



TOC ANALYZER

BANA-602

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1. Preface

Please read this manual carefully before using this product. Thank you for purchasing this product. This operation manual is the user manual for the TOC Conductivity Meter Instruction, which explains the standalone operation, software operation, data management, maintenance, and repair methods of the TOC Conductivity Meter Instruction. It is suitable for users with a basic knowledge of chemistry. Please read this manual carefully before operation and use the product correctly. Please keep this manual for future reference.

2. Important Information

1. If there is a change in the user or usage location, please hand over this manual to the subsequent user.
2. If this manual or the warning labels on the product are lost or damaged, please contact our company immediately.
3. To ensure safe operation, please read the "Safety Instructions" carefully before using this product.
4. After unpacking, please check if the provided parts model and quantity are correct. If they are incorrect, please contact our company immediately.
5. To ensure safe operation, please entrust our company with the installation, commissioning, or reinstallation of the instrument after moving.
6. If the instrument has not been used for a long time, confirm that the sample pump, UV lamp, etc., are working properly after powering on.

3. Warranty

Warranty Period: The warranty period is determined according to the terms of the contract signed with our company.

Warranty Coverage: If any malfunction occurs due to manufacturing defects, the manufacturer will provide free repair or replacement of parts within the warranty period.

The warranty does not cover the following:

- (1) Improper operation.
- (2) Unauthorized unpacking or failure to follow the unpacking instructions, resulting in damage or loss of parts.
- (3) Repairs or modifications performed by anyone other than our company or companies designated by us.
- (4) Use with hardware or software not specified by our company.
- (5) Failures caused by computer viruses, and damage to software and data, including basic software.
- (6) Failures and damage to software and data, including basic software, caused by power outages or sudden voltage drops.
- (7) Failures and damage to software and data, including basic software, caused by improper shutdown.
- (8) Failures not caused by the product itself.
- (9) Failures caused by the use of the product in harsh environments such as high temperature, high

humidity, corrosive gases, or vibrations.

(10) Failures caused by uncontrollable accidents such as fire, earthquake, other natural disasters, radioactive material and hazardous substance contamination, and war riots and crimes.

(11) Failures caused during self-movement or transportation of the product after installation.

(12) Consumables or parts equivalent to consumables.

4. Safety Instructions

Installation Location Precautions

The TOC Conductivity Meter Instruction weighs 13 kg. Consider the total weight when used in conjunction with a computer and auto sampler during installation. The lab bench used for installing this instrument should be sturdy enough to support the total system weight. The bench should be level, stable, and at least 600 mm deep, otherwise, the instrument may tip over or fall off the bench.

Installation Precautions

1. Take measures to prevent the instrument from falling during an earthquake or other disasters, as strong vibrations may cause the instrument to fall and get damaged.
2. This instrument can only be connected to a power source with the specified voltage; otherwise, it may cause fire or electric shock. Check if the power voltage is stable and the current capacity is sufficient for all system components. Otherwise, the instrument cannot work at its rated performance.
3. The instrument should be grounded to prevent electric shock caused by accidents or electric leakage. Grounding is also important for the stable operation of the instrument.
4. Do not place heavy objects on the power cable, keep the power cable away from any heat sources, and do not modify, excessively bend, or stretch the power cable, as this may damage the power cable and cause fire, electric shock, or malfunction. If the power cable is damaged, contact our company's after-sales engineer immediately.

Operational Precautions

1. Always wear protective gloves and goggles when handling solvents and samples. Solvent splashes in the eyes may cause blindness. If solvent splashes into the eyes, rinse immediately with plenty of water and seek medical attention.
2. Do not use flammable sprays (such as hair spray, insecticide, etc.) near the instrument, as they can ignite and cause fire.

Instrument Inspection, Maintenance, Adjustment, and Care Precautions:

1. Before inspecting, maintaining, or replacing parts, turn off the power to prevent electric shock or short-circuit accidents.
2. If there is dust on the power plug, unplug it from the power outlet and wipe off the dust with a dry cloth. Accumulated dust can cause fire.
3. If water enters the instrument, dry it immediately to prevent rusting. Do not use alcohol or other solvents to clean the instrument as they can cause discoloration of the instrument surface.
4. Dispose of waste liquids properly according to the instructions of the management department.

5. Overview

5.1 Product Introduction

The TOC Conductivity Meter Instruction series Total Organic Carbon (TOC) Analyzer is a high-performance, high-reliability conductivity TOC analyzer independently developed and manufactured by our company. The TOC Conductivity Meter Instruction can detect TOC concentrations in water samples ranging from 1µg/L to 1500µg/L. This product is easy to operate, has low maintenance costs, and requires no chemical reagents.

This product complies with GMP requirements for computerized system validation and meets FDA 21 CFR PART 11 requirements for electronic data integrity, electronic signatures, and audit trails.

5.2 Performance Features

- (1) Utilizes UV photolytic oxidation without the need for catalysts and carrier gases.
- (2) Equipped with a buzzer alarm function that activates when the set upper limit is exceeded, protecting the instrument and preventing operational errors.
- (3) Requires no additional acid reagents, oxidizers, or any gases, thus incurring no extra daily maintenance costs.
- (4) Designed specifically for detecting TOC content in deionized water with concentrations below 1000µg/L.
- (5) Built-in large-capacity memory with a standard capacity of 8GB, with no storage time limitations.
- (6) Fast detection speed, with each detection taking no more than 3 minutes.
- (7) Compact size, lightweight, low energy consumption, and portable.
- (8) Features a 7-inch color touch screen with a user-friendly interface.
- (9) Allows historical records to be queried by detection date, with clear and detailed historical files and data.
- (10) Includes a USB data copy function, allowing all data within a day to be copied based on the date, facilitating data export and backup.
- (11) Supports Bluetooth printing, equipped with a compact Bluetooth printer for easy and fast printing.
- (12) Complies with GMP requirements for computerized system validation and meets FDA 21 CFR PART 11 requirements for electronic data integrity, electronic signatures, and audit trails.

5.3 Measurement Principle

The organic compounds in the sample are oxidized into carbon dioxide under the influence of ultraviolet (UV) light, and the carbon dioxide is measured using conductivity detection technology. The total organic carbon (TOC) concentration is calculated by measuring the total inorganic carbon (TIC) concentration of the unoxidized sample and the total carbon (TC) concentration of the sample after oxidation. The TOC concentration is the difference between the total carbon concentration and the total inorganic carbon concentration: $TOC = TC - TIC$.

UV Lamp Oxidation Principle: The UV lamp emits light at wavelengths of 185 nm and 254 nm, which causes photodecomposition of water.



The hydroxyl radical ($OH^\cdot$) can completely oxidize organic compounds into carbon dioxide.

Organic compounds + OH. $\rightarrow$ CO₂ + H₂O

5.4 Applications

The conductivity TOC analyzer can be used to test the organic carbon content in pure water, deionized water, and water for injection in the pharmaceutical industry. It is used for ultra-pure water TOC detection in the semiconductor industry, power plants, research institutions, laboratories, and more. In the pharmaceutical and biochemical fields, it can be used for cleaning validation to verify cleaning effectiveness. It can also be used for online monitoring of water production systems in the pharmaceutical industry, ultra-pure water preparation systems in the semiconductor industry, wafer process technology, and the deionized water preparation process in power plants.

6. Technical Specifications

6.1 Technical Parameters

Power Supply	(220 $\pm$ 22)V,(50 $\pm$ 1)Hz
Operation Mode	Computer control, Standalone operation
Application	Liquid
Measurement Principle	UV Oxidation
Rated Power (W)	100
Ambient Temperature	5°C - 35°C,temperature variation within $\pm$ 5°C/day
Relative Humidity	$\leq$ 85 %
Detection Range	1-1500 μ g/L
Analysis Time	1min
Total Organic Carbon Indication Error	$\pm$ 5 %
Total Organic Carbon Measurement Repeatability	$\leq$ 3 %
Dimensions	440*220*366mm(Depth*Width*Height)
Weight	13kg

Table 1

6.2 Measuring Principle Diagram

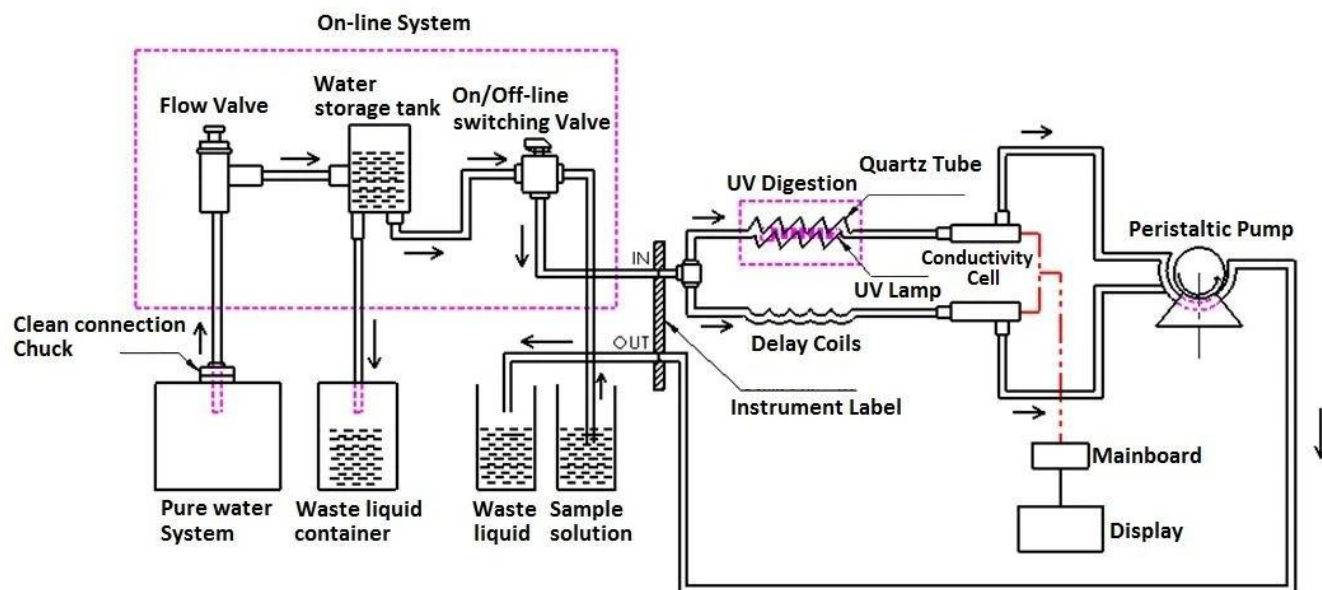


Figure 1

7. Hardware Components

7.1 Front View

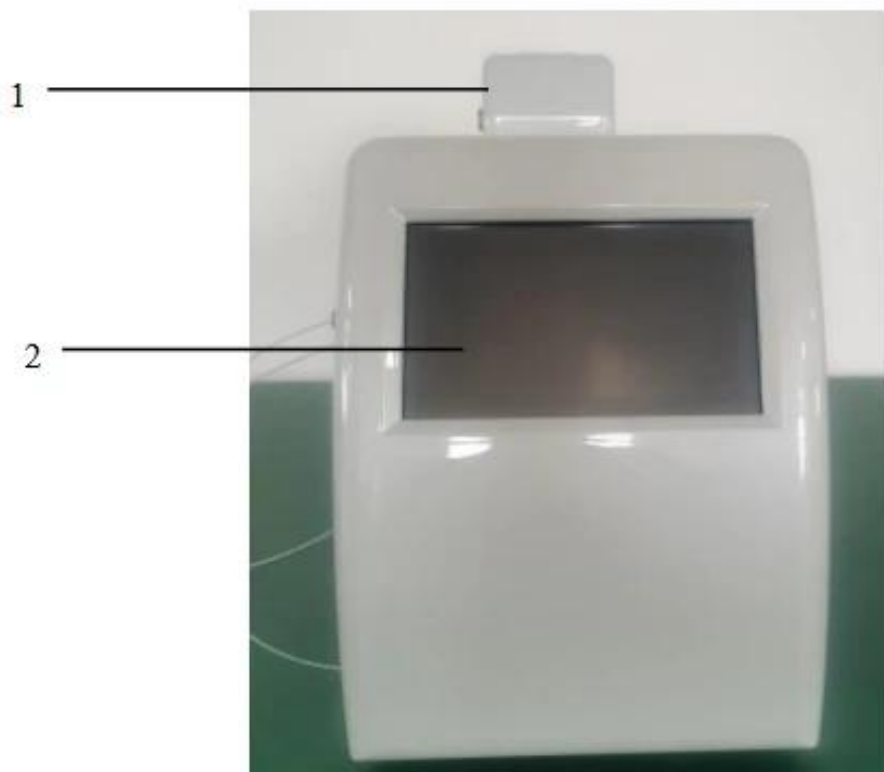


Figure 2

1. Online Module
2. Operation Screen

7.2 Left View



Figure 3

1. Online Sample Inlet
2. Main Unit Sample Inlet
3. Offline Sample Inlet
4. Sample Inlet
5. Waste Outlet

7.3 Right View



Figure 4

1. Online Module
2. USB Port
3. USB Interface

7.4 Rear View

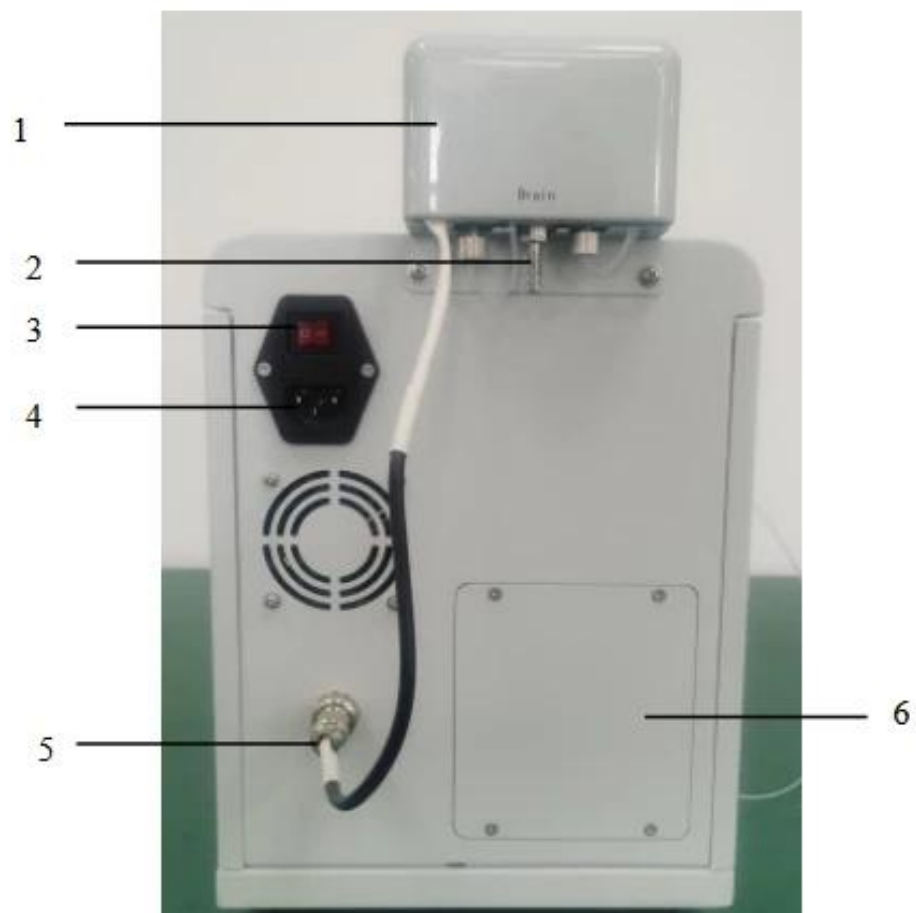


Figure 5

- 1. Online Module
- 2. Drainage Pipe Interface
- 3. Power Switch
- 4. Power Interface
- 5. Online Aviation Socket
- 6. UV Lamp Cover

7.5 Top View

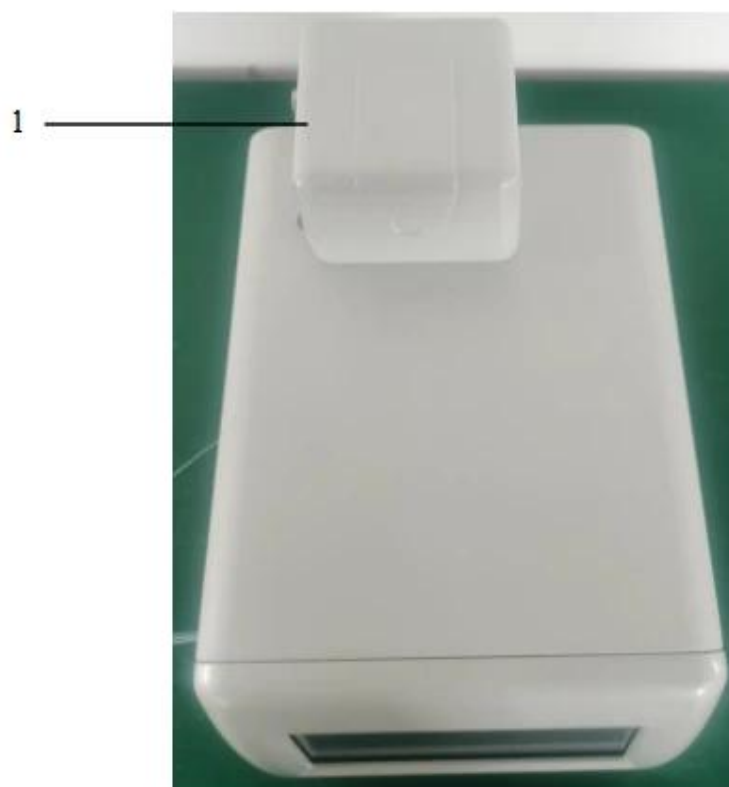


Figure 7
1. Online Module

7.6 Internal Left View

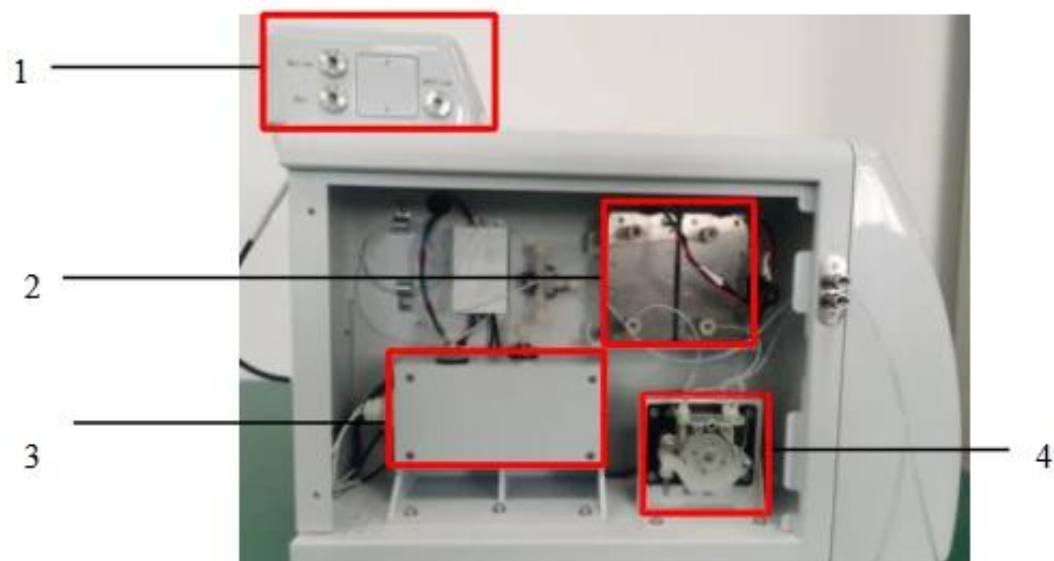


Figure 8
1. Online Module
2. Conductivity Cell
3. UV Lamp Box
4. Peristaltic Pump

8. Installation and Preparation for Testing

8.1 Installation Requirements

8.1.1 Power Requirements

The instrument must have a good grounding line, and the power socket must be a three-pronged socket with good grounding.

Please connect to a stable power source of AC (220±22) V, 50/60 Hz, single-phase with a capacity of 10A or more. If the power voltage exceeds this range, it may severely damage the instrument.

8.1.2 Space Requirements

- (1) Laboratory bench dimensions: length: $\geq 200\text{cm}$, width: $\geq 70\text{cm}$, height: 70cm-80cm. The bench surface should support at least 100kg, be stable without vibration, and be resistant to heat and acids.
- (2) The distance between the back of the instrument and the power socket should be $\leq 150\text{cm}$ for easy connection to the power supply.

8.1.3 Environmental Requirements

- (1) Do not install the instrument near windows or doors to avoid drafts, dust, corrosive gases, and vibrations.
- (2) Keep away from strong electromagnetic field interference.
- (3) Avoid fire hazard areas; some internal components may reach high temperatures and could cause a fire.
- (4) Environmental temperature: 5-35°C.
- (5) Working humidity: 10-80% RH.

8.1.4 Computer Requirements

- (1) Hardware Configuration: CPU: 3GHz or above, Memory: 4G or above, Hard Disk: 500GB or above (at least divided into two partitions).
- (2) External Interface: USB 2.0 or higher
- (3) Operating System: Windows 10 Pro or Enterprise edition.
- (4) Pre-installed Software: PDF reader with PDF printing capabilities.
- (5) Monitor: Resolution 1600*900.

8.1.5 Reagent Requirements

No.	Name	Specifications
1	Pure Water	TOC less than 100µg/L, conductivity less than 1uS/cm (25°C)
2	Sucrose	Standard reagent or superior grade
3	1,4-Benzoquinone	Standard reagent or reference substance

Table 2

8.2 Preparation for Analysis

8.2.1 Solution Preparation

1. Zero Calibration Water

Zero calibration water must use high-purity water containing less than 100µg/L total organic carbon and less than 1uS/cm conductivity (25°C).

Note:

It should be used immediately after preparation, and should not be stored in open beakers or containers. Exposure to air for over an hour can alter the TOC value due to dissolved carbon dioxide.

2. Sucrose Solution (ρTOC=100mg/L)

Accurately weigh 0.2377g of dried, high-purity sucrose and dissolve it in pure water. Transfer to a 1000mL volumetric flask and dilute to the mark with pure water, then mix well. This is the standard stock solution, which can be further diluted to prepare other concentrations as needed.

Note:

Before preparing the standard solution, the sucrose standard must be dried at 105°C (221F) to constant weight.

3. 1,4-Benzoquinone Solution (ρTOC=100mg/L)

Accurately weigh 0.1501g of analytical grade 1,4-benzoquinone and dissolve it in pure water. Transfer to a 1000mL volumetric flask and dilute to the mark with pure water, then mix well. This is the standard stock solution, which can be further diluted to prepare other concentrations as needed.

8.2.2 Calibration Solution Preparation

From the sucrose standard stock solution (ρTOC=100mg/L), prepare calibration solutions of 200µg/L, 500µg/L, and 1000µg/L by stepwise dilution. Use zero calibration water for dilution.

8.2.3 System Suitability Solution Preparation

1. Sucrose Reference Solution (ρTOC=500µg/L)

Prepare a 500µg/L sucrose reference solution by stepwise dilution from the sucrose standard stock solution (ρTOC=100mg/L). Use zero calibration water for dilution.

2. 1,4-Benzoquinone Reference Solution (ρTOC=500µg/L)

Prepare a 500µg/L 1,4-benzoquinone reference solution by stepwise dilution from the 1,4-benzoquinone standard stock solution (ρTOC=100mg/L). Use zero calibration water for dilution.

9. Instrument Installation

9.1 Online Module Installation

Align the online module with the two holes on the back of the instrument and secure it with two mounting screws.



Figure 9

Connect the aviation plug on the online module to the main unit.



Figure 10

Unscrew the stainless steel fitting at the sample inlet on the main unit. Take the 40cm online sample tube from the accessories, connect one end to the sample inlet on the main unit and the other end to the main unit sample inlet on the online module.



Figure 11



Figure 12 (40cm Sample Tube)

Take out the other 300cm online sample tube. Connect one end to the online sample inlet on the online module (Figure 5.5), and the other end to the dedicated online tubing interface. At the same time, connect the Waste liquid drain tube to the drainage pipe interface.

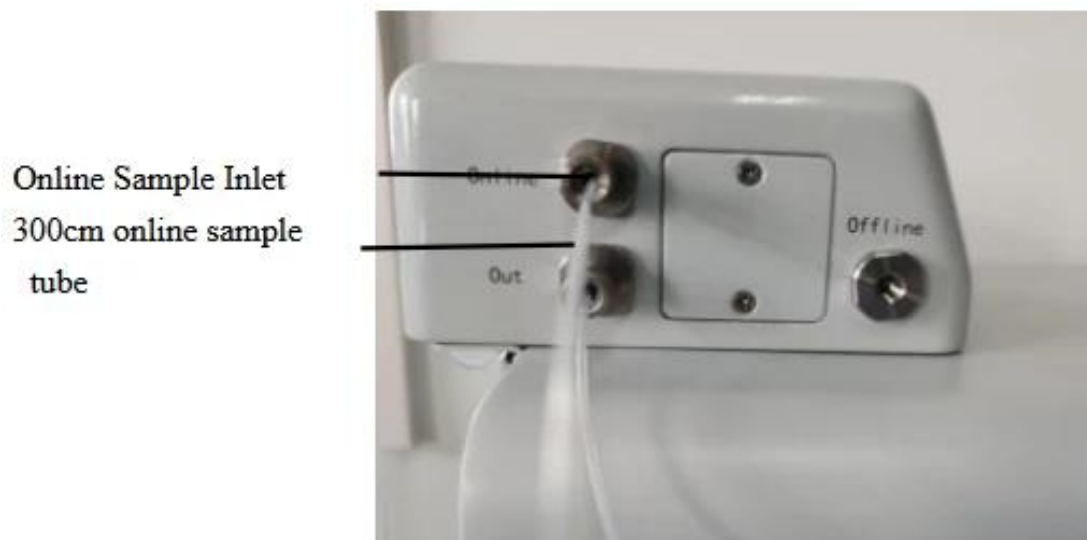


Figure 13

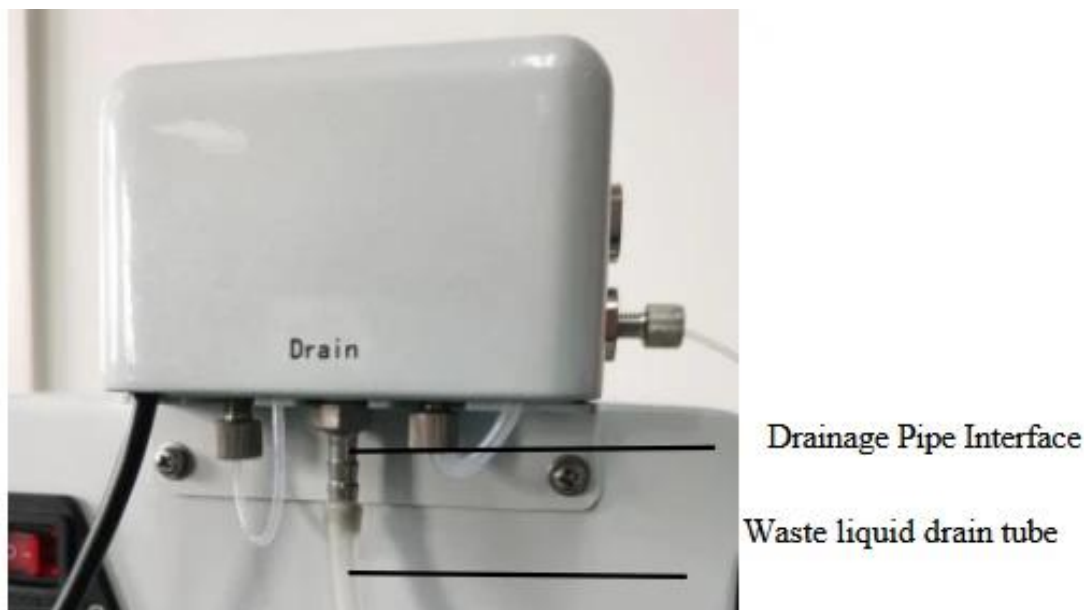


Figure 14

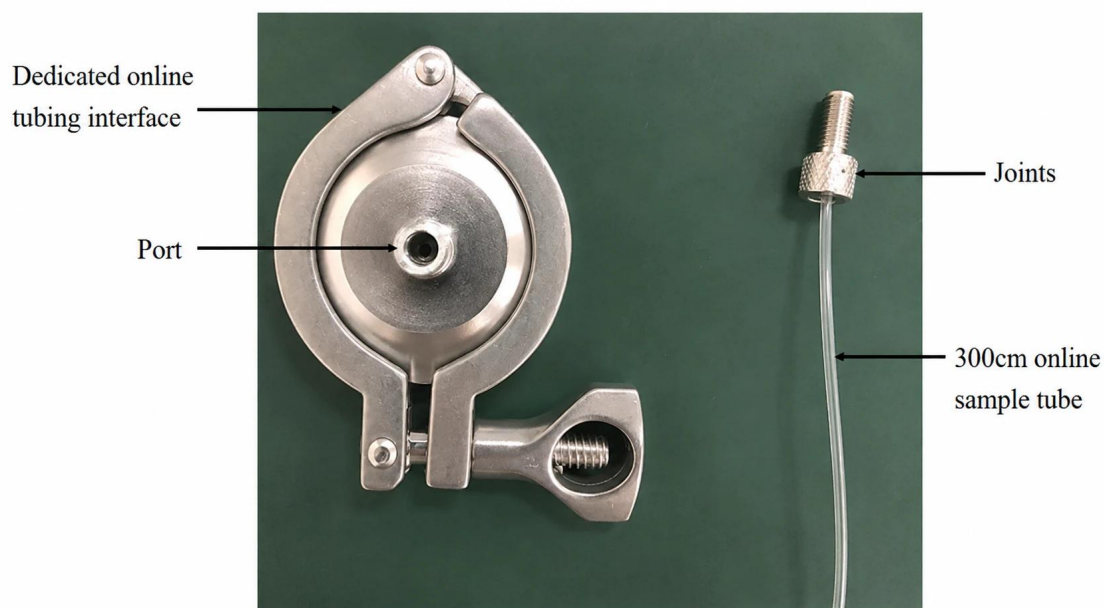


Figure 15

Note:

The online sampling tube of the online detection device should be connected to the water supply tubing of the water purification equipment using the dedicated online tubing interface, which is a standard accessory as shown in (the right side shows the connector). The outer diameter is 50.5mm, and the interface size is 1/4-28 thread. If the interface size of the user's water supply tubing is special, please notify us in advance, and we can provide customized services.

10. Instrument Operation

10.1 Software Operation

10.1.1 Software Installation

Installation Notes:

- (1) The Windows version required for the software to run should be Windows 10. Confirm whether Windows is 32-bit or 64-bit.
- (2) The computer system hard disk should have at least two partitions, typically C and D drives. Install the software folder on the D drive and ensure software operation permissions (can run without administrator rights). If needed, open the software with administrator rights.

Note:

The shipped accessories include a USB drive with the installation software. Since the installation software has an embedded encryption program for use only with this instrument, keep the USB drive safe. Contact our after-sales personnel for reinstallation if the USB drive is lost.

10.1.1.1 USB Communication Driver Installation

1. Open the USB driver installation file from the software installation package (e.g., Windows 64-bit, open). Click "Extract."



