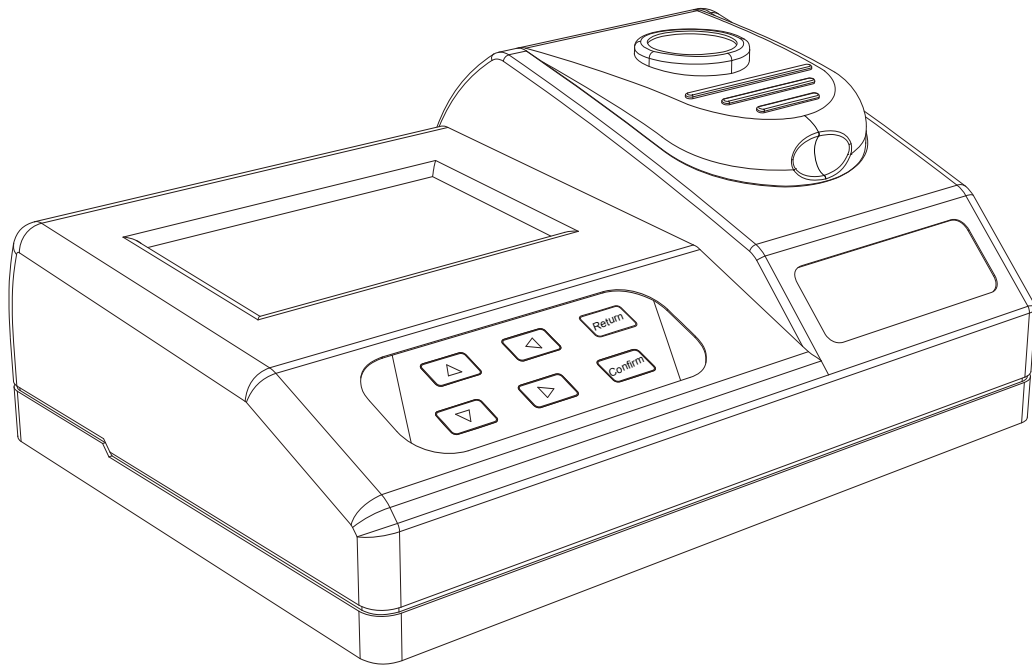


# User Manual

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**Desktop Water Quality Analyzer (Economy Type)**



**Catalogue**

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## Important Notes!

1. This instrument must be operated by qualified personnel.
2. Please read this user manual carefully before using the instrument, and keep it in a safe place for future reference.
3. All illustrations in this manual are for reference only; the actual product should be taken as the final authority.
4. The company reserves the right to modify this manual without prior notice.

## Safety Warning!



Warning:  
Risk of electric shock

To ensure safe use of the instrument, please read the following precautions carefully:

1. The instrument is powered by AC 220V. Do not place the instrument in a humid environment or immerse it in water.
2. Do not open the instrument casing during operation.
3. Use a socket with good grounding.
4. Ensure the power cord and socket have a power rating higher than the maximum power consumption of the instrument.



Beware of corrosion

1. There is a risk of chemical exposure during instrument use. Comply with laboratory safety regulations and wear personal protective equipment (PPE) for handling chemicals.
2. The use and disposal of chemical reagents in experiments must comply with national and local laws and regulations.
3. Do not allow liquids or water to enter the instrument's cuvette compartment.
4. Please read Section 5 "[Reagent Preparation](#)" and Section 7 "[Precautions](#)" in this manual carefully.

Section 1: Main Structural Components of the Instrument

As shown in Figures 1, 2, and 3, the instrument consists primarily of the following components: 1. Upper housing cover; 2. Lower housing; 3. Display; 4. Colorimetric dust cover; 6. Power socket; 7. Power switch; 8. Expansion port; 9. Colorimetric cell (3 types available; select one based on specific requirements).



