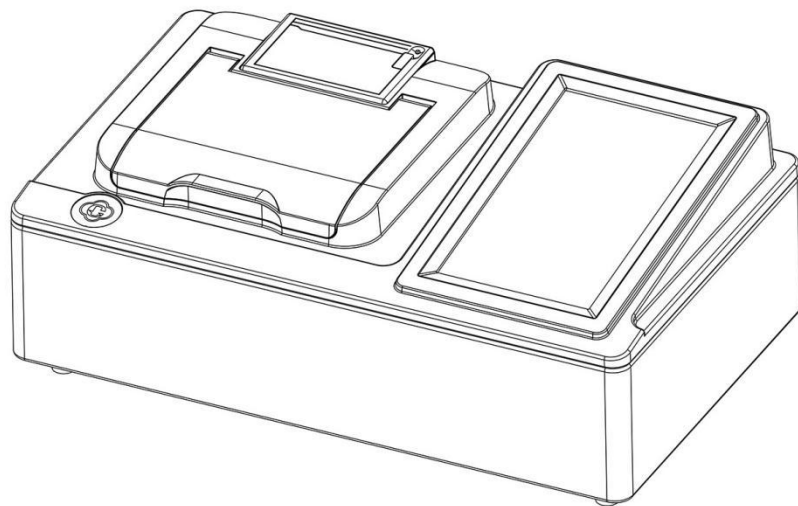

iWannaMP

**Multi-Parameter Photometer Water Quality
Analyzer**

User Manual



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Guangdong Rainstin Instruments Co., Ltd. <http://www.rainstin.com>

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1. Product Introduction

1.1 Overview

The **iWannaMP Multi-Parameter Photometer Water Quality Analyzer** is a high-precision multi-wavelength photometer designed for laboratory analysis of more than 70 water quality parameters, including COD, ammonia nitrogen, total phosphorus, total nitrogen, nitrate, nitrite, and more. It features programmable methods compatible with reagents from multiple brands, customizable calibration curves, multi-wavelength configuration, and dual-cuvette support. With a 7-inch touchscreen, modular circuit design, large data storage, and optional wireless communication, it delivers fast, reliable, and flexible water quality testing for industrial, environmental, and laboratory applications.

This instrument operates based on the principle of relative measurement. A reference solution (such as distilled water) is selected, and its transmittance (T) is set to 100%. The transmittance of the test sample is then measured relative to this reference solution. The change in transmittance (T) has a functional relationship with the concentration of the measured substance. Within a certain range, it follows the **Lambert-Beer Law**:

$$T = I / I_0$$

$$A = KCL = -\log I / I_0$$

Where:

- **T** – Transmittance
- **A** – Absorbance
- **C** – Concentration of the solution
- **K** – Absorption coefficient of the solution
- **L** – Optical path length of the solution
- **I** – Intensity of light reaching the photodetector after passing through the test sample
- **I₀** – Intensity of light reaching the photodetector after passing through the reference sample

1.2 Key Features

- **Multi-Wavelength Photometric System:** Equipped with multiple LED light sources covering key photometric wavelengths, enabling accurate testing of a wide range of colorimetric water quality parameters.
- **Wide Parameter Coverage:** Measures over 70 common water quality parameters using pre-programmed methods and supports reagent compatibility from multiple brands.
- **Customizable Calibration Curve:** Create calibration curves via dilution, manual input, or USB import for flexible method programming.
- **Dual Cuvette Compatibility:** Compatible with both $\Phi 16$ mm colorimetric tube and $\Phi 25$ mm colorimetric cuvette, broadening the range of applicable sample types.
- **Modular Circuit Design:** Independent control board and communication board provide excellent expandability and system stability.
- **High-Quality LED Light Source:** Delivers long-term stable performance without the need for frequent replacement.
- **Rich Communication Interfaces:** 2 USB Type-A ports, 1 USB Type-B port, 1 RS485 port, with optional Bluetooth, 4G, and Wi-Fi modules for enhanced connectivity.
- **Multi-Light Source Configuration:** Supports up to eight light sources to meet full-parameter testing requirements.
- **Reference Light Compensation:** Utilizes reference light subtraction to eliminate background interference and improve test repeatability.
- **Large Data Storage Capacity:** Stores more than 100,000 test records for easy data retrieval and traceability.
- **7-Inch Color Touchscreen:** Provides a clear, intuitive, and user-friendly interface.
- **Built-in Thermal Printer:** Convenient for instant printing of test results.

