DW-739 Series User Manual

Drinking Water Ultra-Low Turbidity Panel

Pyxis®

V1.8

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Pyxis

DW-739 Series

Ultra-Low Turbidity Inline Analyzers for Drinking Water

User Manual

Pyxis Lab Inc.

October 2021

Related Statements

The manufacturer shall not be liable for direct, indirect, special, incidental or consequential damages resulting from any deficiency or omission in this manual. The manufacturer reserves the right to make changes to this manual and the products described in it at any time without notice or liability. Revised versions can be found on the manufacturer's website.

Safety Information

Please read this manual completely before unpacking, installing and operating this equipment. In particular, pay attention to all dangers, warnings and precautions, otherwise, it may cause serious personal injury to the operator or damage to the equipment.

Use of Danger Information

Danger
Indicates a potentially or urgent dangerous situation that, if not avoided, will cause death or serious injury.

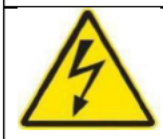
Warning
Indicates a potentially or very dangerous situation that, if not avoided, may cause serious personal injury or death.

Warning
Indicates a potentially dangerous situation that may cause a certain degree of personal injury.

Attention
Indicates conditions that if not avoided, will cause damage to the instrument. This is information that needs special emphasis.

Warning Label

Please read all labels and marks attached to the instrument. Failure to follow the instructions on these safety labels may result in personal injury or damage to the instrument.

	If this symbol appears in the instrument, it means refer to the operation and/or safety information in the instruction manual.
	If there is this mark on the instrument housing or insulator, it means there is a risk of electric shock or death from electric shock.
	Static electricity can damage the delicate internal electronic components, resulting in reduced performance or eventual failure of the instrument.
	Electrical equipment marked with this symbol cannot be disposed of through the European public waste system after August 12, 2005. In order to comply with European regional and national regulations (EU Directive 2002 / 98 / EC), European electrical equipment users must now return abandoned or expired equipment to the manufacturer for disposal without any cost.

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1. Specifications

Item	DW-739	DW-739B	DW-739-G	DW-739B-G
P/N	42143	42144	42145	42146
Turbidity Wavelength	Warm White	860nm	Warm White	860 nm
Light Source	LED			
Turbidity Dual Range	0.001 – 10 / 10 - 40.00 NTU			
Turbidity Accuracy	+ 0.005 NTU or 2% <10NTU			
Turbidity Repeatability	+ 0.001 NTU or 0.5% <10NTU			
Measurement Accuracy	0.001NTU or ± 1% Full Scale			
Minimum Resolution	0.001 NTU			
Response time	4s after immersion - Turbidity			
Compliance	EPA-180.1	ISO-7027	EPA-180.1	ISO-7027
Measurement Interval	Continuous Measurement			
Display	7-inch LCD Color Industrial Capacitive Touch Screen			
Storage Capacity	Built-In 4GB of Ram for Storing up to 1-Million Data/Event Records			
Power Requirement	96-260VAC / 50-60 Hz; 10A Fuse; 200 W			
Output	2 x 4-20 mA / RS-485 Modbus - RTU / Modbus TCP			
Input	2 x 4-20 mA / RS-485 Modbus - RTU			
USB	1 x USB host, for data downloading and screen upgrade			
Internet	RJ-45 socket, Modbus-TCP			
Panel Operational Temperature	40 – 113°F (4-45 °C)			
Storage Temperature	Instrument: -4 – 131°F (-20 – 55°C) / Sensors 32 – 122°F (0 – 50°C)			
Sample Water Temperature	40 – 104°F (4-40°C)			
Sample Water Pressure	7.25 – 30 psi (0.05 – 0.2MPa)			
Installation	FR-100 Self-Regulating Flow Reservoir w/Rotameter & PRV - Included			
FR-100 Minimum Flow Rate	200 mL/minute			
FR-100 Maximum Flow Rate	1,800 mL/minute			
FR-100 Sample Inlet	¼ - inch OD			
FR-100 Sample Outlet	20mm - To Drain			
FR-100 Drain	½ - inch NPT			
Rating	IP-65 Panel-Display / IP-67 Sensors			
Regulation	CE / RoHS			
Relative Humidity	20% - 90% (No Condensation)			
Altitude	<6,561 feet (<2,000 Meter)			
Dimensions (HxWxD)	Panel (DW-739) 790H x 450W x 231D mm			
Approximate Product Weight	DW-739 ~ 15 kg			
Pyxis 4G CloudLink™	NA		Included	
CloudLink™ Bands	NA		Global *(B1/2/3/4/5/7/12/13/14/20/28/66/7*	
CloudLink™ Protocols	NA		IP/TCP/UDP/HTTP/HTTPS/Modbus	

**NOTE* - Pyxis Lab is consistently updating technologies, as such, specifications may change without notice.*
Technical specifications on the LT-739/B can also be found in its respective Operation Manual.
Contact info@pyxis-lab.com for details or www.pyxis-lab.com .

2. Unpackaging

The package includes the following items:

- One DW-739 Ultra-Low Turbidity Panel Complete with 110VAC Power Supply Cord
    - UC-100A Touch Screen Display/Data Logger with Pyxis Sensors Prewired in RS-485 (RTU)
    - FR-100 Sensor Flow Reservoir
    - LT-739 (Warm White Light) or LT-739B (InfrRed) Ultra-Low Turbidity Sensor (as selected)
    - Pyxis CloudLink™ – 4G Gateway (as selected models ending in "G")

3. System Layout and Features

The DW-739 series are single channel inline turbidity analyzers specifically designed as a 'Turn-Key' monitoring solution for clean water applications including drinking water networks, secondary water supply and decorative/swimming water applications. The DW-739 series offers highly accurate, real-time measurement, display and data-logging of Ultra-Low Turbidity utilizing proprietary Pyxis Lab smart sensor technology in both EPA-180.1 and ISO-7027 compliant formats, coupled with a Pyxis touch screen display and data logging terminal. The DW-739 series is offered in a convenient and easy to integrate panel mounted format for rapid installation and simple maintenance.