Figure 1, Instrument Exterior View



Figure 2. Back View

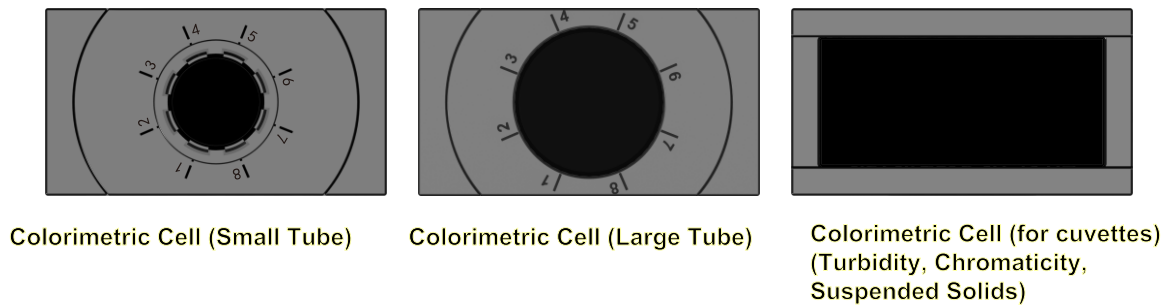


Figure 3. Colorimetric Section

### Section 2 Main Functions and Features of the Instrument

This instrument is widely applicable to environmental monitoring, sewage treatment, as well as departments such as universities, research institutions, etc.

It is also suitable for the determination of surface water, groundwater, and tap water.

The instrument has the following advantages:

- 1.It uses cold light and monochromatic light as the light source, with excellent optical stability and no interference from various lights.
- 2.It features a large - screen LCD Chinese display, and all operations including setting, calibration, and recording are realized in the same integrated environment.
- 3.By using technologies such as V/F conversion, software redundancy, and software trapping, it has strong anti - interference ability.
- 4.It has a data storage function, which can store 10 working curves and 199 historical records, and the data will not be lost after power failure.
- 5.It has factory calibration and user - defined calibration functions.
- 6.The main unit housing is made of ABS material by mold - making, with good corrosion resistance.

### Section 3 Main Parameters of the Instrument

|  |                        |  |
|--|------------------------|--|
| Performance Parameters                 | Optical Channels       | 1 - 8 Channels can be customized                   |
|  | Wavelength Range       | 340, 420, 470, 520, 540, 560, 610, 660, 680, 700nm |
|  | Light Source           | High-performance LED                               |
|  | Detector               | Silicon Photoelectric Sensor                       |
|  | Wavelength Accuracy    | $\pm 1\text{nm}$                                   |
|  | Absorbance Range       | -2.000~2.000A                                      |
|  | Colorimetric Linearity | $\pm 0.002A (0\sim 1A)$                            |
|  | Colorimetric Accuracy  | $\pm 0.005A/1A\text{Time}$                         |
| Physical Parameters                    | Display                | Dot-matrix 240×128LCD                              |
|  | Instrument Dimensions  | 266mm×200mm×130mm                                  |
|  | Instrument Weight      | 500g   |
| Environmental and Operating Parameters | Working Environment    | Temperature: 5~40 C, Humidity: $\leq 85\%$         |
|  | Storage Environment    | Temperature: -40 ~ 60 C, Humidity: $\leq 85\%$     |
|  | Power Supply           | AC(220±22)V, (50±0.5) Hz                           |

## Section 4 Instrument Operation

### 4.1 Startup

In the standby state, press the power key to turn on the instrument. The instrument will prompt "Initializing, please wait..." and start initializing (Figure 4). If there are any system problems during the initialization process, corresponding prompts will appear. After the initialization is completed, the main menu will be displayed (Figure 5).