1.3 Technical Specifications

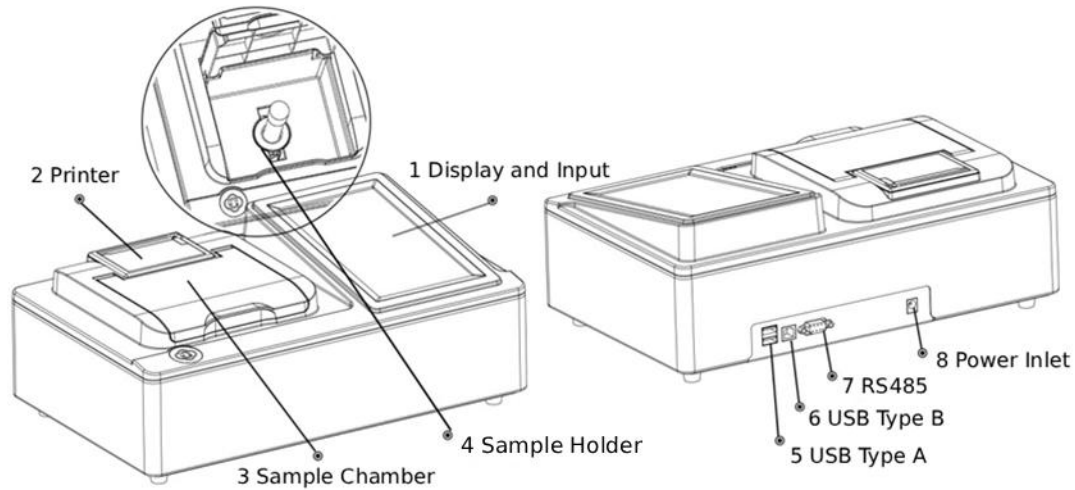
Item	Parameter
Display & Input	7-inch color touchscreen
Light Source	Light Emitting Diode (LED)
Detector	Photodiode
Testing Mode	Absorbance (Abs) and Concentration (Conc)
Number of Light Sources	7 (within the range of 350–860 nm)
Display Accuracy	1 mg/L–0.001 mg/L
Measurement Error	≤5%
Measurement Reproducibility	≤3%
Sample Cell	Φ16mm colorimetric tube, Φ25mm colorimetric cuvette
Interfaces	2 USB Type-A, 1 USB Type-B, 1 RS485
Operating Environment	Temperature: 0–50°C; Humidity: ≤90%, no condensation
Dimensions (L × W × H)	341 × 207 × 134 mm
Power Supply	220V/50Hz
Weight	3.2kg

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1.4 Common Parameters and Measurement Ranges

Parameter	Range	Parameter	Range
COD	0–40 mg/L	Ferrous Iron	0–10 mg/L
COD High Chlorine III	30–200 mg/L	Total Iron	0–10 mg/L
COD	10–150 mg/L	Manganese	0–20 mg/L
COD High Chlorine II	200–1500 mg/L	Permanganate Index	0.5–5 mg/L
TP	0.2–30 mg/L	Iodine	0.07–7 mg/L
TN	0–25 mg/L; 5–100 mg/L	pH	6.5–8.5
Ammonia Nitrogen (Nessler)	0–5 mg/L; 0–30 mg/L; 10–150 mg/L	Ammonia Nitrogen (Salicylate)	0–2.5 mg/L; 0–50 mg/L
Formaldehyde	0.2–3.2 mg/L	Active Oxygen	0.005–1 mg/L
Hydrazine	0–1 mg/L	Hydrogen Peroxide	0.01–1 mg/L
Sulfate	5–250 mg/L	Ozone	0.01–2.5 mg/L
Chloride	5–50 mg/L; 50–500 mg/L	Chlorine Dioxide	0.04–5 mg/L
Silica	1–80 mg/L	Volatile Fatty Acids	50–3000 mg/L
Nitrate	0–25 mg/L; 5–100 mg/L	Zinc	0–2 mg/L
Lead	0–1.6 mg/L	Cadmium	0.005–1 mg/L
Copper	0–10 mg/L	COD	20–1500 mg/L; 100–2000 mg/L
Nickel	0–5 mg/L	COD High Chlorine I	1500–20000 mg/L
Phosphate	0.6–90 mg/L	Bromine	0.05–5 mg/L
Volatile Phenols	0.017–2 mg/L	Cyanide	0.005–0.5 mg/L
Chlorine Dioxide	1–200 mg/L	Sulfides	0.02–1 mg/L
Hydrogen Peroxide	0.2–40 mg/L	Fluoride	0–2 mg/L
Cyanuric Acid	5–50 mg/L	Cobalt	0.02–2 mg/L
Urea	0.05–3.5 mg/L	Aluminum	0.002–0.2 mg/L
Silicic Acid	2–100 mg/L	Arsenic	0.1–5 mg/L
Residual Chlorine/Total Chlorine	0.02–3 mg/L; 0.1–10 mg/L	TP	0.02–2 mg/L
Total Hardness	0.5–10 mg/L; 50–500 mg/L	Phosphate	0.06–6 mg/L
Volatile Phenols	0.1–12 mg/L	Silica	0.02–2 mg/L
Nitrite	0–10 mg/L	Turbidity	0–200 NTU; 200–2000 NTU
Hexavalent Chromium	0–2 mg/L	Color	0–500°
Total Chromium	0–2 mg/L	Suspended Solids	

1.5 Instrument Appearance



- 1. Display and Input:** Used for entering various operation commands and displaying execution results.
- 2. Printer:** Used for printing analysis results by built-in thermal printer.
- 3. Sample Chamber:** Compartment for sample detection.
- 4. Sample Holder:** Designed to hold test samples using 16 mm colorimetric tube or 25 mm colorimetric cuvette.
- 5. USB Type-A Port:** Used for upgrading the display and motherboard firmware.
- 6. USB Type-B Port:** Connects to a host computer (PC).
- 7. RS485 Communication Interface:** For external device connection and LIMS system integration.
- 8. Power Inlet:** External power input port.

2. Installation and Environment

2.1 Installation Environment

1. The instrument is designed to operate at $220V \pm 22V$, $50Hz \pm 1Hz$. Ensure that the power supply is stable and reliable; otherwise, the instrument may not function properly.
2. The instrument should be installed in a dry indoor environment with an ambient temperature of $0^{\circ}C-50^{\circ}C$ and a relative humidity of no more than 90%.
3. Place the instrument on a solid and stable workbench, free from strong or continuous vibration.
4. The room should be free of corrosive gases such as hydrogen sulfide or nitrous fluoride.
5. Keep the instrument away from strong magnetic fields, electric fields, and devices generating high-frequency waves.
6. Avoid direct exposure to strong airflow.
7. Avoid direct exposure to intense light.
8. The power supply must have proper grounding with an independent ground wire.