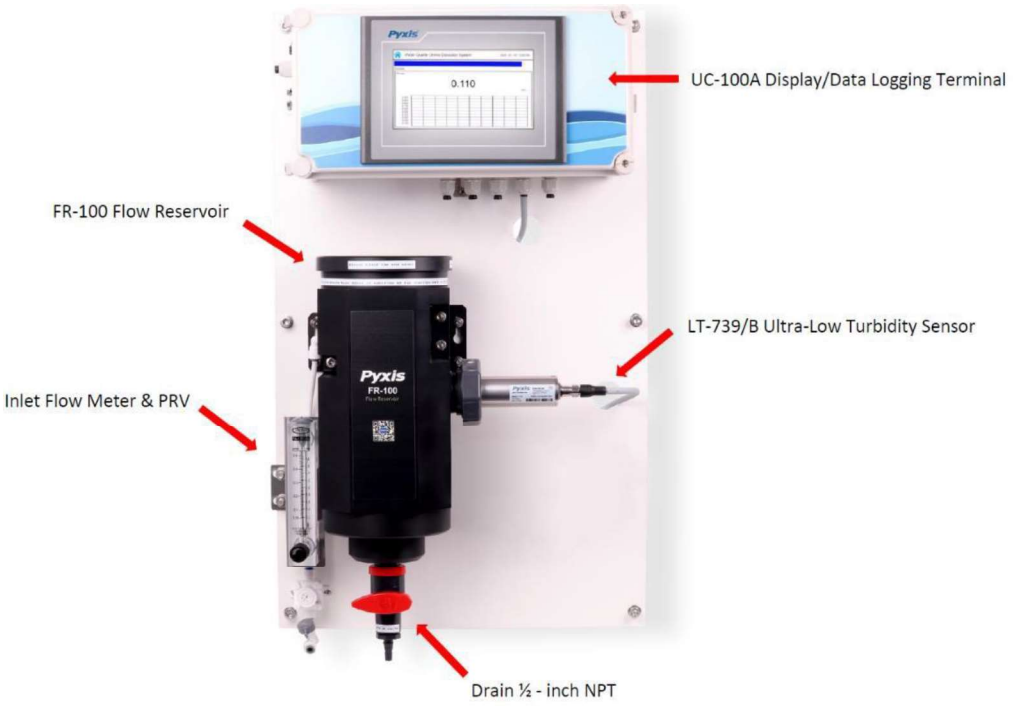


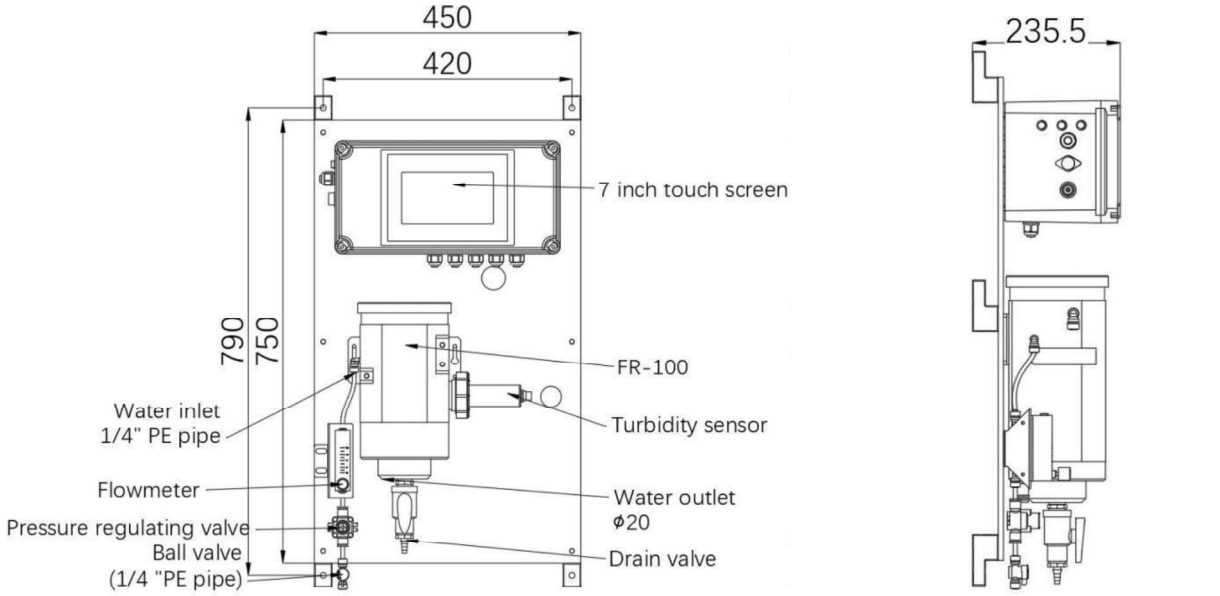
Figure. 1- DW-739 Series

DW-739 Series Features

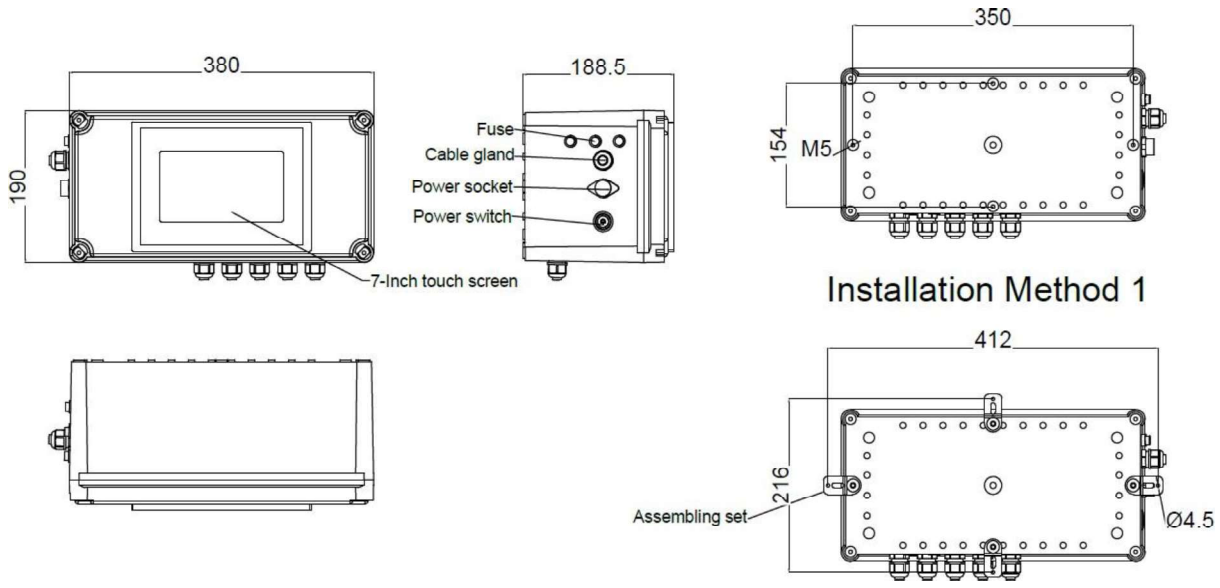
- Pyxis Lab's advanced research and development sensor technologies to achieve highly accurate and stable measurement of Turbidity with ultra-low resolution.
- Pyxis LT-739 (EPA) and LT-739B (ISO) ultra-low resolution turbidity sensors offer a detection light source using warm white LED in 90-degree surface scatter format in accordance with USEPA 180.1 standards or Infra-Red 860nm in accordance with ISO-7027.1 standards. The turbidity sensors are mounted in the unique Pyxis FR-100 flow reservoir enabling the highest resolution possible of 0.001NTU with unmatched stability. The LT-739 and LT-739B offers simple calibration using the Pyxis L-CAL Portable Turbidity Calibration Kit (uses 500mL Formazin per calibration).
- Pyxis FR-100 Single-Sensor flow reservoir provides sample calming for dissipation of air-bubbles and settling of suspended solids, foam or other impurities commonly observed in drinking water influent. This unique flow reservoir design results in the highest level of turbidity resolution on the market and greatly extends the maintenance cycle of the sensor while providing a large buffer capacity to mitigate pressure fluctuations. The minimum inlet pressure of FR-100 flow reservoir is only 7.5 psi (0.05mpa) making it highly suitable for the end of pipe networks and secondary supply influent sampling.
- Turbidity sensor offers a self-cleaning flat electrode design making them easy to maintain and clean.
- Simple sensor removal and replacement. LT-739 sensors is connected to the display/data logger via RS-485 modbus (RTU) allowing for integrated sensor calibration interface and diagnostics within the display screen.
- Convenient and simple to install Back-Panel (DW-739 Series) for rapid and easy installation. Truly a plumb and power to go platform with intense factory setup, testing and sensor calibration prior to shipment.
- 7-inch touch screen display/data logger interface with sensor calibration integrated. Display/data logger offers 2x 4-20mA I/O as well as RS-485 for signal passthrough to any PLC or DCS network. Pyxis CloudLink™ 4G Gateway version available.
- For NSF Certified Applications the DW-739 discharge flow of approximately 200-400mL/minute may be sent to sanitary drain or returned to the inlet of the pretreatment system.