Figure 16

2. Click "Next."



Figure 17

3. Select "I accept this agreement" and click "Next."

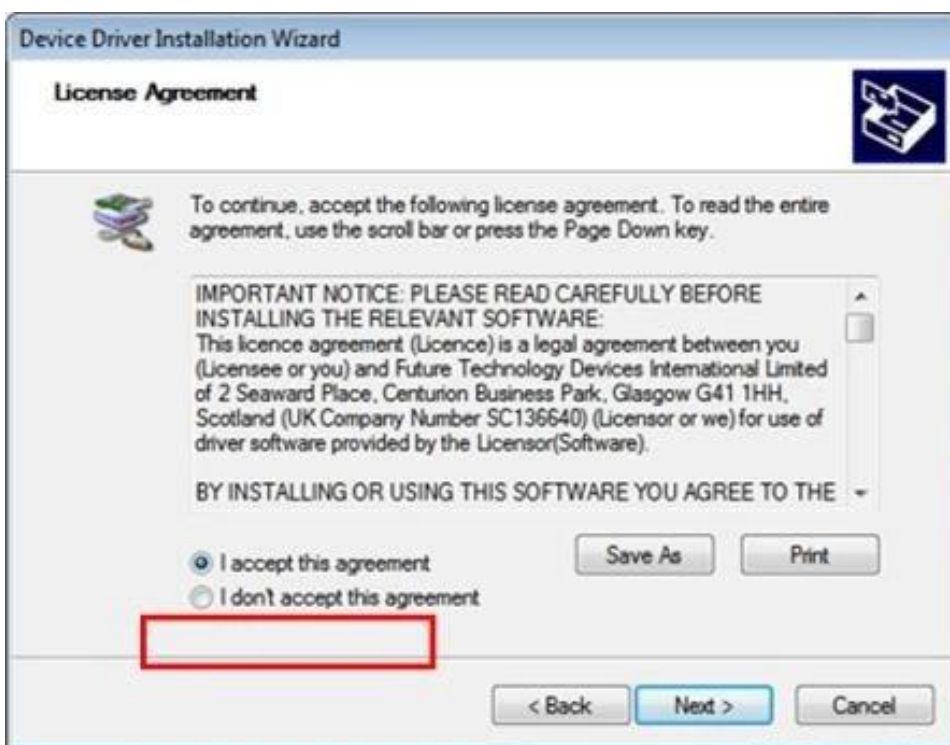


Figure 18

4. Wait for the installation to complete.



Figure 19

10.1.1.2 Software Installation

10.1.1.3

1. Open the installation file from the software package and double-click to open it.

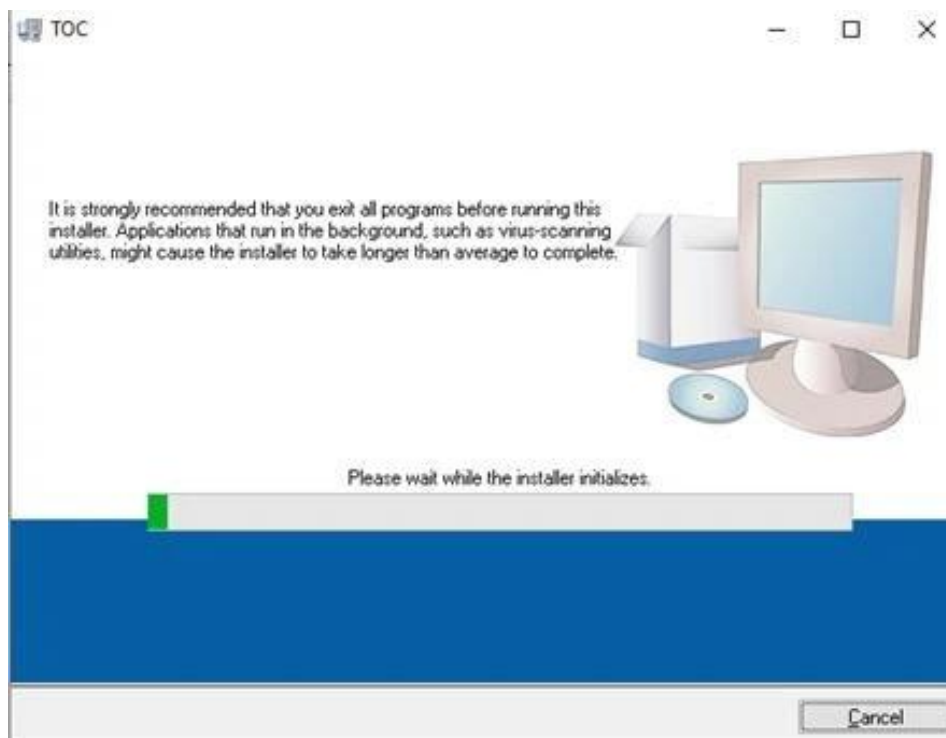


Figure 20

2. The default installation path is the D drive. Set it to a drive with running authorization if needed.

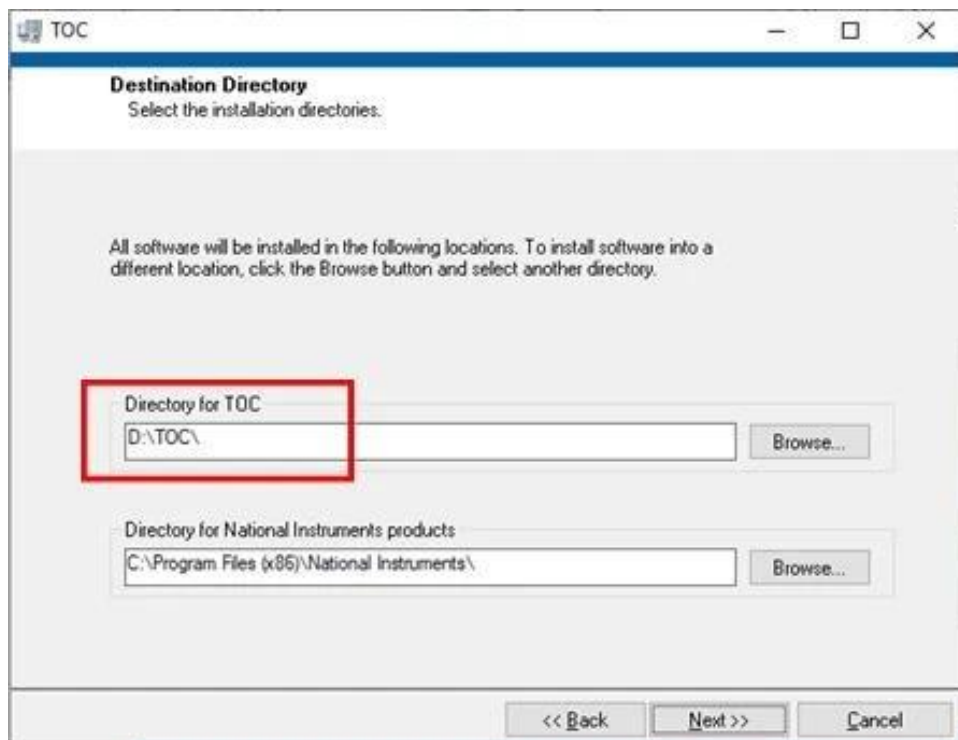


Figure 21

3. Select "I accept the above two license agreements" and click "Next."

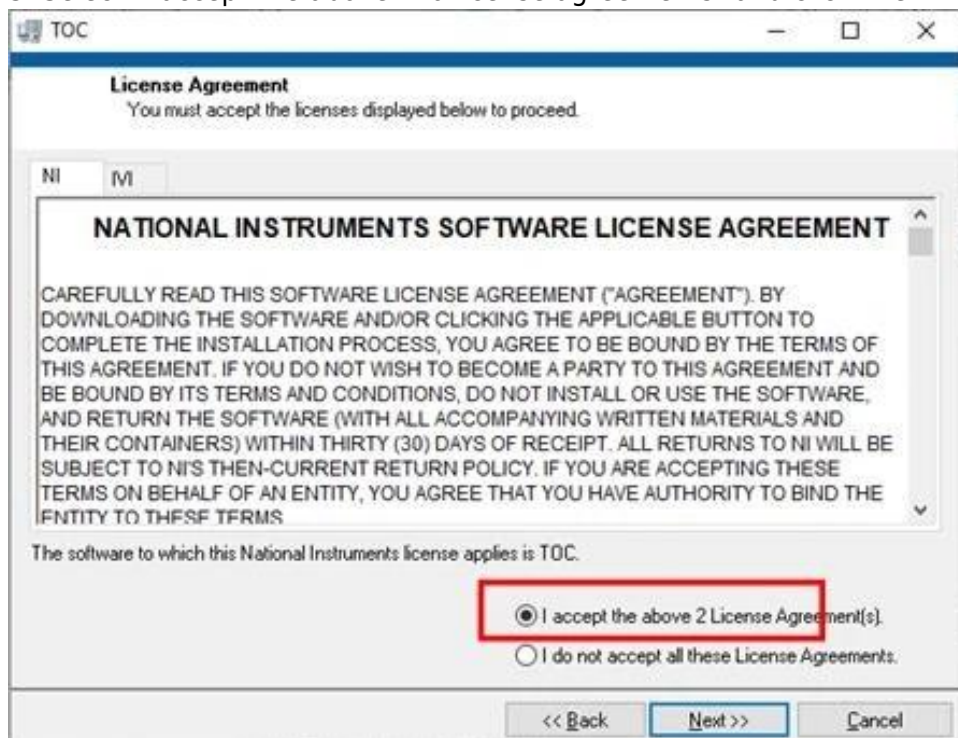


Figure 22

4. Click "Next."

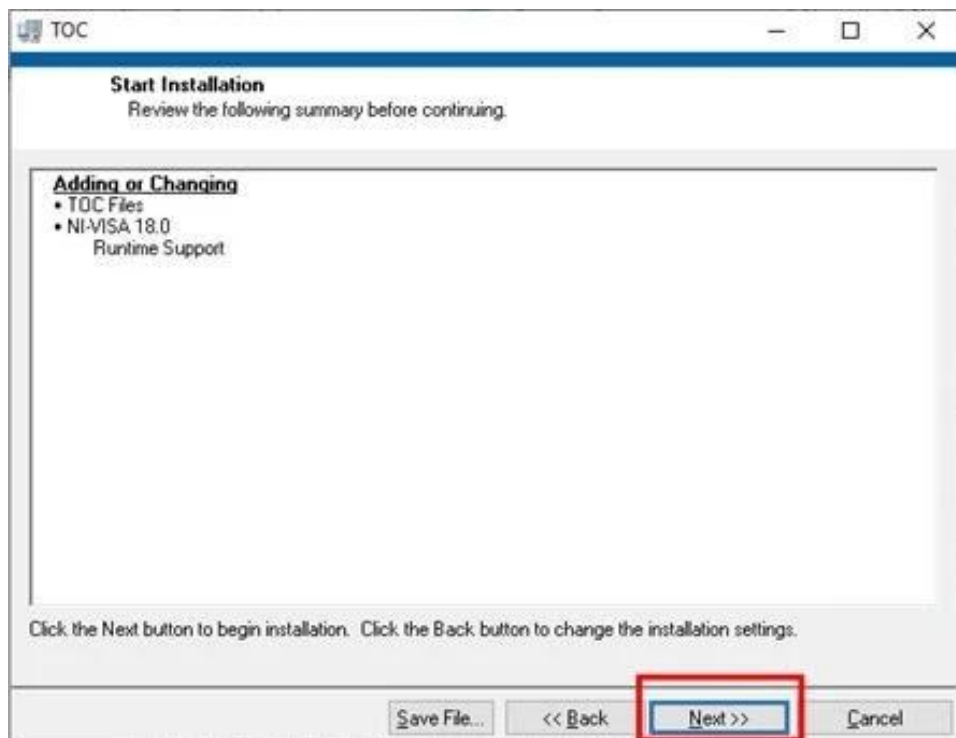


Figure 23

5. Wait for the installation to complete.

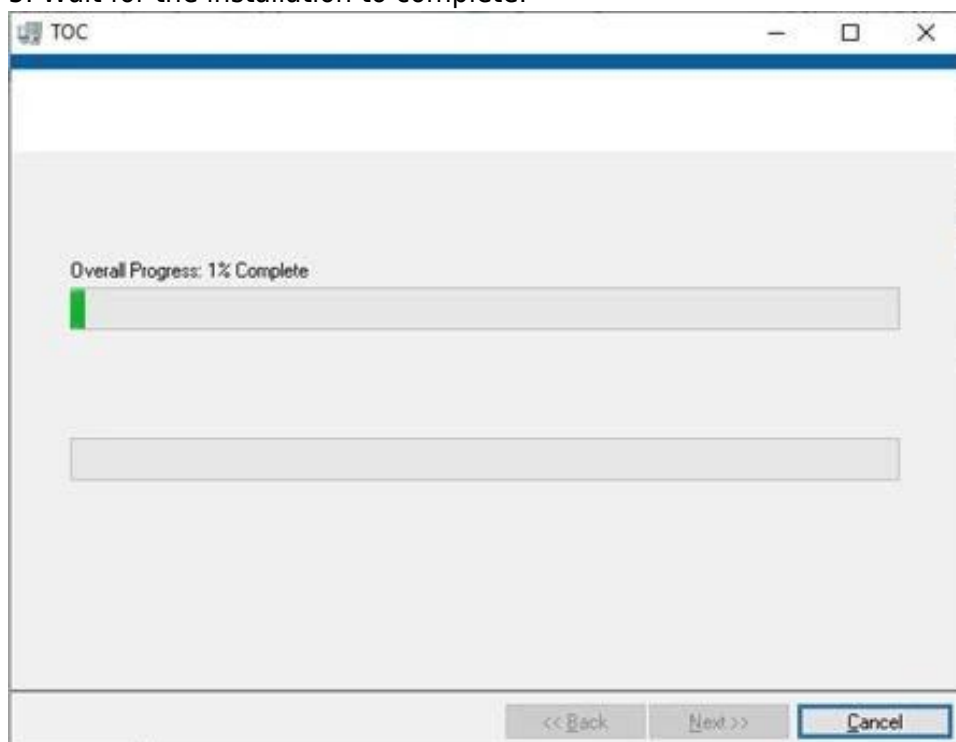


Figure 24

6. After installation, follow the prompts to click "Next" and restart the computer. A software shortcut will appear on the desktop.

10.1.2 Software Operation

10.1.2.1 Open Software

Double-click the software icon  TOCe-Control.exe to enter the main interface.

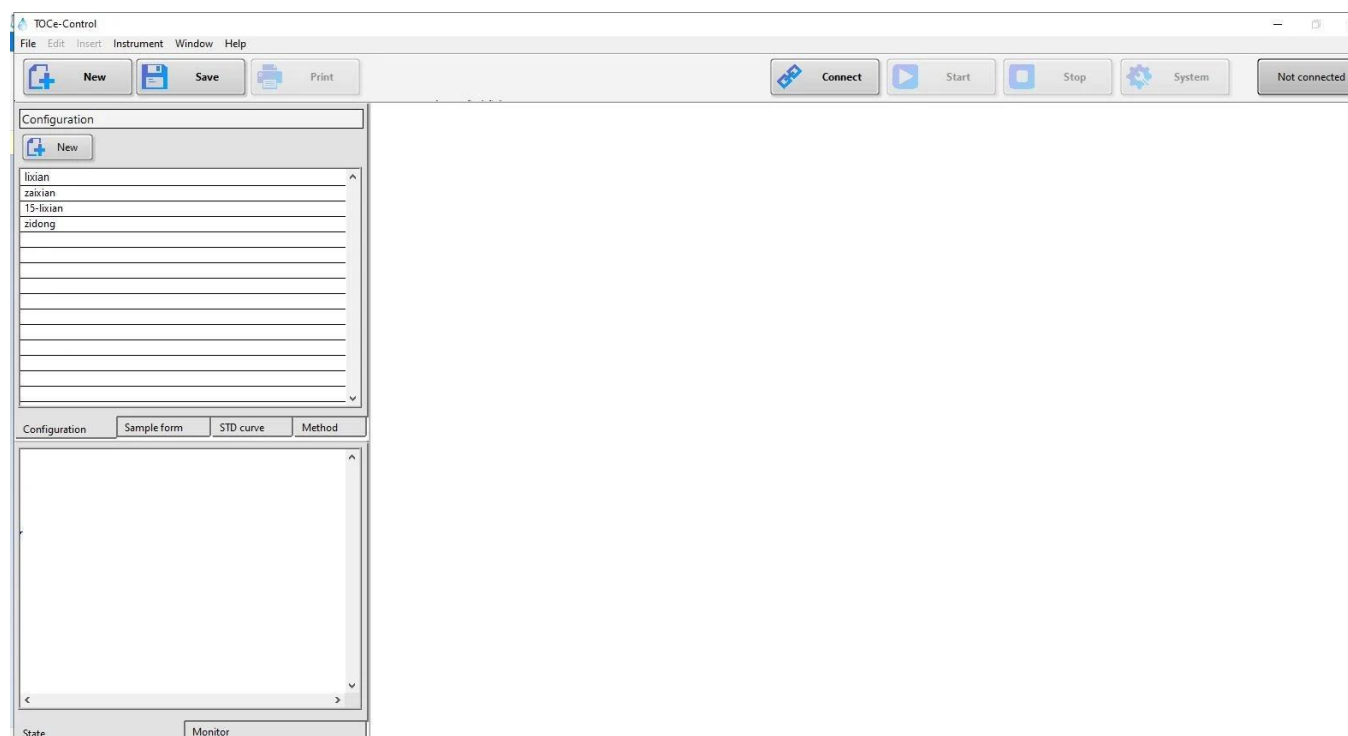


Figure 25

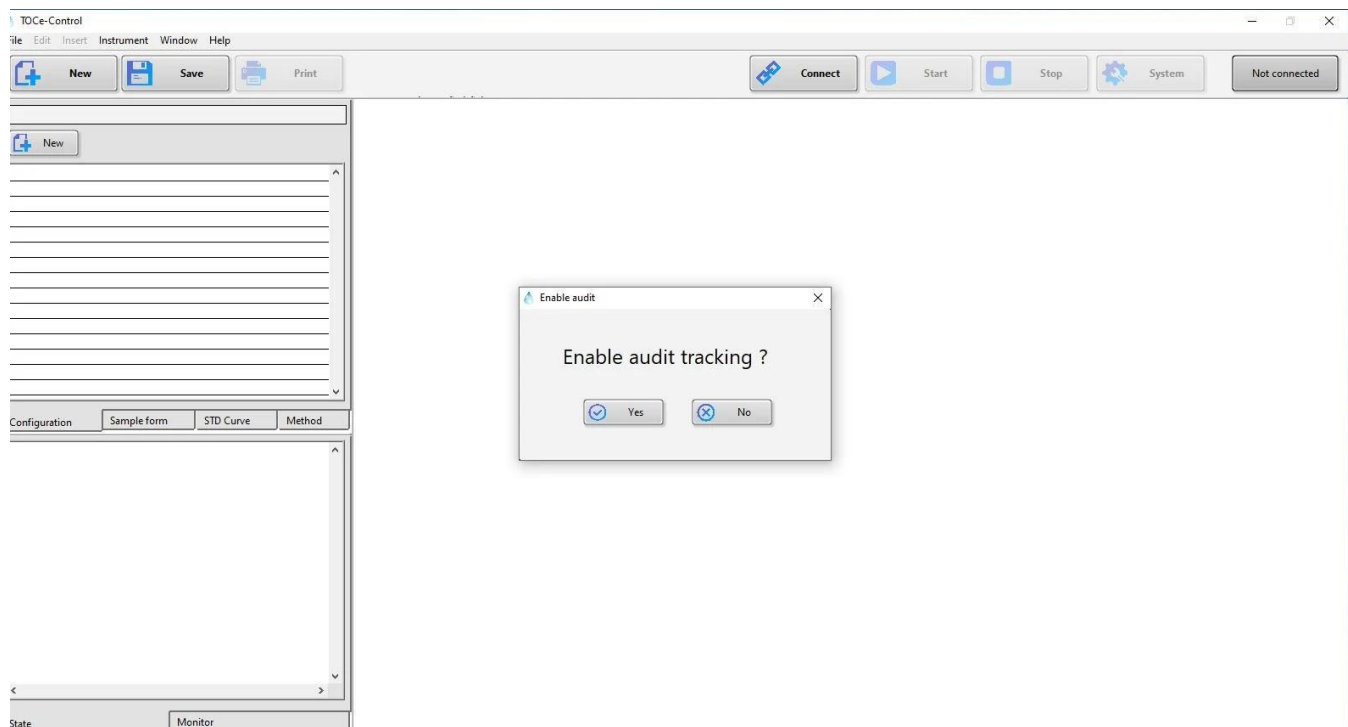


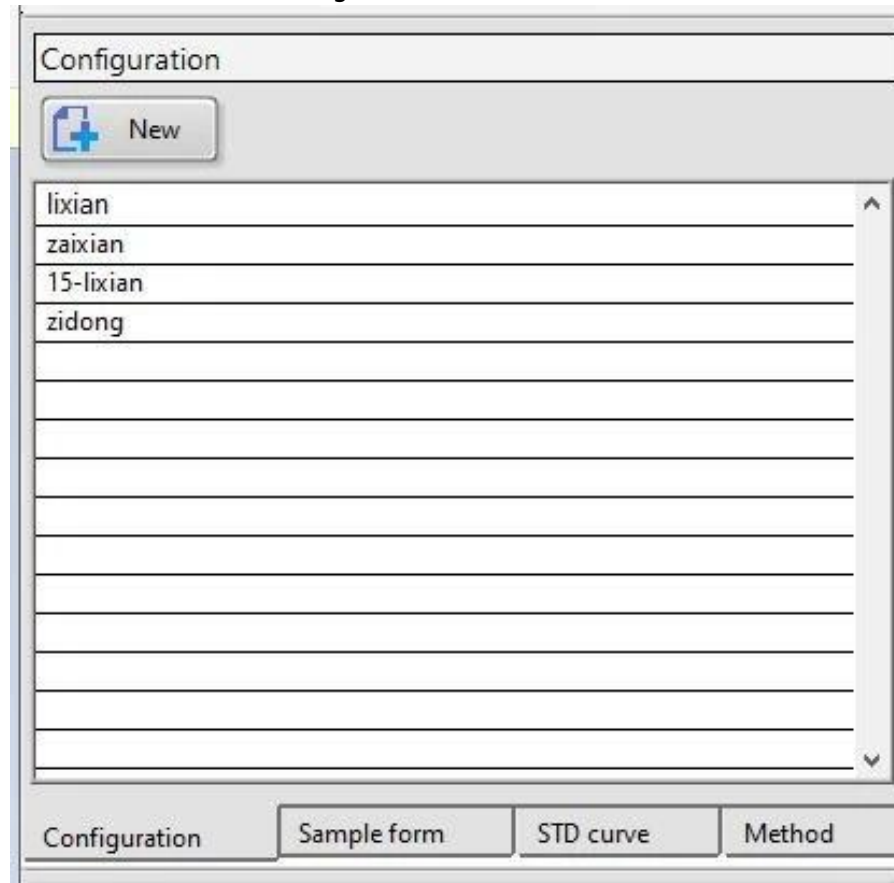
Figure 26

Note:

When you open the software for the first time after installation, a prompt will appear to configure the audit trail function (Figure 6.11). You can configure it according to your actual needs. For operations related to the audit trail, please refer to the audit trail software manual.

10.1.2.2 Create Hardware Configuration

1. Click "Hardware Configuration" under the "File Browser" tab and then click "New"



The screenshot shows a software window titled "Configuration". Inside, there is a button labeled "New" with a blue plus icon. Below this is a list box with the following items: "lixian", "zaixian", "15-lixian", and "zidong". The list box has a vertical scrollbar on the right. At the bottom of the window, there are four tabs: "Configuration", "Sample form", "STD curve", and "Method". The "Configuration" tab is currently selected.

Figure 27

2. In the "Instrument Setup Wizard" interface, enter information such as "Hardware Name," and "Annotation." After completing the settings, click "Next".

Hardware configuration

Hardware name

Instrument number

User

Creation time

Annotation

Enter basic hardware information

Back Next Cancel

Figure 28

3. Follow the prompts to select the "Instrument Model," "Operating Mode," and "Accessories." After completing the settings, click "Next".

Hardware configuration

Instrument Model

Mode

Accessory ☐ Auto sampler

Select hardware configuration

Back Next Cancel

Figure 29

4. Configure the instrument communication parameters. After setting the ".Main unit port," click "Save".

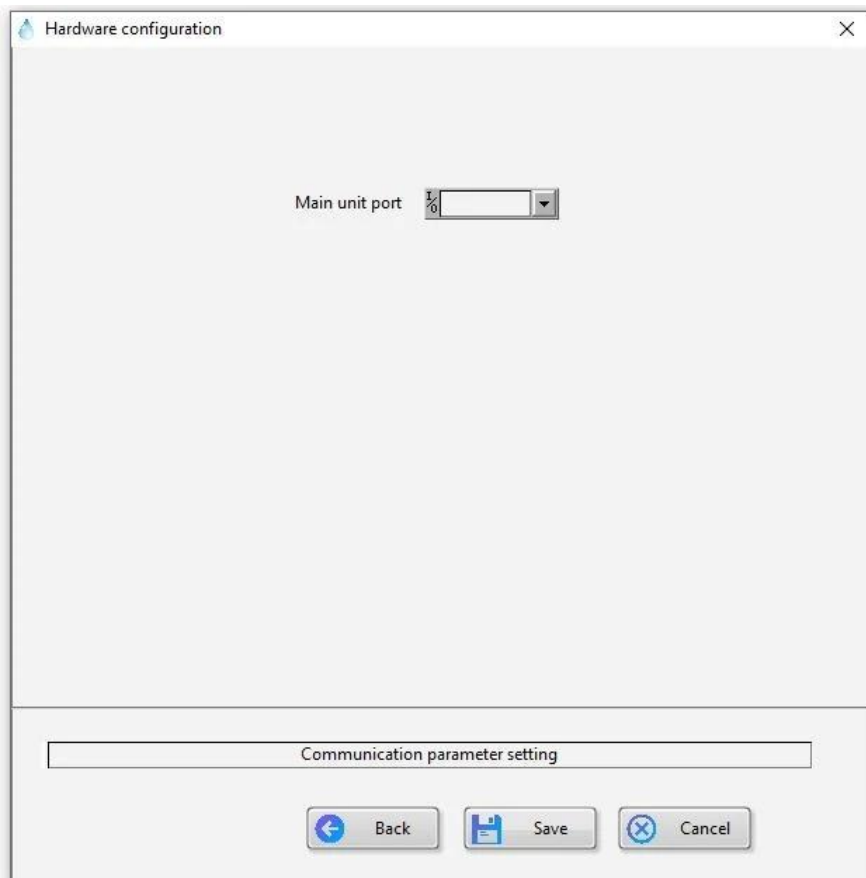


Figure 30

5. After saving, the configured hardware file will be displayed under "Hardware Configuration" in the File Browser tab.

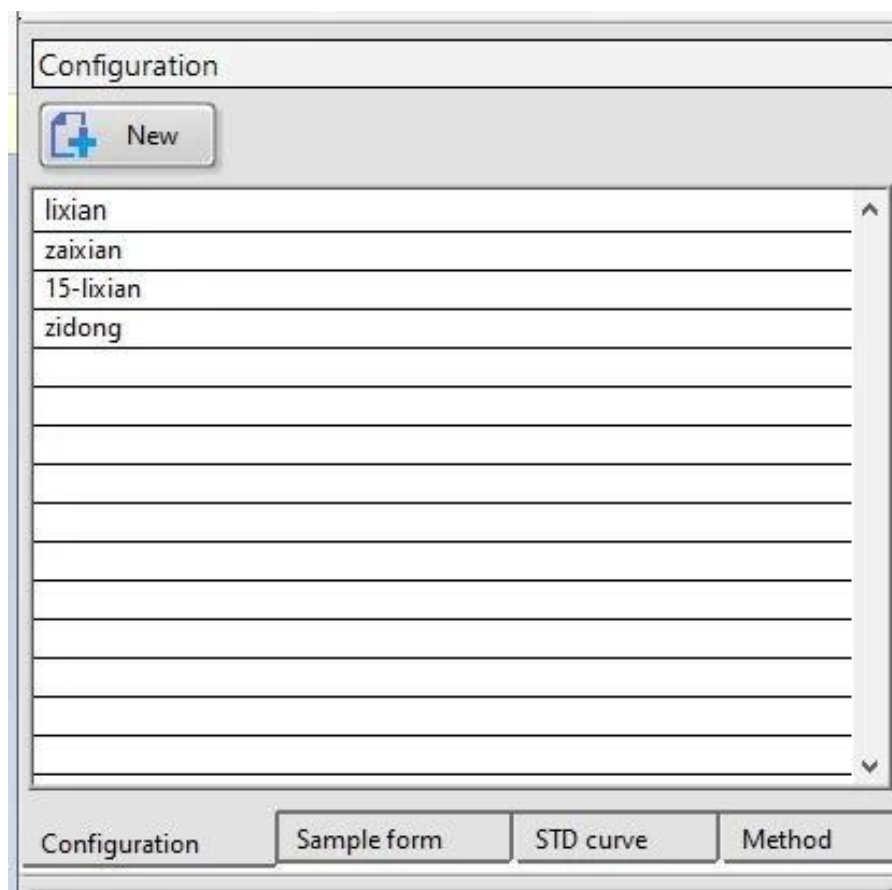


Figure 31

10.1.2.3 Creating Sample Tables

1. Click "New" under the "Sample Table" in the File Browser tab, or click "New" in the toolbar.

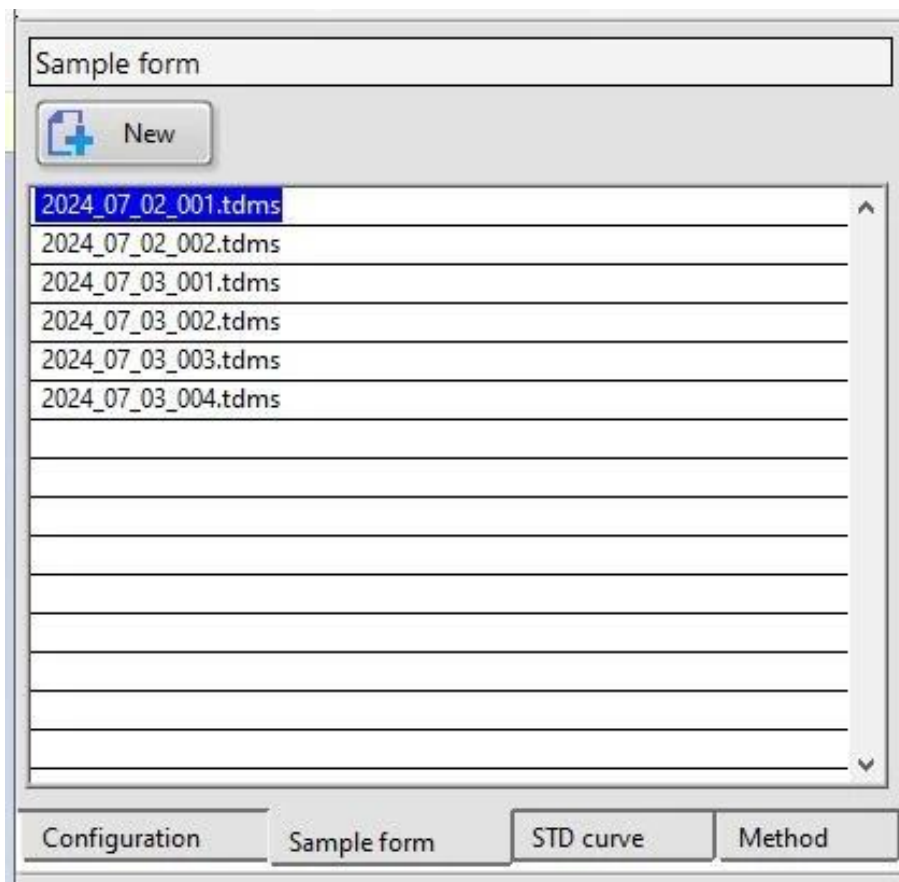


Figure 32

2. In the "Select Hardware Configuration" window, select the instrument hardware configuration.

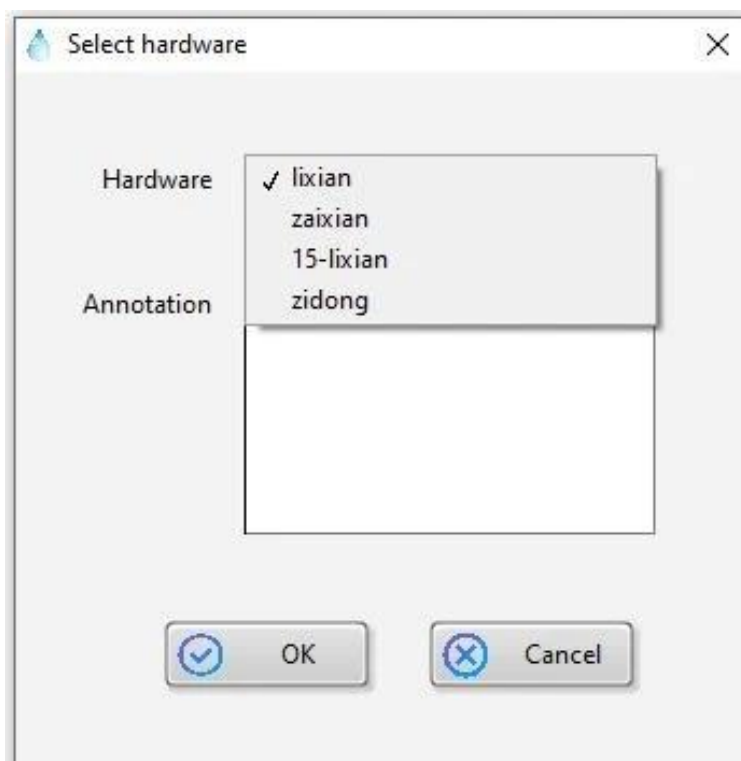


Figure 33

3. After creating the new sample table, it will be displayed in the designated area.

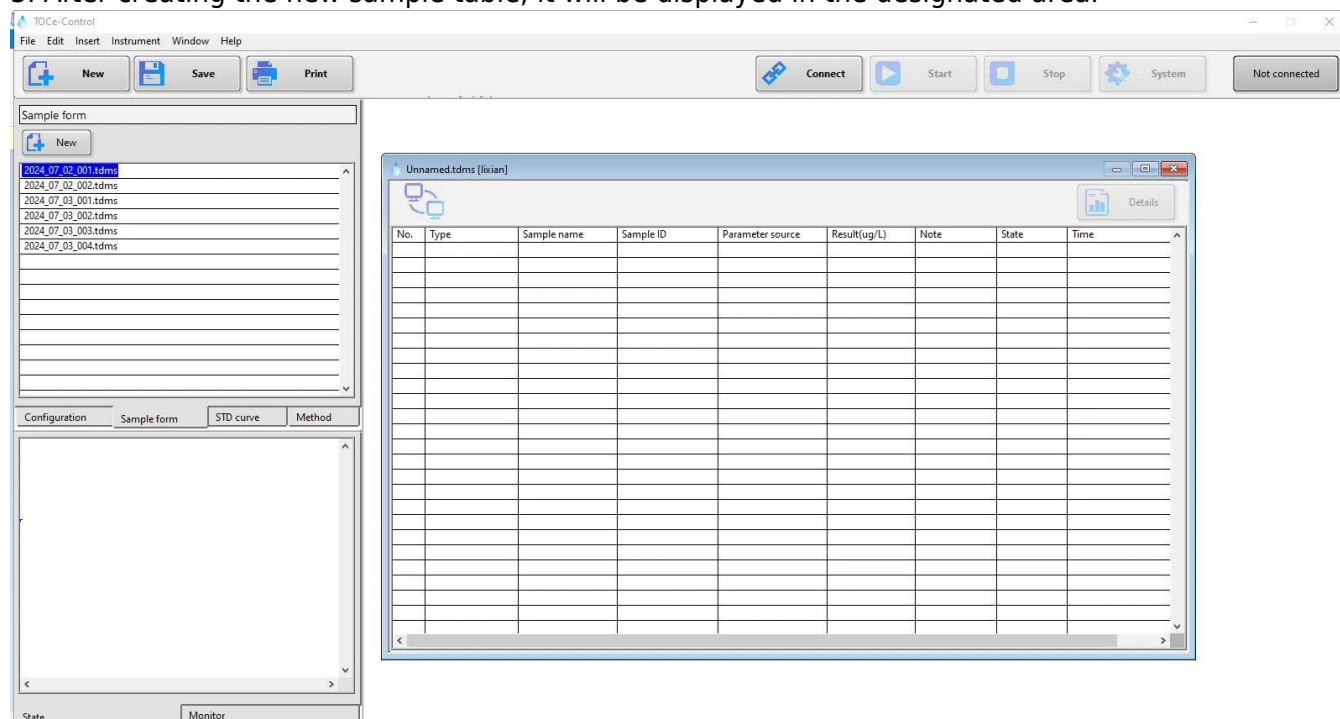


Figure 34

10.1.2.4 Creating Analysis Parameter Files

The purpose of creating a standard curve file is to set parameter information for measuring standard samples.

The purpose of creating a method file is to set analysis parameters for measuring unknown samples. If these files already exist, the following steps can be skipped.