3. Disclaimer and Warranty

3.1 Disclaimer

1. The specifications and information mentioned in this manual are for reference only and are subject to change without notice.
2. Please read the safety instructions carefully before using the instrument. The company is not responsible for accidents caused by improper operation.
3. This product is intended for use in professional fields. Operators must have relevant knowledge and skills. Accidents caused by misuse are not covered.

3.2 Warranty

1. All products undergo strict inspection before shipment and are covered by a one-year free warranty for quality issues.
2. During the warranty period, if problems arise due to improper operation, unsuitable environment, human error, accidents, or improper storage/transportation, the company may charge repair costs.
3. For out-of-warranty instruments, paid repair and service are available.
4. Warranty does not apply under the following conditions:
 - a. Unauthorized disassembly, modification, or repair.
 - b. Repairs by non-authorized personnel.
 - c. Tampering or breaking of anti-disassembly seals.
 - d. Use of non-original consumables causing malfunctions.
 - e. Products purchased through unauthorized channels.
 - f. Improper use or operation in unsuitable environments.

4. Instrument Operation

4.1 Device Connection

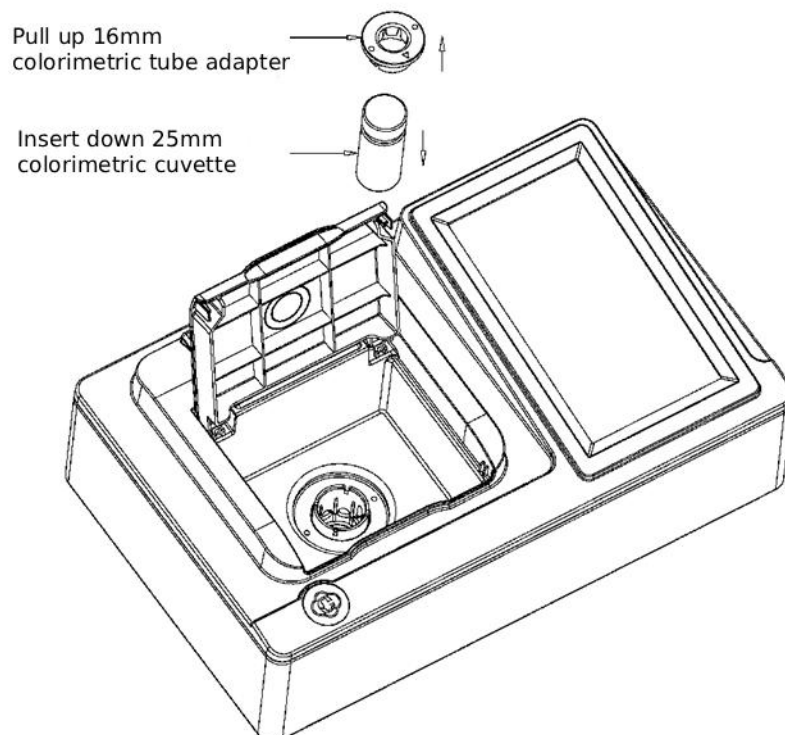
Open the package and check that all accessories are included. After confirming everything is correct, insert the power plug into the power inlet of the device.

Turn on the power switch and make sure the display screen lights up properly.

4.2 Preparation Before Testing

Prepare the reagents and ensure that they comply with the required cuvette standards (16 mm colorimetric tube or 25 mm colorimetric cuvette).

Prepare all supporting instruments and consumables such as a digestion device, pipette and tips, label paper, and water samples.



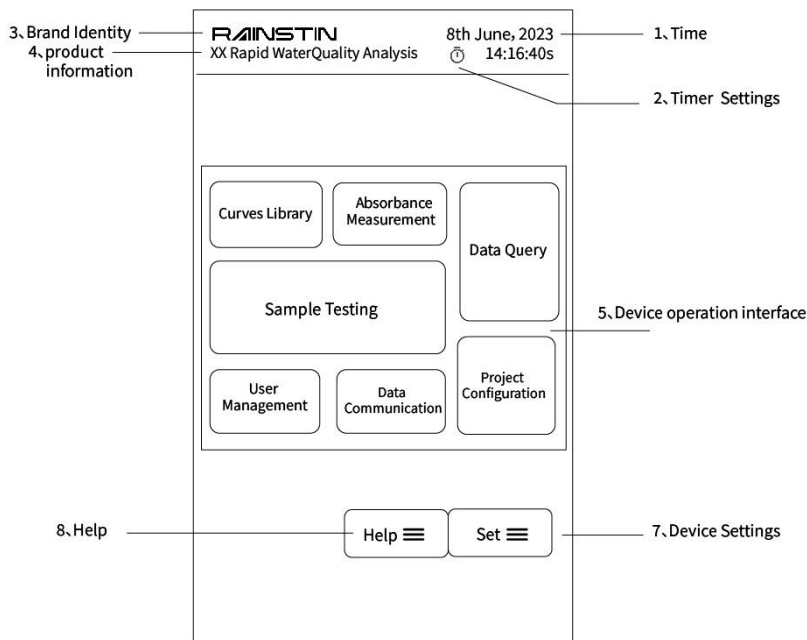
When using 16 mm colorimetric tube, align the 16 mm adapter with the arrow and insert it into the sample holder. The adapter is inserted by default.

As shown in the figure above, when using 25 mm colorimetric cuvette, simply pull up the 16 mm adapter, and insert the 25mm colorimetric cuvette.

4.3 Software Operation

When powered on for the first time, the “User Management” function is disabled by default.

The main interface is displayed as shown below.



* Click “4. Product Information”, enter the password “666666”, and follow the prompts to modify the configuration name or customize a preferred name.