4. Dimension and Mounting

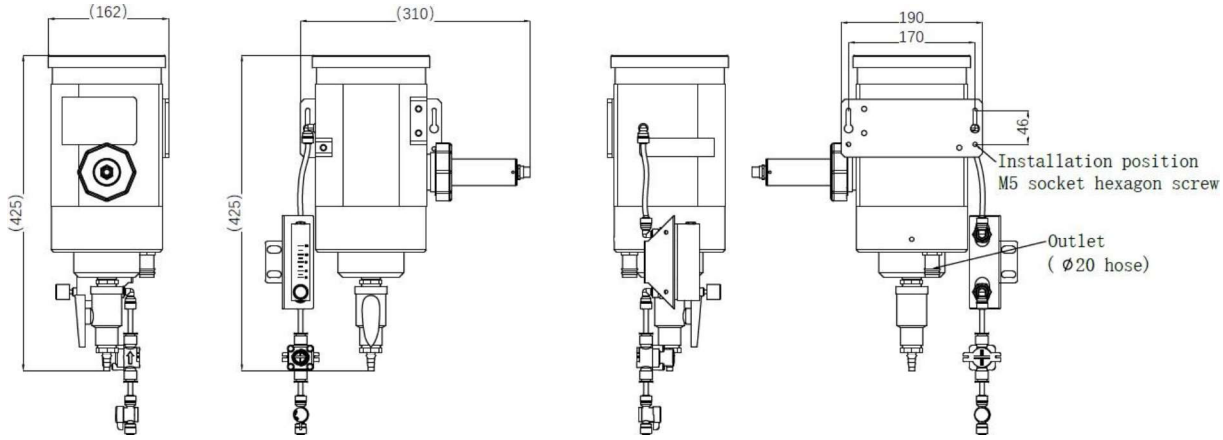
DW-739 Series Panel Dimensions (mm)

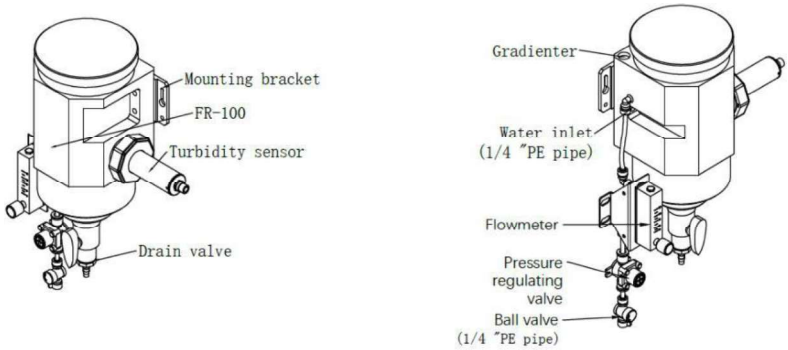


DW-739 Series UC-100A Controller Dimensions (mm)

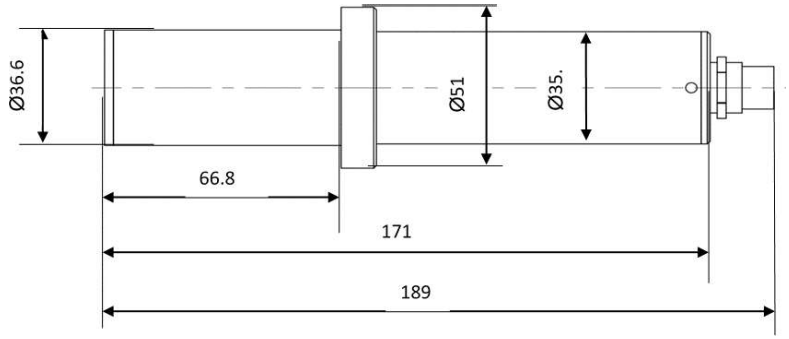


DW-739 Series FR-100 Flow Reservoir Dimensions (mm)





DW739 Series Sensor Dimensions (mm)



LT-739 / LT-739B Turbidity Sensor

5. Installation

5.1. Installation Requirements

Power Supply: 100~240VAC 50/60Hz

Water Supply: Inlet water pressure should be from 7.25 – 30 psi (0.05-0.2MPa) with an inlet feedwater line diameter of ¼-inch O.D. Tubing. The DW-739 is provided with an inlet Rotameter and PRV for sample water inlet flow control and limited pressure regulation. Depending on sample water quality, these items may be installed on the application needs and user desire. The range of inlet flow for the FR-100 should be consistently maintained between 200 and 1,800 mL per minute.

Drainage: The FR-100 outlet tube (20mm Tubing) located on the bottom of the FR-100 should be connected to a discharge drain via gravity flow.

Wall Mount Space: The DW-739 analyzer panel size is roughly 790H x 450W x 235D (mm) in dimension. Please accommodate sufficient space for mounting.

Wall Mount Weight: Approximately 15kg. Please use appropriate mounting hardware.

3G/4G Network: Make sure your mobile network is a CMCC/CUCC 3G/4G compatible network. Ensure the signal strength is sufficient in the installation eara.

5.2. Tube connection

1. **Inlet Water:** Connect the ¼-inch inlet water tubing to the quick adapter provided**.** ***NOTE*** *The inlet flow meter is shipped as a loose item and may be installed as desired by the user. If feedwater water quality is poor, users may desire to not install this flow meter. Consistent flow of 200-1,800mL is required.*

2. **Outlet Line:** Connect 20mm tubing to the outlet drain. This is the sample water outlet flow. This line must be diverted to drain.