1. Standard Curve File

The steps to input the main parameters of the standard curve file are as follows:

1. Click "New" under "Standard Curve" in the File Browser tab.

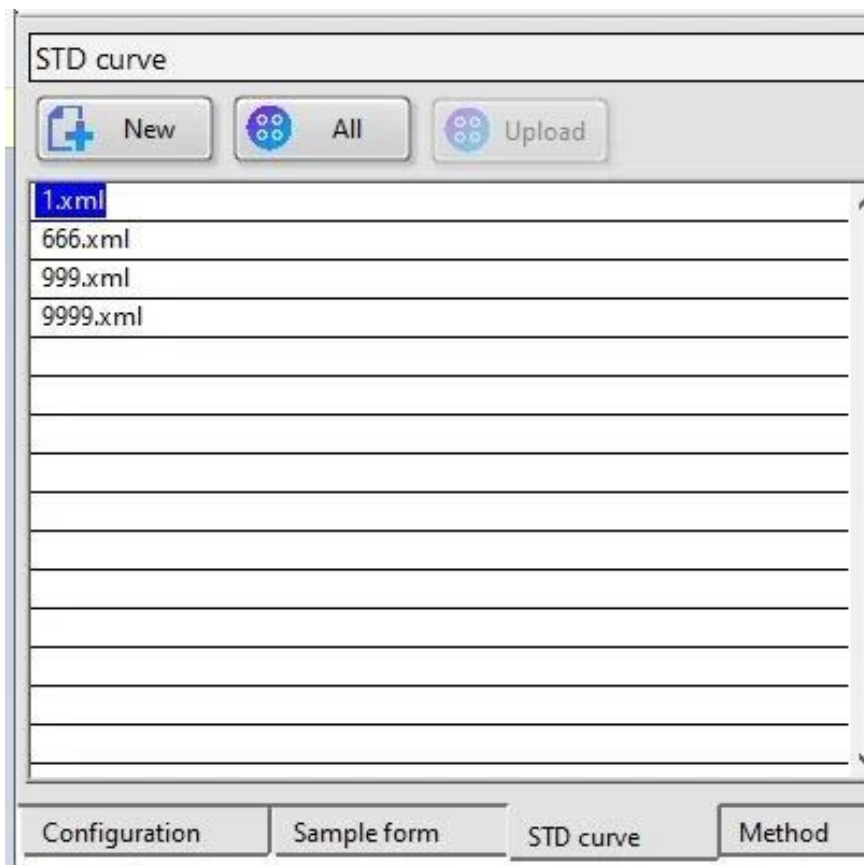


Figure 35

In the "New Standard Curve Parameters" interface, select the applicable "Hardware" for the standard curve. After completing the settings, click "Next".

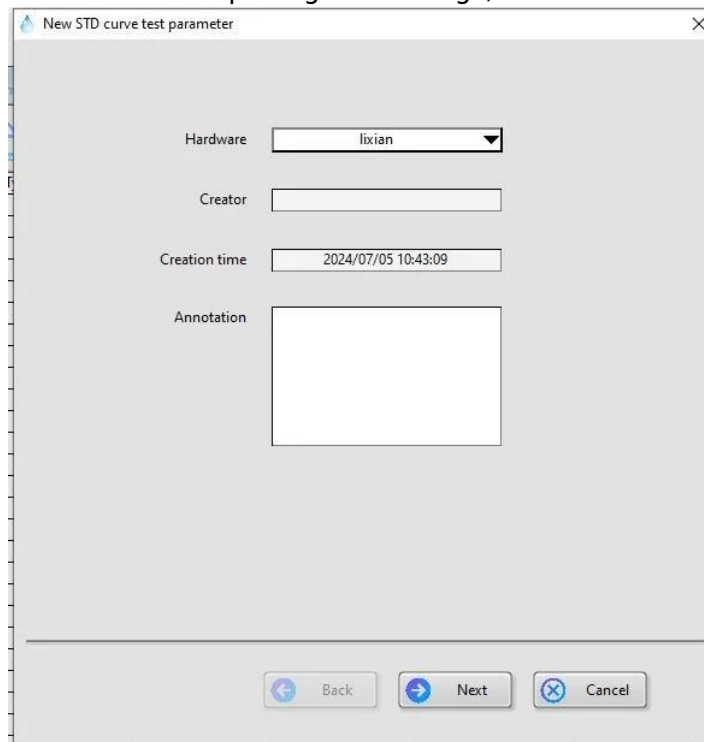
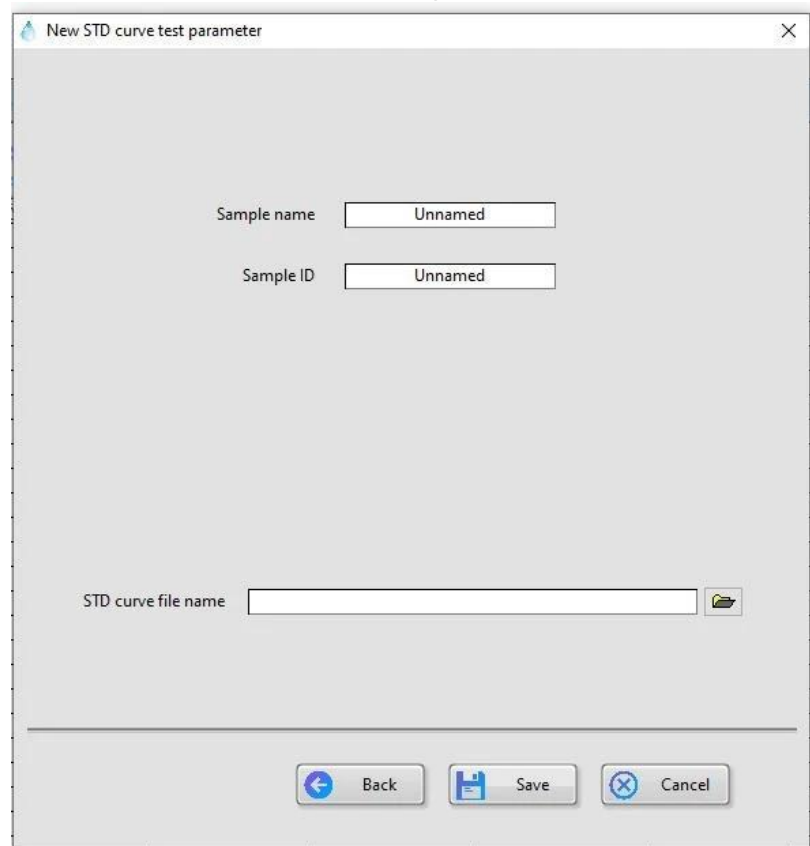


Figure 36

3. Enter the sample name, sample ID, and other information. Enter the file name in "Standard Curve File

Name," and click "Save" to complete the standard curve configuration file.



The image shows a software dialog box titled "New STD curve test parameter". It contains three input fields: "Sample name" with the text "Unnamed", "Sample ID" with the text "Unnamed", and "STD curve file name" which is empty. To the right of the "STD curve file name" field is a small folder icon. At the bottom of the dialog are three buttons: "Back" (with a left arrow icon), "Save" (with a floppy disk icon), and "Cancel" (with a close icon).

Figure 37

2. Method File

The steps to input the main parameters of the method file are as follows:

1. Click "New" under "Method" in the File Browser tab.

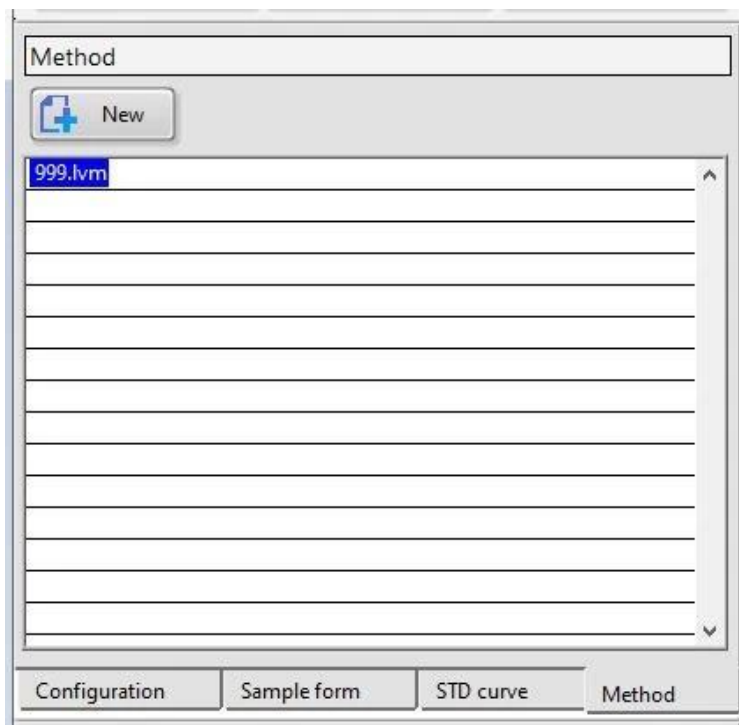


Figure 38

2. In the "New Method" interface, select the applicable "Hardware" for the method. After completing the settings, click "Next".

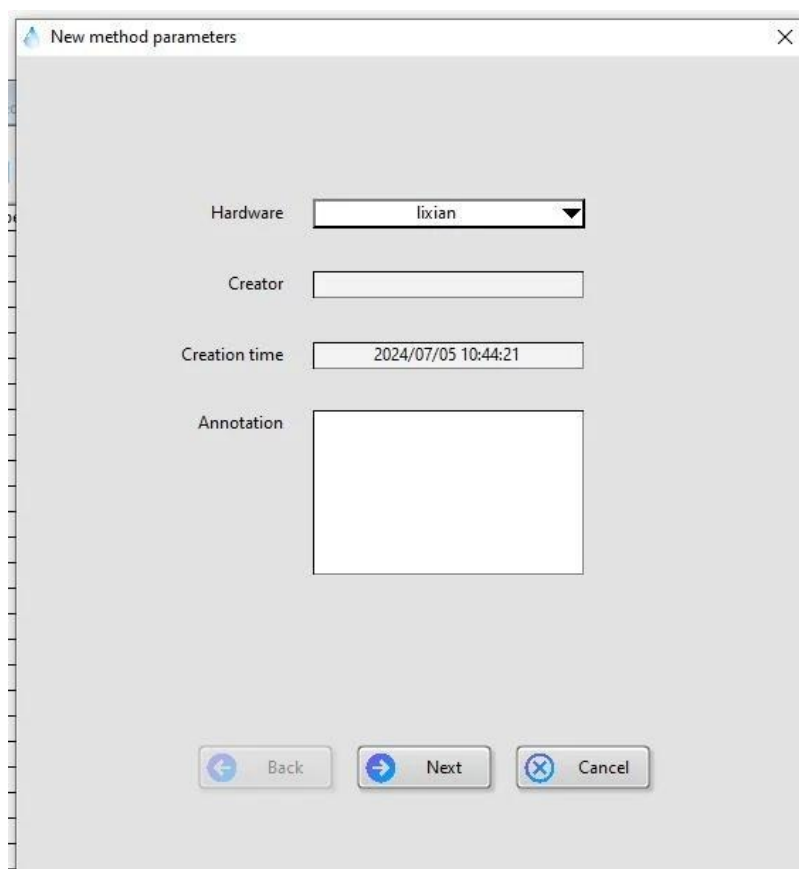
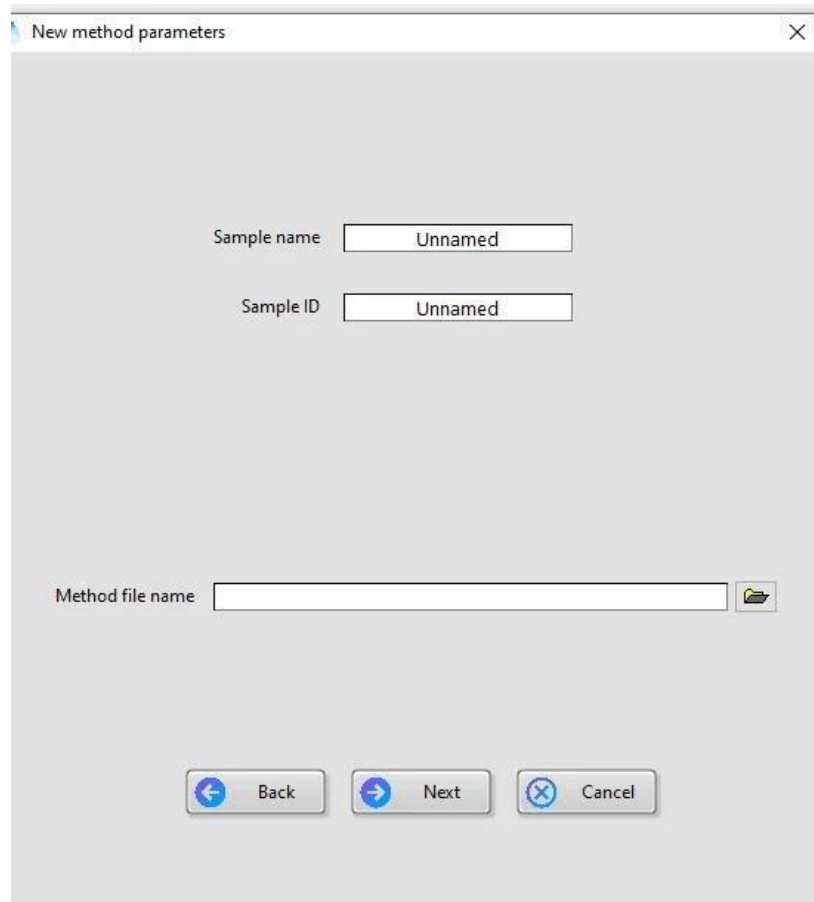


Figure 39

3. Enter the sample name, sample ID, and other information. Enter the file name in "Method File Name," and click "Next".



New method parameters

Sample name

Sample ID

Method file name 

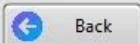
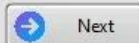
 Back  Next  Cancel

Figure 40

4. Select an already established standard curve as the reference for calculation. In offline mode, set the Number of Cleanings and measurements (Figure 6.26). In online mode, input the alarm threshold and sampling frequency parameters (Figure 6.27). Click "Save" to complete the setup.

New method parameters

Reference STD curve

D:\TOCe-Control\STD_Curve\1.2024_07_02_14_18_56.xml

Number of cleanings 3

Number of measurements 3

Back Save Cancel

Figure 41



Figure 42

10.1.2.5 Editing the Sample Table

1. Insert Standard Curve Test into Sample Table

1. Select the newly created sample table window, right-click the blank area of the sample table, and choose "Insert Standard Curve" from the shortcut menu.

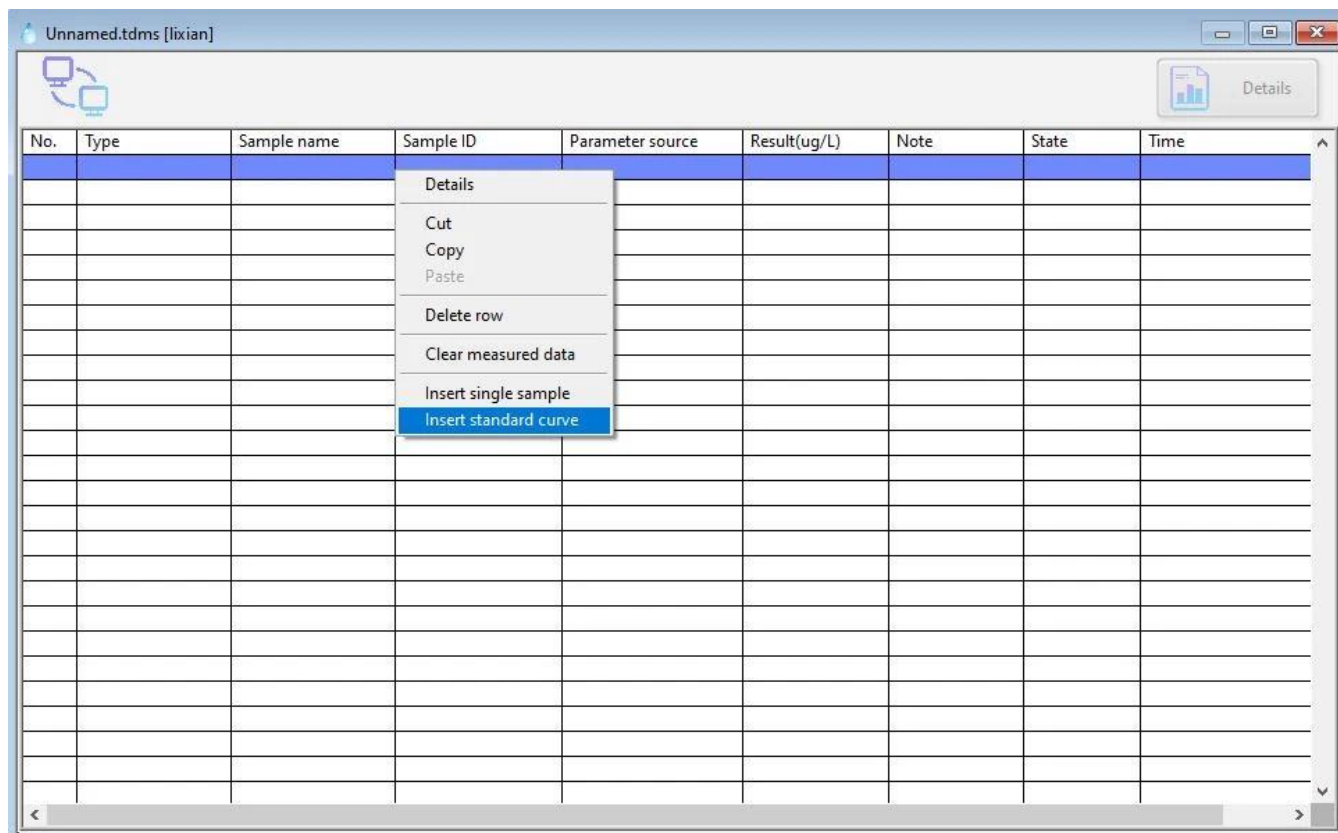


Figure 43

2. In the pop-up window, select the configured standard curve file and click "OK".

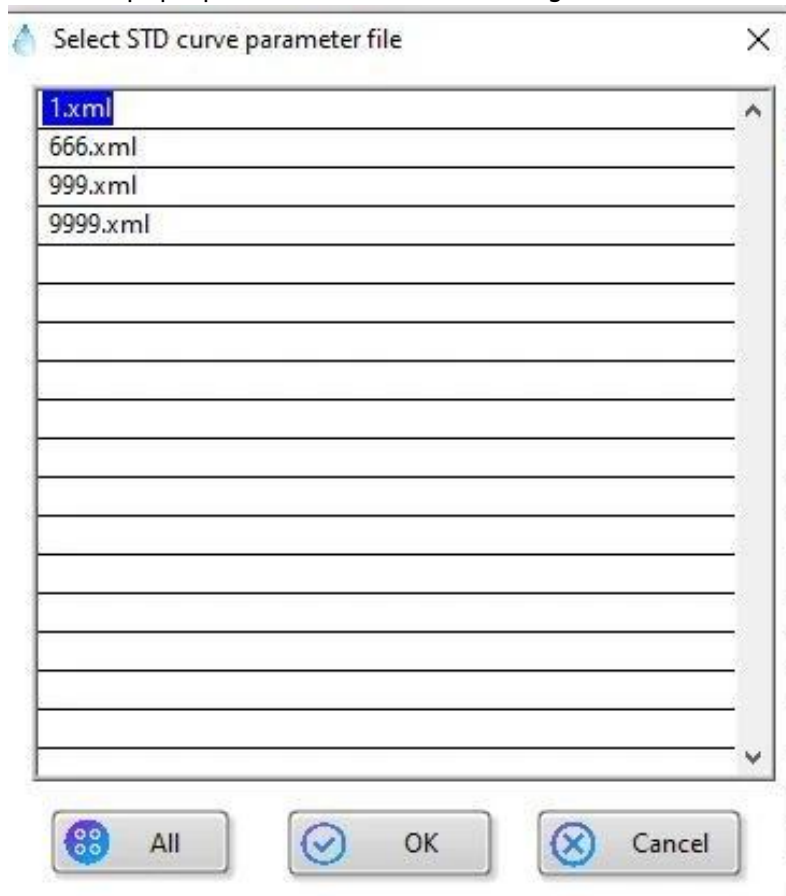


Figure 44

3. The standard curve test is added to the sample table.

[illegible]

Figure 45

2. Insert Unknown Sample Test into Sample Table

1. Select the newly created sample table window, right-click the blank area of the sample table, and choose "Insert Single Sample" from the shortcut menu.

[illegible]

Figure 46

2. In the pop-up single sample parameter setting window, choose the method path, check "Skip remaining wizard pages, use source test parameters," and click "Save".

Select the desired sample row in the table, right-click and select "Copy", then right-click the blank row in the table and select "Paste", and the sample setup is completed.

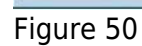
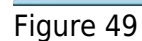




Figure 53

3. Enter the mode selection interface. The system has two modes to choose from: offline mode and online mode. Select the mode you need and click the "Confirm" button.

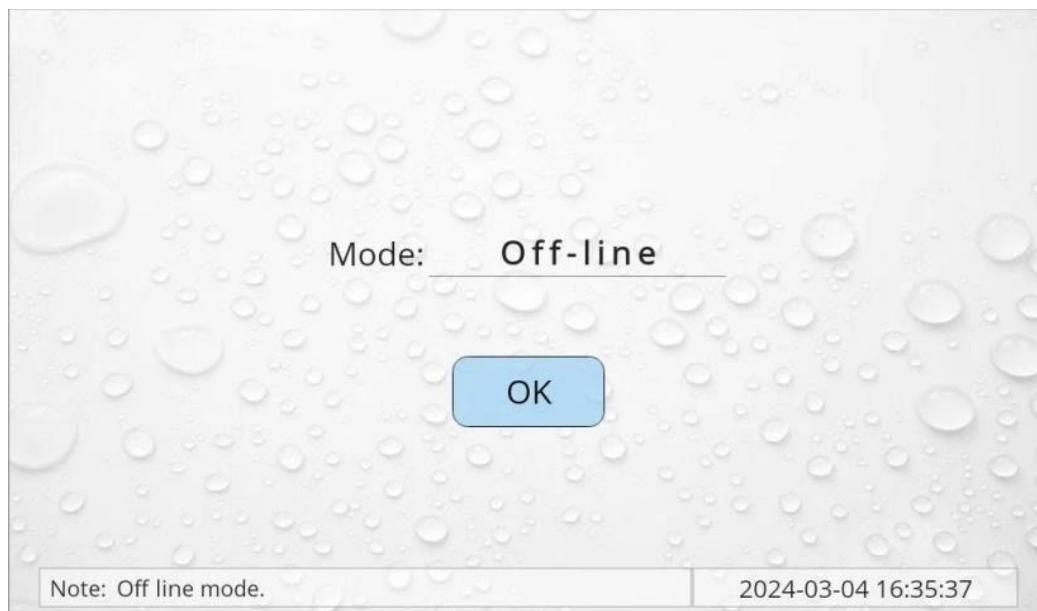


Figure 54



Figure 55

10.2.2 Measurement

10.2.2.1 Introduction to Offline Mode Measurement

The offline mode measurement interface.

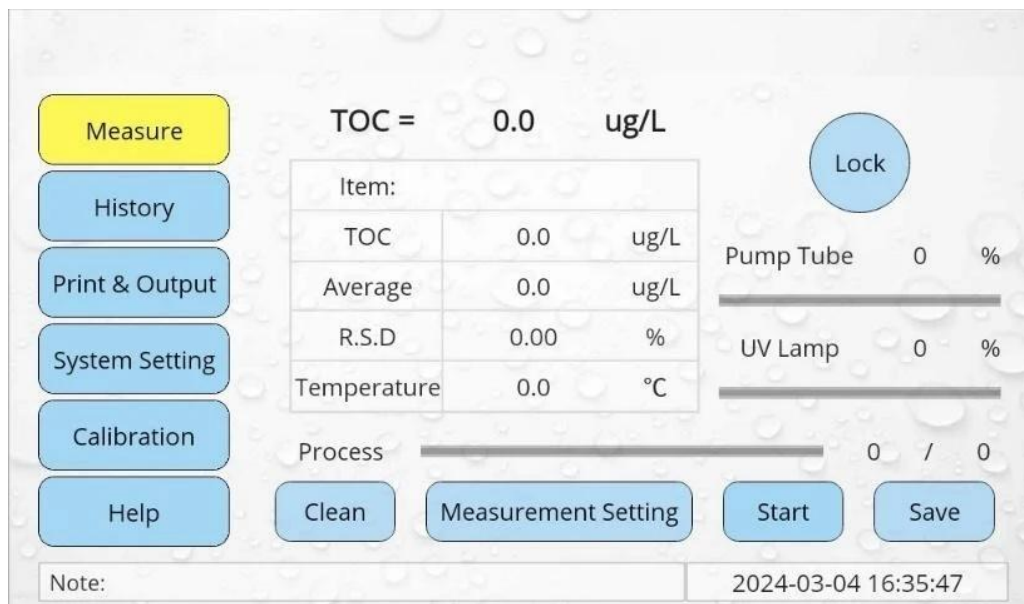


Figure 56

- (1) After entering the main interface, the left side contains menu buttons, including "Measurement," "History," "Print & Output," "System Settings," "Calibration," and "Help." These buttons can be used to switch between interfaces when the system is not performing a measurement.
- (2) The bottom of the interface displays operation prompts and time information.
- (3) The central part of the interface is the offline mode measurement table, showing "Project Name,"

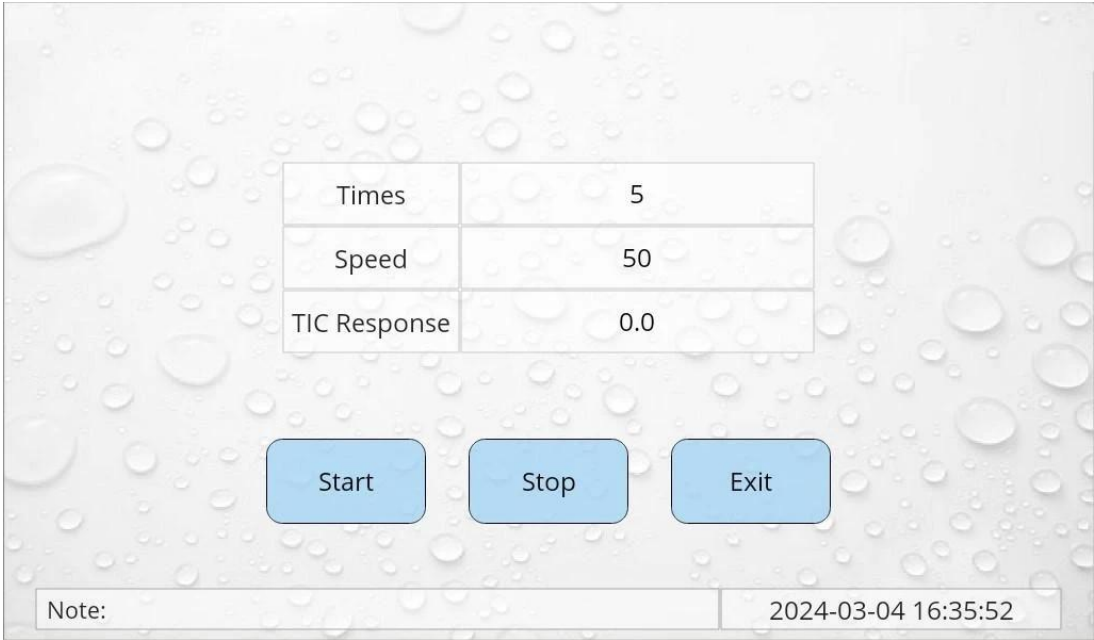
"TOC Test Value," "Average Value," "RSD," and "Temperature" data from top to bottom. The final test results are displayed at the top of the table in bold font.

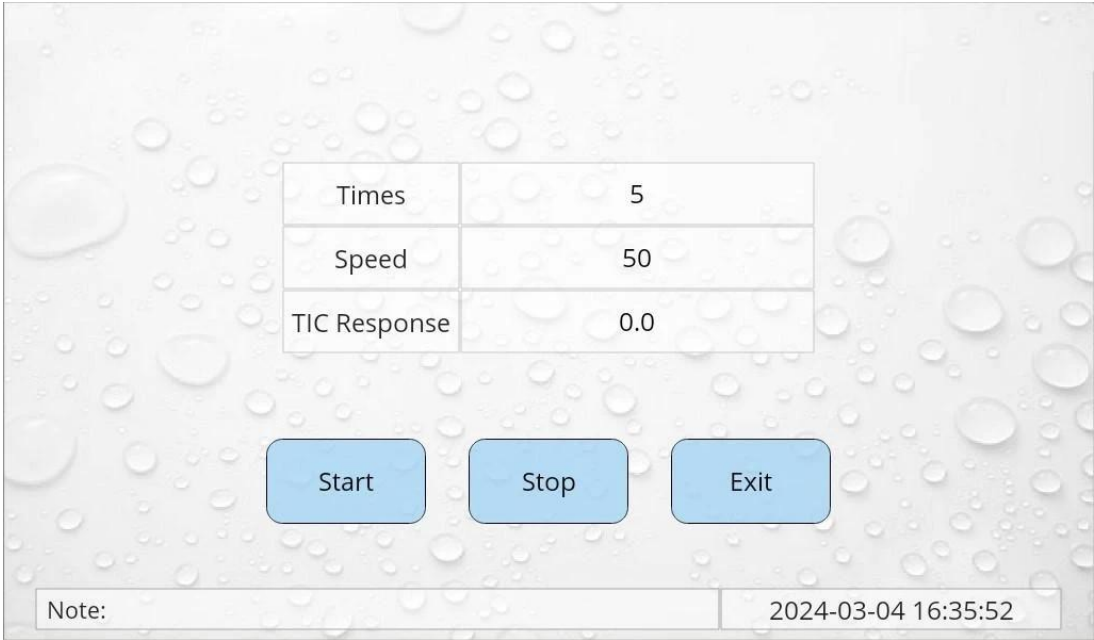
(4) The lower part of the table contains a progress bar, with the current and total measurement counts displayed on the right side.

(5) On the right side of the table are progress bars indicating the usage status of the "Peristaltic Pump Tube" and "UV Lamp" in percentage form. Replace consumables promptly when their usage time is near expiration, and update the usage time information in the "System Settings" interface to recalculate usage time.

Measurement Interface Button Functions

"Lock": Click this button to lock the main interface when the system is not performing measurements. The main interface will switch to the welcome interface. To re-enter the system, you need to re-enter the login password.

"Clean": The clean button provides an interface dedicated to cleaning the pipelines, as shown in . Thoroughly clean the instrument pipelines when first used after long storage or when measuring high concentration samples. In the cleaning interface, you can set the cleaning pump speed (1-50) and cleaning times (1-50) and display the TIC response value of the cleaning water during cleaning. Click the "Start" and "Stop" buttons to control the peristaltic pump, and click the "Exit" button to return to the measurement interface.



Times	5
Speed	50
TIC Response	0.0

Start Stop Exit

Note: 2024-03-04 16:35:52

Figure 57

"Measurement Settings": Click this button to enter the "Measurement Settings" interface. In the measurement settings interface, enter the project name, cleaning times (0-50), and measurement times (1-50). The system provides default parameters, which can be modified if needed. Click the "Finish and Save" button to save the settings and return to the measurement interface, or click the "Cancel" button to cancel the settings and return to the measurement interface.



Figure 58

"Start": After finishing and saving the measurement settings, the "Project Name" set in the previous step will appear on the measurement interface. Click the "Start" button to begin measurement, changing it to a "Stop" button. During measurement, only the "Stop" button can be used; other buttons are disabled. The system performs cleaning and measurement operations in sequence based on the set cleaning and measurement times. The measurement results are displayed during cleaning but are not saved. After completing the measurement, the system automatically saves all measurement data.

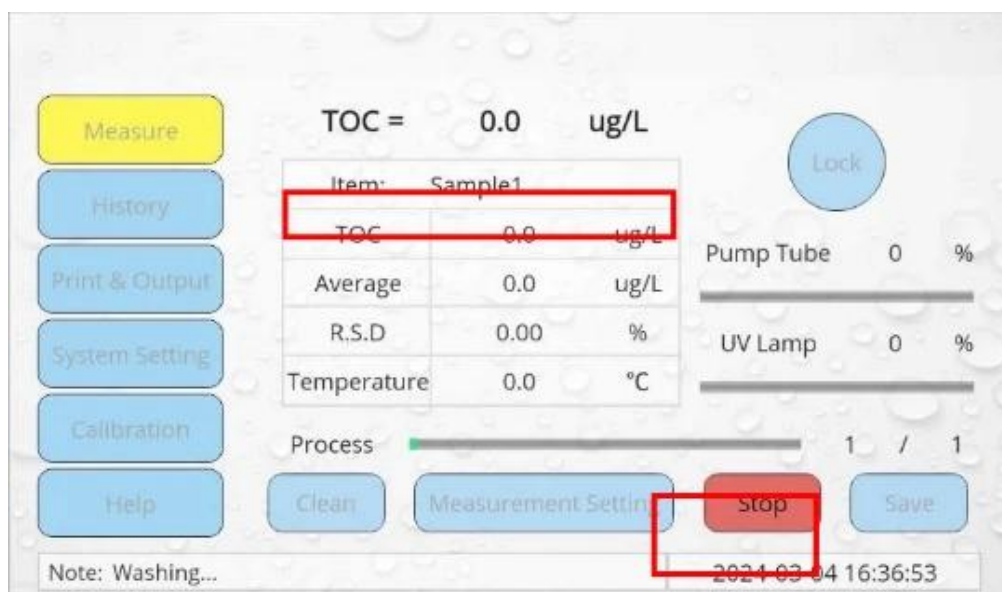


Figure 59

"Save": If you stop the measurement by clicking the "Stop" button before it finishes, data will not be saved automatically. To save the data, click the "Save" button.

10.2.2.2 Introduction to Online Mode Measurement

(1) The online mode measurement interface. The menu buttons, "Lock" button, consumable life record

progress bar, prompts, time information, and measurement progress bar are the same as in offline mode and will not be repeated here. The far right of the measurement progress bar shows the current record count.