* The “2. Timer Settings” (alarm clock symbol) appears on every page. Click it to enter the timer setting interface and start a countdown as needed.

4.3.1 Curve Library

All measurement curves can be imported, entered manually, or created in this section.

Curves numbered below 5000 are built-in system curves and cannot be modified.

User-defined curves are numbered from 5000 to 9999, and can be freely edited.

4.3.1.1 Curve Library Interface

The screenshot shows the 'Curves Library' interface. At the top left is a back arrow icon. Below it are 'Back' and 'Forward' navigation options. The main content is a table with three columns: 'Identity', 'Curve Name', and 'Testing Range'. The table lists 12 curves, with identities 0001-0004 and 5001-5006. Below the table is a note: 'Note: The curves numbered from 5000 to 9999 can be deleted by long - pressing!'. At the bottom are four buttons: 'Input', 'Create', 'Import', and 'Export', each with a menu icon.

Identity	Curve Name	Testing Range
0001	DCOD HR	100-2000mg/L
0002	DCOD LR	10-150mg/L
0003	DTA LR	0-30mg/L
0004	DTA HR	10-150mg/L
5001	HCOD HR	20-1500mg/L
5002	HCOD LR	3-150mg/L
5003	HTA HR	0-50mg/L
5004	HTA LR	0-2.5mg/L
5005	HTN HR	1-100mg/L
5006	HTN LR	0.06-3.5mg/L

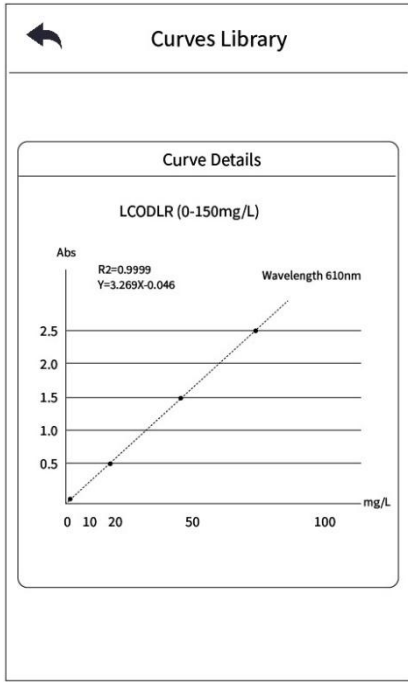
Note: The curves numbered from 5000 to 9999 can be deleted by long - pressing!

Input Create Import Export

The main page of the Curve Library displays all stored curves for selection. 4 features "Input", "Create", "Import" and "Export" buttons are displayed below.

4.3.1.2 Curve Library Interface

Click any program within the Curve Library to view its detailed parameters, including K value, B value, and R value, or its corresponding graphical chart, as shown below



4.3.1.3 Input Curve Manually

Click “Input” button and enter all the corresponding information of measurement curve in the blank fields of the page, then click “Save” to store the curve. The values can be provided by company.

Input Curves	
Curve Identity:	
Curve Name:	
Testing Range: (mg/L)	
Wavelength Selection: (nm)	420 525 565 610 700 860
Resolution: (mg/L)	1 0.1 0.01 0.001
K Value:	
B Value:	
Save	

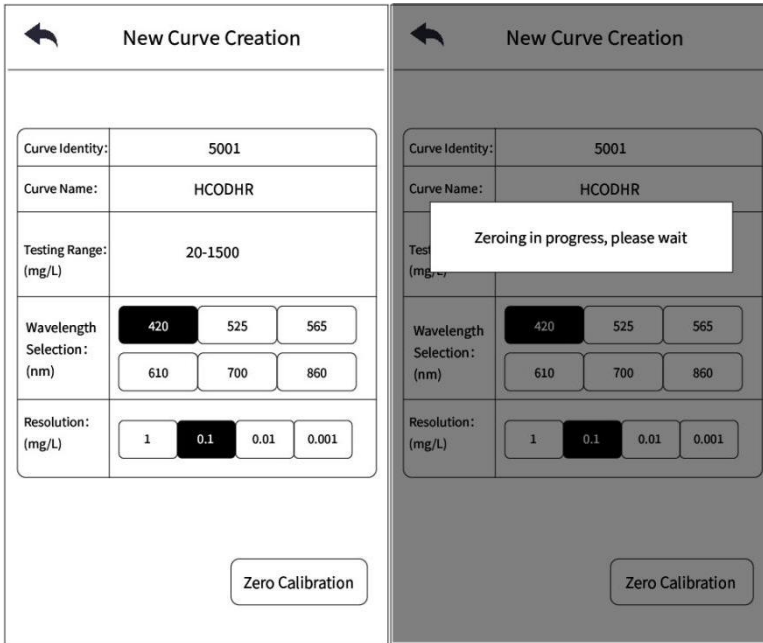
Input Curves	
Curve Identity:	5001
Curve Name:	LCOD
Testing Range: (mg/L)	Please enter complete information!
Wavelength Selection: (nm)	420 525 565 610 700 860
Resolution: (mg/L)	1 0.1 0.01 0.001
K Value:	
B Value:	
Save	

Input Curves	
Curve Identity:	5001
Curve Name:	LCOD
Testing Range: (mg/L)	Saved!
Wavelength Selection: (nm)	420 525 565 610 700 860
Resolution: (mg/L)	1 0.1 0.01 0.001
K Value:	4
B Value:	1
Save	