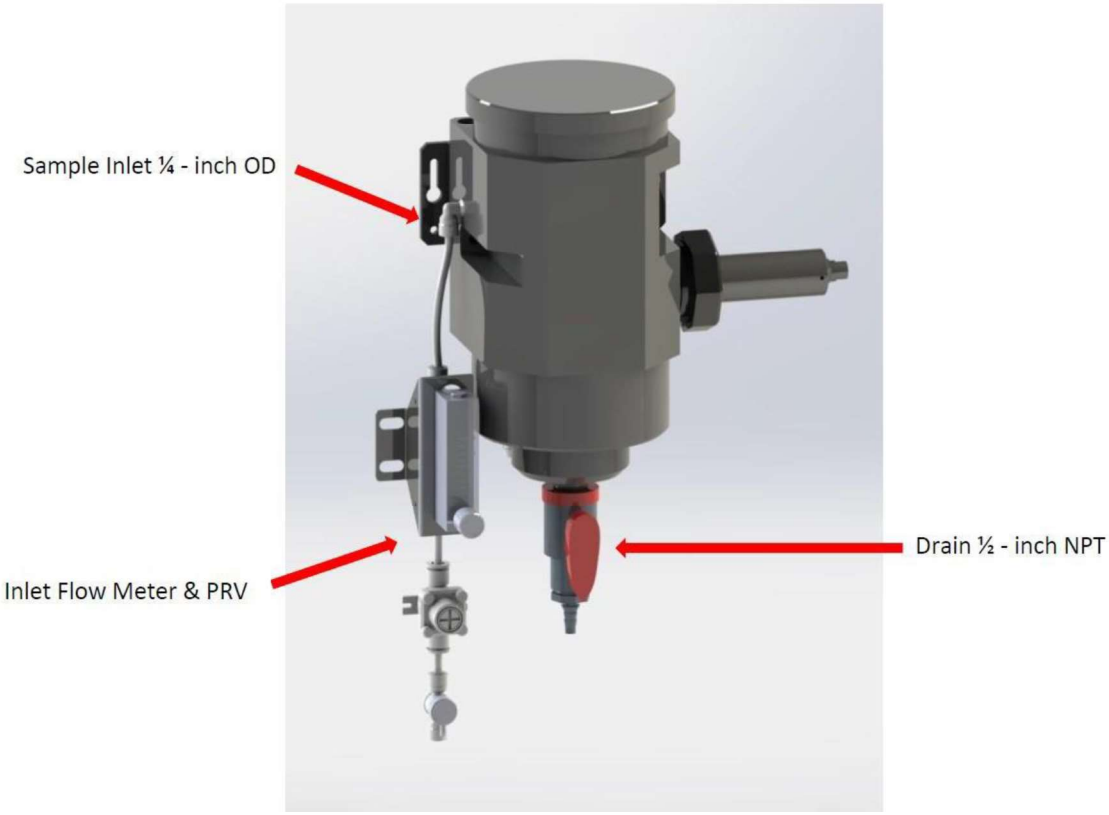


Figure. 2- FR-100 Connections

5.3. Terminal Wiring

The DW-739 analyzer has universal AC power supply equipment allowing users simply to plug the power supply into a 100~240V AC 50/60Hz power outlet for normal operation.