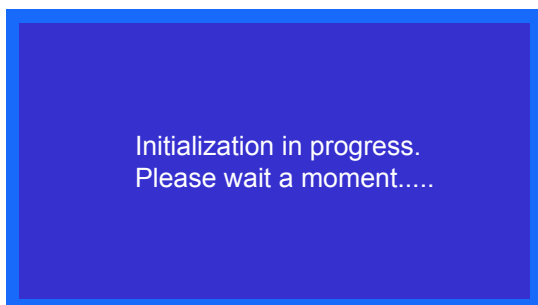


Figure 4. Startup initialization

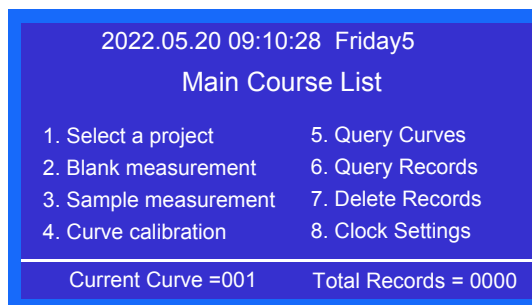


Figure 5. Main Menu

### 4.2 Main Menu Introduction

The main menu is divided into eight sections: Select Item, Blank Measurement, Sample Measurement, Curve Calibration, View Curves, View Records, Delete Records, and Clock Settings (Figure 5). Use the "1", "1", "+", and "→" keys to navigate through the options, then press the "Confirm" key to access the corresponding function.

### 4.3 Selection Curve

Select the "Select Item" option from the main menu and press the "Confirm" button. The instrument will then enter the curve selection screen (Figure 6). Users can select any of the listed curves as the current curve to proceed with subsequent measurement operations.

Note: The unit =mg/L indicates that the measured concentration unit is mg/ L. Users can select the curve based on the concentration of the measured parameter of the water sample being tested.



Figure 6. Select the project

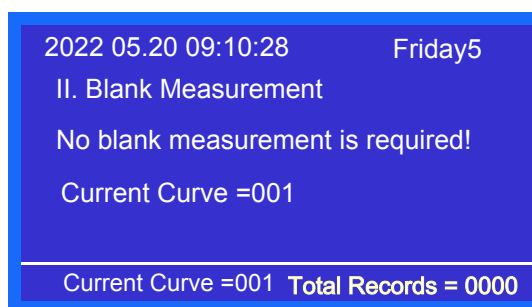


Figure 7. No blank prompt is required

### 4.4 Blank Measurement

When the instrument interface is in the main menu, if the user selects the "Blank Measurement" menu, the instrument will enter the blank measurement interface. If the measured parameter is pH, turbidity, or other parameters that do not require blank measurement, the instrument will display the prompt "No need for blank measurement!" (Figure 7). Otherwise, the instrument will enter the blank measurement (Figure 8).

The purpose of blank measurement is to obtain a reference value, which is used to deduct from the sample measurement. For blank measurement, first thoroughly clean the cuvettes (or cells) and their lids (or use disposable cuvettes/cells for pre - made reagents), add distilled water and various required reagents, and wipe off the surface water droplets with a soft cloth. Then put the cuvette (cell) into the cuvette holder. After the blank value is stably displayed, press the "Confirm" key to confirm its value. The blank value serves as a reference and deduction basis. It is very important for the calculation of absorption values during subsequent sample measurements, so make sure the value is stable before confirming.

The blank value can only be less than 1.000A. A value of 1.000A indicates that the signal has exceeded the limit. Before blank measurement, a curve must be selected first, and this curve should be either a factory - calibrated curve or a curve that has been strictly calibrated by the user.