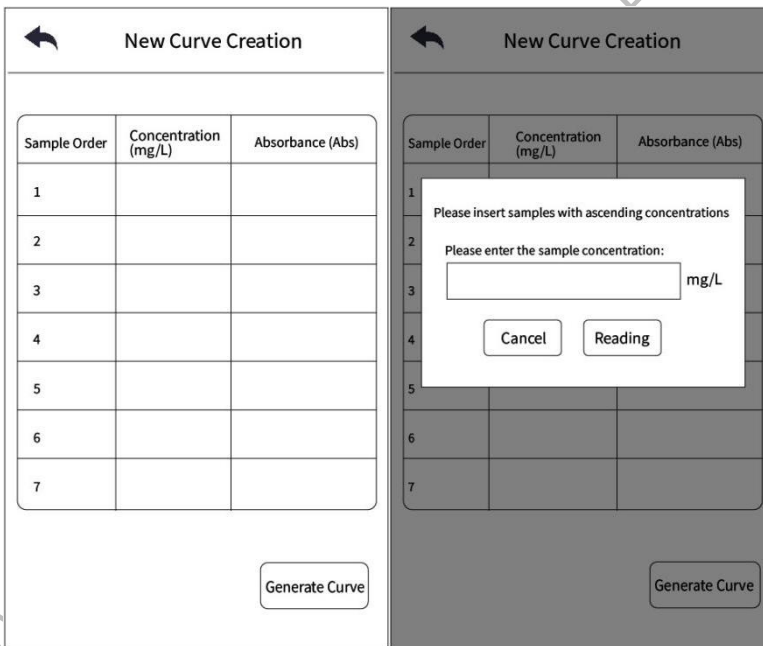
4.3.1.4 Create New Curve

Click “Create” button to create new curve as shown below. Select the wavelength, and input the curve code, name, and range. Select the resolution according to the measurement range. Place a reference sample (zero) sample into the sample holder

and click “Zero Calibration”.



After zeroing, the interface will display as shown below;

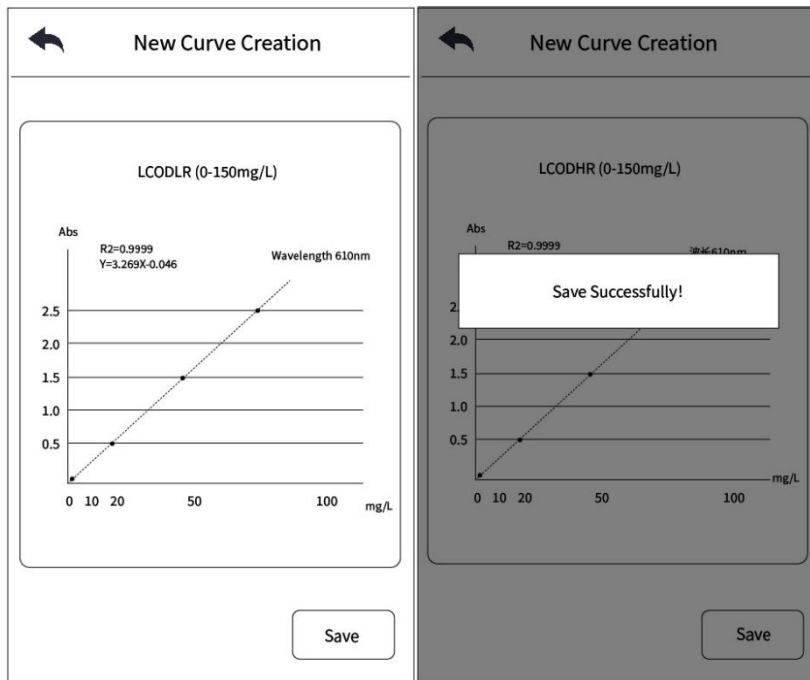


Click the first concentration cell, input the concentration value of the first sample, then place the first sample to sample holder and click “Reading”. After the reading is complete, the absorbance value of the first sample will appear in the corresponding cell below.

Repeat the measurement process for different concentrations of samples.

When all data points are entered, click “Generate Curve” to create the curve chart at

the bottom of the table. Click “Save” to store the new measurement curve, or back to cancel and return to the previous screen.



4.3.1.5 Import Curve

Click “Import” button to import curve. Select the file path (like USB drive) then click “Import” to complete the curve import.

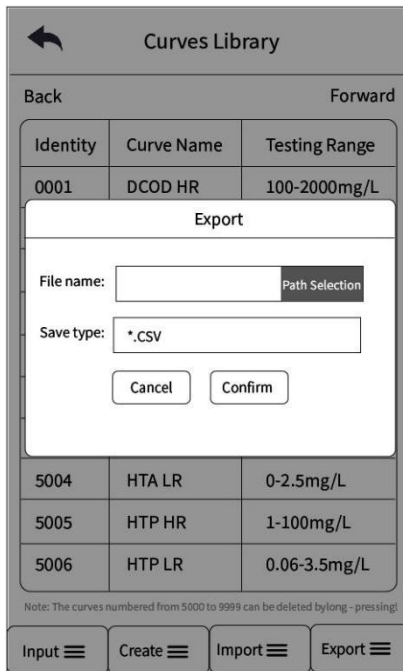
The screenshot shows a mobile application interface titled "Import Curve".

Under the heading "Path Selection:", there is a dropdown menu with "USB" selected. Below the dropdown is a button labeled "Import".

***Important:** The file format of the curve is CSV. Make sure the USB drive contains only one CSV-format measurement curve file, otherwise the system may not recognize it.

4.3.1.6 Export Curve

Click “Export” button to export all curves in the curve library. Enter the file name and select export file path. Click “Confirm” button to complete the curves exporting.