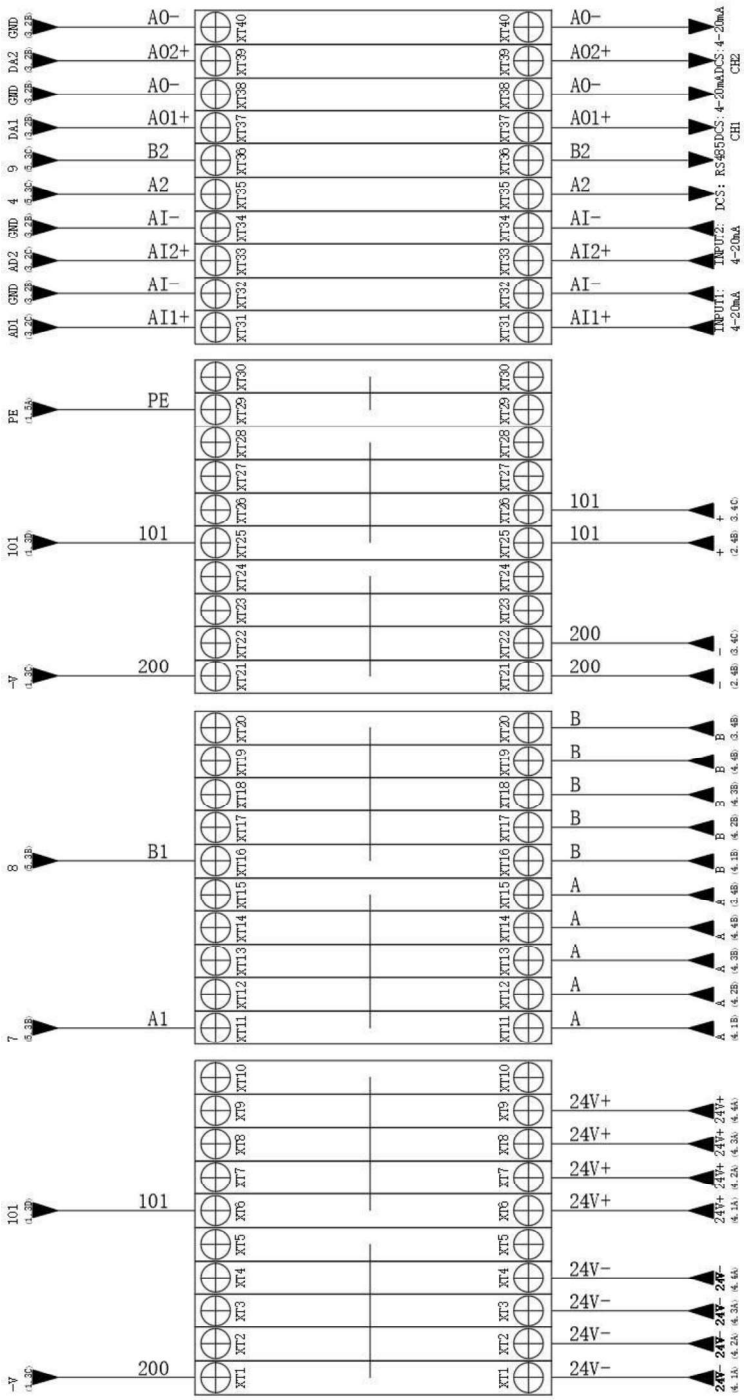


Figure. 3 - Terminal Wiring Diagram

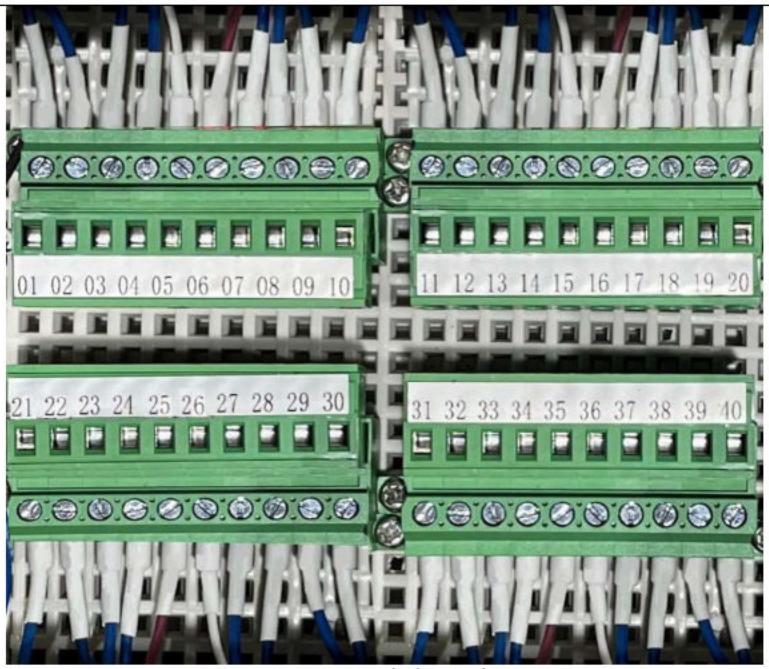


Figure. 4 - Terminal Physical Diagram

Warning

The process of electrical connection to contact the 220V single-phase power supply, should be operated by personnel with an electrician's license. Failure to operate according to the electrical code of practice may result in electric shock injury or even death.

6. Touch Screen Operation

6.1. Main Screen

After the system is powered on an initial screen allows the user to log into the system.

Figure. 5 - Main Screen

6.2. User Login

After powering on the system, log in with the username and password to be able to change system settings. Click the "User Login" button, select the user "pyxis", enter the password: "888888" in the user password field. A new user can be added via "User Management" in interface of the menu.

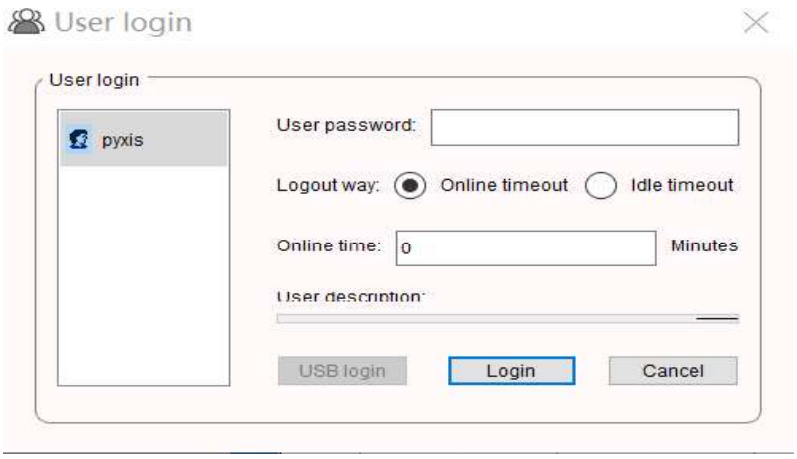


Figure. 6 - User Login Screen

If you do not need a password, or want to change the user, you can enter the system and "Manage" in the "User Management" screen of the menu. See 6.11 for details.

6.3. Real-Time Monitoring

Click the "Enter System" button on the main interface to enter the real-time monitoring screen of the system. The data detected by the Pyxis sensors will be displayed in real-time. See a functional overview of each section of this screen highlighted below. (numbers 1-4)

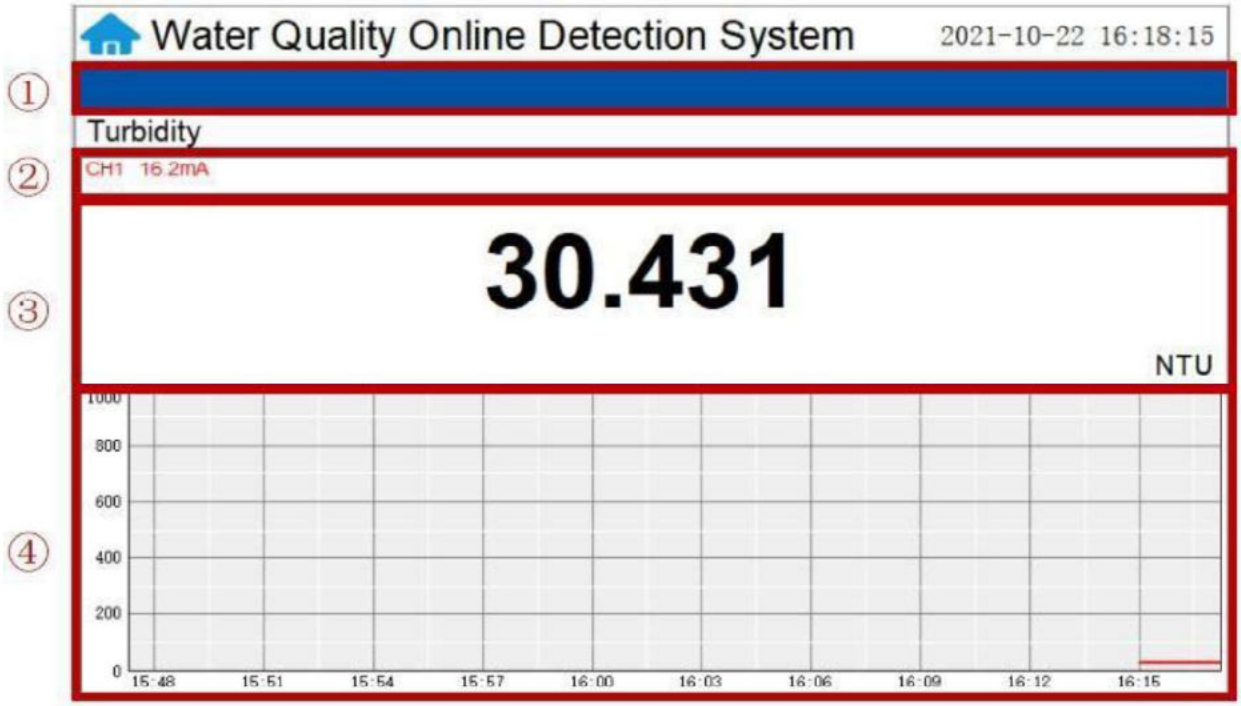


Figure. 7 - Real-time monitoring screen

Section Number	Functional Overview
1	The blue area will scroll any alarm information in real time until the alarm is cleared.
2	Real-time display of the current sensor's 4-20mA signal value.
3	Real-time display of current sensor measurement value.
4	Historical data is recorded as a live curve, with the horizontal coordinate being the time and the vertical coordinate being the measured value.

Table 1 - Main interface functional overview

Press and hold the curve area for 2 seconds and then let go, the Y-axis curve range setting dialog box will appear. Users may change the display value range of Y-axis for each measurement index curve. Click the outter area of the screen to save and exit the setting screen after modifications are made.