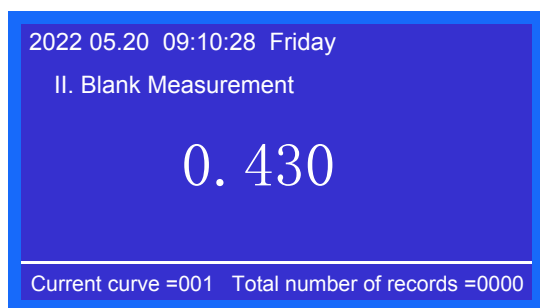


Figure 8. Measurement Blank

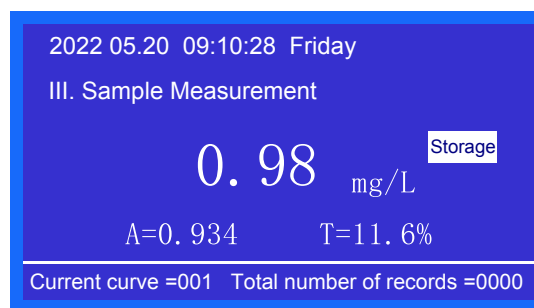


Figure 9. Sample Measurement

#### 4.5 Sample Measurement

When measuring, first thoroughly clean the cuvettes (or cells) and their lids, add a certain amount of water sample and required reagents, and wipe off the surface water droplets with a soft cloth. Then put the cuvette (cell) into the cuvette holder. On the main menu interface, select the "Sample Measurement" item. The instrument will enter the sample measurement interface. Press the "Confirm" key, and the instrument will display the measurement results and absorption value, transmittance value, as shown in Figure 9.

The result of sample measurement can be stored. Select the "Store" item and press confirm.

After the measurement is completed, put in the next sample for measurement. If you do not want to measure, press the "Return" key, and the instrument will return to the main menu.

#### 4.6 Curve Calibration

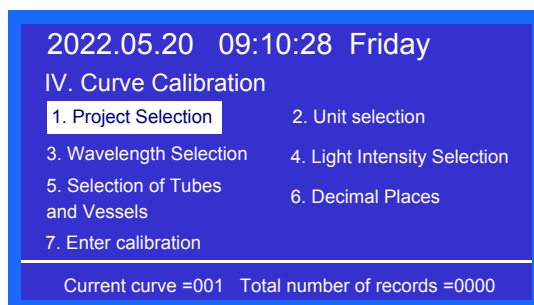


Figure 10: Curve Calibration Submenu Options

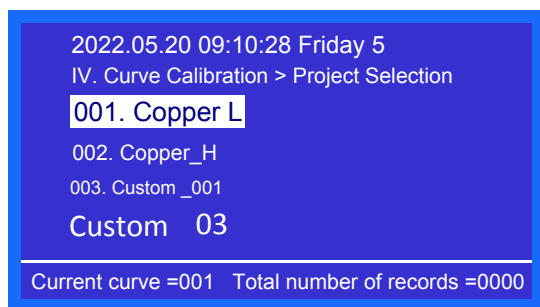


Figure 11. Curve Calibration - Item Selection

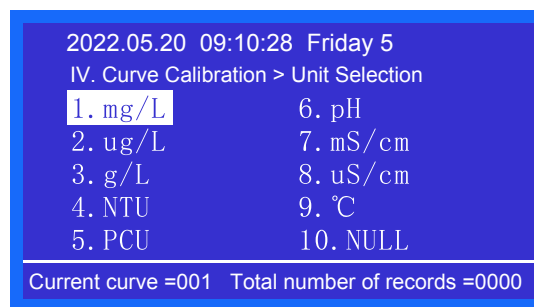


Figure 12. Curve Calibration - Unit Selection

#### 4.6.1 Project Selection

In the curve calibration menu, select the "Project Selection" item. The instrument will display all selectable standard curves and user - defined curves. After confirming the curve selection, subsequent calibration operations will be carried out for this curve (Figure 11).

#### 4.6.2 Unit Selection

In the curve calibration menu, select the "Unit Selection" item. The instrument will enter the unit selection interface. mg/L and ug/L and g/L are used for concentration units, NTU is used for turbidity units, PCU is used for color units, pH is used for acidity - alkalinity units, mS/cm and uS/cm are used for conductivity units, and °C is the unit of temperature (Figure 12).