The screenshot shows the 'Curves Library' interface. At the top, there are 'Back' and 'Forward' navigation buttons. Below them is a table with three columns: 'Identity', 'Curve Name', and 'Testing Range'. The table contains the following data:

Identity	Curve Name	Testing Range
0001	DCOD HR	100-2000mg/L
5004	HTA LR	0-2.5mg/L
5005	HTP HR	1-100mg/L
5006	HTP LR	0.06-3.5mg/L

An 'Export' dialog box is overlaid on the table. It contains the following fields and buttons:

- 'File name:' followed by a text input field and a 'Path Selection' button.
- 'Save type:' followed by a dropdown menu showing '*.CSV'.
- 'Cancel' and 'Confirm' buttons.

At the bottom of the dialog box, there is a note: 'Note: The curves numbered from 5000 to 9999 can be deleted by long - pressing!'. Below the dialog box, there are four menu buttons: 'Input', 'Create', 'Import', and 'Export'.

4.3.1.7 Delete Curve

Select the curve you wish to remove in the curve library, press and hold 3 seconds to active curve delete function which is shown below. Then press “Delete” button to delete it.

← Curves Library

Back Forward

Identity	Curve Name	Testing Range
0001	DCOD HR	100-2000mg/L
0002	DCOD LR	10-150mg/L
0003	DTA LR	0-30mg/L
0004	DTA HR	10-150mg/L
5001	HCOD HR	20-1500mg/L
<div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-between; align-items: center;"> HCOD HR Cancel Delete </div>		
5003	HTA HR	0-50mg/L
5004	HTA LR	0-2.5mg/L
5005	HTN HR	1-100mg/L
5006	HTN LR	0.06-3.5mg/L

Note: The curves numbered from 5000 to 9999 can be deleted by long - pressing!

Input ≡ Create ≡ Import ≡ Export ≡

4.3.2 Sample Testing

The “Sample Testing” page contains “Add Common Curves” and “Delete Common Curves” and “Sample Testing” functions.

← Sample Testing

Identity	Curve Name	Testing Range
0001	DCODHR	100-2000mg/L
5001	HCOD HR	20-1500mg/L
5003	HRTA HR	0-50mg/L

©

Add Common Curves Delete Common Curves

4.3.2.1 Add Frequently Used Programs

Click “Add Common Curves”, select desired curves from the Curve Library, and press

4.3.2.3 Sample Testing Procedure

Click the corresponding curve number to enter the specific testing interface.

The image displays two screenshots of the 'Sample Testing' interface. The left screenshot shows a table with the following data:

Identity	Curve Name	Testing Range
0001	DCODHR	100-2000mg/L
5001	HCOD HR	20-1500mg/L
5003	HTA HR	0-50mg/L

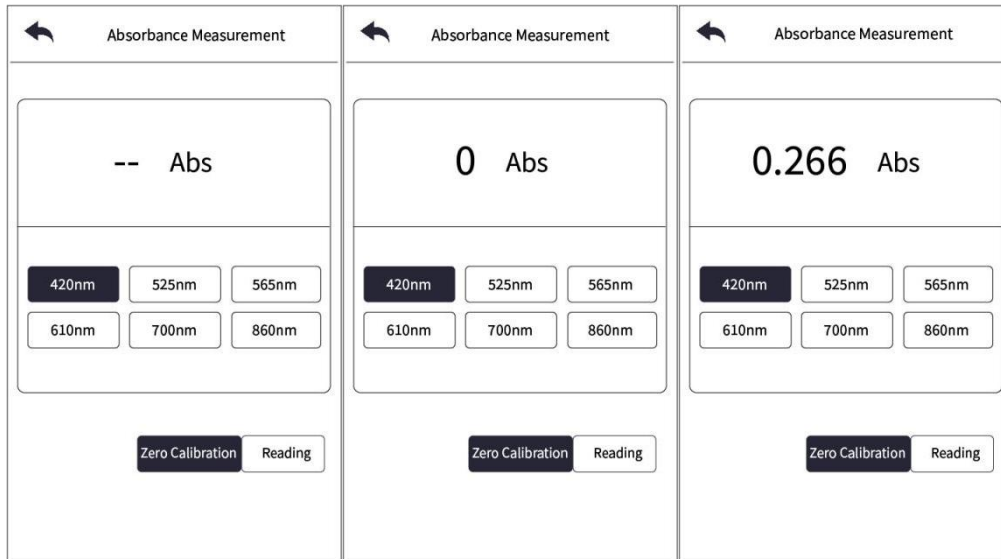
Below the table are two buttons: 'Add Common Curves' and 'Delete Common Curves'. The right screenshot shows the testing interface for 'DCOD HR(100-2000mg/L)' with a 'Timer' button and a large display showing '566 mg/L'. Below the display is a 'Sampling Point' menu icon. At the bottom of the right screenshot are four buttons: 'Save', 'Zero Calibration', 'Test', and 'Print'.

- Click the symbol "≡" beside "Sampling Point" to select the sample point.
- Place the reference (zero) sample into the sample holder, and click "Zero Calibration".
- Remove reference sample and insert the sample to be measured into the sample holder, and click "Test" to read data.
- After the measurement result appears, click "Print" to print the data by thermal printer
- Click "Timer" to set countdown reminders for color development reactions (e.g., ammonia nitrogen, total phosphorus).
- Click "Save Mode" in Settings page to choose result save mode:
 - Default mode: Auto Save (data automatically saved after measurement).
 - Manual mode: click "Save" manually after each test. A popup message will confirm successful data saving.