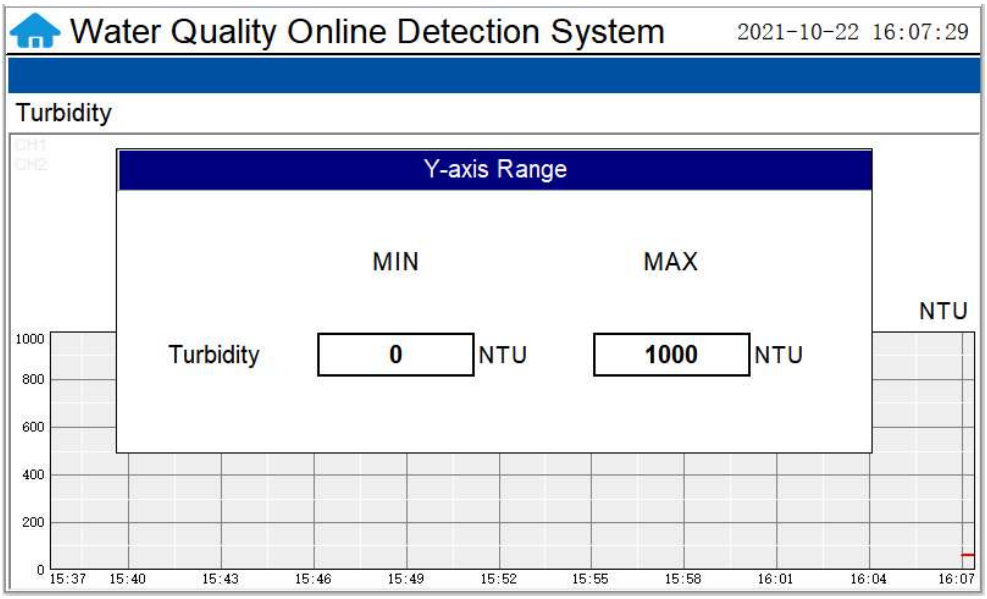


Figure. 8 - Curve Range Setting

6.4. Menu Bar

Click the button in the upper left corner of the screen to enter the system's menu interface, where the user can select to enter the desired operation interface.

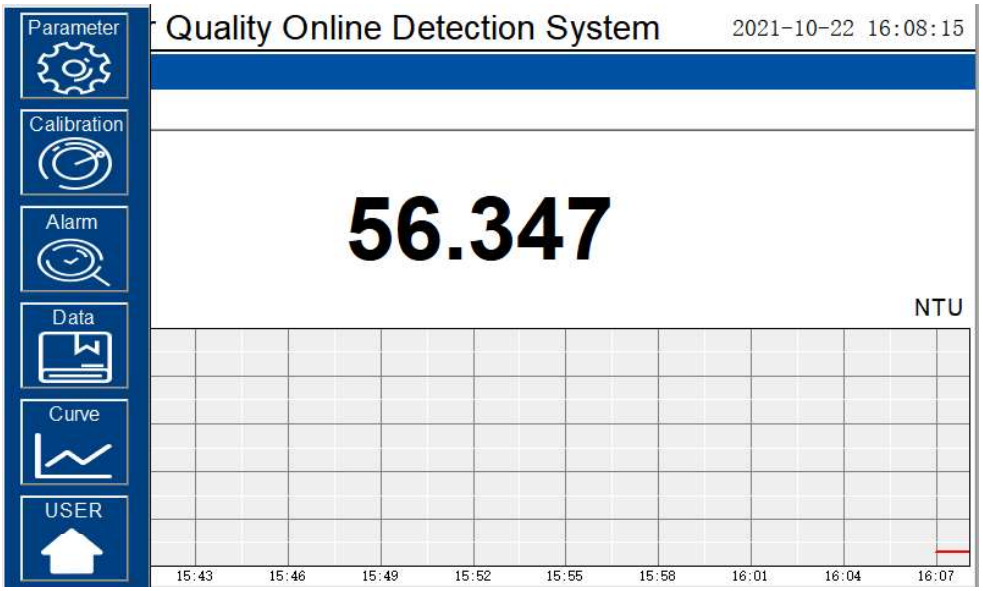


Figure. 9 - Menu Bar

6.5. Configurable Parameters

Click the "Parameter" button in the menu bar. Here you can select to enter "Alarm Parameters" and "4-20mA Output" setting interface etc

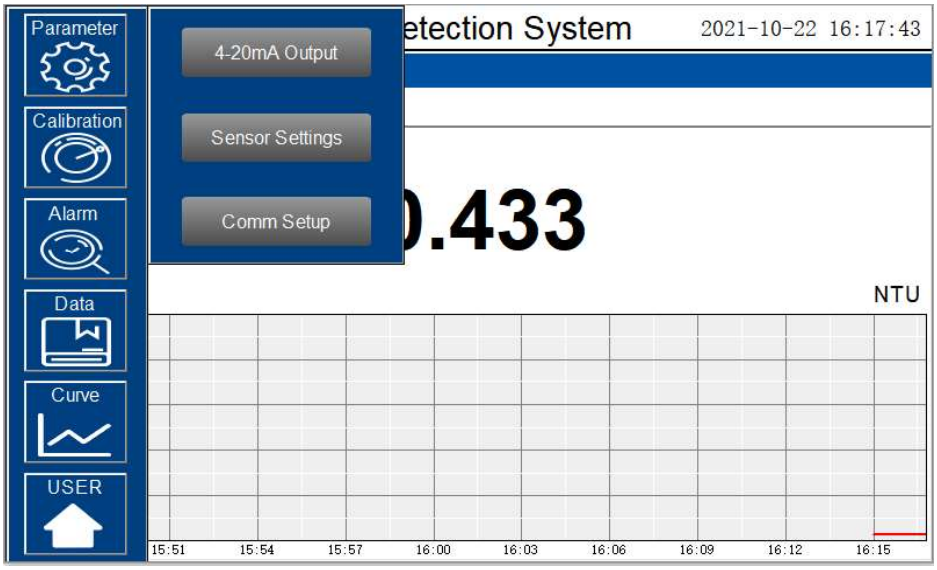


Figure. 10 - Parameter Settings

6.5.1. 4-20mA Output Parameters Setting

Click "4-20mA Output " to enter the 4-20mA output parameter setting interface. The 4mA and 20mA output values should corresponds to the lower and upper limits of the sensor range. *NOTE* The closer the value is set to the measurement value the more accurate the data.