#### 4.6.3 Wavelength Selection

In the curve calibration menu, select the "Wavelength Selection" item. The instrument will display all selectable channel numbers and wavelength values. Users can select channels according to the wavelength and channel position (Figure 13). Note that sometimes the wavelengths of multiple channels may also be the same (but the positions are different, pay attention to the channel identification number on the color slot).

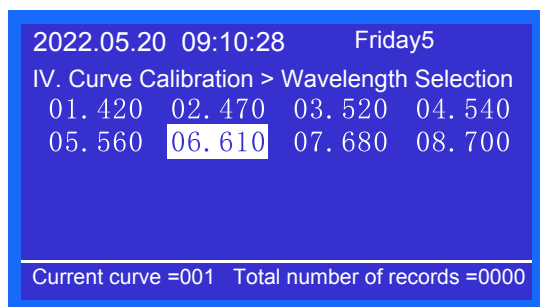


Figure 13. Curve Calibration - Wavelength Selection

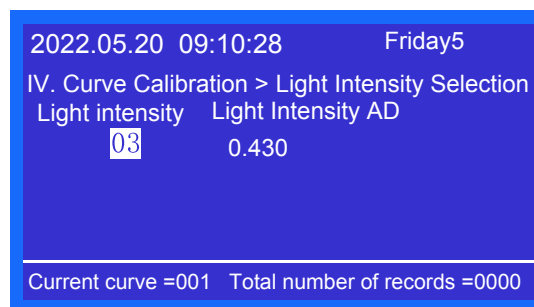


Figure 14. Curve Calibration - Light Intensity Selection

#### 4.6.4 Light intensity selection

In the curve calibration menu, select the "Light Intensity Selection" item. The instrument will enter the light intensity selection interface (Figure 14). The user can press the "↑" or "↓" key to change the light intensity value, and the range of the light intensity value is 1 - 16.

The purpose of light intensity selection is to make the light intensity match the appropriate measurement range of the instrument, so as to ensure the accuracy of the measurement results. For example, when measuring a substance of 0.1g with a balance of 1000g range, its accuracy obviously cannot be guaranteed; while using a balance with a range of 1g, the measurement result will be more accurate. The reason why the instrument has the light intensity selection function is based on this. It can be considered that the range of the instrument is 1.000. Considering that when the signal value is greater than 1.000 during measurement, the instrument still displays 1.000, so when selecting the light intensity, the AD values of all undetermined standard substances of different concentrations to be placed should be less than 1.000. Moreover, considering that there will be a certain drift with changes in temperature and other environmental factors.

It is advisable to keep the AD value less than 0.900, and the lower limit should not approach 0.000. The recommended value is 0.100 - 0.800 (for reference only) (Figure 14). To make it easier for users to select, it is recommended that users directly check the corresponding factory - set curve when selecting the light intensity and choose the same light intensity according to the corresponding factory - set curve.

#### 4.6.5 Cuvette Selection

In the curve calibration menu, select the "Cuvette Selection" item. The instrument will enter the cuvette selection interface. G16 is a cuvette with a diameter of 16mm, G20 is a cuvette with a diameter of 20mm, G25 is a cuvette with a diameter of 25mm; M10 is a cuvette with an optical path of 10mm, M20 is a cuvette with an optical path of 20mm, M30 is a cuvette with an optical path of 30mm, M50 is a cuvette with an optical path of 50mm, and M70 is a cuvette with an optical path of 70mm. (Figure 15)