4.3.4 Photometric Measurement

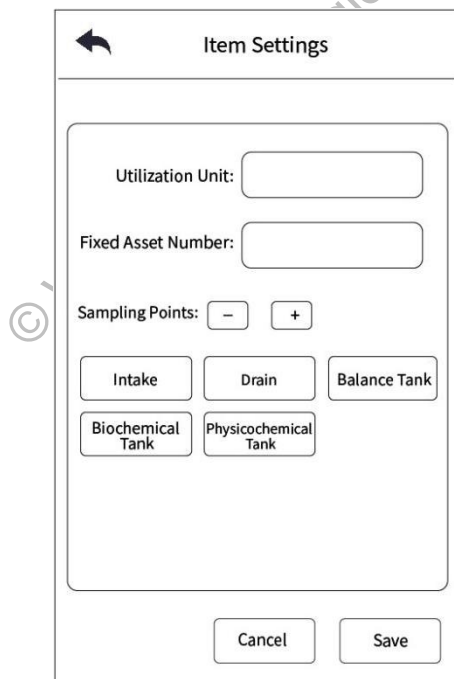
This function is used to measure the absorbance value at different wavelengths.

Select the desired wavelength, place the sample in the sample holder, and the system will automatically display the absorbance reading.



4.3.5 Item Settings

In this function, users can set the location of sampling points, user unit (organization name), and asset identification code according to specific item requirements.



4.3.6 User Management

By default, the “User Management” function is disabled.

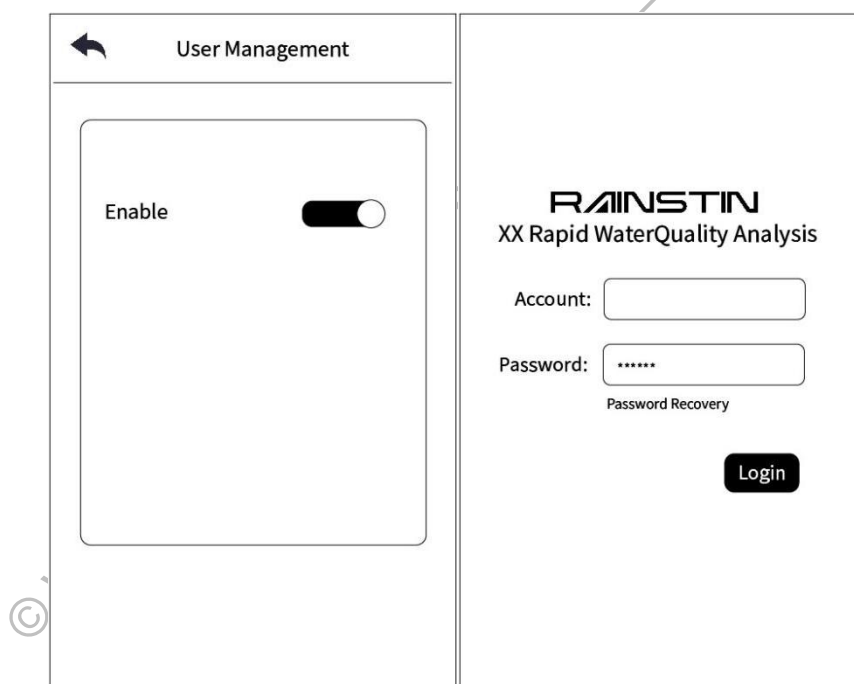
When enabled, the system will restart and enter the administrator login Interface.

- Administrator Username: admin
- Default Password: 123456

Upon first login, the administrator is required to change the password.

Administrator privileges include:

- Creating and managing sub-accounts
- Creating new curves
- Importing and exporting curves
- Deleting curves
- Viewing all user data records



4.3.7 Data Communication

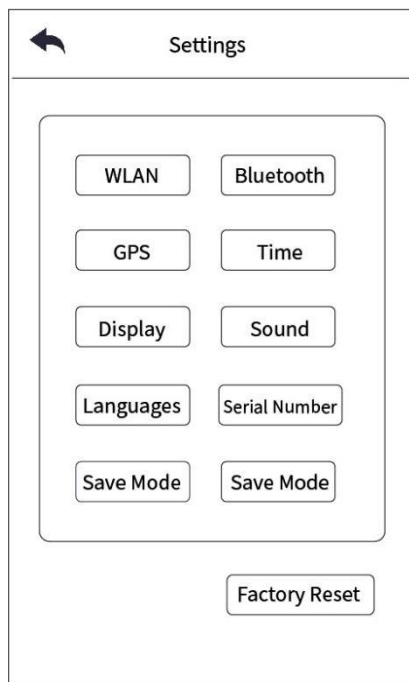
This function becomes available only when the Wi-Fi or 4G communication module is installed.

Through this module, the instrument can connect to external systems such as LIMS

(Laboratory Information Management System) for data synchronization and remote data transfer

4.3.8 Settings

Click on the desired item to enter the corresponding sub-menu for configuration.