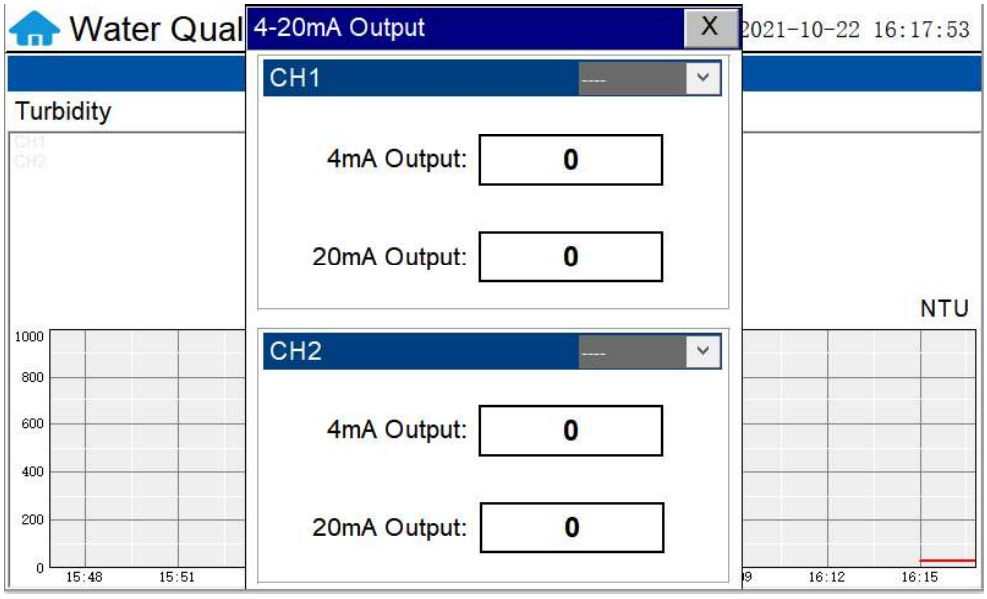


Figure. 11 - 4-20mA Output Setting

6.5.2. Sensor Settings

The sensor setting can configure the sensor model. The sensor has been configured before the device leaves the factory, and the customer does not need to configure it during normal use.

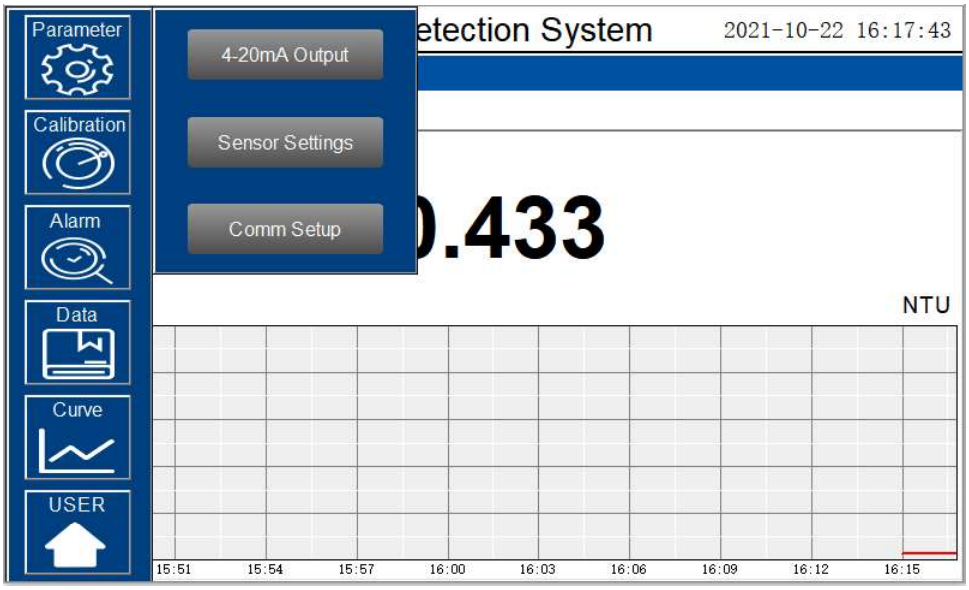


Figure. 12- Sensor Settings

6.5.3. Communication Setting

DCS communication parameters generally do not need to be changed. If the DCS communication station number and other parameters need to be changed on site, they can be changed on this interface.