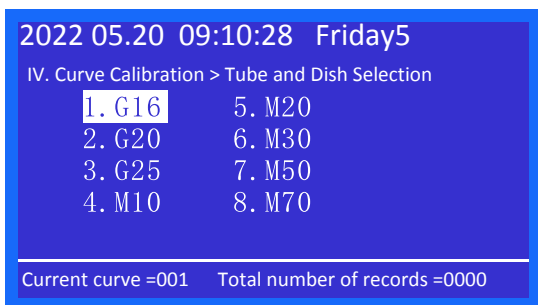


Figure 15- Curve Calibration - Tube and Dish Selection

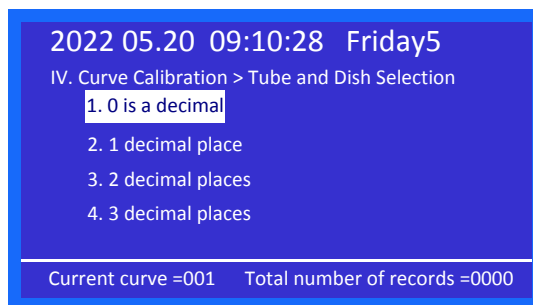


Figure 16- Curve Calibration - Decimal Places

#### 4.6.6 Decimal places

In the curve calibration menu, select the "Decimal Places" option. The instrument will enter the decimal places setting interface (Figure 16). Users can set the number of decimal places according to the precision and resolution requirements of the measured parameter. The number of decimal places can only be 0–3. For parameters with higher requirements, it can be linked with the unit setting. For example, if a resolution of 0.0001 mg/L (4 decimal places) is required, the unit can be changed to ug/L, and 1 decimal place is sufficient (because 0.0001 mg/L = 0.1 ug/L).

#### 4.6.7 Enter calibration

After completing the above settings, in the curve calibration menu, select "7. Enter Calibration" to make the instrument truly start the actual calibration (Figure 17).

First, except for parameters like pH (colorimetric method) and turbidity that do not require absorbance measurement, the first standard substance should generally be a sample with a target measurement parameter value of 0.00 (using the corresponding cuvette/colorimeter). On the "Standard Value" sub - interface, use the numeric keypad to input "00000.00", click "Confirm" to store it. Below the "Absorbance" field, a small value (e.g., 0.430) will appear—this is a reference value, not the actual absorbance. The instrument internally processes the absorbance as 0.000 (Figure 18).