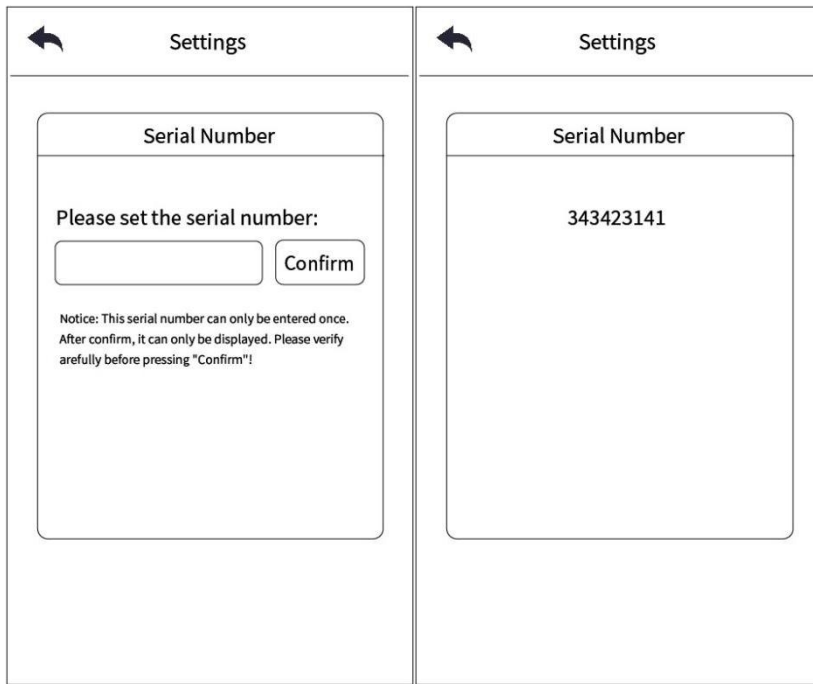


4.3.8.1 Optional Settings

Some settings become active only when the corresponding hardware module is installed — such as WLAN, Bluetooth, and GPS.

4.3.8.2 Serial Number

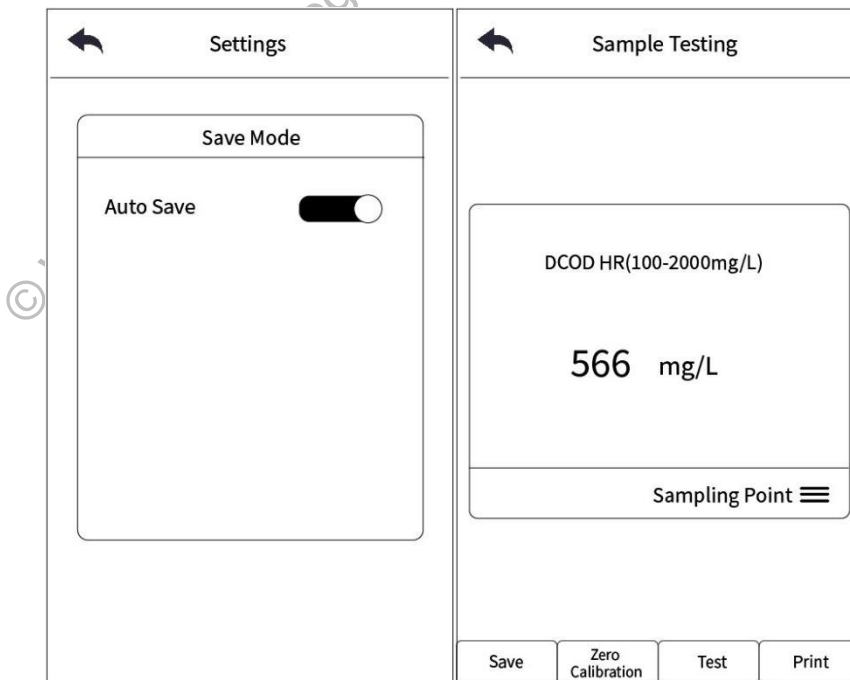
© The serial number can only be set once. After being set, it becomes read-only and is used for after-sales tracking and device traceability.



4.3.8.3 Data Save Mode

The default mode is auto save mode. In auto save mode, measurement results are automatically saved and can be reviewed under “Data Query”.

If manual save mode is selected, users must manually click the “Save” button on the “Sample Testing” page to store results. After saving, a popup message will confirm “Data Saved Successfully.”



4.3.8.4 Other Settings

Follow the on-screen instructions to adjust system parameters such as date, time, and display options.

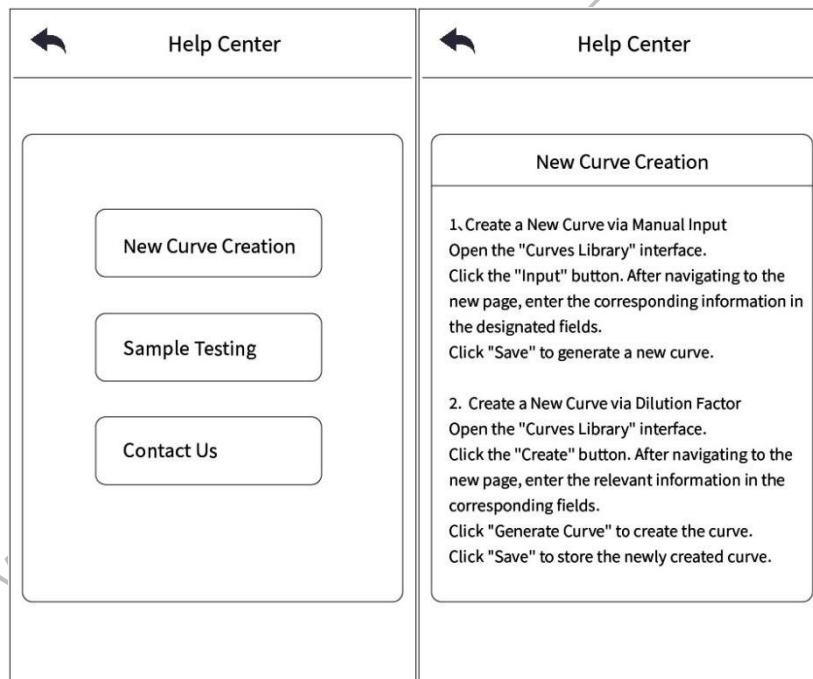
4.3.8.5 Restore Factory Settings

The “Restore Factory Settings” option will erase all user data and restore the device to its original state.

*Use this function with caution.

4.3.9 Help Center

The Help Center provides brief operating instructions and contact information for technical support.



5. Packing List

Item	Number
Benchtop multi-parameter water quality analyzer Instrument	1
Power Cable	1
User Manual	1
Certificate of Conformity	1
Warranty Card	1

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