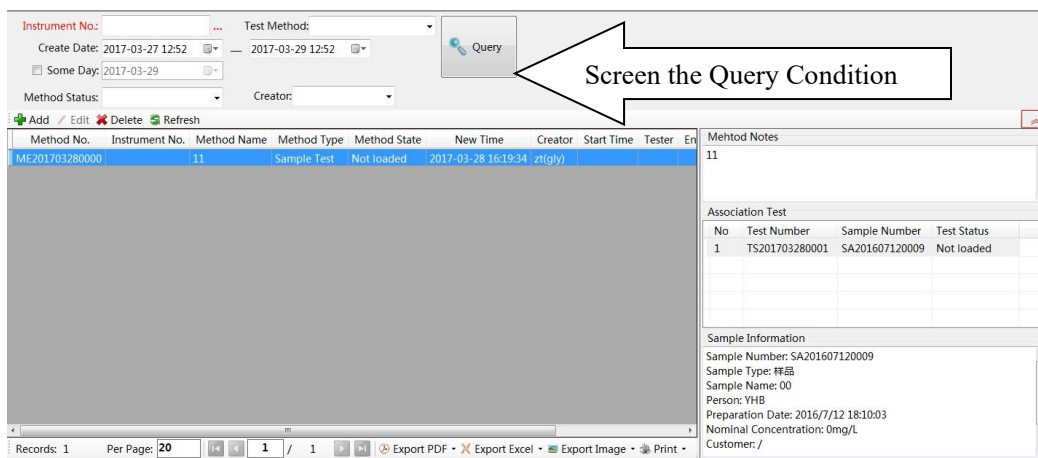



Figure 8-6

Click —Method management| → query the keyword (the user may choose more than one option):
input the device number, test method, creation date/a certain day, method status, creation personnel
→ click the query → select the test method by using the left button → click by using the right
button → view the report (the user may view/print the report only for the completed test method)

* Click the pull-down option  on the right side of the interface, so as to screen more query conditions.

In the sample test report preview,

Export the PDF: The user may select to export the PDF (the content of the report cannot be modified).

Export the picture: The user may select to export the picture (.JPG) format (the content of the report cannot be modified).

Print: The user may select to print the test report.

Importance: When the uncompleted method information is viewed, please do not input the device number. The user may select “Not loaded” in the method status.

Test method status:

Not loaded: Test method which is not loaded

Waiting: Test method which prepares to wait for the test

Testing: Test method which is carrying out the test

Completed: Test method which is completed

8.2.8 Test Method Data Query

Single completed data view and printing in the test method




---Click the data view **Data**

---Select the test mode: Off-line (off-line test data).

---Select the device number: Click ----|| to select the device number required to be queried.

---Select the test date: Select the data of the certain time or day required to be queried.

---Click the pull-down option  on the right side of the interface and select the test personnel: query the test data of different users (only the administrator is authorized).

Input the related conditions required to be searched. Click Query or press the Enter key to show the single test data in the test method.

--- Click by using the left button to select the single sample information required to be queried. Click by using the right button: view the report/add the note information/view the sample information.

View the report: Enter the report preview: select to export the PDF/picture (the content cannot be modified) or print the current report.

Add the note information: Add the note information to the test information

View the sample information: View the basic information of the sample.

8.3 On-line Mode

8.3.1 Start the Station:


---After entering the software, start the communication to enter the station management. Click the station required to be started: right button – operation mode – on-line; right button – start this station.

---Or select the station: right button – start this station. On the station interface, change the (on-line mode) / (off-line mode) by using the right button.

8.3.2 Start the Test:

After entering the station, click the start button . Click  to suspend the test. Click  to stop the current test.


8.3.3 On-line Data Query

---Click the data view  Methods

---Select the test mode: On-line (on-line test data)

---Device Number: Click ----|| to select the device number required to be queried.

--- Select the test date: Select the data of the certain time or day required to be queried.

--- Click the pull-down option  on the right side of the interfacem and select the test personnel: query the test data of different users (only the adiminstrator is authorized).