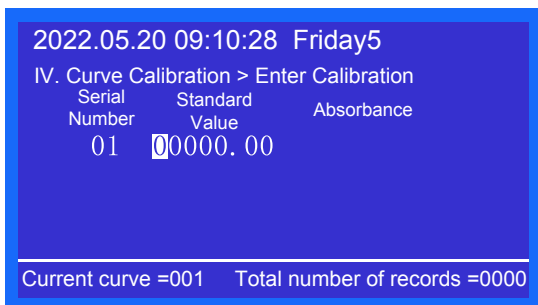


Figure 17, Curve calibration - Enter Calibration - Input Standard Value

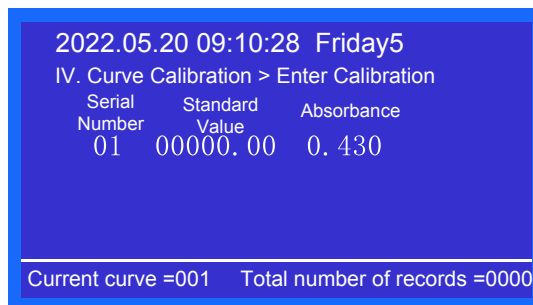


Figure 18- Curve Calibration - Display the first reference value

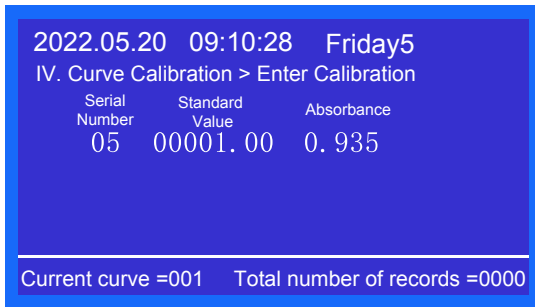


Figure 19, Curve calibration - Enter Calibration - Display Absorbance

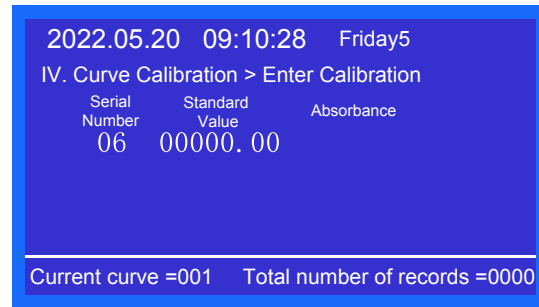


Figure 20. Curve Calibration - Press "ENTER" to end the calibration

Then, place the cuvettes (or dishes) containing different standard substances into the colorimeter slot one by one, and input the corresponding standard values to obtain the corresponding absorbance (Figure 19 shows the standard value and absorbance of the 5th sample).

When all standard values are entered and the corresponding absorbances are obtained, when the standard value is "00000.00" (and the serial number is greater than 2), press the "Confirm" key (Figure 20). The instrument will display the completed curve calibration process. At this time, pressing the "Confirm" key will store the completed calibration curve in the instrument. If an error message appears during the calibration process, it indicates a calibration failure. Press the "Return" key to return to the function selection menu.

Note: The calibration process must be performed in sequence from 1 to 7. For example, if the "Light Intensity Selection" operation is performed directly without selecting the wavelength, the system will not know which wavelengths light intensity to select, so the system will automatically prompt to confirm the "Wavelength Selection" item.

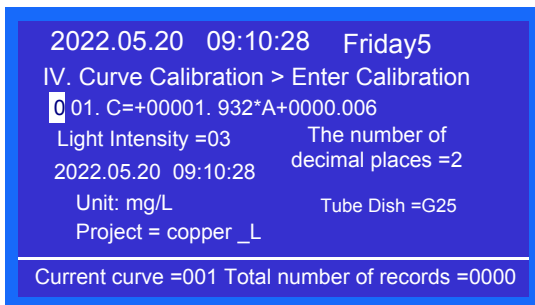


Figure 21, Curve Calibration - Shows the calibrated curve

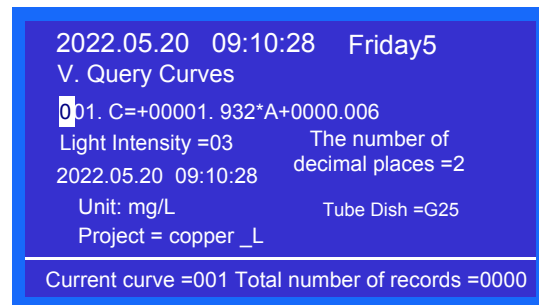


Figure 22. Query Curve - Query Curve Results

#### 4.7 Query Curve

Under the main menu, select the "Query Curve" option. The system will enter the curve query interface (Figure 22). Users can use the "↑" or "↓" keys to select the curve to be queried (including factory curves and user - defined curves). The system will display the content of the queried curve, including the curve equation, light intensity value, number of decimal places, calibration date and time, unit, cuvette type, project name, and correlation coefficient. Press the "Return" key to return to the main menu.

#### 4.8 Record Query

Under the main menu, select the "Record Query" menu item. The system will enter the record query interface. By entering the serial number of the query record, the record to be queried can be changed (Figure 23).

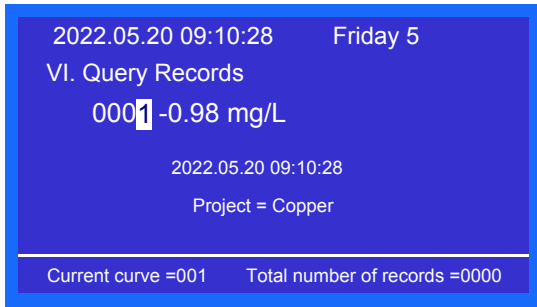


Figure 23. Query Record



Figure 24, Delete records

#### 4.9 Delete Record

Select the "Delete Record" menu item under the main menu, and the system will enter the record deletion interface (Figure 24). Press the "Confirm" key to delete part or all of the records.