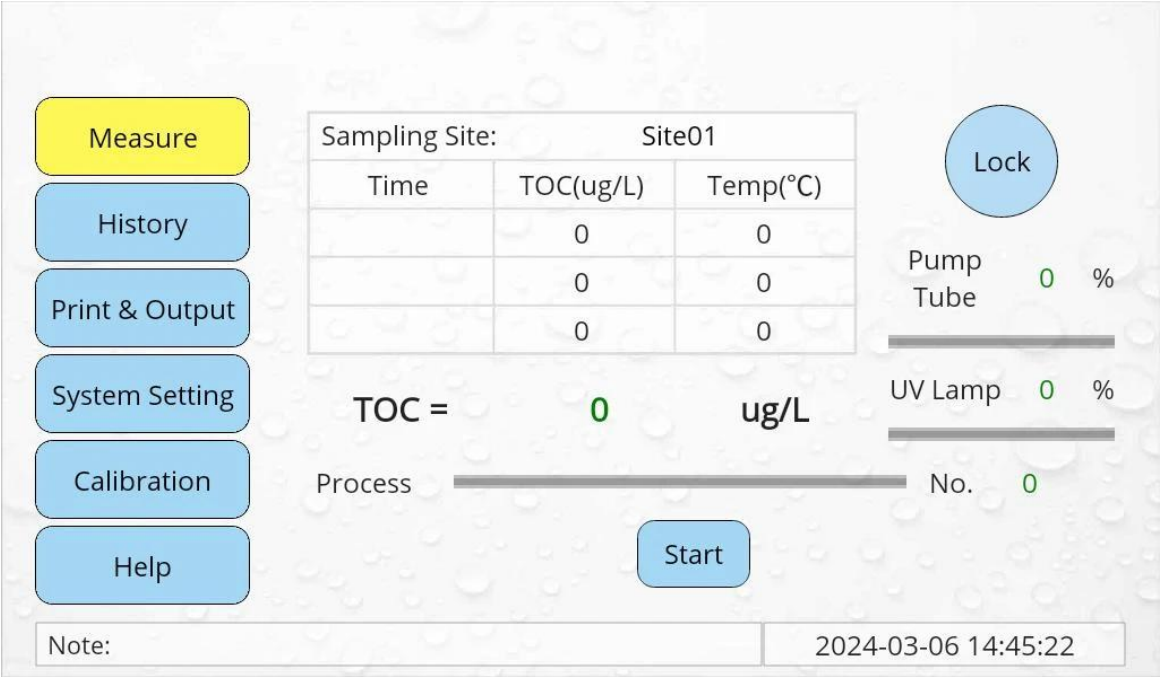


Figure 60

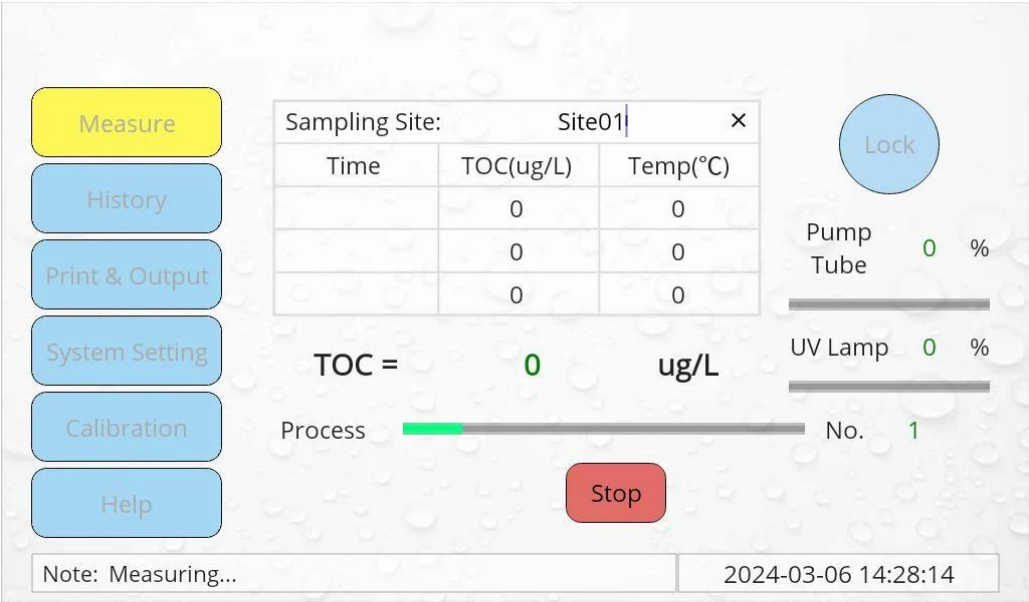
The top of the online mode measurement interface displays the sampling point, defaulted to "Site01." Click this default value to set the sampling point. The lower table shows the latest times, test data, and temperature from bottom to top, with the current test results displayed in bold at the bottom.



Figure 61

Click the "Start" button to enter the measurement process, changing it to a "Stop" button. During measurement, the system measures and records data sequentially. Other function buttons are disabled until you click "Stop." The data storage file is named based on the time you clicked start, making it easy

to find later.



CC

10.2.3 History

When the system is not performing measurements, click the "History" menu button to enter the history query interface.

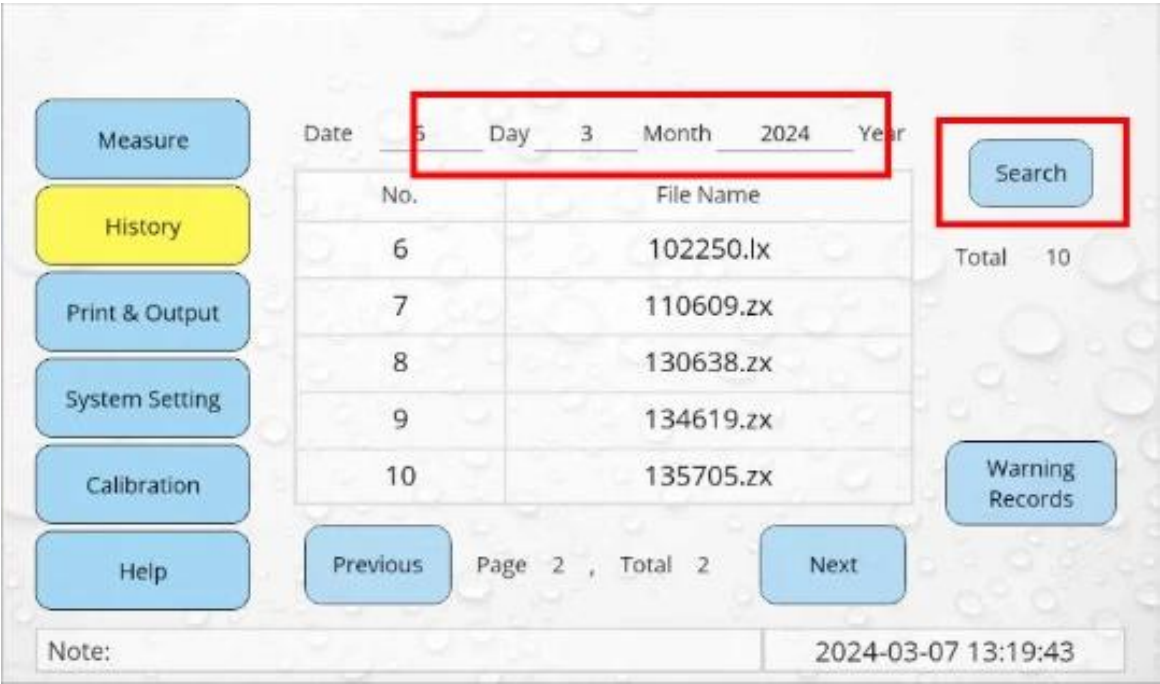


Figure 63

- (1) In the history interface, enter the measurement date of the file to be queried, and click the "Search" button at the top right to display the file list in the table (Figure 6.48). Files with the ".lx" suffix are offline mode measurement files, while those with the ".zx" suffix are online mode measurement files. Click the "Previous " or "Next " buttons to browse remaining entries.
- (2) Click any file name to view the corresponding data. Offline mode files including file name,

measurement times, measurement time, average value, RSD, temperature, and all recorded data. Each page displays 10 entries. Click the "Previous " or "Next " buttons to view remaining data. Click the "Back" button to go back to the history main interface. Click the "Delete" button to return to the history main interface and clear the measurement record.

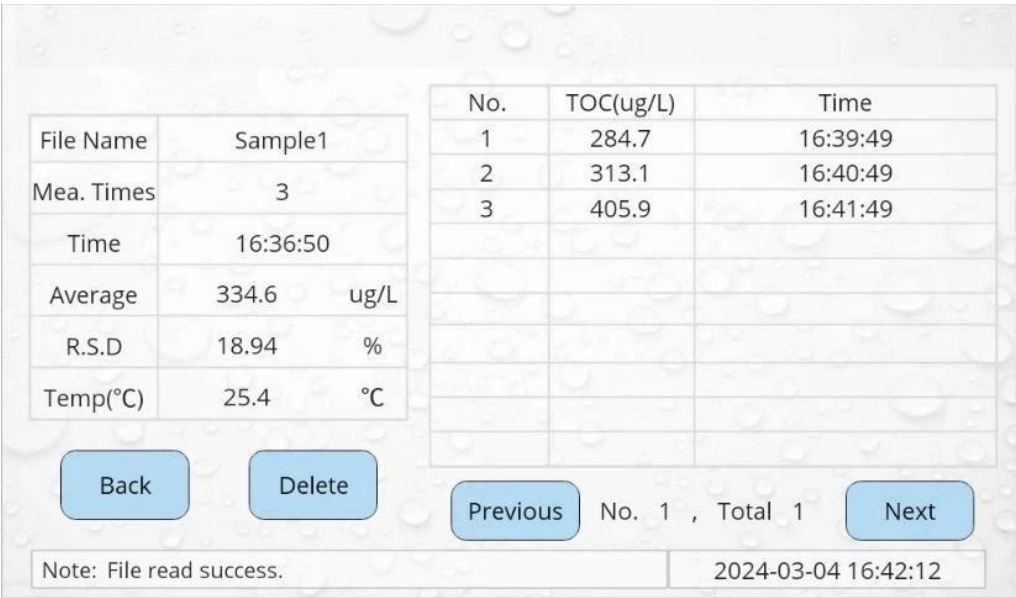


Figure 64

(3) Online mode files, including sampling point, date, and all recorded data. Each page displays 7 entries. Click the "Previous " or "Next " buttons to view remaining data. Click the "Back" button to go back to the history main interface. Click the "Delete" button to return to the history main interface and clear the measurement record.



Figure 65

Click the "Warning Records" button to enter the alarm records interface. Alarm records include information about alarms triggered by measurements exceeding the range or alarm values. Click the "Copy" button in the alarm records interface to export alarm records to a USB drive. Click the "Previous " or "Next " buttons to browse remaining entries. Click the "Back" button to go back to the history main

interface.



Figure 66

10.2.4 Print & Output

When the system is not performing measurements, click the "Print & Output" menu button to enter the print output interface.

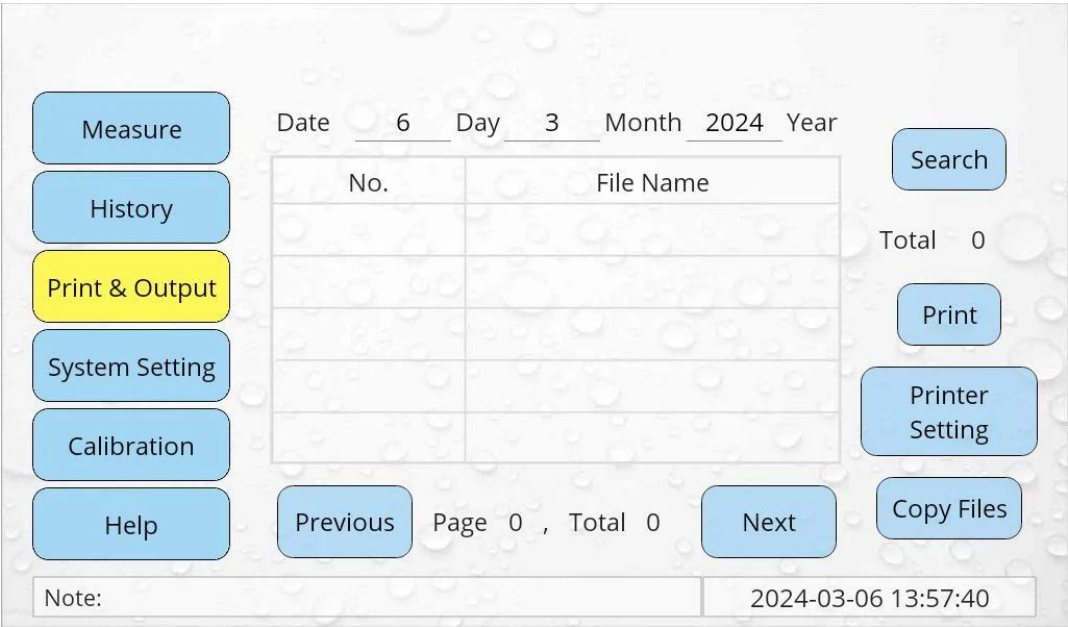


Figure 67

- (1) Similar to the history interface, enter the time information and click the "Query" button to display the file list in the table. Click the "Previous Page" or "Next Page" buttons to browse remaining entries.
- (2) Insert a USB drive into the USB port on the right side of the main unit. Click the "Copy Files" button to automatically copy all files within that date to the USB drive, stored in a folder named with the date information (e.g., "161020" represents October 20, 2016). If a folder with the same name already exists on the USB drive, an error message will appear. In this case, delete the folder on the USB drive before

copying.

(3) Before shipping, the printer and main unit have been set up for Bluetooth connection, so there is no need to perform "Printer Settings." Turn on the printer, wait about a minute, select the target file, and click the "Print" button to complete data printing.



Figure 68

Note:

If the prompt at the bottom indicates "Please set the printer in the printer settings interface," it means the printer connection failed. Restart the main unit and printer, and try again. If it still fails, click the "Printer Setting" button to enter the printer settings interface. Enter the BIND and PSWD codes in the corresponding windows, following the default settings format. Refer to the printer manual for obtaining the BIND and PSWD codes. After confirming the settings, click the "Connect" button. This pairing may take 1-2 minutes. If the connection fails, check the input and try reconnecting. If it still fails, contact after-sales support. Once connected, click the "Back" button.

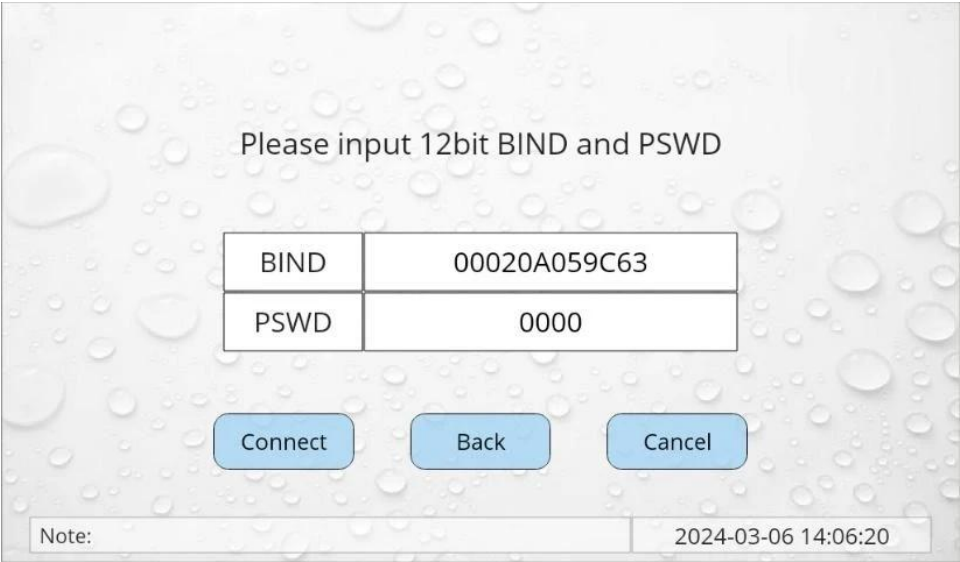


Figure 69

10.2.5 System Settings

When the system is not performing measurements, click the "System Setting" menu button to enter the system settings login interface. The initial password is 00000001. Click the "OK" button to enter the system settings interface. In the system settings interface, you can view and set the basic parameters of the instrument.



Figure 70

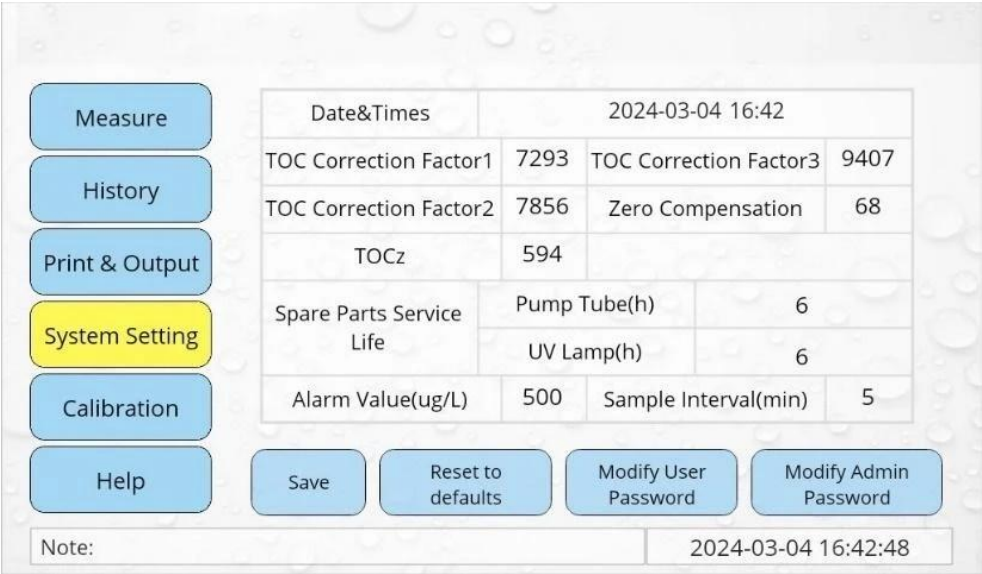


Figure 71

- (1) Click the box to the right of "Date & Time" to set the system time and date.
- (2) Click the boxes to the right of each item to set the corresponding parameters. The "Zero Compensation," "TOCz," and "TOC Correction Factor 1, 2, and 3" need to be set based on calibration results. "Pump Tube" and "UV Lamp" are used to set the used time information. After replacing the corresponding parts, reset the data. The "Alarm Value (ug/L)" sets the alarm value for online mode. When running in online mode, if the measurement result exceeds the alarm value, the buzzer will sound an alarm and record the alarm information. "Sampling Interval (minutes)" sets the sampling interval time for

online mode, ranging from 5-120 minutes.

(3) After setting all parameters, click the "Save" button to save all parameters.

(4) To restore factory settings, click the "Reset to defaults" button.

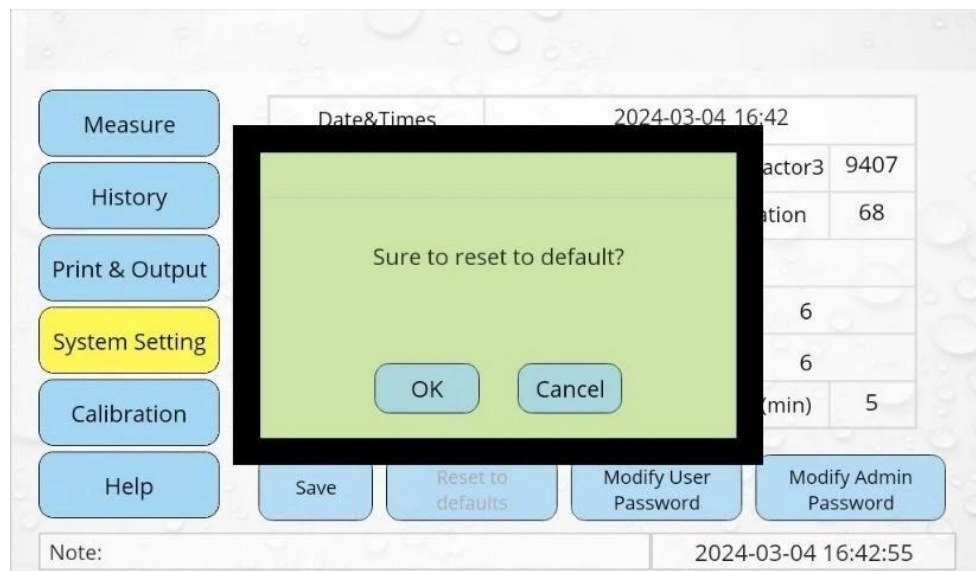


Figure 73

(5) Click "Modify User Password" or "Modify Admin Password" to modify the system login password and system settings login password, respectively. To change the password, correctly enter the old password, then enter the new password twice, and click the "OK" button to complete the modification. The user password is 6 digits, and the admin password is 8 digits. If the input format is incorrect, re-enter the information.



Figure 75

10.2.6 Calibration

Calibration involves a total of 16 steps. Please follow the prompts step-by-step to complete the calibration process.

1. When the system is not performing any measurement operations, click the "Calibration" menu button to enter the calibration interface. Follow the prompt to insert the sampling tube into the zero calibration water and click the "Start" button.

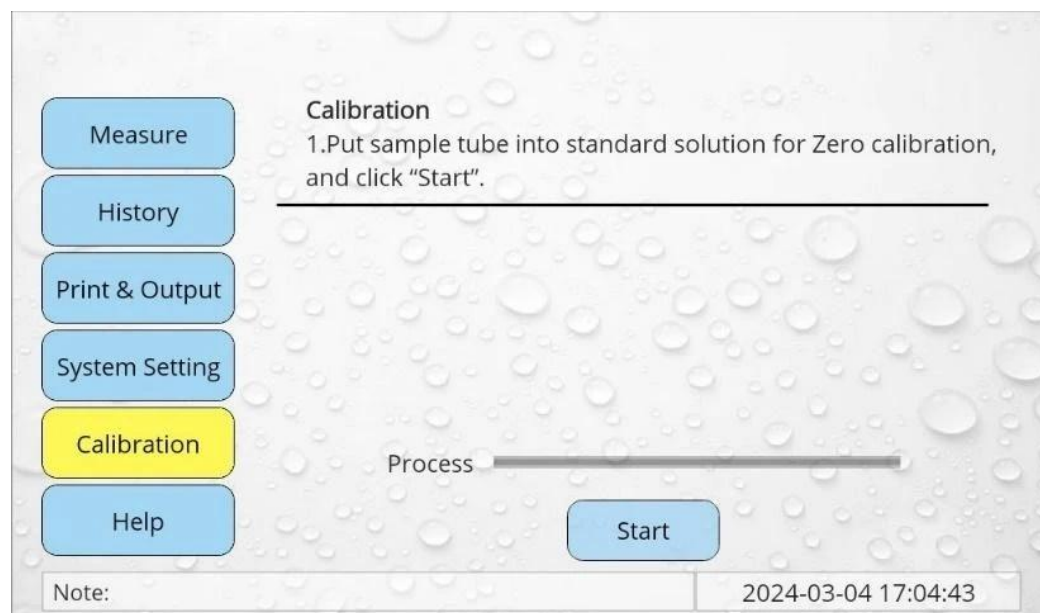


Figure 76

The system will automatically measure the TC and TIC values of the zero calibration water and calculate the compensation value. The system will automatically stop when the RSD of the TC and TIC measurements is less than 0.5% for three consecutive measurements. This calibration usually takes about 20 minutes. If the system has recently tested high concentration samples or has not been used for a long time, it may take longer. Each measurement result is updated in real time for easy observation. If you want to stop the calibration, click the "Stop" button.

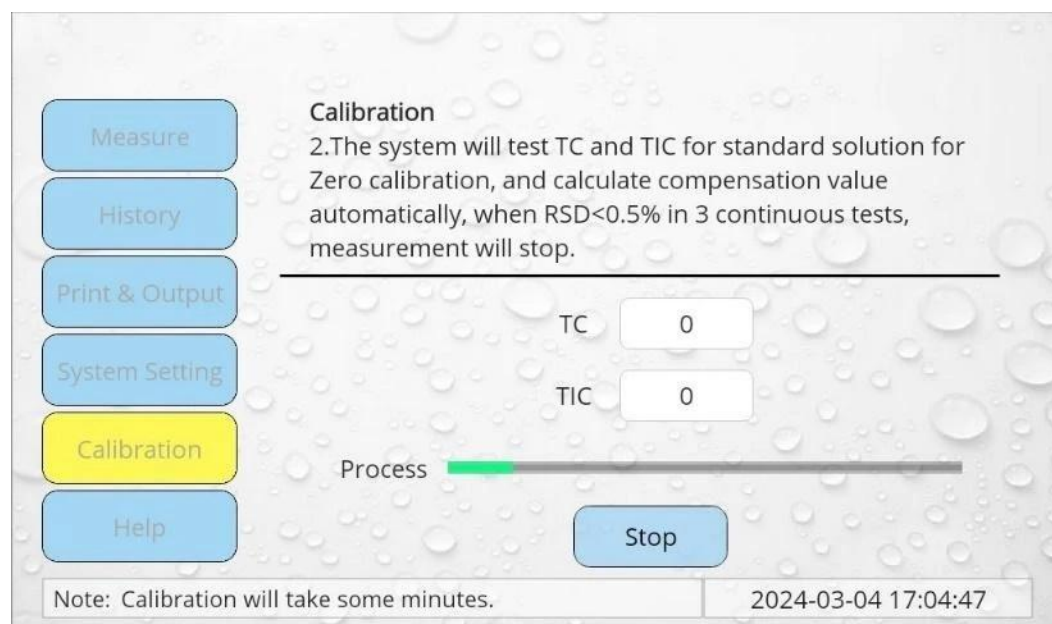


Figure 77

3. The zero compensation value is calculated as the average TC value of three consecutive

measurements minus the average TIC value of three consecutive measurements. The system automatically calculates this value and displays it on the screen. Record the zero compensation value in the box below and enter it into the system parameters after calibration is complete. Click the "Next" button to continue the calibration; if you are not satisfied with the measurement results, click the "Previous" button to return to step 1 and retest.

The screenshot shows a software interface for calibration. On the left is a vertical menu with buttons: Measure, History, Print & Output, System Setting, Calibration (highlighted in yellow), and Help. The main area has a title 'Calibration' and instructions: '3. Please make record for below zero compensation value, click "Next" to continue, click "Previous" to repeat last step.' Below this is a 'Zero Compensation' label followed by a text box containing the value '95'. A 'Process' progress bar is shown with a green segment. At the bottom are 'Previous' and 'Next' buttons. A status bar at the very bottom contains the text 'Note: Zero compensation calibration finished.' and the timestamp '2024-03-04 17:12:49'.

Figure 78

4. Measure the zero calibration water to obtain the TOC response value of the zero calibration water. Do not remove the sampling tube from the zero calibration water. Click the "Start" button to continue the calibration process or the "Cancel" button to cancel the calibration.

This screenshot shows the same software interface as Figure 78, but at a different step. The instructions now read: '4. Click "Start" to measure standard solution for zero calibration, and get its TOC value.' The 'Process' progress bar is further along. The 'Previous' button has been replaced by 'Start' and 'Cancel' buttons. The status bar at the bottom shows 'Note:' and the timestamp '2024-03-04 17:12:52'.

Figure 79

5. The system will automatically measure the TOC response value of the zero calibration water and display it on the screen, as shown in Figure 6.63. The system will automatically stop when the RSD of

three consecutive measurements is less than 2%, and the average of these three measurements will be recorded as TOCz. To stop the calibration process, click the "Stop" button.

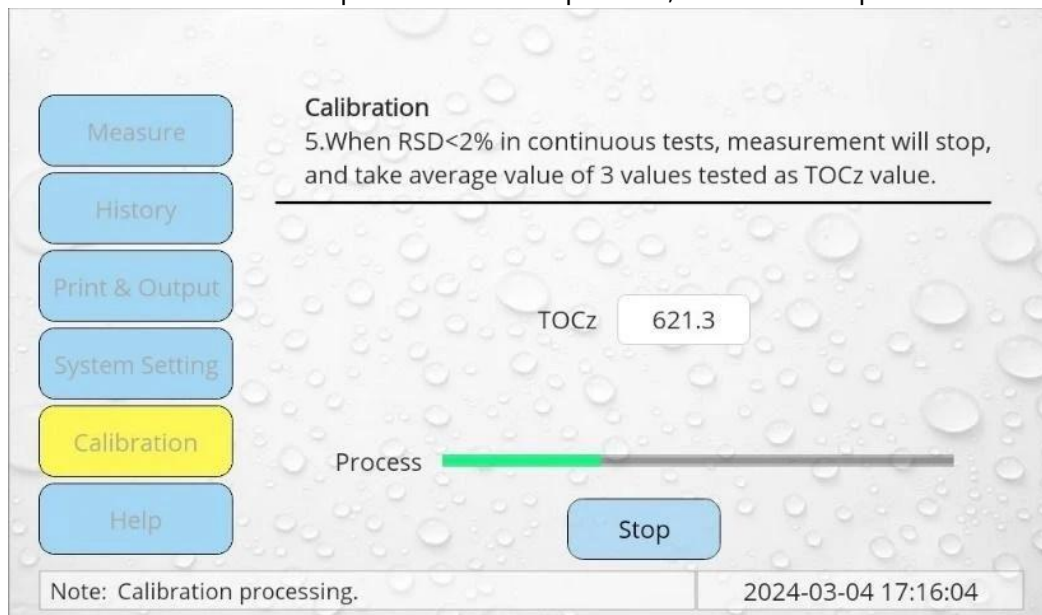


Figure 80

6. The TOCz result is displayed as shown in Figure 6.64. Record the TOCz value in the box, which will be used to calculate the organic carbon calibration constant at the end of the calibration. Click the "Next" button to continue the calibration; if you are not satisfied with the measurement results, click the "Previous" button to return to step 4 and retest.

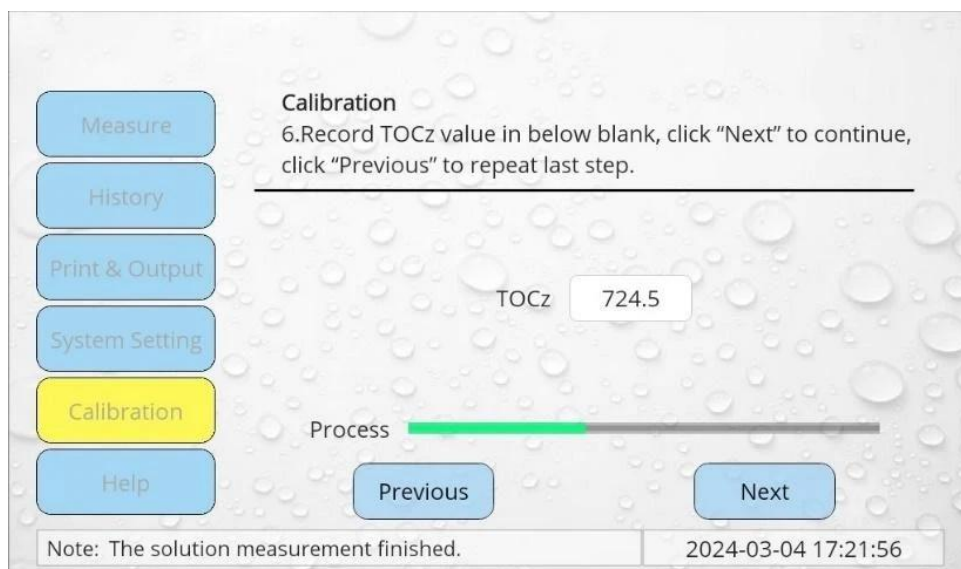


Figure 81

7. Insert the sampling tube into the 200 µg/L sucrose calibration solution. Click the "Start" button to continue the calibration or the "Cancel" button to exit the calibration process.

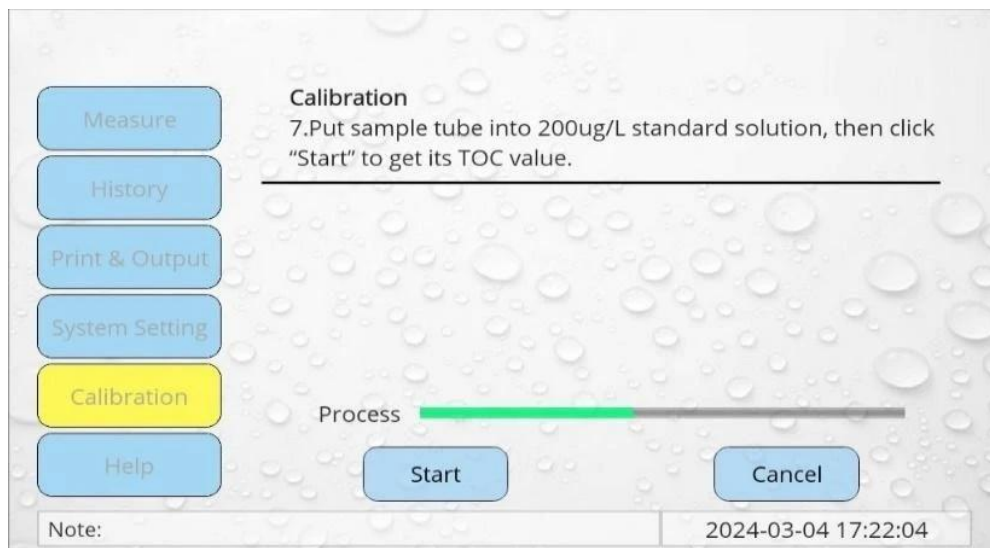


Figure 82

8. The system will automatically measure the TOC response value of the 200 µg/L sucrose calibration solution and display it on the screen, as shown in Figure 6.66. The system will automatically stop when the RSD of three consecutive measurements is less than 1%, and the average of these three measurements will be recorded as TOCs1. To stop the calibration process, click the "Stop" button.

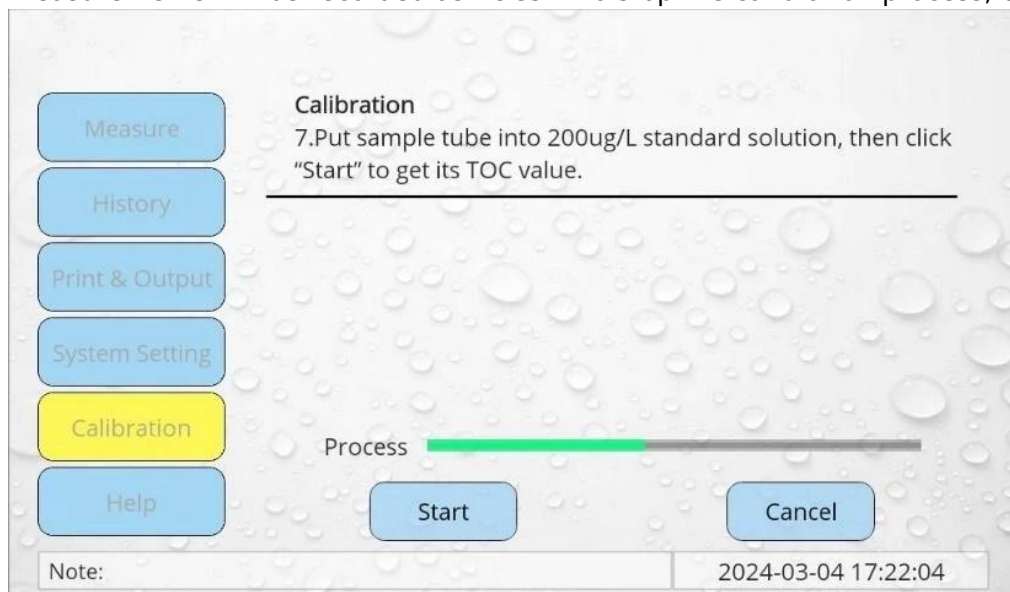


Figure 83

9. The TOCs1 result is displayed. Record the TOCs1 value in the box, which will be used to calculate the organic carbon calibration constant at the end of the calibration. Click the "Next" button to continue the calibration; if you are not satisfied with the measurement results, click the "Previous" button to return to step 7 and retest.