Input the related conditions required to be searched. Click Query or press the Enter key to display the data, and show the line chart.

Display per page: The user may select the number of data record items of the current page.

Export the PDF: The user may select to export the PDF of the current page or all pages (the content of the report cannot be modified).

Export the Excel: The user may select to export the Excel format of the current page or all pages.

Export the picture: The user may select to export the picture (.JPG) format of the current page or all pages (the content of the report cannot be modified).

Print: The user may select to print the data of the current page or all pages.

8.4 Parameter Setting

8.4.1 Pipe Washing

The test calibration and user curve plotting process are required to be carried out in the off-line status. It is required to carry out the test calibration, before the device is used, or when the calibration period expires and the data are not stable.

The purpose of pipe washing is to remove the residues in the pipe, as well as bubbles arisen from sample liquid flowing in the pipe. The pipe must be washed before the device is used. In general, the pipe shall be washed for 30-60 minutes. The pipe must be washed with high-purity water for over 6 hours, if the device has not been used for a long time (more than 10 days), or the device was used to test the water sample with high TOC value or high conductivity.

8.4.2 Device Calibration

8.4.2.1 Calibration Purpose

Carry out the test calibration before the initial operation and regular calibration. In order to improve the test accuracy of the device, reduce the span drift.

8.4.2.2 Calibration Period

The calibration period may be determined according to the specific operation condition. It is recommended to carry out the calibration once every 6 months. When the large data deviation occurs, after the other influence factor is eliminated, it is required to carry out the calibration again.

8.4.2.3 Calibration Solution

Test calibration water: The test calibration water adopts the high-purity water (water for the test) with the total organic carbon of less than 0.1mg/L and conductivity of below 1.0 μ S/cm (25 $^{\circ}$ C), as the test calibration water.

Attentions: The high-purity water cannot be placed in the open-mouthed beaker to carry out the test. The contact between the liquid and air shall be as small as possible. If the low-concentration high-purity water is exposed in the air for over 1 hour, it is very easy to be polluted by the air so that the test result is not accurate.

Test calibration solution: The test calibration adopts 0.75mg/L sucrose calibration solution (the carbon content of the sample is 0.75mg/L). The solvent used to prepare the calibration solution is the test calibration water.

According to the Section 8.3, input the sample information (the test calibration water is the blank sample, and the test calibration solution is the standard sample) and test method (test calibration), and start the test. After the completion of the test, the calibration coefficient will be automatically calculated, and the system will remind if the original calibration coefficient is replaced.

8.4.3 User Curve Plotting

According to the user demands, the user may individually use the standard sucrose solution to plot the TOC operation curve in the measuring range (0-1.500mg/L).of the TOC device.

Select the (20%, 50%, 80%, 100%)sucrose solution and standard solution background water used to make the TOC operation curve measuring range, as the concentration point of the TOC operation curve.

Attentions: When the concentration of the standard sucrose solution is very low, the TOC content in the solution will change with time. Therefore, the reagent and zero water shall be prepared on the day of being used. In order to avoid that the solution is polluted by

the air, it is better to reduce the contact area between the solution and air.

- 1) Standard solution background water: This process adopts the water without carbonic acid. It is obtained after the high-purity water (water for the test) with the total organic carbon of less than 0.1mg/L and conductivity of below 1.0 μ S/cm (25 °C) is boiled and the carbonic acid is removed. The water without carbonic acid is used as the background water to prepare the standard solution.
- 2) Standard sucrose solution: Precisely weigh 0.1489g sucrose which is dried to constant weight at 105°C, add the water for the TOC test for dissolution in a 500mL volumetric flask, and obtain 125mg/L (the carbon content is 125mg/L) sucrose original solution. Dilute the sucrose original solution with the standard solution background water to the designated scale line.

8.4.3.1 Start the Test

After entering the software, select the off-line mode. According to the **Section 8.3**, create a new test method --- operation curve plotting. Arrange the sample number based on the standard solution background water, as well as the standard sucrose solution sequence from low concentration to high concentration.