#### 4.10 Clock Setting

Select the "Clock Setting" option under the main menu, and the instrument will enter the clock setting interface (Figure 25). Enter the year, month, day, hour, minute, second, and week one by one, and then press the "Confirm" key to complete the setting.

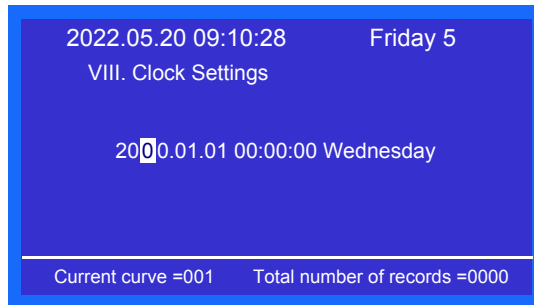


Figure 25. Clock Settings

## Section 5 Preparation of Reagents

Since the reagents and preparation methods vary for each measurement parameter, the SISCO company has specially compiled the "Water Quality Analyzer Chemical Operation Manual." For specific preparation procedures, please refer to the manual provided with the instrument.

## Common Instrument Faults and Troubleshooting

**Table 1. Common Faults and Solutions**

| No. | Fault Phenomenon                          | Possible Causes  | Solutions   |
|-----|---|--|---|
| 1   | No display on startup<br>Keyboard failure | 1. Device not powered on properly<br>2. Display damaged  | 1. Contact manufacturer<br>2. Return to factory for repair  |
| 2   | Keyboard Failure                          | 1. Software malfunction<br>2. Keyboard damaged   | 1. Turn off power and reconnect power supply<br>2. Return to factory for repair   |
| 3   | Abnormal test data                        | 1. Optical system failure<br>2. Electronic system failure  | 1. Return to factory for repair<br>2. Return to factory for repair  |
| 4   | Insufficient test accuracy                | 1. Optical system aging causing performance change<br>2. Electronic system aging causing measurement drift<br>3. Insufficient calibration accuracy<br>4. Improper operation<br>5. Dirty cuvette or flow cell<br>6. Interfering substances in water samples | 1. Self-calibration or re-calibration curve<br>2. Self-calibration or re-calibration curve<br>3. Purchase high-quality reagents<br>4. Strengthen training and standardize operation<br>5. Clean cuvette, flow cell, and tubing regularly<br>6. Pre-treat water samples or establish calibration curves for different concentrations |
| 5   | Abnormal display                          | 1. Display failure<br>2. Software malfunction<br>3. Unstable voltage   | 1. Return to factory for repair<br>2. Restart after power-off or return for repair<br>3. Use a voltage stabilizer   |

## Precautions

The instrument is a high - precision device. The following matters should be noted during use:

.The instrument should operate in an environment with suitable temperature and humidity, stable voltage, low noise, low dust, no strong vibration, and no strong magnetic interference.

.When the instrument is not in use, the cuvette in the cuvette holder should be taken out to avoid damage to the structure due to pre - tension, and also to prevent liquid from spilling into the instrument and causing circuit failure.

.During the operation of liquid reagents, strict precautions should be taken to prevent them from entering the instrument and causing corrosion to the circuit and optical path.

.Since the amounts of the sampled specimen, distilled water, and reagents have a great relationship with the measurement accuracy, the preparation of reagents and sampling operations should be carried out carefully; otherwise, the accuracy of the measurement results will be greatly affected.

.As most water quality tests involve chemical operations, the operators must be professionals and need to be strictly trained before taking up their posts.

.Operators must wear necessary protective equipment, such as masks, rubber gloves, protective clothing, etc.