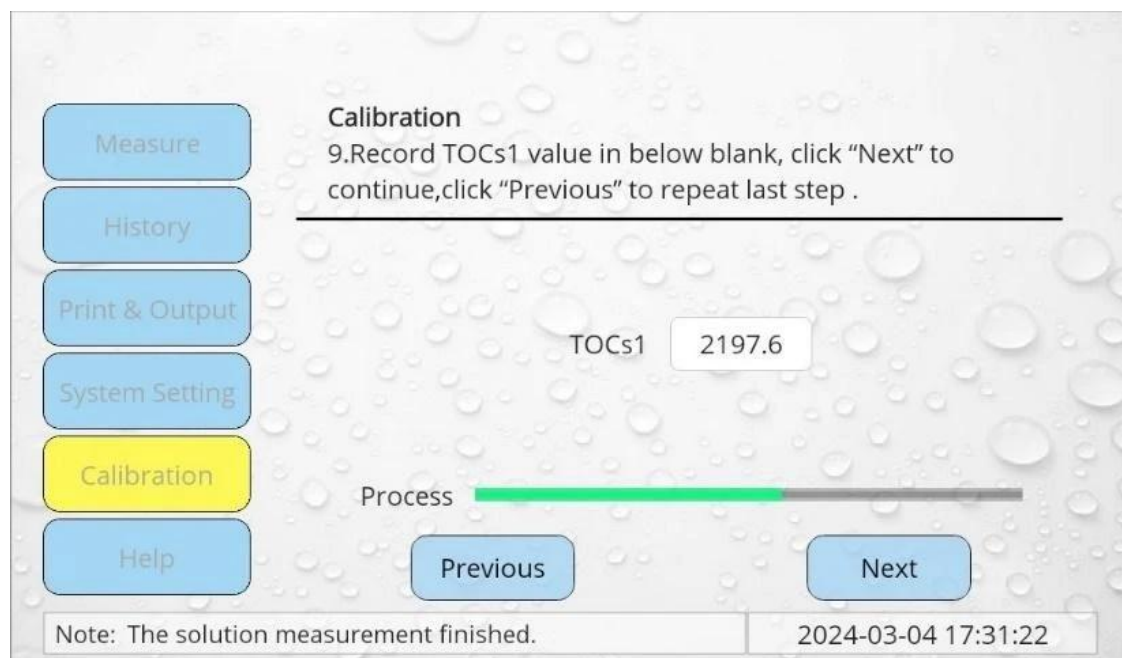


Figure 83

10. Insert the sampling tube into the 500 µg/L sucrose calibration solution. Click the "Start" button to continue the calibration or the "Cancel" button to exit the calibration process.

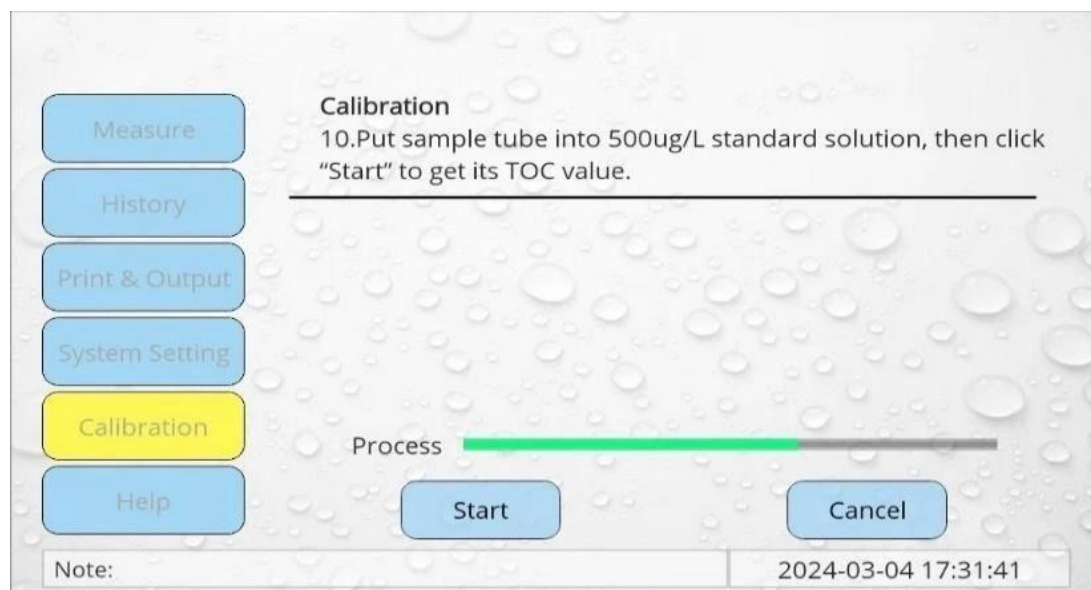


Figure 84

11. The system will automatically measure the TOC response value of the 500 µg/L sucrose calibration solution and display it on the screen, as shown in Figure 6.69. The system will automatically stop when the RSD of three consecutive measurements is less than 0.5%, and the average of these three measurements will be recorded as TOCs2. To stop the calibration process, click the "Stop" button.

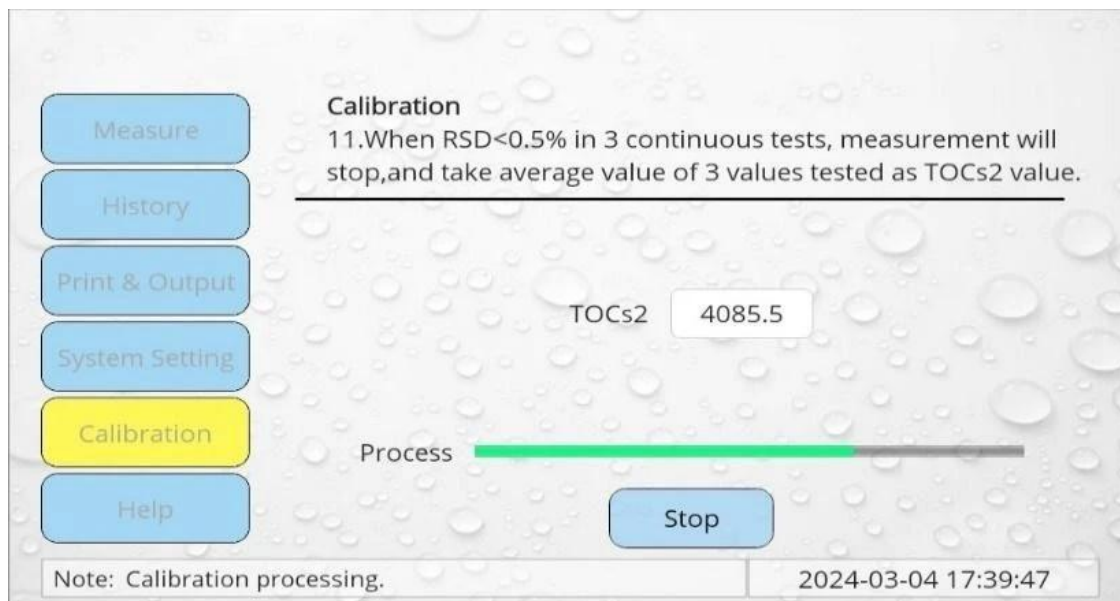


Figure 85

12. The TOCs2 result is displayed. Record the TOCs2 value in the box, which will be used to calculate the organic carbon calibration constant at the end of the calibration. Click the "Next" button to continue the calibration; if you are not satisfied with the measurement results, click the "Previous" button to return to step 10 and retest.

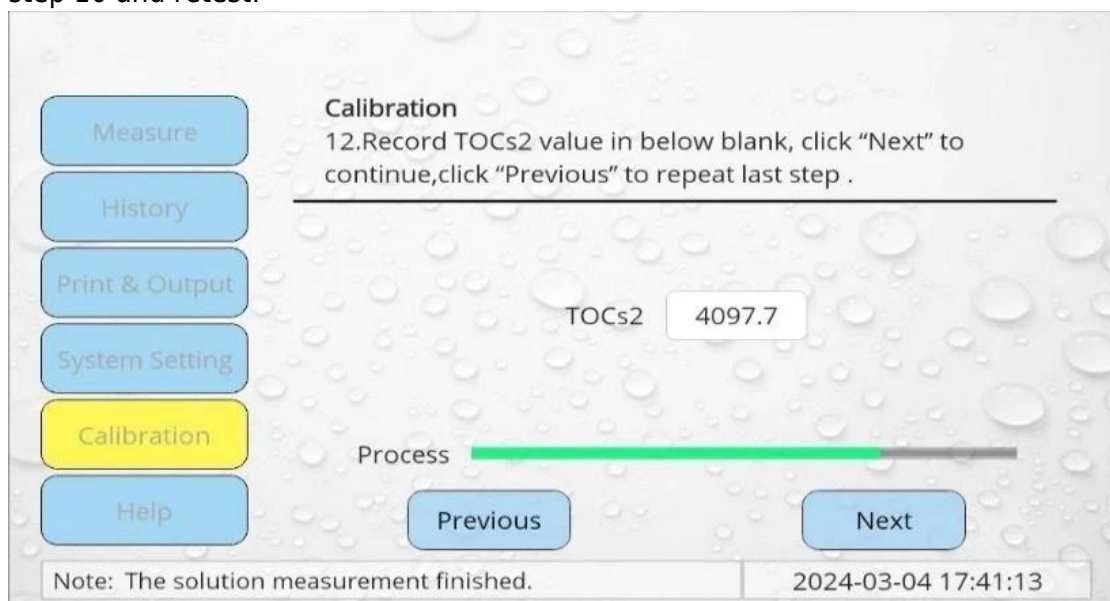


Figure 86

13. Insert the sampling tube into the 1000 µg/L sucrose calibration solution. Click the "Start" button to continue the calibration or the "Cancel" button to exit the calibration process.

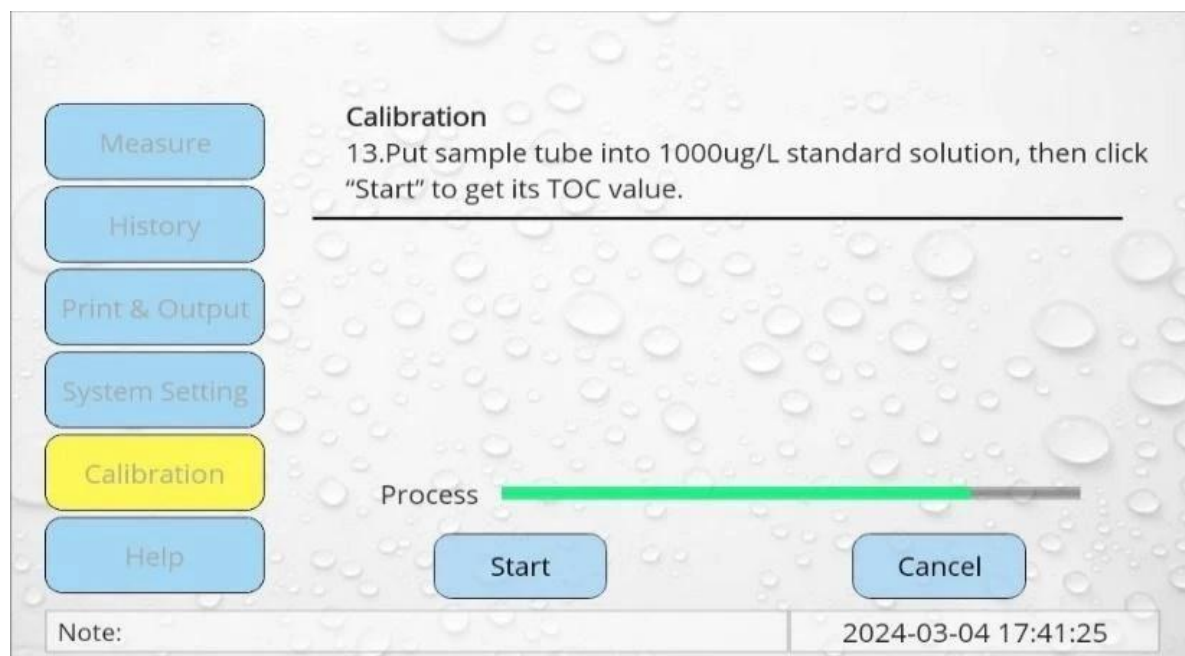


Figure 87

14. The system will automatically measure the TOC response value of the 1000 µg/L sucrose calibration solution and display it on the screen. The system will automatically stop when the RSD of three consecutive measurements is less than 0.5%, and the average of these three measurements will be recorded as TOCs3. To stop the calibration process, click the "Stop" button.

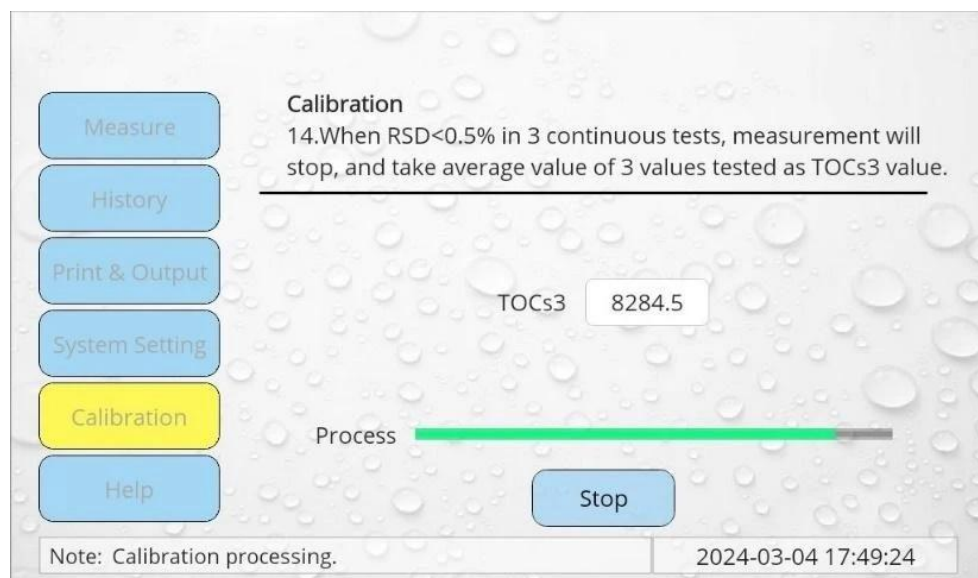


Figure 88

15. The TOCs3 result is displayed. Record the TOCs3 value in the box, which will be used to calculate the organic carbon calibration constant at the end of the calibration. Click the "Next" button to continue the calibration; if you are not satisfied with the measurement results, click the "Previous" button to return to step 13 and retest.

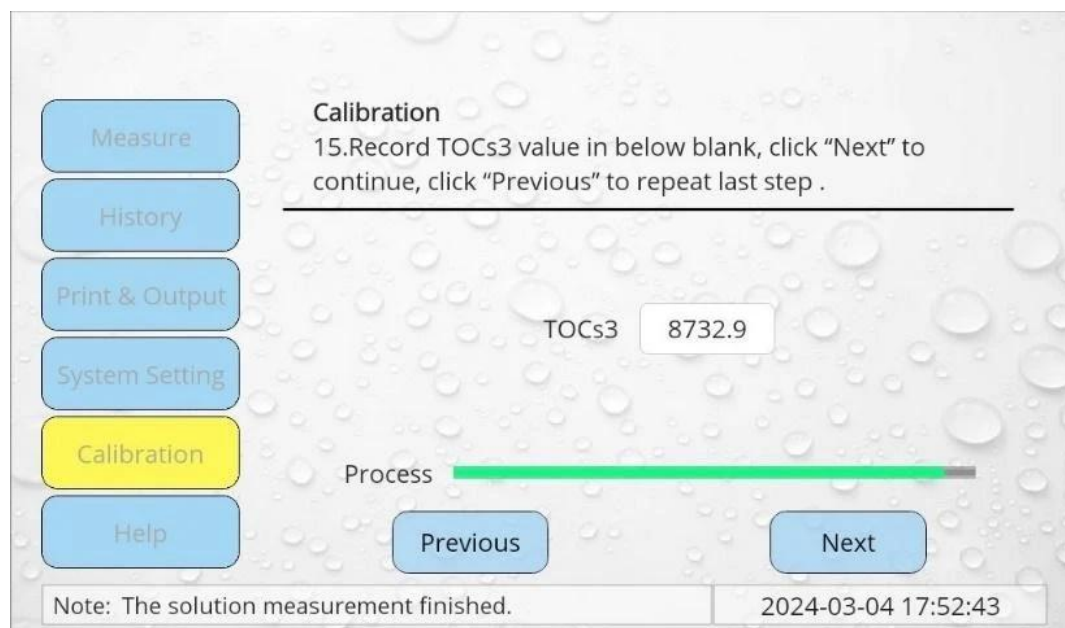


Figure 89

16. The system will analyze the results based on the tests. If the calibration fails, you need to re-prepare the calibration solution and redo the calibration process. If the calibration is successful, the system will automatically calculate the total organic carbon calibration constant and display it on the screen. Record the three total organic carbon calibration constants, the zero compensation value, and the zero response value in the boxes. Click the "Finish" button, and the interface will switch to the system settings login interface. Enter the system settings and input the recorded values into the corresponding boxes in the system settings, then click "Save."

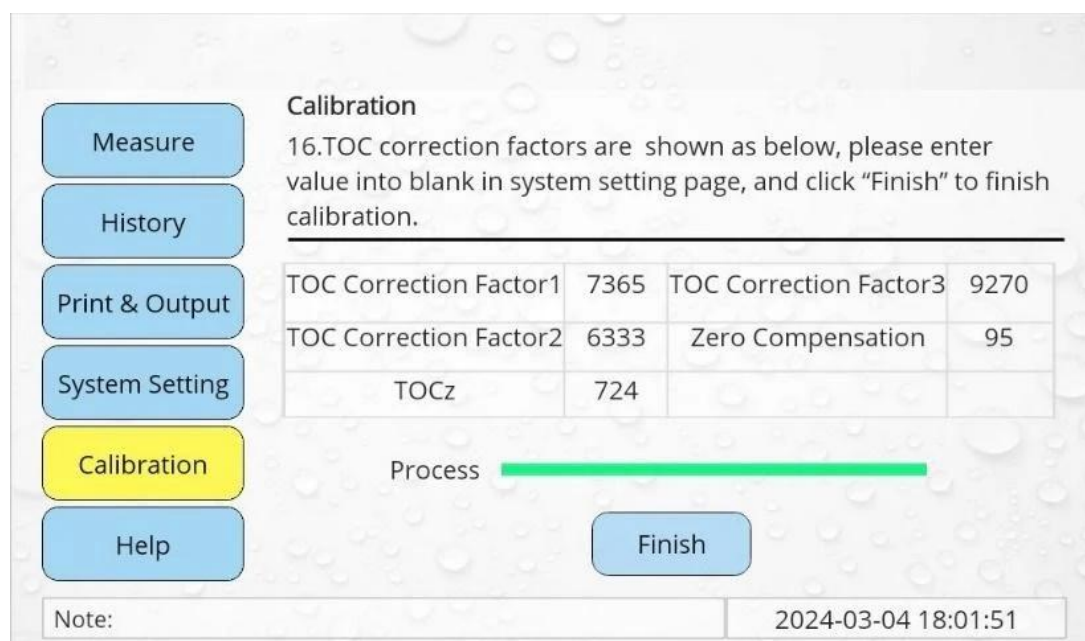


Figure 90

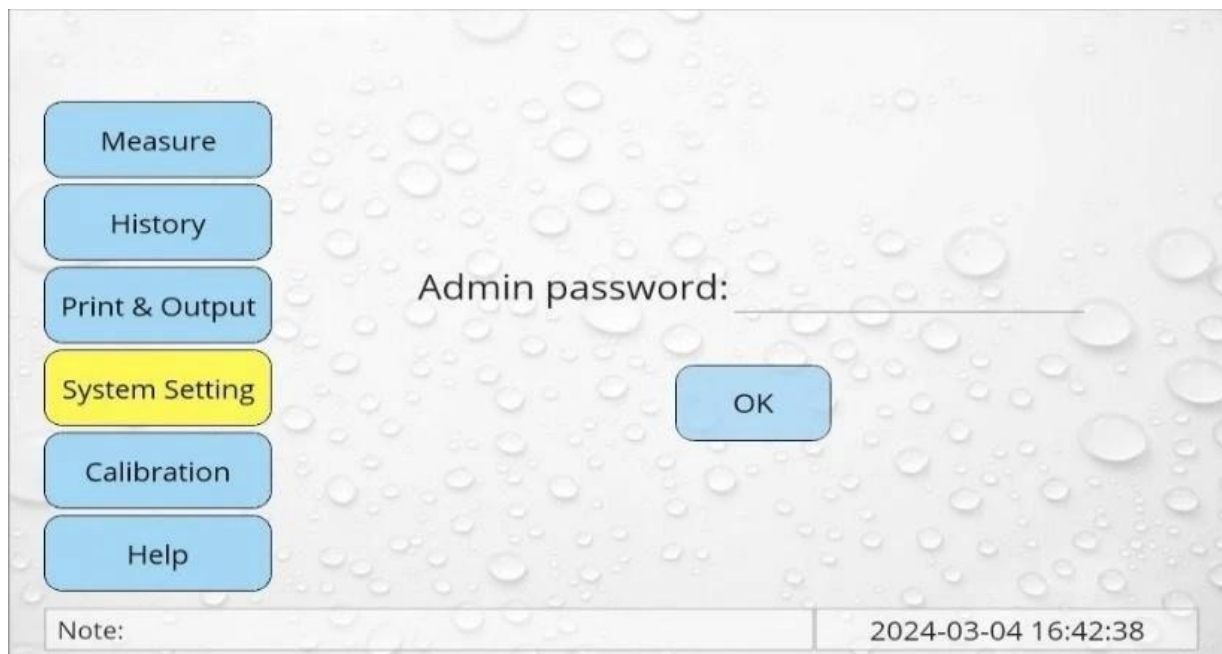


Figure 91

10.2.7 Help

When the system is not performing measurement operations, click the "Help" menu button to enter the help interface.

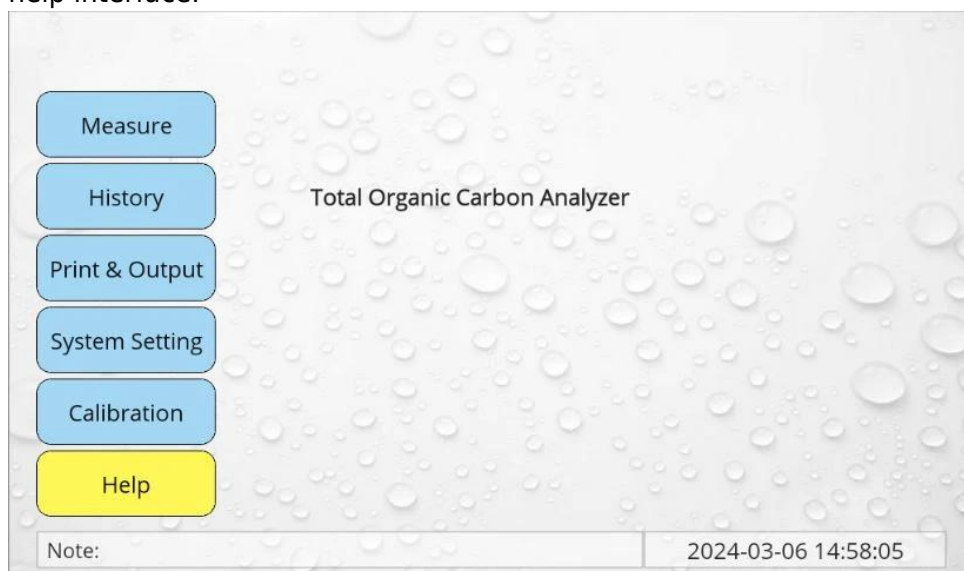


Figure 92

11. Software Detailed Description

11.1 Introduction to Software Main Interface

The main interface window of the software consists of the following sections.

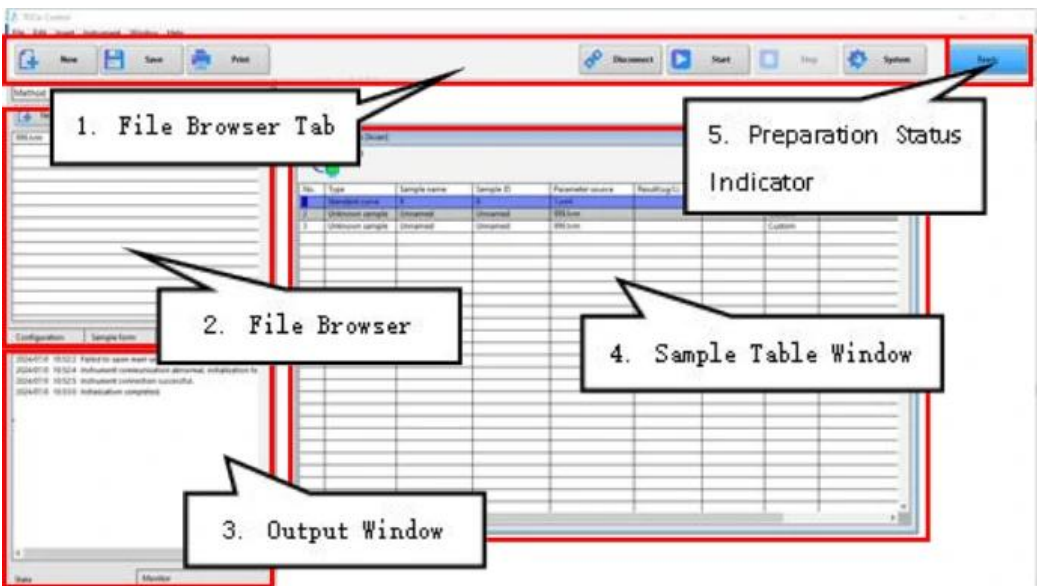


Figure 93

Item	Description
File Browser Tab	This area is used for the primary operations that control the software's functionality.
File Browser	There are 4 tabs. Click the tab name to switch the display content. The file list in the tab shows the names of saved files. When the number of saved files exceeds the number of rows in the file list, you can scroll the list vertically (using the mouse wheel) to browse. Double-click a file name in the file list to open a saved file. In the "Hardware Configuration" tab, "New" allows you to create new hardware configurations. In the "Sample Table" tab, "New" allows you to create new sample tables. In the "Standard Curve" tab, "New" allows you to create new standard curve test files. "All" displays configuration files and measured standard curve data content. "Upload" can read the lower machine's standard curve parameter information when connected. In the "Method" tab, "New" allows you to create new sample test configuration files.
Output Window	There are 2 tabs displaying the main operations and monitoring information of the instrument when in communication mode. The "Status" tab shows the main instrument operation processes and execution times. The "Background Monitoring" tab shows the UV lamp and peristaltic pump tube lifespan information in real time.

Table 3

Sample Table Window	Displays the content of the open sample table. This area shows the sample table and detailed data.
Connection Status	Displays the communication status with the instrument and the operation status of the instrument. Not Connected: The computer is not in communication with the instrument. Ready: Instrument communication is successful. Running: The connected sample table is in the test state.

Table 4

11.2 Introduction to the Sample Table Window Area

The main components of the sample table window are as follows.

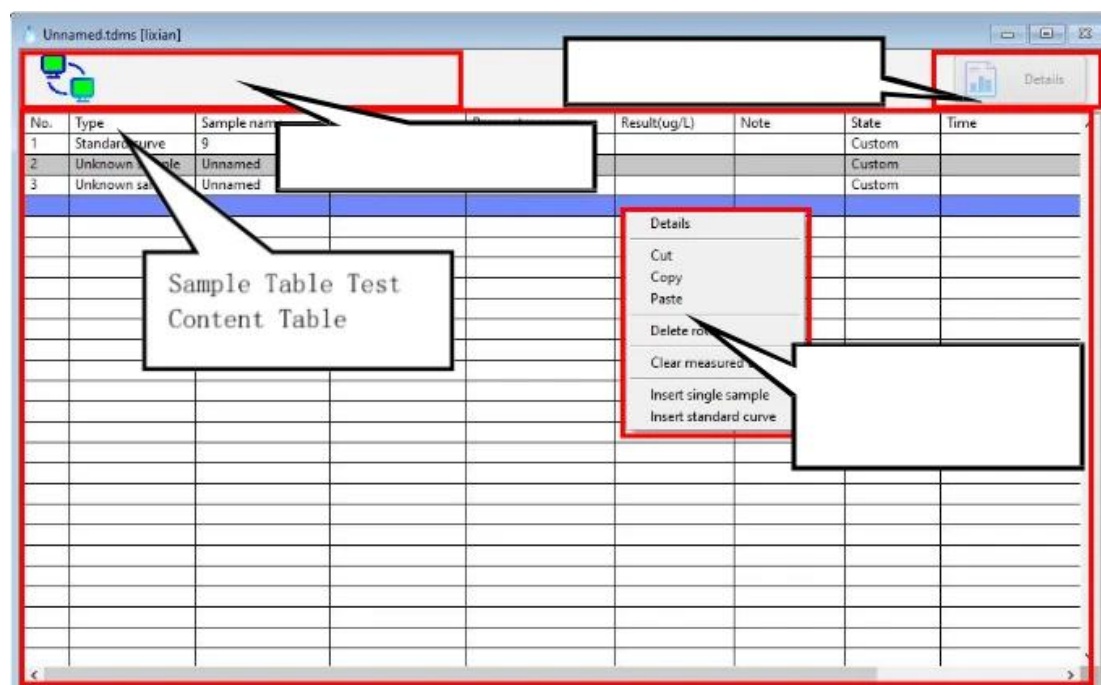


Figure 95

Item	Description
Test Status Display	:Shows the connection status of the sample table. When the connection is successful, it is displayed in green.
Sample Table Buttons	Detailed: Click to enter the detailed data view interface for the selected row.

Table 5

Sample Table Right-Click Menu	Detailed Data: Click to enter the detailed data view interface for the selected row. Cut: Click to cut the selected row data to the clipboard. Copy: Click to copy the selected row data to the clipboard. Paste: Click to insert the data from the clipboard into the sample table. If the selected row is empty, the pasted data is added to the last row of the sample table by default. Delete Row: Click to delete the selected row. Clear Measured Data: Click this item in the selected row to delete all stored test data. The test status of the selected row changes to "Custom" and can be retested. Insert Single Sample: Click to enter the "Single Sample Parameter Setting" window. After configuration, a single unknown sample test can be created. Insert Standard Curve: Click to enter the "Select Standard Curve File" window. After configuration, a single standard curve test can be created.
Sample Table Test Content Grid	Serial Number: Displays the serial number of the sample table test. Type: Displays the test type, either "Standard Curve" or "Unknown Sample". Sample Name: Displays the sample name. Sample ID: Displays the sample ID. Parameter Source: Displays the name of the file from which the measurement parameters are referenced. Result: In offline mode, displays the average concentration of the unknown sample test. Status: Displays the test status: "Custom" means the test has not been conducted, "Testing" means the test is in progress, "Aborted" means the test was paused before completion, and "Completed" means the test is finished. Cup Position: In offline mode, if an autosampler is used, this shows the sample placement position.

Table 6

Note:

The column width of the sample table grid can be adjusted by dragging with the mouse.

11.3 File Creation and Editing

11.3.1 Creating Hardware Configuration

Hardware configuration files are used to set up the connection information for the instrument.

1. Click "New" under the "Hardware Configuration" in the File Browser tab.

Configuration

New

lixian

zaixian

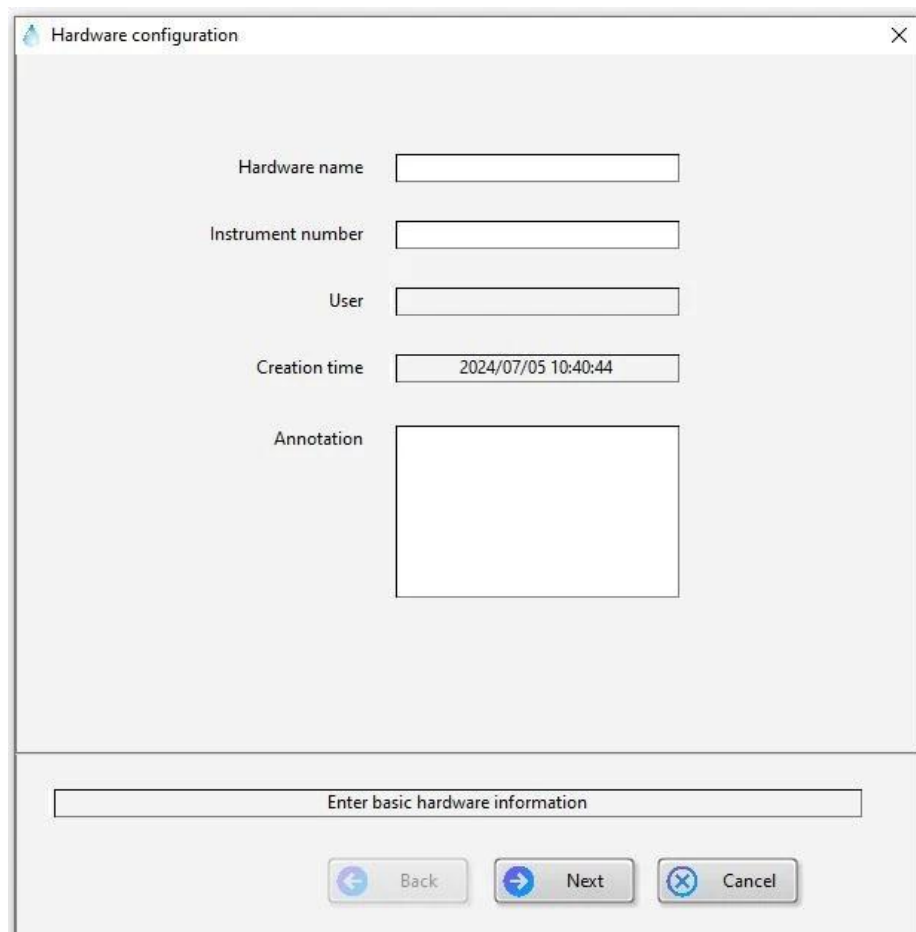
15-lixian

zidong

Configuration Sample form STD curve Method

Figure 96

2. In the "Hardware configuration" interface, enter the basic information for the hardware. After completing the settings, click "Next".