Load the method, and start the test. After the completion of the test, the system will automatically calculate the result (refer to the Figure 8-5 Operation Curve).

----Input the linear name and note information, and click —Save!.

----Enter the station which completes the operation curve. Set the operation curve (refer to the Section 7.3.2). Restart the current station. The user operation curve is finished to be plotted.

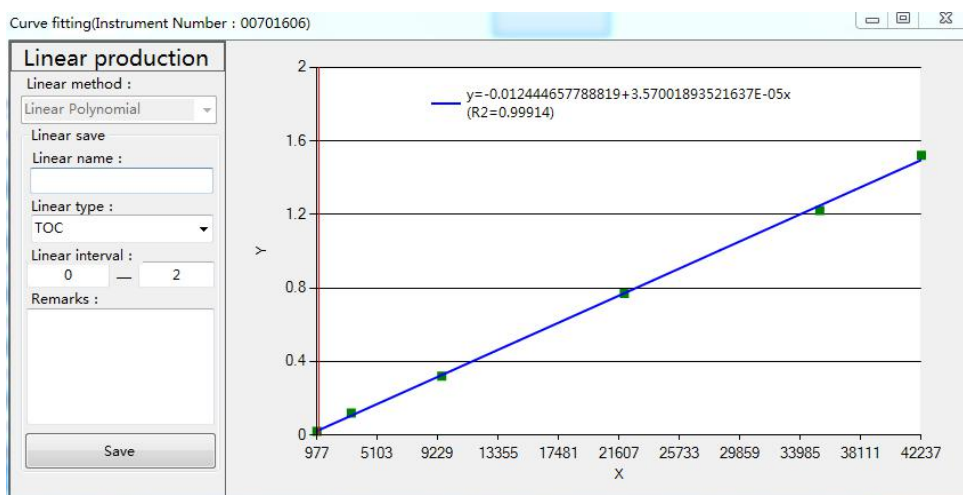


Figure 8-7

8.4.3.2 Change the User Operation Curve and System Operation Curve

The device's factory default data processing procedure adopts the system operation curve to carry out the calculation. According to the user demands, the user may change the user operation curve (the plotting method refers to the Section 8.5.3) and system operation curve.

Enter the -Operation curvell in the setup (refer to the Section 7.3.2) – click the system operation curve/user operation curve – click -Changell --- restart the station to complete the such change.

8.5 On-line Connection of the Automatic Sampler (Optional Configuration)

After the device is connected to the automatic sampler, click in the blank of the graphic area by using the right button to show the sidebar, and enter the setup (refer to the Section 7.3.2 Sidebar).

---Enter the off-line setting. Tick off the items of preparing the automatic sampler and starting the automatic sampler, complete the change and restart the station. The software will automatically identify the automatic sampler.

After starting the automatic sampler, enter the off-line mode:

(Refer to the operation manual of the automatic sampler)

---ASE-70/ASE-70: According to the following table, complete the parameter setting. Then, after the off-line method is loaded, wait for the automatic sampler initialization. On the automatic sampler, click the operation, enter the software and start the test.

Automatic Sampler Model	Setting steps (Carry out the operation on the automatic sampler. The detailed information refers to the operation manual of the automatic sampler.)
ASE-70	Run the sampling operation – Select the on-line status and choose the Mode II as the device mode
ASE-18C	Select the setting – Select the sampling mode: run the mode – choose the Mode II as the on-line mode

IX. Maintenance

9.1 Replacement Period of Consumable Goods

The UV lamp and peristaltic pump pipe may be purchased from the company. The UV lamp is the 185nm & 254nm dual-wavelength UV lamp. The peristaltic pump pipe is the special wear-resisting pump pipe with high quality and excellent stability. The replacement period of consumable goods is shown in the following table.

Part Name	Replacement Period
UV Lamp	5,000 hours
Peristaltic Pump Pipe	180 days

9.2 Replace the UV Lamp

The UV lamp's intensity, especially the short-wavelength UV ray's irradiance may be reduced with the increase of operation time. Therefore, it is required to regularly carry out the replacement. The company suggests that the UV lamp should be replaced after it is operated for 5,000 hours.