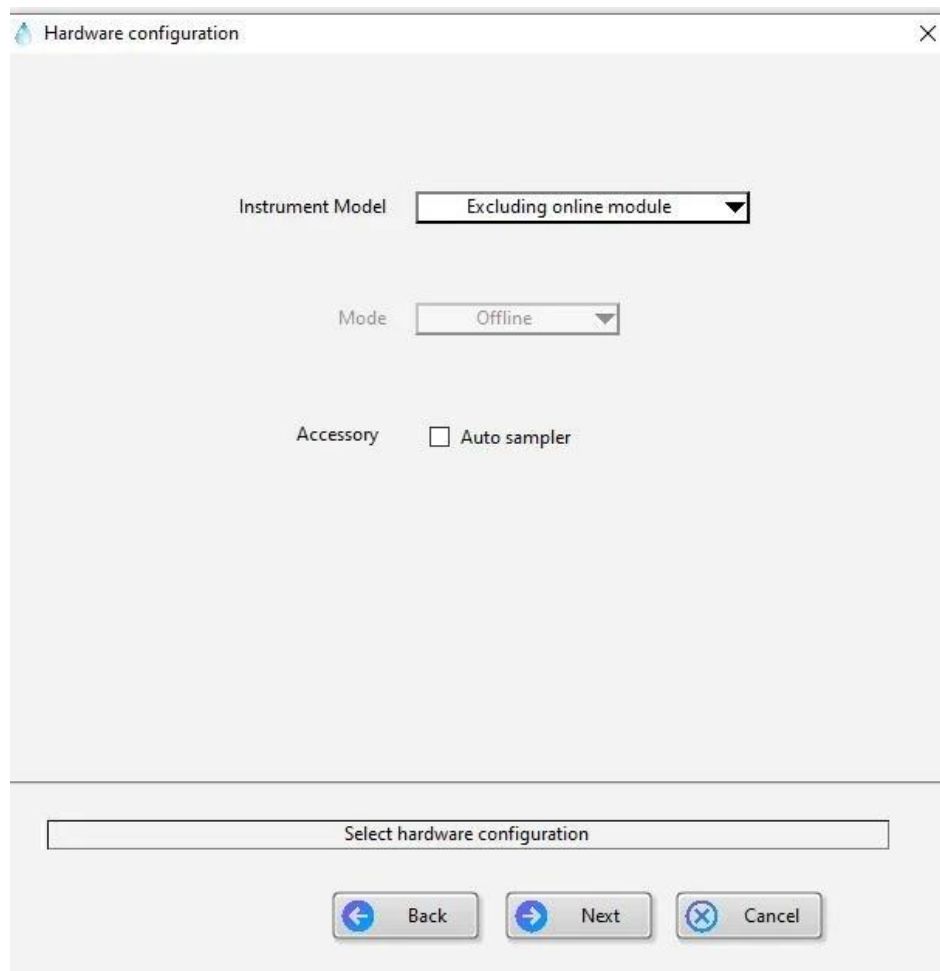
The image shows a 'Hardware configuration' dialog box with a title bar containing a close button (X). The dialog has a light gray background. It contains five input fields arranged vertically, each with a label to its left: 'Hardware name', 'Instrument number', 'User', 'Creation time', and 'Annotation'. The 'Creation time' field is pre-filled with the text '2024/07/05 10:40:44'. Below these fields is a horizontal bar with the text 'Enter basic hardware information'. At the bottom of the dialog are three buttons: 'Back' (with a left arrow icon), 'Next' (with a right arrow icon), and 'Cancel' (with an 'X' icon).

Figure 97

Item	Description
Hardware Name	The name of the hardware configuration, used for calling when connecting the instrument. Other parameter files need to be based on the hardware configuration information.
User	The username of the file creator.
Creation Time	The time the file was created.
Annotation	Enter any Annotation for the file.

Table 7

3. Select the hardware configuration. After selection, click "Next".



The image shows a 'Hardware configuration' dialog box with a title bar containing a blue icon and a close button. The dialog has a light gray background. It contains three main sections: 'Instrument Model' with a dropdown menu showing 'Excluding online module', 'Mode' with a dropdown menu showing 'Offline', and 'Accessory' with an unchecked checkbox labeled 'Auto sampler'. At the bottom, there is a text box labeled 'Select hardware configuration' and three buttons: 'Back' (with a left arrow), 'Next' (with a right arrow), and 'Cancel' (with a blue X).

Figure 98

Item	Description
Instrument Model	Select according to the instrument model used.
Mode	Choose between online and offline modes. The default is offline mode.
Accessory	Select the accessories to be used.

Table 8

4. Set the communication port for connecting the computer to the instrument. After completing the settings, click "Save".

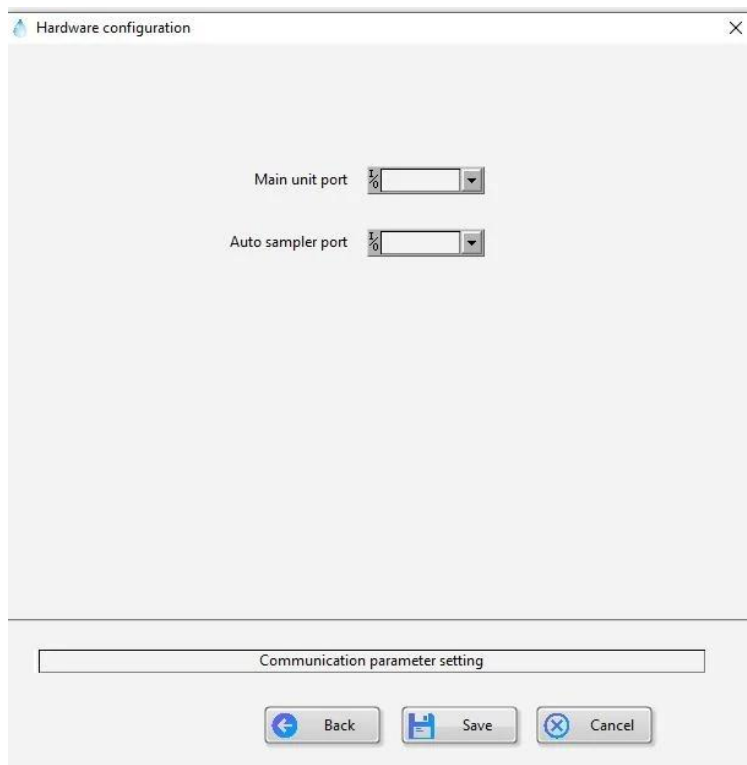


Figure 99

Item	Description
.Main unit port	Enter the serial port number for connecting to the host.
Auto sampler Port	Enter the serial port number for connecting the autosampler. This is shown when the autosampler accessory is enabled.

Table 9

11.3.2 Creating Standard Curve Files

Standard curve files are used to draw standard curves.

1. Click "New" under "STD Curve" in the File Browser tab.

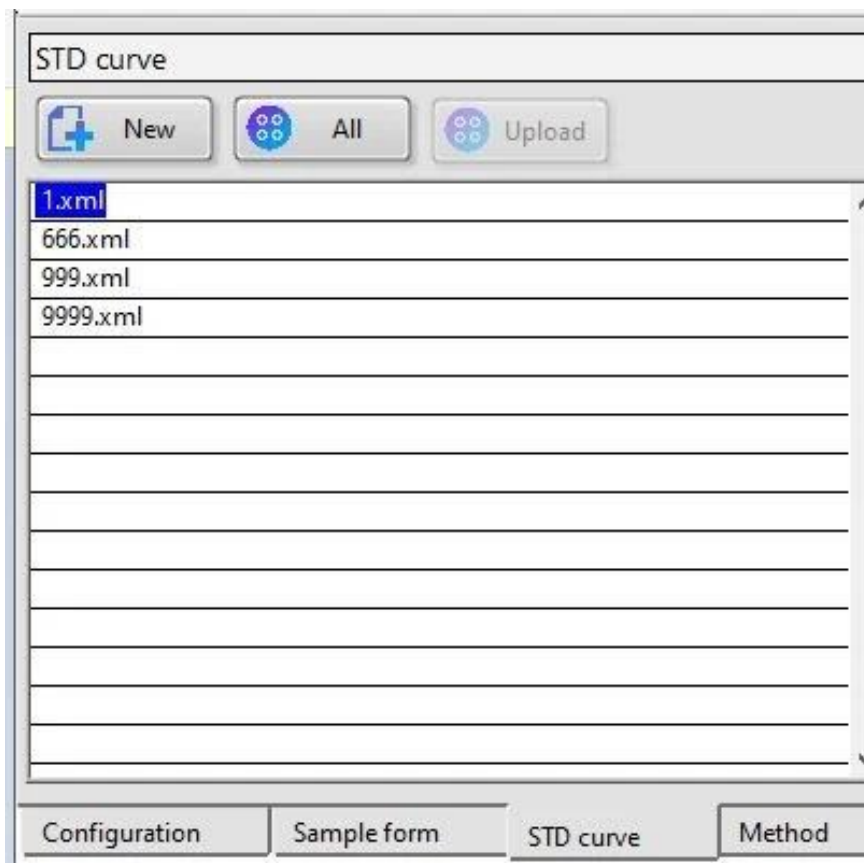
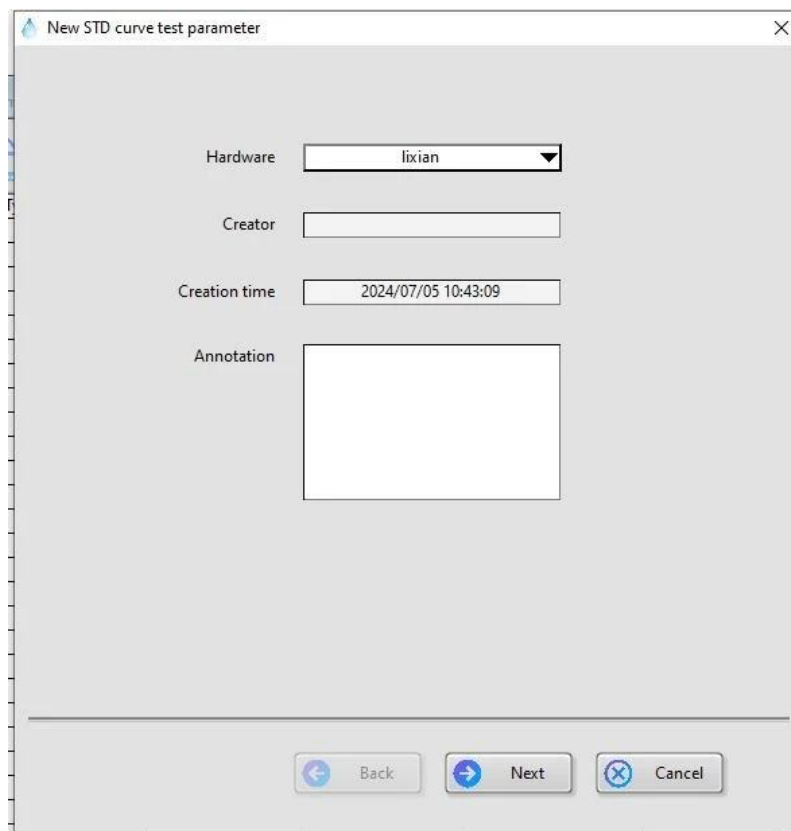


Figure 100

2. In the "New STD curve Test Parameter" interface, select the hardware configuration to be connected. After completing the settings, click "Next".



New STD curve test parameter

Hardware: lixian

Creator:

Creation time: 2024/07/05 10:43:09

Annotation:

Back Next Cancel

Figure 101

Item	Description
Hardware	The name of the hardware configuration that the file is compatible with.
Creator	The user creating the file.
Creation Time	The time the file was created.
Annotation	File remarks and other information.

Table 10

3. Enter the sample name and sample ID according to specific test requirements. Enter the standard curve file name in "STD Curve File Name".

The image shows a software dialog box titled "New STD curve test parameter". It has a light gray background and a standard Windows-style title bar with a close button (X). Inside the dialog, there are three input fields. The first is labeled "Sample name" and contains the text "Unnamed". The second is labeled "Sample ID" and also contains "Unnamed". The third is labeled "STD curve file name" and is currently empty, with a small folder icon to its right. At the bottom of the dialog, there are three buttons: "Back" with a left arrow icon, "Save" with a floppy disk icon, and "Cancel" with a blue X icon.

Figure 102

Item	Description
Sample Name	Enter the sample name.
Sample ID	Enter the sample ID.
STD Curve File Name	Enter the standard curve file name. The default path is the STD_Curve folder in the software directory. Once created, the standard curve file will be saved under this name.

Table 11

4)Click "Save" to complete the creation of the standard curve file.

11.3.3 Creating Method Files

Method files are used to configure the parameters for unknown sample tests.

1. Click "New" under "Method" in the File Browser tab

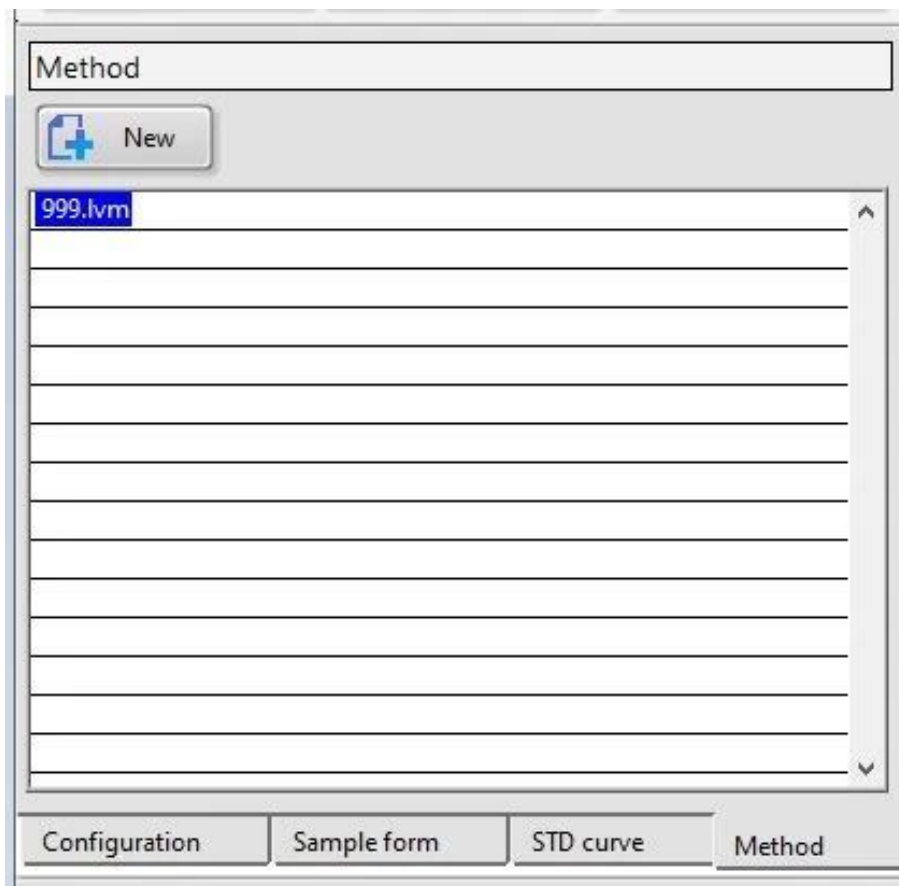


Figure 103

2. In the "New Method" interface, select the hardware configuration to be connected. After completing the settings, click "Next".

The image shows a software window titled "New method parameters". It has a light gray background. On the left side, there are four labels: "Hardware", "Creator", "Creation time", and "Annotation". To the right of each label is an input field. The "Hardware" field is a dropdown menu with "lixian" selected. The "Creator" field is a single-line text box. The "Creation time" field is a single-line text box containing the date and time "2024/07/05 10:44:21". The "Annotation" field is a larger, multi-line text box. At the bottom of the window, there are three buttons: "Back" with a left arrow icon, "Next" with a right arrow icon, and "Cancel" with a close icon (X).

Figure 104

Item	Description
Hardware	The name of the hardware configuration that the file is compatible with.
Creator	The user creating the file.
Creation Time	The time the file was created.
Annotation	File remarks and other information.

Table 12

3. Enter the sample name and sample ID according to specific test requirements. Enter the method file name in "Method File Name." After completing the settings, click "Next".

The image shows a software window titled "New method parameters". Inside, there are three input fields. The first is labeled "Sample name" and contains the text "Unnamed". The second is labeled "Sample ID" and also contains "Unnamed". The third is labeled "Method file name" and is currently empty. To the right of the "Method file name" field is a small folder icon. At the bottom of the window, there are three buttons: "Back" with a left arrow, "Next" with a right arrow, and "Cancel" with a close icon.

Figure 105

Item	Description
Sample Name	Enter the sample name. When added to the sample table, it is displayed in the sample name column for recording the test.
Sample ID	Enter the sample ID. When added to the sample table, it is displayed in the sample ID column for recording the test.
Method File Name	Enter the method file name. The default path is the method folder in the software directory. Once created, the method file will be saved under this name.

Table 13

4. Select the standard curve to reference for concentration calculation. In offline mode, set the Number of Cleanings and measurements for the test. In online mode, set the thresholds and sampling frequency for the test.

New method parameters

Reference STD curve

D:\TOCe-Control\STD_Curve\1.2024_07_02_14_18_56.xml

Number of cleanings 3

Number of measurements 3

Back Save Cancel

Figure 106

New method parameters

Reference STD curve

D:\TOCe-Control\STD_Curve\1.2024_07_02_13_27_39.xml

Alarm threshold(ug/L) 500

Sampling frequency(min) 2

Back Save Cancel

Figure 107

Item	Description
Reference STD Curve	Set the standard curve used for calculating sample concentration.
Number of Cleanings	In offline mode, the number of times the sample tubing is washed. The default is 3, ranging from 1 to 20.
Number of Measurements	In offline mode, the number of measurements taken after washing. The default is 3, ranging from 2 to 20.
Alarm Threshold(μ g/L)	In online mode, the concentration threshold. The default is 500, ranging from 0 to 1500.
Sampling Frequency(min)	In online mode, the interval time between measurements. The default is 2, ranging from 1 to 150.

Table 14

5. Click "Save" to complete the creation of the method file.

11.3.4 Viewing and Editing Hardware Configurations

1. Find the saved files in the "Hardware Configuration" list under the File Browser tab, and double-click to open.

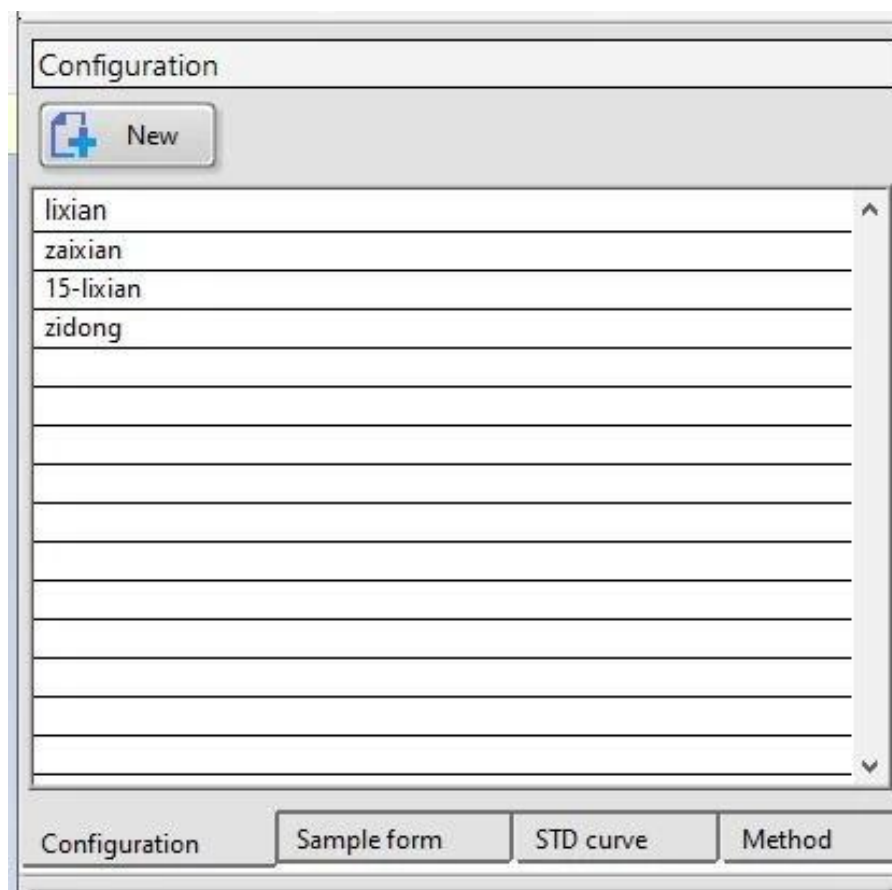


Figure 108

2. In the pop-up instrument setup viewing window, click the corresponding tab to view and edit.

Hardware Routine

The screenshot shows a software window titled "Hardware view" with a close button (X) in the top right corner. Below the title bar are three tabs: "Routine", "Hardware Param.", and "Comm. Param.". The "Hardware Param." tab is active. The main area contains the following fields:

- Hardware name:** A text box containing the value "lixian".
- Instrument number:** An empty text box.
- User:** An empty text box.
- Creation time:** A text box containing the value "2024/07/02 10:30:49".
- Annotation:** A large empty rectangular text area.

At the bottom of the window, there are three buttons: "Print" (with a printer icon), "OK" (with a checkmark icon), and "Cancel" (with an X icon).

Figure 109

Item	Description
Hardware Name	Displays the hardware name entered during the creation of the hardware configuration. This cannot be changed.
User	Displays the username of the file creator.
Creation Time	Displays the time when the configuration was created.
Annotation	Displays Annotation or remarks for the hardware configuration. This can be edited.
Print	Button to trigger the printing of the hardware configuration parameters. For detailed instructions, refer to "7.6.2 Hardware Configuration Printing."

Table 15

"Hardware Param." Tab

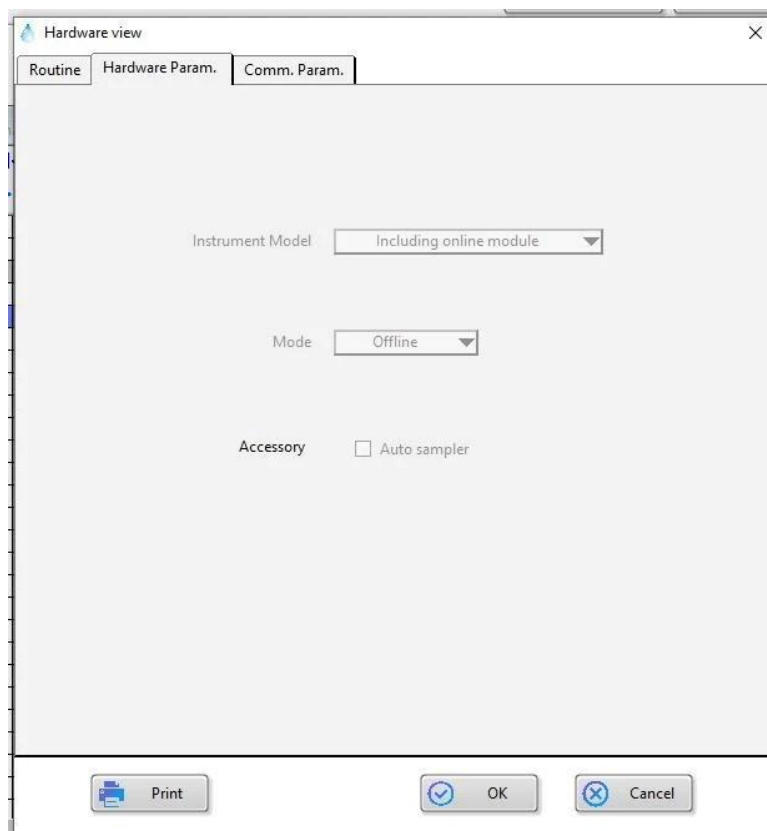


Figure 110

Item	Description
Instrument Model	Displays the instrument model applicable to the configuration. This cannot be changed.
Mode	Displays the operating mode information of the configuration. This cannot be changed.
Accessory	Displays the accessory information. This cannot be changed.

Table 16

"Communication Parameters" Tab

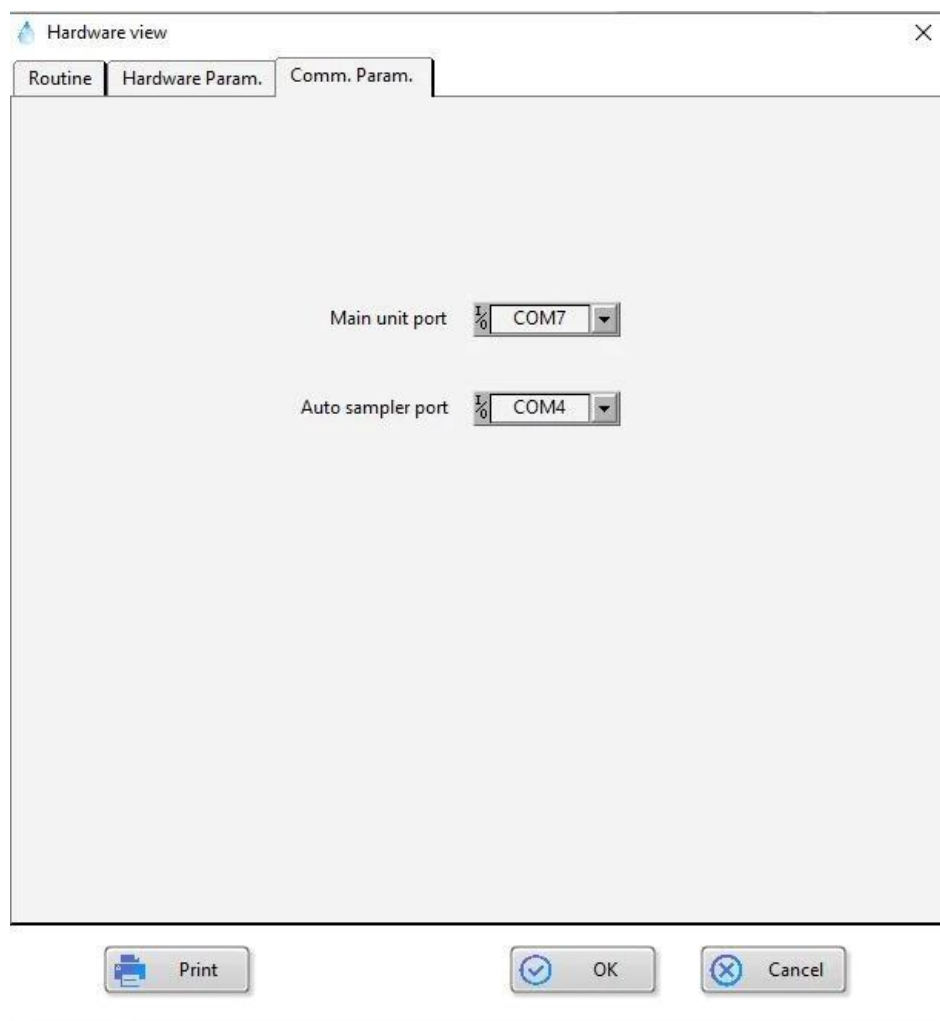


Figure 111

Item	Description
Main unit port	Displays the serial port number for connecting to the host. This can be edited.
Auto sampler Port	Displays the serial port number for connecting the autosampler. This can be edited.

Table 17

11.3.5 Viewing and Editing Standard Curve Files

1. Find the saved files in the "Standard Curve" list under the File Browser tab, and double-click to open.

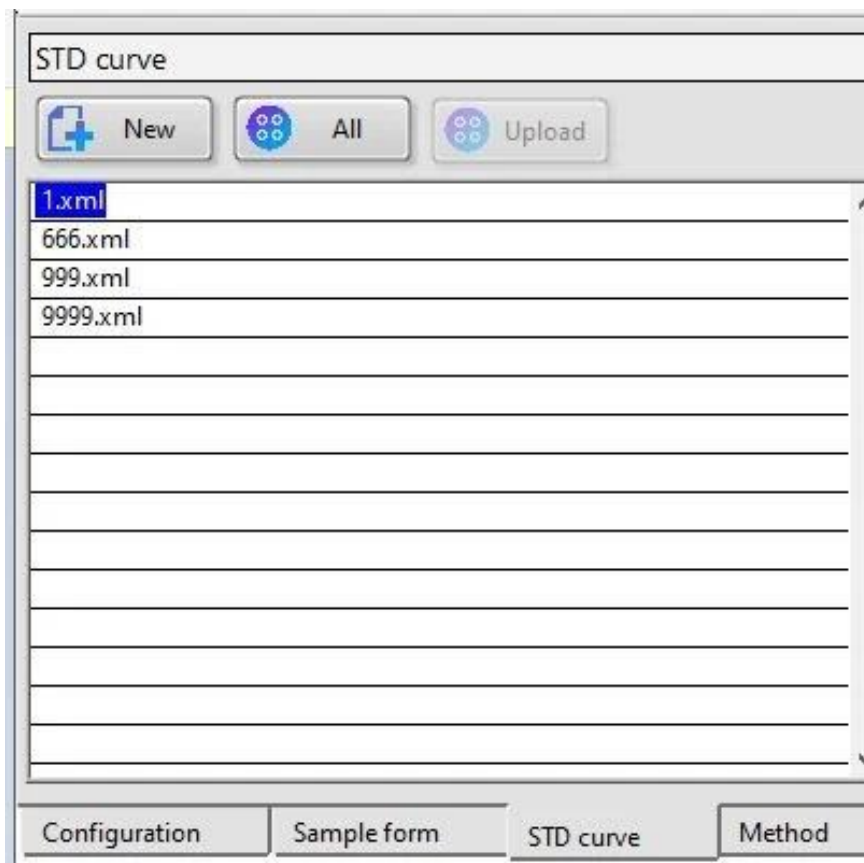


Figure 112

2. In the pop-up standard curve parameters viewing window, click the corresponding tab to view and edit.

Convention Tab

View STD curve parameter

Convention

Overview

Analysis

Hardware

15-lixian

Creator

Creation time

2024/07/04 16:26:51

Annotation

Print

OK

Cancel

Figure 113

Item	Description
Hardware	Displays the hardware configuration name applicable to the standard curve test.
Creator	Displays the username of the standard curve creator.
Creation Time	Displays the time when the parameters were created.
Annotation	Displays the parameter Annotation.
Print	Button to trigger the printing of the standard curve information. For detailed instructions, refer to "7.6.3 Standard Curve Printing."

Table 18

Overview Tab

[81]

www.biolabscientific.com

View STD curve parameter

Convention Overview Analysis

Sample name

Sample ID

STD curve file name

Print OK Cancel

Figure 114

Item	Description
Sample Name	Displays the sample name. When this test is added to the sample table, it is shown in the sample name column for recording the test.
Sample ID	Displays the sample ID. When this test is added to the sample table, it is shown in the sample ID column for recording the test.
STD Curve File Name	Displays the save path of the standard curve file.

Table 19

Analysis Tab

View STD curve parameter

Convention | Overview | Analysis

Compensation value: 36

Calibration constant 1: 9345

Calibration constant 2: 8920

Calibration constant 3: 9074

TOCz: 178

TOCs1: 0

TOCs2: 0

TOCs3: 0

Load

Print OK Cancel

Figure 115

Item	Description
Compensation Value	Displays the zero point compensation value of the standard curve.
TOCz	Displays the TOCz of the standard curve.
TOCs1	Displays the TOCs1 of the standard curve.
TOCs2	Displays the TOCs2 of the standard curve.
TOCs3	Displays the TOCs3 of the standard curve.
Calibration Constant 1	Displays the calibration constant 1 of the standard curve.
Calibration Constant 2	Displays the calibration constant 2 of the standard curve.
Calibration Constant 3	Displays the calibration constant 3 of the standard curve.
Load	Loads the displayed parameters into the lower machine parameter system for standalone use.

Table 20

11.3.6 Viewing and Editing Method Files

1. Find the saved file in the "Method" list under the "File Browser" tab and double-click to open.

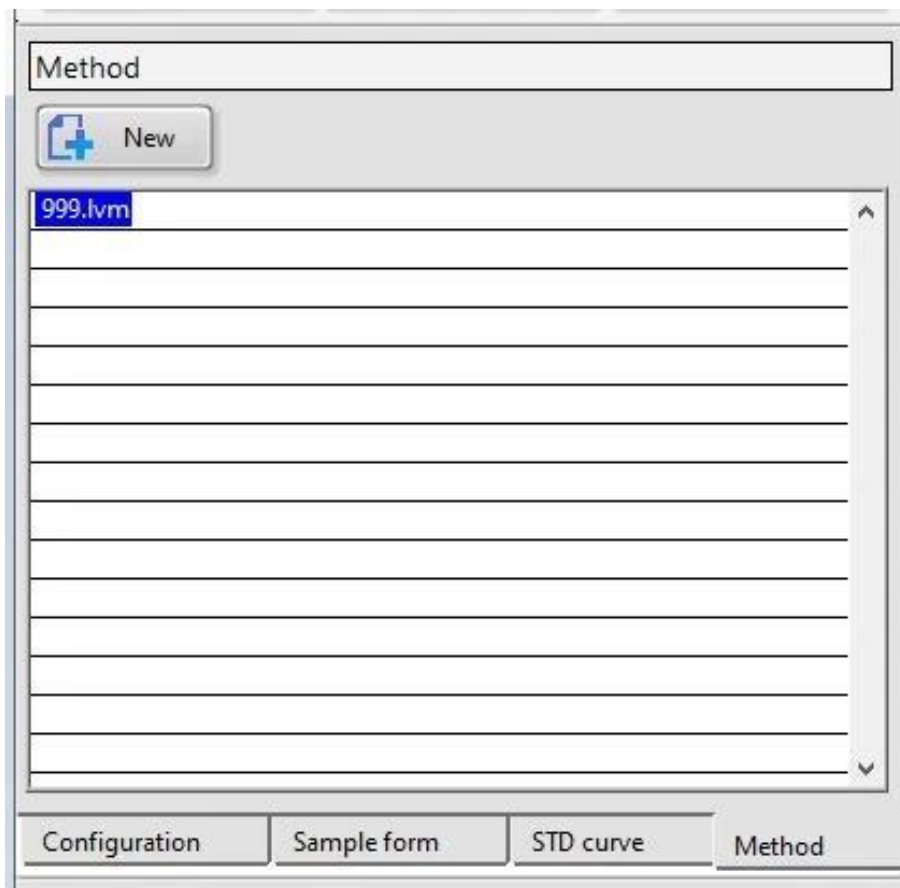


Figure 116

2. In the popped-up method parameter viewing window, click the corresponding tab to view and edit.

Routine Tab

View method parameters

Routine Overview Param.

Hardware

User

Creation time

Annotation

OK Cancel

Figure 117

Item	Description
Hardware	Displays the hardware configuration name applicable to the method test.
User	Displays the username of the method creator.
Creation Time	Displays the time when the parameters were created.
Annotation	Displays the parameter Annotation.

Table 21

Overview Tab

View method parameters

Routine

Overview

Param.

Sample name

Unnamed

Sample ID

Unnamed

Method file name

D:\TOCe-Control\Method\999.lvm

OK

Cancel

Figure 118

Item	Description
Sample Name	Displays the sample name. When this test is added to the sample table, it is shown in the sample name column for recording the test.
Sample ID	Displays the sample ID. When this test is added to the sample table, it is shown in the sample ID column for recording the test.
Method File Name	Displays the save path of the method file.

Table 22

View method parameters

Routine Overview Param.

Reference STD curve

D:\TOCe-Control\STD_Curve\1.2024_07_02_13_27_39.xml

Number of cleanings 3

Number of measurements 3

OK Cancel

Figure 119 (Offline)

View method parameters

Routine Overview Param.

Reference STD curve

D:\TOCe-Control\STD_Curve\1.2024_07_02_14_18_56.xml

Alarm threshold(ug/L) 500

Sampling frequency(min) 2

OK Cancel

Figure 120 (Online)

Item	Description
------	-------------

Reference STD Curve	Displays the standard curve used for calculating the concentration of unknown samples.
Number of Cleanings	In offline mode, the number of times the sample tubing is washed. The default is 3, ranging from 1 to 20.
Number of Measurements	In offline mode, the number of measurements taken after washing. The default is 3, ranging from 2 to 20.
Alarm Threshold(μ g/L)	In online mode, the concentration threshold. The default is 500, ranging from 0 to 1500.
Sampling Frequency(min)	In online mode, the interval time between measurements. The default is 2, ranging from 1 to 150.

Table 23

11.4 Editing the Sample Table

11.4.1 Inserting a Standard Curve Test

Standard curve tests can be inserted into the sample table by dragging and dropping a saved file from the "Standard Curve" list under the "File Browser" tab. The insertion can also be done via the right-click menu. The process is as follows:

1. Right-click in the open sample table to open the menu, then select "Insert Standard Curve"

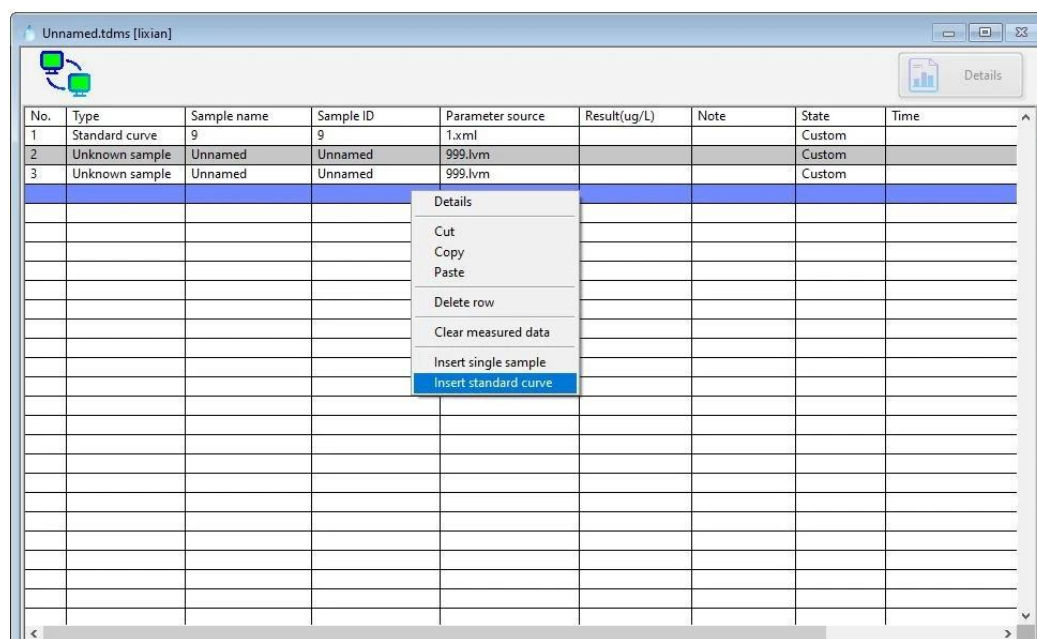


Figure 121

2. In the popped-up "Select Standard Curve" window, select the standard curve file.

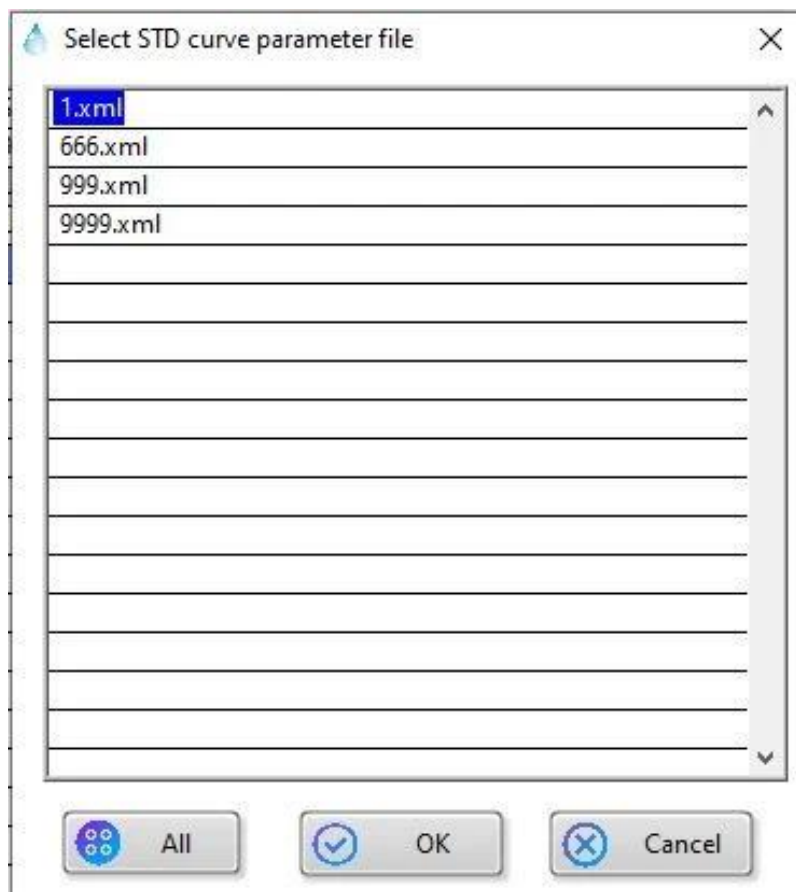


Figure 122

Item	Description
Standard Curve File List	Displays saved standard curve files.
All	Displays all saved files and completed standard curve files in the standard curve file list.

Table 24

3. Click "OK" to add the standard curve test to the sample table.

Note:

If the hardware configuration parameters of the inserted standard curve or method test do not match the hardware parameters configured in the sample table, an error prompt will appear.

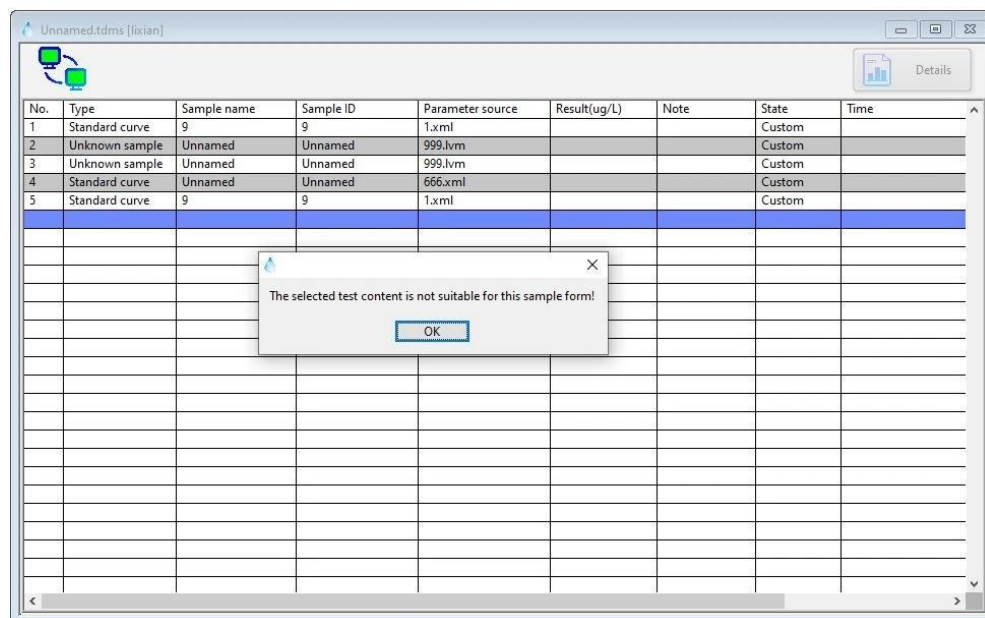


Figure 123

11.4.2 Inserting a Single Sample Test

Sample tests can be inserted into the sample table by dragging and dropping a saved file from the "Method" list under the "File Browser" tab. The insertion can also be done via the right-click menu. The process is as follows:

1. Right-click in the open sample table to open the menu, then select "Insert Single Sample".

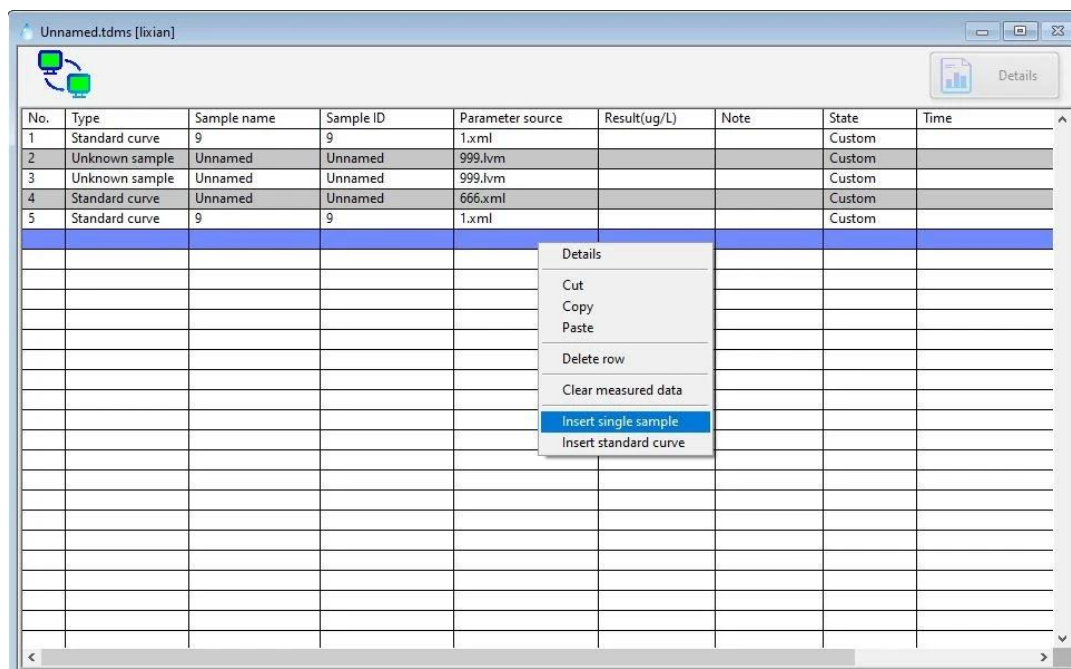
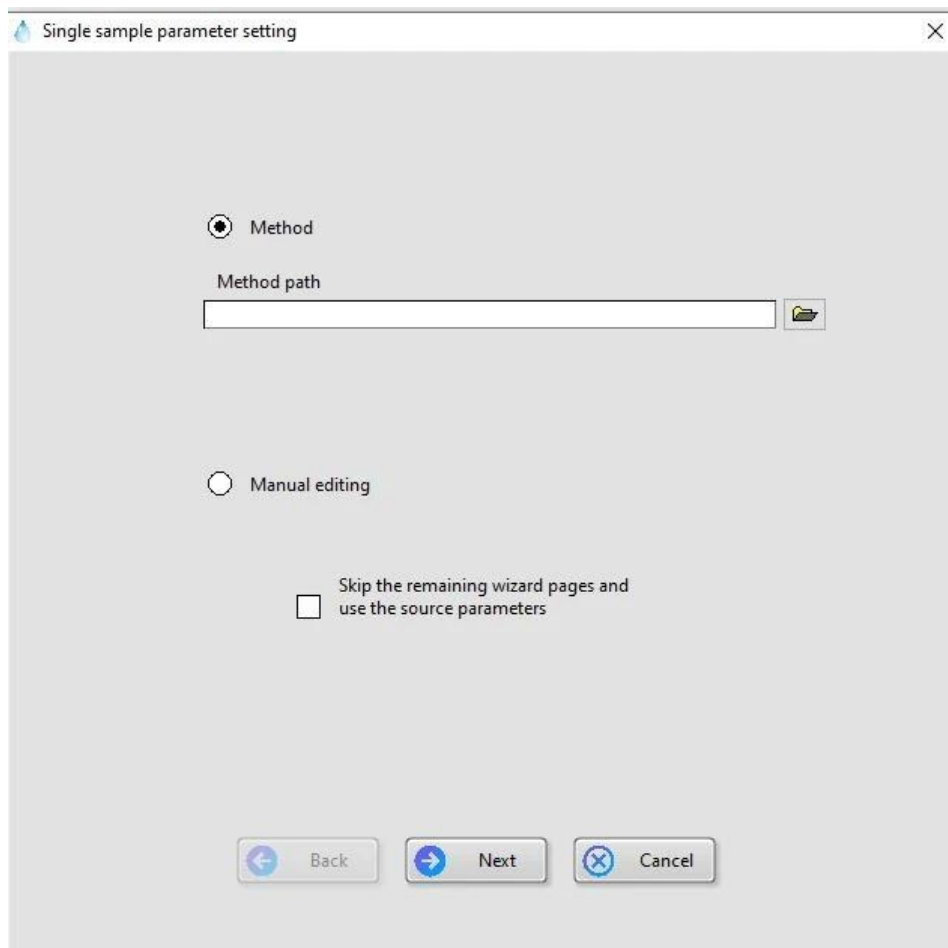


Figure 124

- 2.The "Single Sample Parameter Setting" window will pop up.



Single sample parameter setting

☒ Method

Method path



☐ Manual editing

☐ Skip the remaining wizard pages and use the source parameters

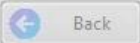
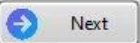
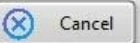
 Back  Next  Cancel

Figure 125

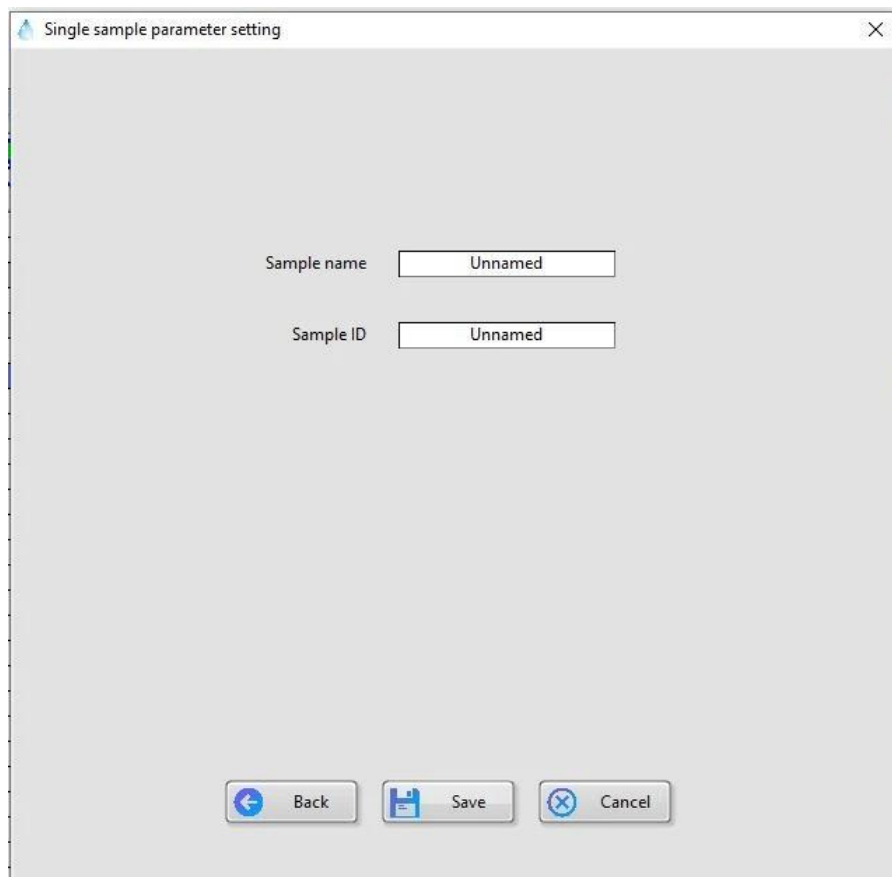
Item	Description
Method	When the method is checked, the method path is enabled, and the analysis parameters are configured according to the selected method file.
Manual Editing	Manually set the analysis parameters without using parameters from an existing file.

Table 25

Note:

When "Skip the remaining wizard pages and use the source parameters" is checked, it can be used by selecting "Method" to skip the wizard process and directly complete the insertion.

3. Click "Next" to set the basic sample information.



A screenshot of a software dialog box titled "Single sample parameter setting". The dialog box has a light gray background and a standard Windows-style title bar with a close button (X) in the top right corner. Inside the dialog, there are two input fields. The first is labeled "Sample name" and contains the text "Unnamed". The second is labeled "Sample ID" and also contains the text "Unnamed". At the bottom of the dialog, there are three buttons: "Back" with a left-pointing arrow icon, "Save" with a floppy disk icon, and "Cancel" with a blue 'X' icon.

Figure 126

Item	Description
Sample Name	Enter the sample name. When this test is added to the sample table, it is displayed in the sample name column for recording the test.
Sample ID	Enter the sample ID. When this test is added to the sample table, it is displayed in the sample ID column for recording the test.

Table 26

4. Click "Next" to set the measurement parameters.

Reference STD curve

D:\TOCe-Control\STD_Curve\1.2024_07_02_14_18_56.xml

Number of cleanings

3

Number of measurements

3

Back

Save

Cancel

Figure 127 (Offline)

Reference STD curve

D:\TOCe-Control\STD_Curve\1.2024_07_02_13_27_39.xml

Alarm threshold(ug/L)

500

Sampling frequency(min)

2

Back

Save

Cancel

Figure 128 (Online)

Item	Description
------	-------------

Reference STD Curve	Set the standard curve used for calculating sample concentration.
Number of Cleanings	In offline mode, the number of times the sample tubing is washed. The default is 3, ranging from 1 to 20.
Number of Measurements	In offline mode, the number of measurements taken after washing. The default is 3, ranging from 2 to 20.
Alarm Threshold(μ g/L)	In online mode, the concentration threshold. The default is 500, ranging from 0 to 1500.
Sampling Frequency(min)	In online mode, the interval time between measurements. The default is 2, ranging from 1 to 150.

Table 27

5. Click "Save" to insert the unknown sample test into the sample table.

Note:

If the hardware configuration parameters of the inserted standard curve or method test do not match the hardware parameters configured in the sample table, an error prompt will appear.

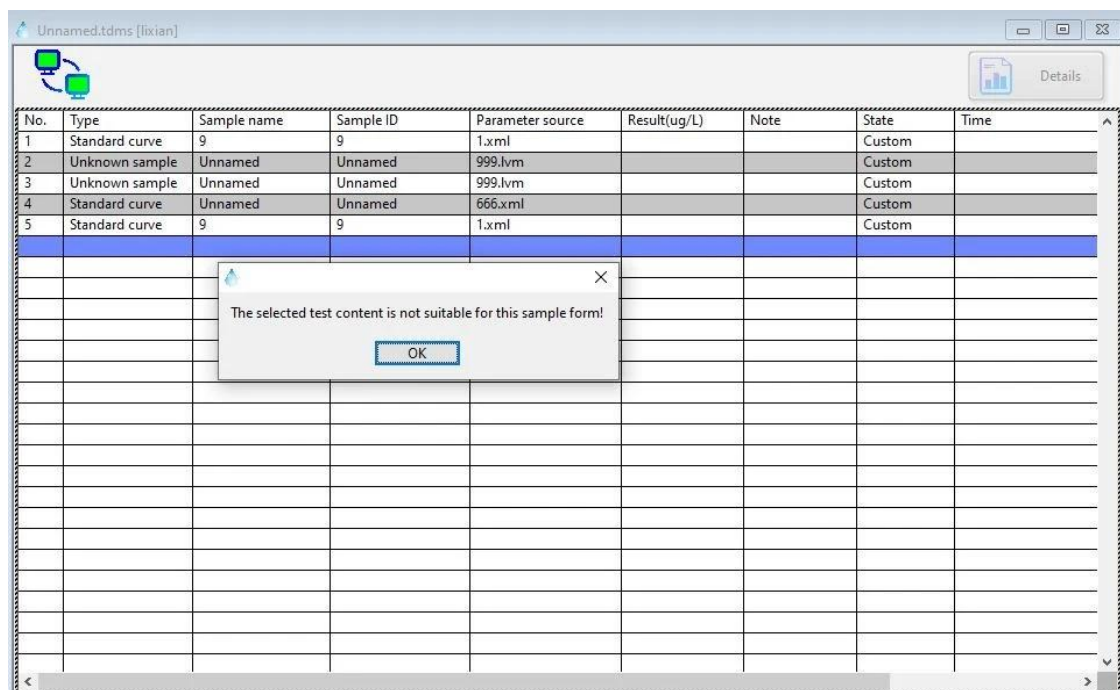


Figure 129

11.4.3 Viewing Saved Sample Tables

Find the saved file in the "Sample Table" list under the "File Browser" tab and double-click to open and view the test data.

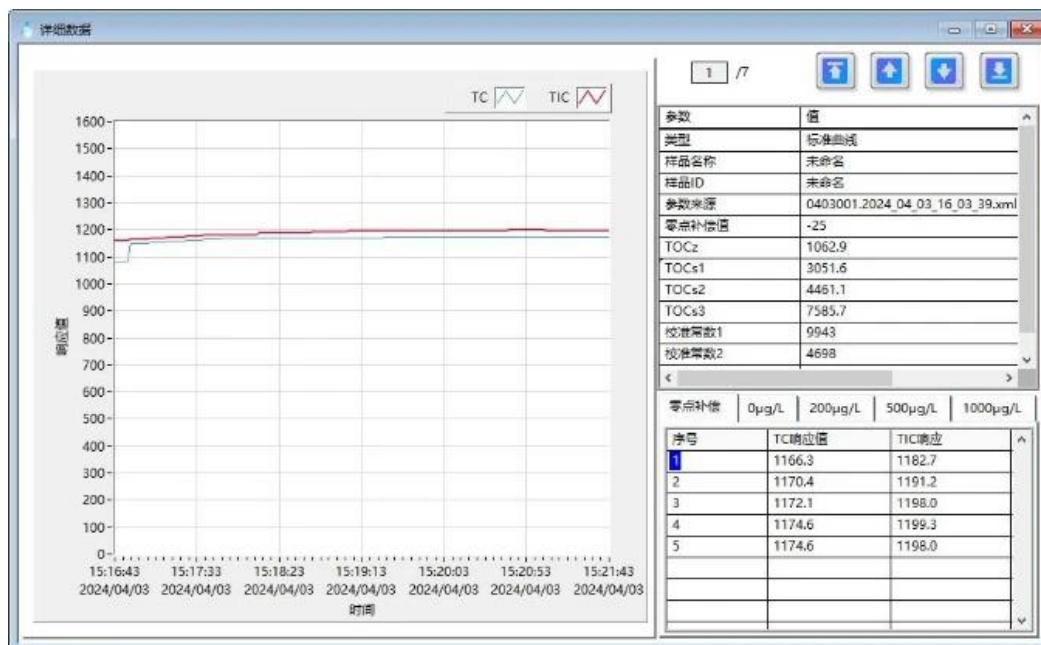


Figure 132

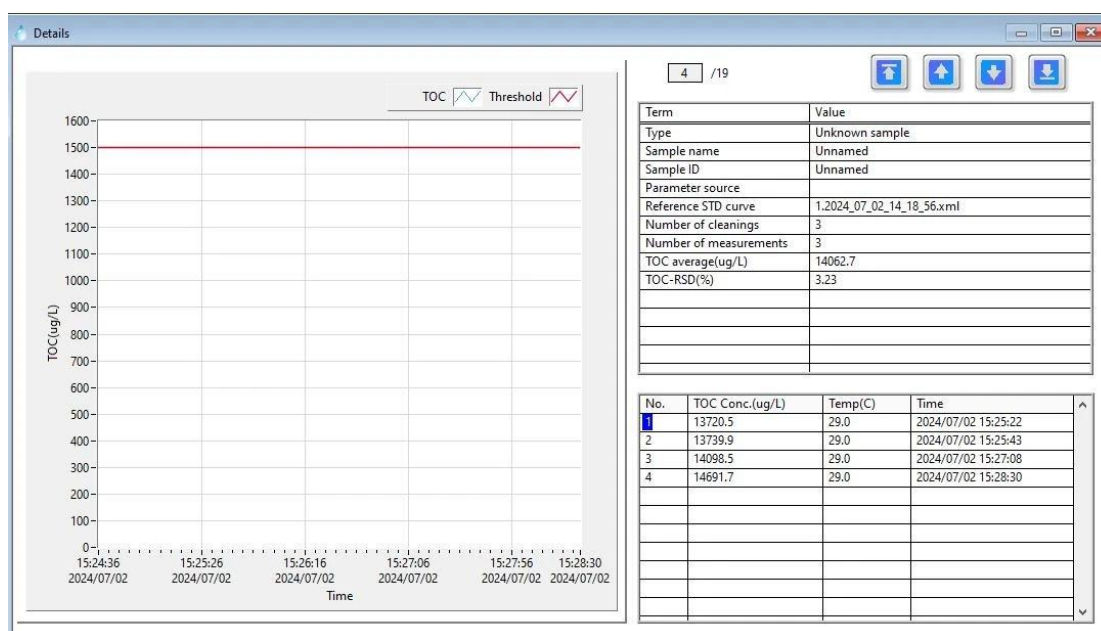


Figure 133

Item	Description
Peak Display	The peak chart display area shows the real-time peak shape or the peak shape of the selected test row.

Sample Selection	Click to switch to view the detailed data of the desired test row.
	 :Displays the detailed test data of the first sample in the table.
	 :Displays the detailed test data of the previous sample.
	 :Displays the detailed test data of the next sample.
	 :Displays the detailed test data of the last sample in the table.
Current Test	Displays the main parameter content of the selected test.

Table 31

Overview	Standard Curve Test: Displays test type, sample name, sample ID, zero point compensation value, TOCz, TOCs1, TOCs2, TOCs3, calibration parameters 1, calibration parameters 2, calibration parameters 3. Unknown Sample Test Offline Mode: Displays test type, sample name, sample ID, reference standard curve, Number of Cleanings, number of measurements, TOC average, TOC-RSD (%). Online Mode: Displays test type, sample name, sample ID, reference standard curve, alarm threshold, sampling frequency, start time, completion time.
Detailed Data Grid	Standard Curve Test: Zero point compensation data table, 0 µg/L data table, 200 µg/L data table, 500 µg/L data table, 1000 µg/L data table. Zero point compensation data table header: Serial Number, TC Response Value, TIC Response Value. 0 µg/L data table header: Serial Number, TOC Value. 200 µg/L data table header: Serial Number, TOC Value. 500 µg/L data table header: Serial Number, TOC Value. 1000 µg/L data table header: Serial Number, TOC Value. Unknown Sample Test: TOC data table. TOC data table header: Serial Number, TOC Concentration (µg/L), Temperature (°C), Time.

Table 32

11.6 Data Printing

11.6.1 Printing Sample Table Data

1. Select and open the sample table to be printed. Refer to "4.4.3 Viewing Saved Sample Tables."
2. Click "Print" in the software interface.

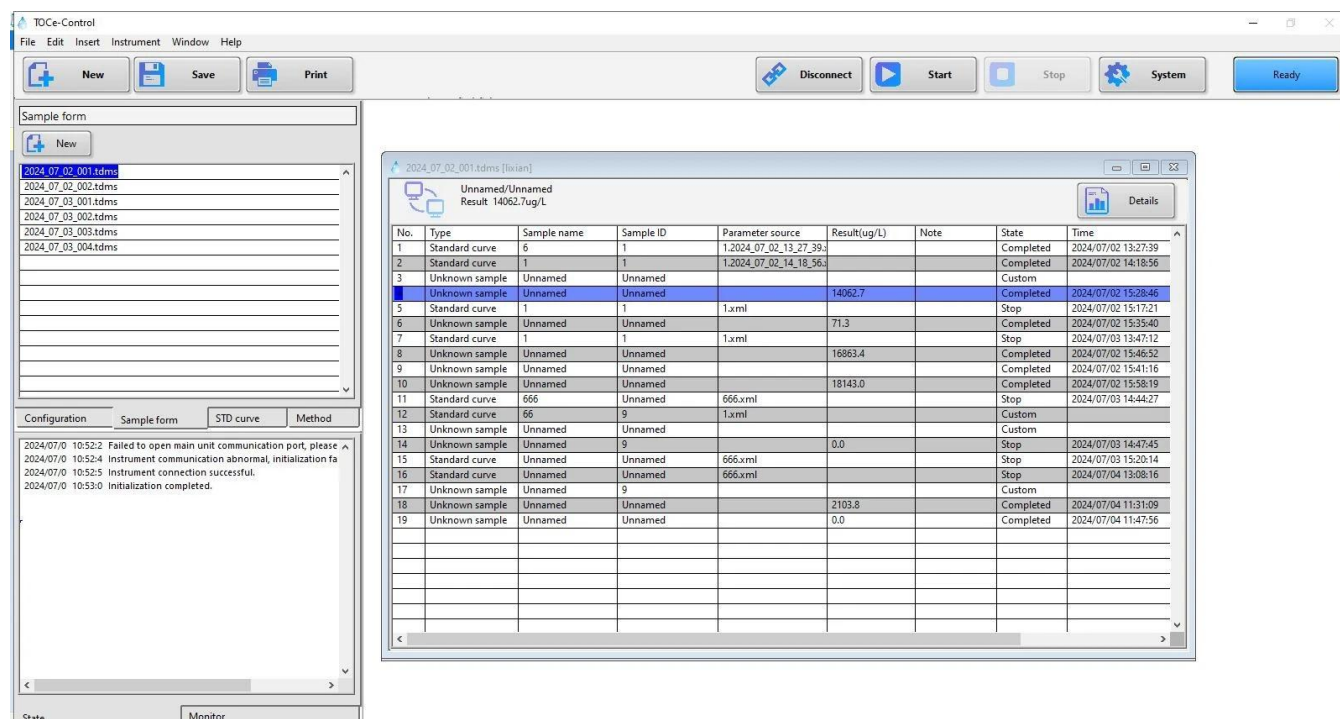


Figure 134

3. The "Print Content and Configuration" window will pop up.

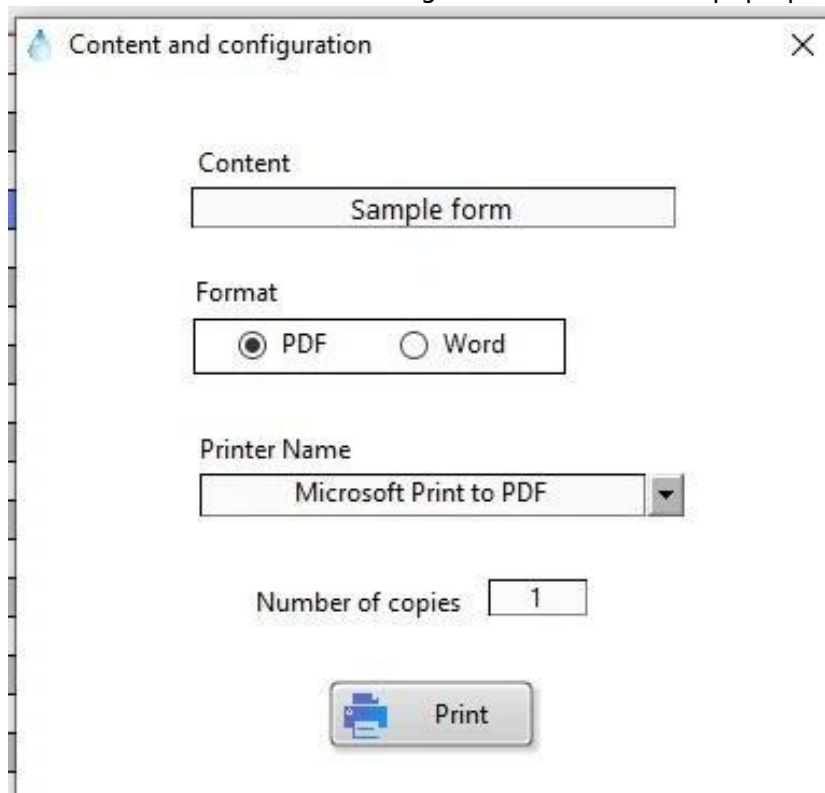


Figure 135

Item	Description
------	-------------

Content	Sample Table Print: Outputs an overview of the selected sample table. Print All Detailed Data: Outputs the selected sample table with row data content and detailed data content. Print Single Row Detailed Data: Outputs the detailed data content of the selected row.
Format	Two formats: PDF and Word.
Printer Name	Select the printer to use for printing. The drop-down list will list the names of printers with installed drivers on the computer.
Number of Copies	Set the number of copies to print.

Table 33

11.6.2 Printing Hardware Configuration

1. View the hardware configuration parameters, refer to 11.3.4 Viewing and Editing Hardware Configuration."
2. Click "Print" in the instrument setup viewing window.

Hardware view

Routine

Hardware Param.

Comm. Param.

Hardware name

zaixian

Instrument number

User

Creation time

2024/07/02 15:58:54

Annotation

Print

OK

Cancel

Figure 136

3.The "Print Configuration" window will pop up.

 Configuration ✕

Format

☒ PDF

☐ Word

Printer Name

Microsoft Print to PDF ▼

Number of copies

1

 Print

Figure 137

Item	Description
Format	Two formats: PDF and Word.
Printer Name	Select the printer to use for printing. The drop-down list will list the names of printers with installed drivers on the computer.
Number of Copies	Set the number of copies to print.
Print	Execute the print command.

Table 34

11.6.3 Printing Standard Curve

1. View the standard curve parameters, refer to "11.3.5 Viewing and Editing Standard Curve Files."
2. Click "Print" in the instrument setup viewing window.

View STD curve parameter

Convention | Overview | Analysis

Hardware: lixian

Creator:

Creation time: 2024/07/02 10:55:21

Annotation:

Print OK Cancel

Figure 138

3. The "Print Configuration" window will pop up.

Format

☒ PDF
 ☐ Word

Printer Name

Microsoft Print to PDF

▼

Number of copies

1


Print

Figure 139

Item	Description
Format	Two formats: PDF and Word.
Printer Name	Select the printer to use for printing. The drop-down list will list the names of printers with installed drivers on the computer.
Number of Copies	Set the number of copies to print.
Print	Execute the print command.

Table 35

11.7 Operation and Analysis

11.7.1 Connecting

Before conducting an analysis, the software and instrument must be connected. Create or double-click to open a sample table, then click "Connect" in the software interface.