When the UV lamp is replaced, it is required to wear the special gloves, so as to avoid leaving fingerprints on the surfaces of the UV lamp tube & spiral quartz tube. The fingerprints may absorb the UV ray and reduce the oxidation property of the oxidation reactor. In addition, carefully carry out the operation, and avoid destroying the lamp tube and its surrounding spiral quartz tube.

Note: Ethyl alcohol may be used to remove fingerprints before the new UV lamp tube is installed.

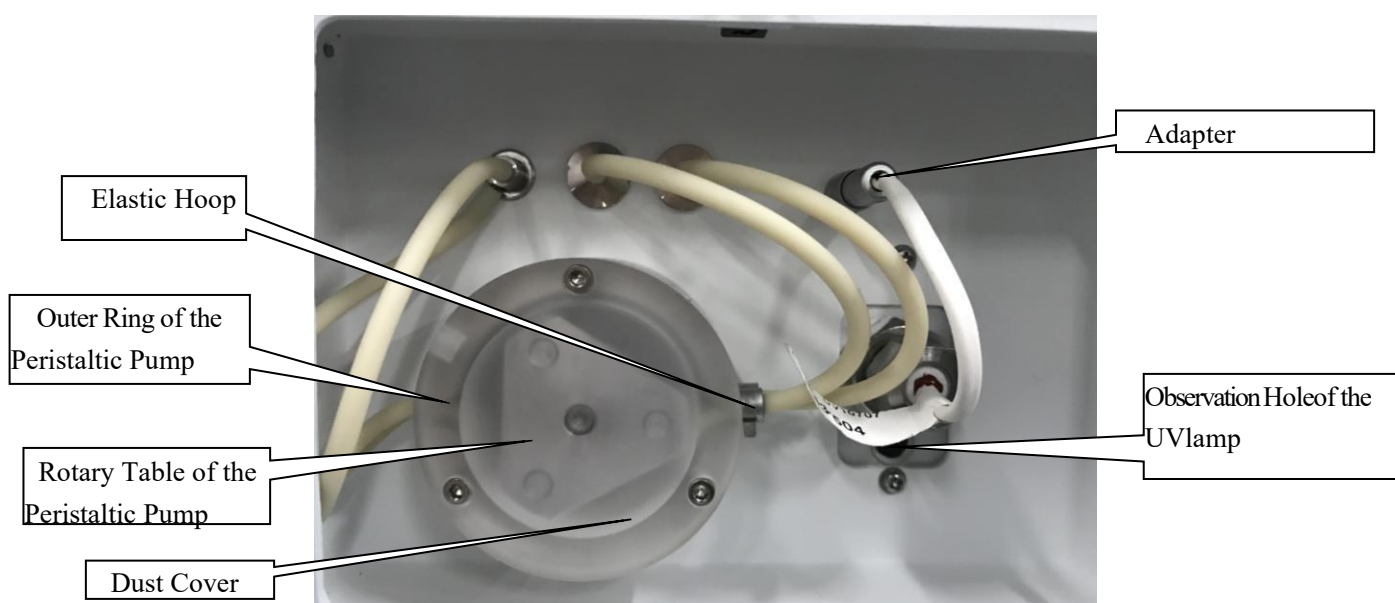


Figure 9-1

9.3 Replace the Peristaltic Pump Pipe

The peristaltic pump pipe may be worn and aged after the long-term operation. It is suggested that the pump pipe should be replaced after being used for 180 days.

Specific Operation to Replace the Pump Pipe:

- ① Turn off the main power switch, and take out the power cord.
- ② Open the front cover plate of the device. Refer to the Figure 9-1 Replacement Diagram for Parts.
- ③ Unscrew three inner hexagon screws of the peristaltic pump dust cover, take down the dust cover, and pull out the pump pipe from the rotary table of the peristaltic pump.
- ④ The both ends of the pump pipe are pulled out from the connector. Take down the elastic hoop, so that two pump pipes may be removed as a whole.
- ⑤ Put the middle part of two new pump pipes into the rotary table of the peristaltic pump.
- ⑥ One end of the pump pipe is connected to the water outlet of the conductivity sensor, and the other end is connected to the liquid waste pipe.
- ⑦ Install the peristaltic pump dust cover and screw down the inner hexagon screws. Install a good front cover
- ⑧ Start the software, enter the station of the peristaltic pump pipe which has been replaced, and click the peristaltic pump pipe status bar by using the right mouse button, in order to reset the operation time of the peristaltic pump pipe. * **The reset needs the reset code. Please contact the manufacturer to obtain the reset code (resetting the operation time can be only carried out by the administrator).**

X. Fault Maintenance

This section introduces a series of potential problems which may be corrected by the user. If the user cannot solve the current problems according to the following fault information table, please inform Drawell after-sales maintenance department of details.

Device Faults	Phenomena	Solutions
The drain pipe cannot discharge the liquid	When the device is operated, observe that the peristaltic pump is running, but no liquid is discharged from the drain pipe.	Pipe blockage: The tiny particles obstruct the pipe. The user may pull out the peristaltic pump pipe (refer to the Figure 9-1), and use the disposable syringe to extract the particles from the pipe, or wash the pipe with the purified water for a long time.
		If the liquid cannot be drawn as the peristaltic pump is damaged, please contact the manufacturer for replacement of the peristaltic pump pipe, so as to solve the problem.
The test data are not stable. There is a large fluctuation.	The data exceed the threshold value.	Change the threshold value setting range (refer to the Section 7.3.2).
	The test sample contains lots of gases.	Carry out the degassing treatment for the test sample.
	The air exists in the sample inlet pipe.	Check if the air exists in the sample inlet pipe. Insert the sample inlet pipe below the liquid level.
	Check if the sample inlet pipe and waste discharge pipe have the pressing mark.	Replace the sample inlet pipe & waste discharge pipe with the pressing mark.
	Recalibrate the device.	(Refer to the Section 8.5.2)Recalibrate the device.
The TOC value is abnormal	The TOC value is the negative value or the TOC value has no change.	Observe if the drain pipe normally discharges the liquid. When no liquid is discharged from the drain pipe, the user may pull out the peristaltic pump pipe (refer to the Figure 9-1), and use the disposable syringe to extract the particles from the pipe, or wash the pipe with the purified water for a long time.
	The UV lamp is damaged/the replacement period expires.	Contact the manufacture for replacement of the UV lamp.
	The IC response value exceeds the range.	The sample conductivity exceeds the range.
The UV lamp is off.	The software displays that the UV lamp is normal, but, on the device, the UV lamp is off or the UV lamp gives an alarm.	Check if the control line of the inverter is normally connected. Pull out and then insert again (refer to the Figure 9-1).
		Contact the manufacturer for replacement of the UV lamp.
		Check if the UV lamp connector is loose. Pull out and then insert again (refer to the Figure 9-1).

The peristaltic pump is not operated.	The software displays that the peristaltic pump is normally operated, but, on the device, the peristaltic pump is not operated.	Open the dust cover of the peristaltic pump. Check if the peristaltic pump is rusty and jammed.
		Contact the manufacturer.
The on-line connection of the device is abnormal.	The station is not connected.	Check if the data line is correctly connected.
		Check if the serial port setting is correct (refer to the Section 7.14).
The database connection is abnormal.	The database connection is abnormal.	Restart the computer with the database.
The on-line data cannot be viewed.	In the data view, the on-line data are lost.	In the data view, click —Display the deleted data.
		On the station interface, reset the threshold value setting (refer to the Section 7.3.2).
The part is not successfully initialized.	After the station is started, the part status is not successfully initialized, and the operation time is not displayed.	Check if the device is normally connected.
		Restart the station.
		Refresh the part information. Refer to the Section 7.3.2.
The bottle position of the sampler is abnormal.	Device alarm: The bottle position of the sampler is abnormal.	Check that the sample bottle of the automatic sampler is correctly placed, and there is no bottle position between two bottles.