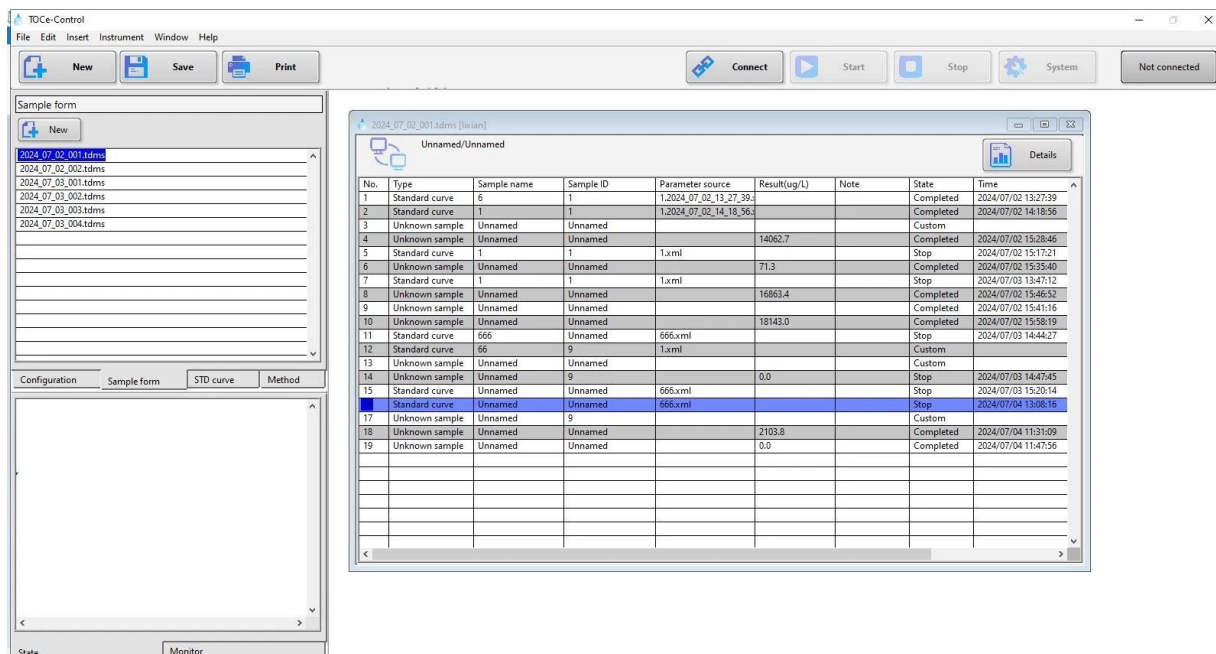


Figure 140

Note:

After clicking "Connect," the software will enter the instrument initialization state, during which the software interface will be inoperable until "Instrument Initialization Complete" appears in the "Status" tab of the output window in the lower left corner of the main software interface.

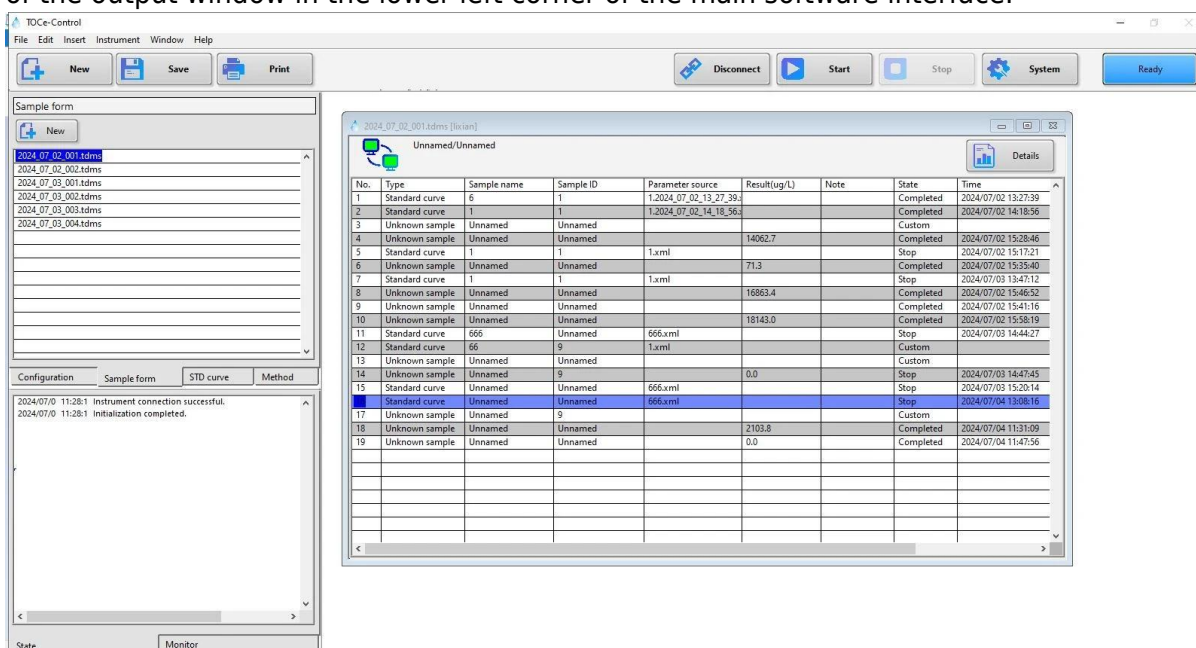


Figure 141

11.7.2 Disconnecting

If the instrument is in the connected state, clicking "Disconnect" in the software interface will interrupt communication between the software and the host.

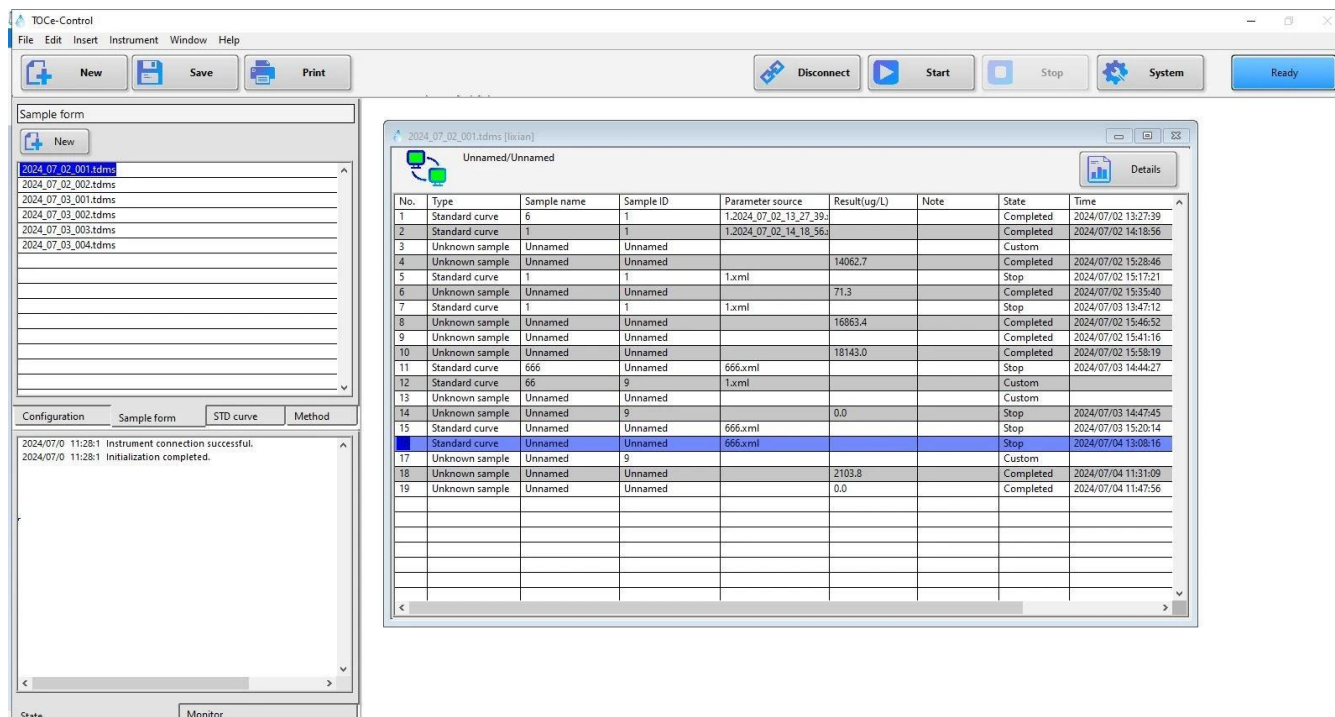


Figure 142

11.7.3 Starting

1. Create/open a sample table.
2. Connect the instrument.
3. Edit the sample table test content.
4. Select the content of the row to be tested.
5. Click "Start," and the "Select Test Method" window will pop up.

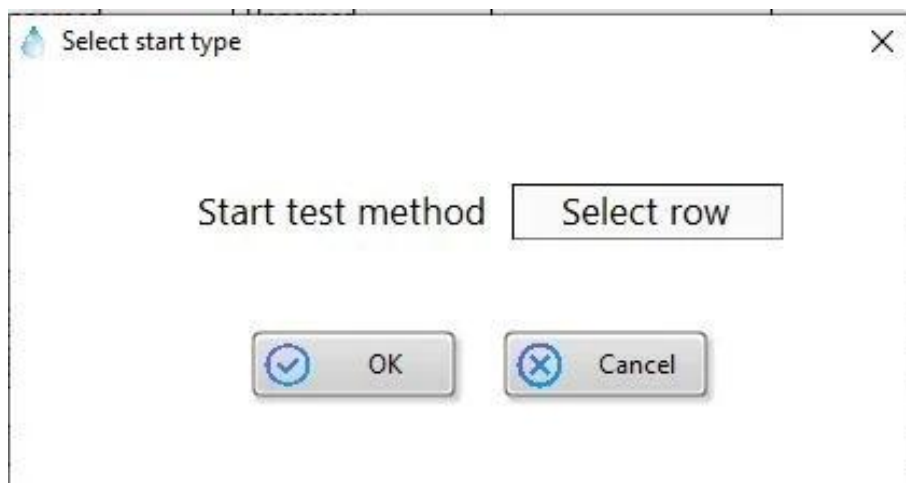


Figure 143

Item	Description
------	-------------

Start Test Method	Selected Row Test: Conduct a single row test on the selected row of the sample table. Full Table Test: In offline mode, conduct row-by-row tests on all rows in the sample table when an autosampler is equipped.
-------------------	---

Table 35

6. Click "OK," and the software will start the analysis. After the measurement is completed, the results will be displayed in the sample table, and the analysis will be finished.

11.7.4 Stopping

During the sample testing process, clicking "Stop" will pop up the "Select Stop Method" window. After selecting the stop method, click "OK" to execute.



Figure 144

Item	Description
Stop Test Method	Stop Immediately: Immediately interrupts the current analysis. Stop After Row Completion: Stops the test after the current row analysis is completed.

Table 36

11.7.5 System

Click "System" in the software interface to pop up the "System" window.

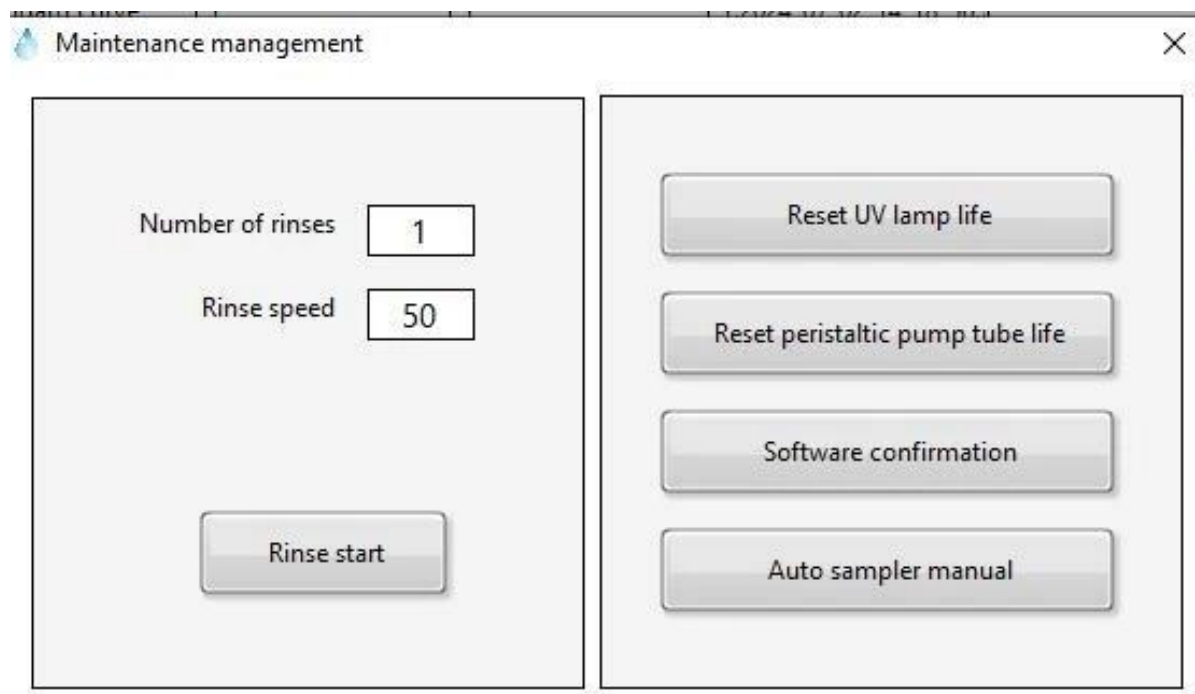


Figure 145

Item	Description
Number of rinses	The set Number of Cleanings for rapid maintenance flushing. The range is 1 to 90. The default value is 1.
Rinse Speed	The set speed for rapid maintenance flushing. The range is 1 to 50. The default value is 50.
Cup Position	When an autosampler is equipped, the cup position used for rapid flushing. The range is 1 to 20. The default value is 1.
Rinse Start	Button to start and stop rapid maintenance flushing.
Reset UV Lamp Life	Button to notify the lower machine to reset the UV lamp lifetime timer.

Table 37

Reset Peristaltic Pump Tube Life	Button to notify the lower machine to reset the peristaltic pump tube lifetime timer.
Software confirmation	Button to call the software self-check program.
Auto sampler manual	Button to call the autosampler debugging subroutine.

Table 38

(a) Software Verification

1. Click "Software Verification" to open the "File Check" interface.

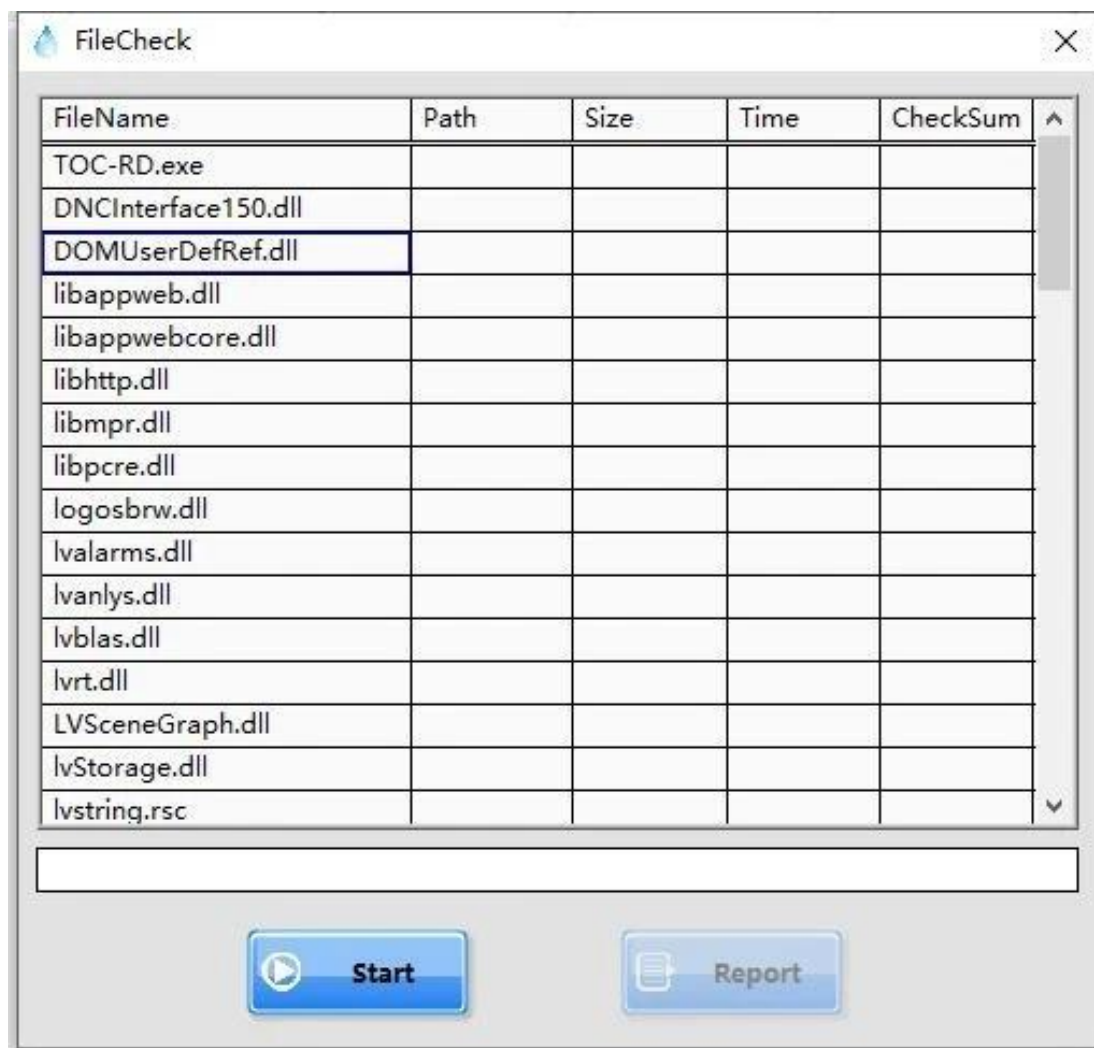


Figure 146

2. Click "Start," and the software will perform a self-check on the files. If an anomaly is detected, "NG" will be displayed.

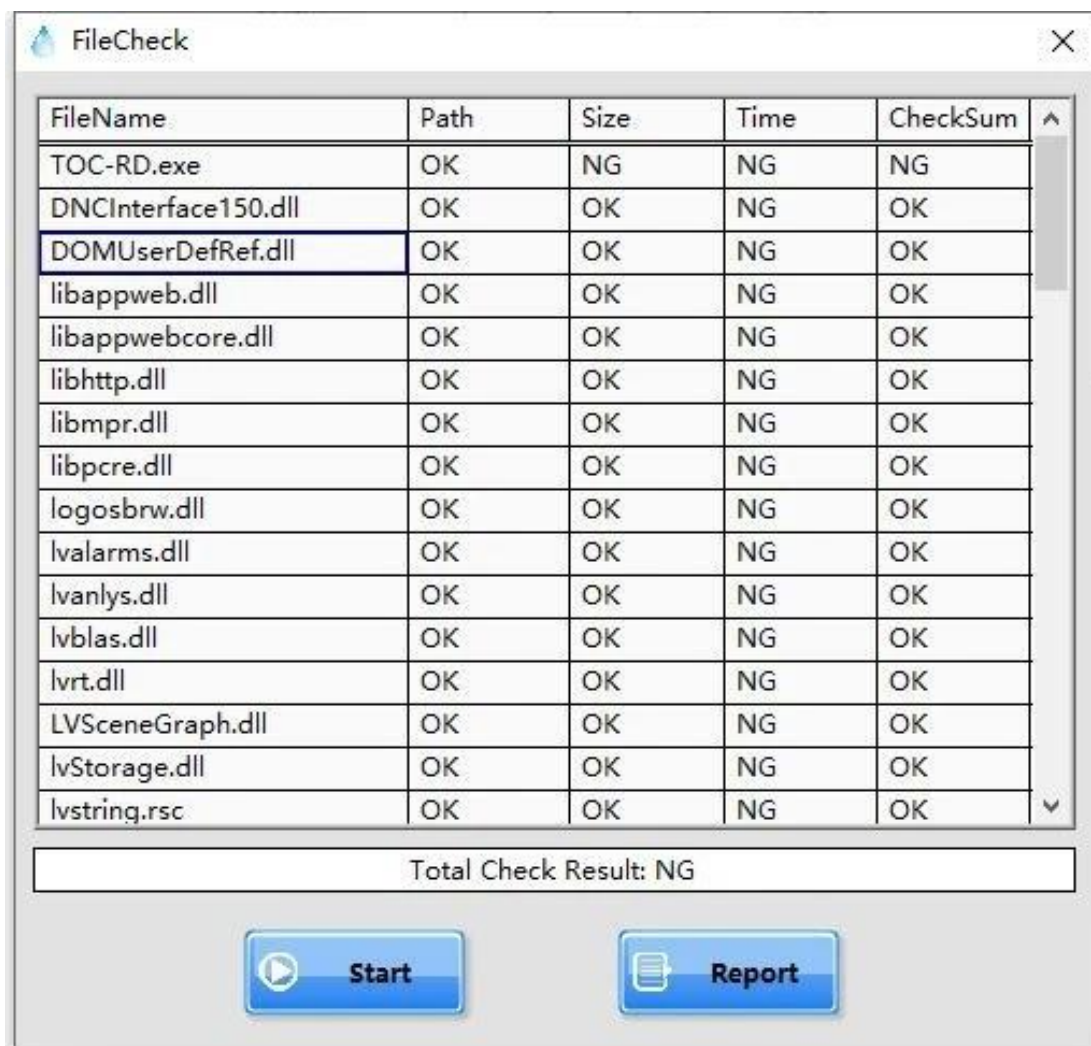


Figure 147

3. Click "Export Report" to export the software self-check results in TXT format.

Note:

The "FileCheck.exe" file exists in the software execution file directory, and opening this file directly can also perform the software self-check function.

12. Maintenance and Repair

12.1 Consumables

Consumable Name	Specification/Part Number	Consumable Code	Replacement Cycle	Replacement Method
Peristaltic Pump Tube	/	BAFZ00001	5000 hours	Refer to "Section 8.2.2"
UV Lamp	/	CBBH00042	5000 hours	Refer to "Section 8.2.1"

Table 39

12.2 Consumable Replacement

12.2.1 Replacing the UV Lamp

The UV lamp has a service life of 5000 hours. Please replace the UV lamp promptly according to the software prompts. Power off the device before replacement.

Steps for replacing the UV lamp:

1. Unscrew the four screws on the rear cover plate of the instrument and remove the rear cover plate.

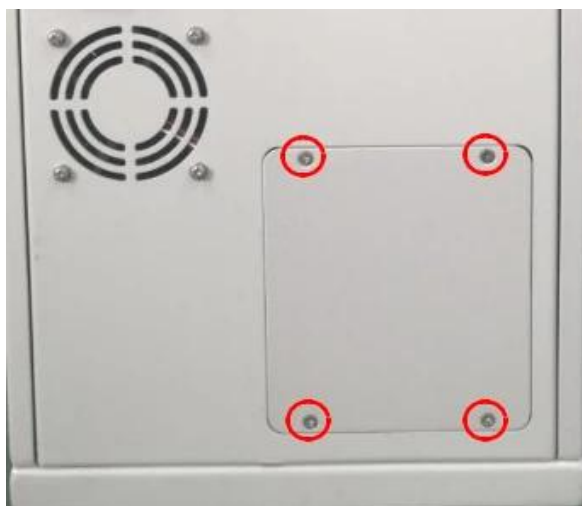


Figure 149

2. Disconnect the UV lamp socket.

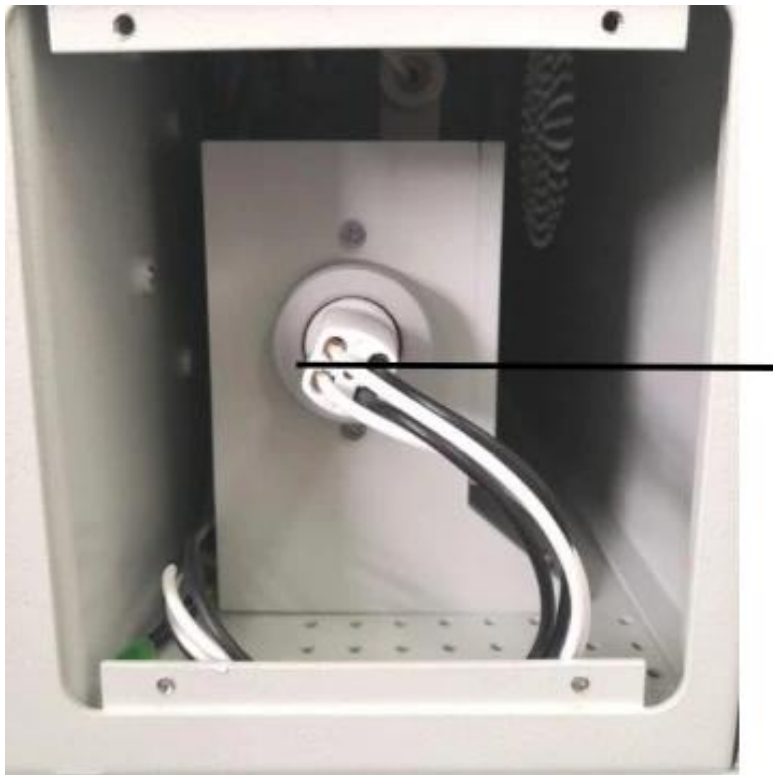


Figure 150



Figure 151

3. Sequentially remove the fixed end cover, O-ring, and UV lamp.

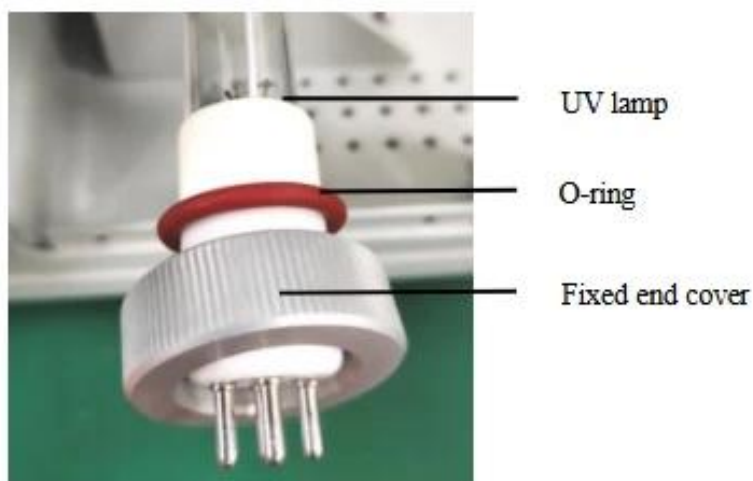


Figure 153

Install the new UV lamp by reversing the above steps.

12.2.2 Replacing the Peristaltic Pump Tube

The peristaltic pump tube has a service life of 5000 hours. Please replace the peristaltic pump tube promptly according to the software prompts.

Steps for replacing the peristaltic pump tube:

1. Open the left side cover of the main unit to see the peristaltic pump.

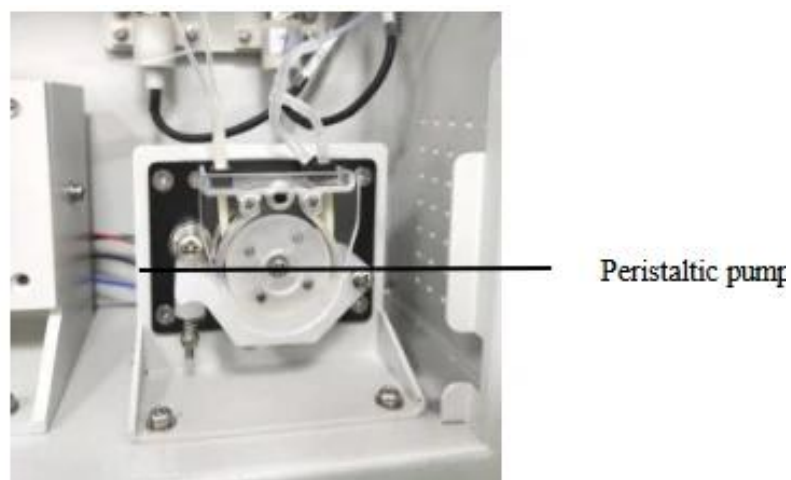


Figure 154

2. Remove the three liquid tubes from the rubber tube of the peristaltic pump tube.

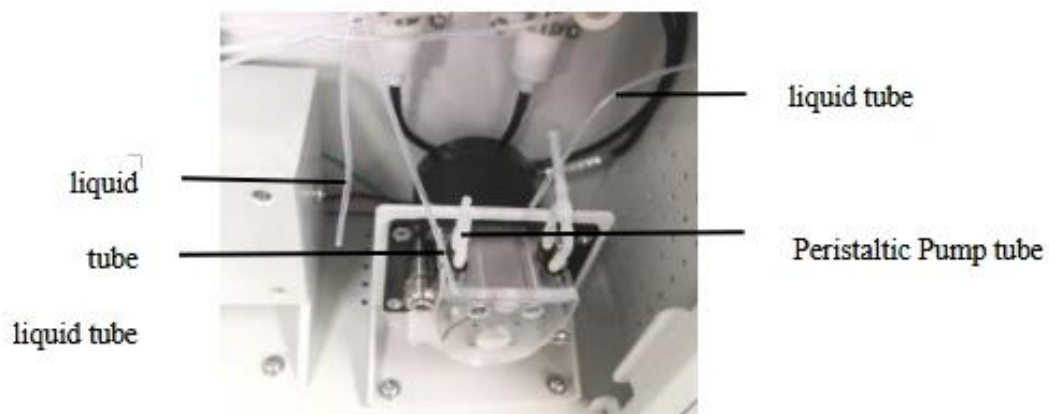


Figure 155

3. Open the peristaltic pump cover.

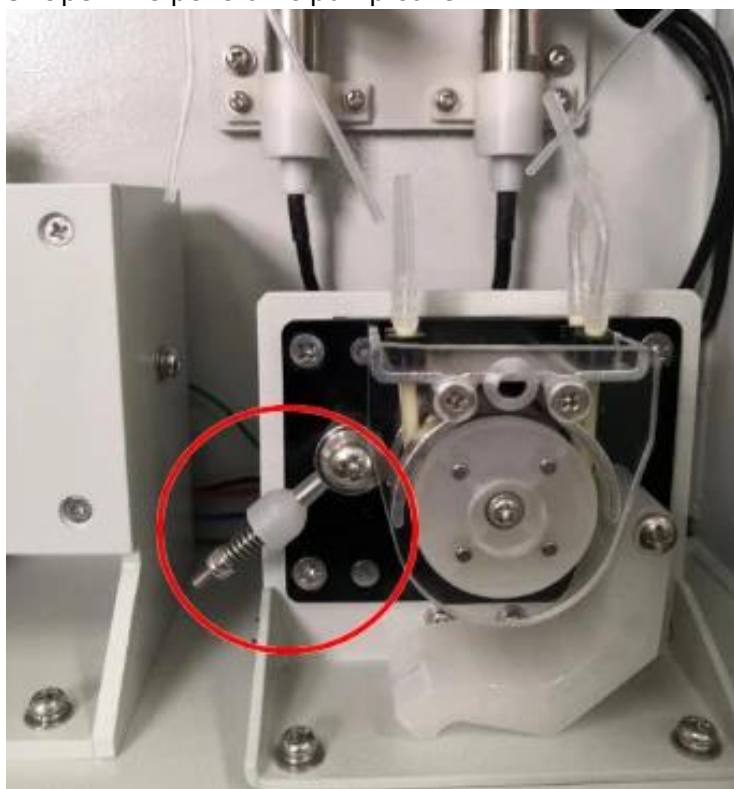


Figure 156

4. Remove the peristaltic pump tube from both sides.

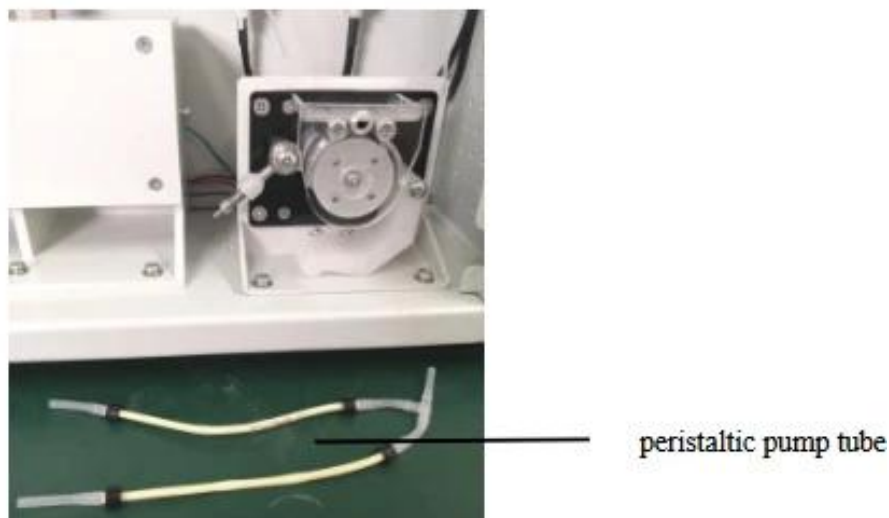


Figure 157

5. Install the new peristaltic pump tube by reversing the above steps.

12.3 Troubleshooting and Diagnosis

12.3.1 Fault Handling

No.	Fault Symptom	Cause Analysis	Solution
1	No display on the screen after turning on the power	Check if the fuse is blown Check if the power cable plug is loose	Replace the fuse Plug in the power cable securely
2	Unstable detection data or large error	Bubbles in the conductivity cell Clogged sample tube	Let the sample tube draw in some air to expel bubbles Check the sample tubing and flush with pure water
3	Significantly low detection values	UV lamp life expired	Refer to "Section 8.2.1 Replacing the UV Lamp"
4	Touch screen unresponsive	Unknown cause leading to a crash	Restart the instrument
5	Beeper alarm	Out of range Exceeds alarm set value Circuit failure	Check the water sample source Check the water sample source Contact a professional for repair
6	Unable to sample or drain properly	Blocked tubing Damaged peristaltic pump tube	Check the sampling and drainage tubing Refer to "Section 8.2.2 Replacing the Peristaltic Pump Tube"

Table 40

13. Reference Information

Accessory Name	Application Scenario
Auto sampler	This component can be selected to improve laboratory efficiency, reduce manual operations, and enhance the consistency and reproducibility of sample testing.
Audit Trail Software	This software can be selected to ensure data integrity, meet external regulatory requirements (such as FDA, EMA, ISO certification agencies), and enable data security and remote monitoring.

Table 41 (Optional Accessories List)



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