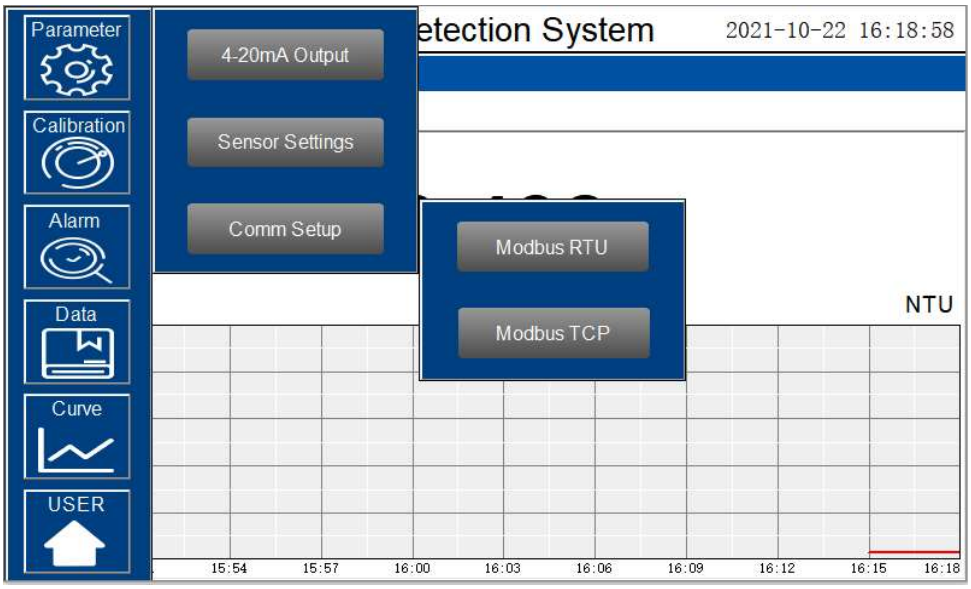


Figure. 13 - Communication Parameters Setting

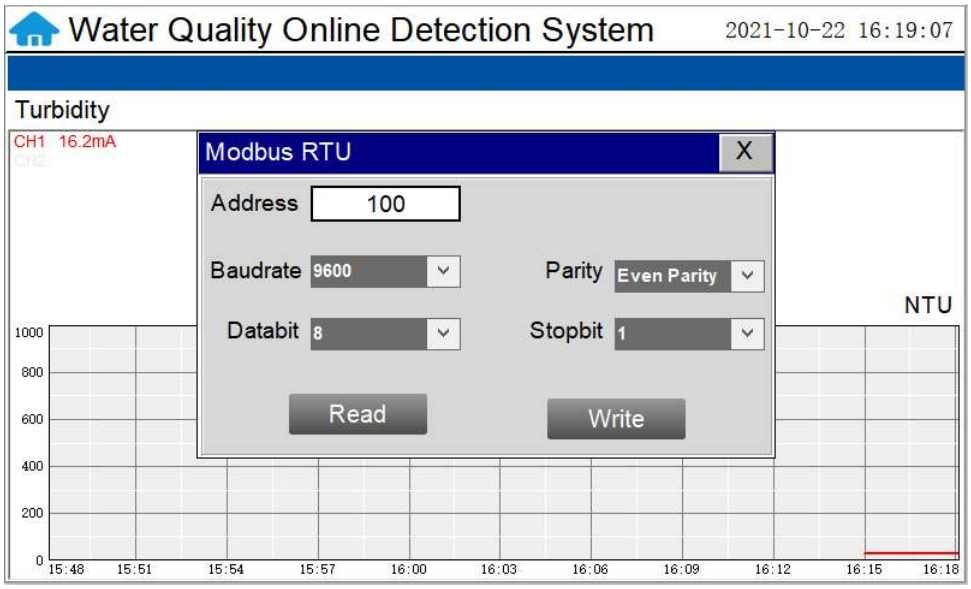


Figure. 14 - Modbus RTU Setting

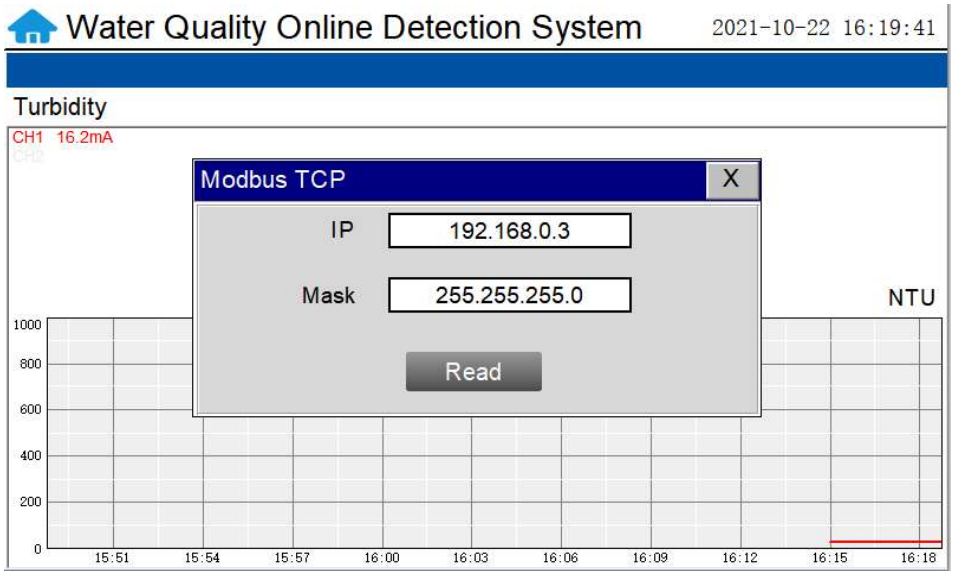


Figure. 15 Modbus TCP Setting

6.6. Calibration

Click on the "Calibration" button in the menu bar and select the sensor to be calibrated.

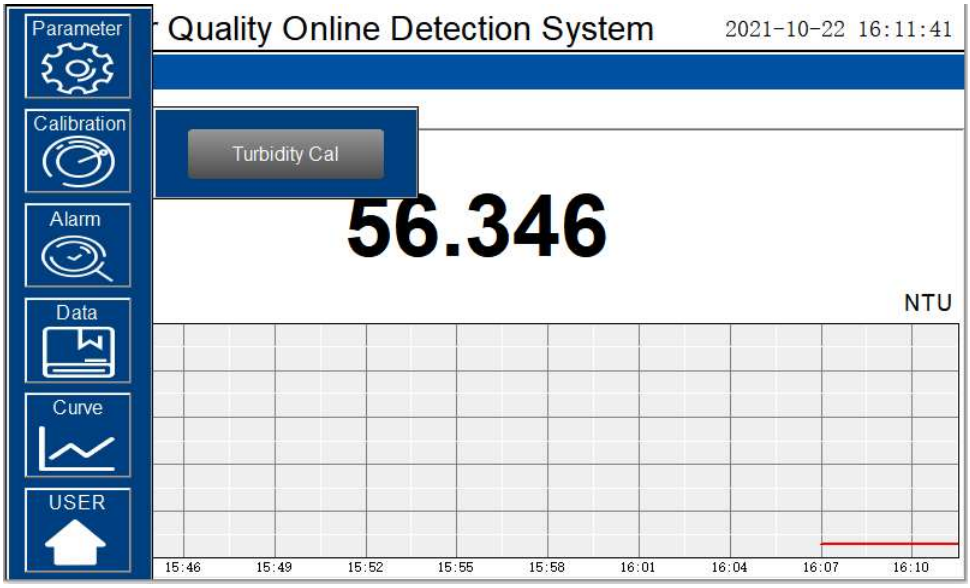


Figure. 16 - Sensor Calibration

6.6.1. Turbidity Calibration

The LT-739 Series Ultra Low Turbidity Sensor is rigorously calibrated at the Pyxis Lab factory. If the sensor is kept clean, the user will not need to calibrate the sensor for one year of operation. However, the user may calibrate the sensor as desired.

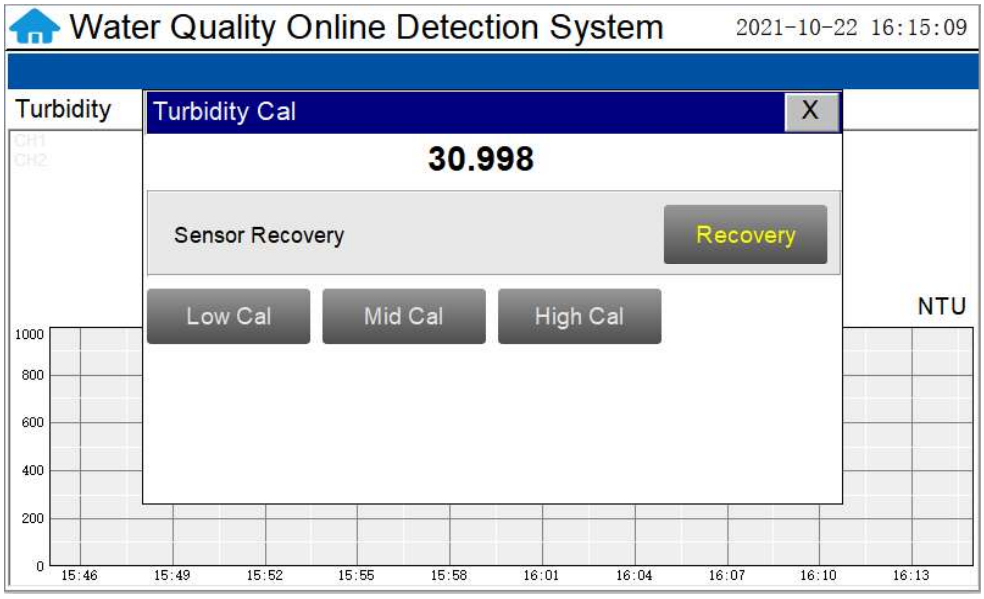


Figure. 17 - Turbidity Calibration Screen

When calibrating, click the corresponding "Low Cal""Mid Cal""High Cal", the standard solution value input box will pop up below, enter the standard solution value in the input box to start calibration

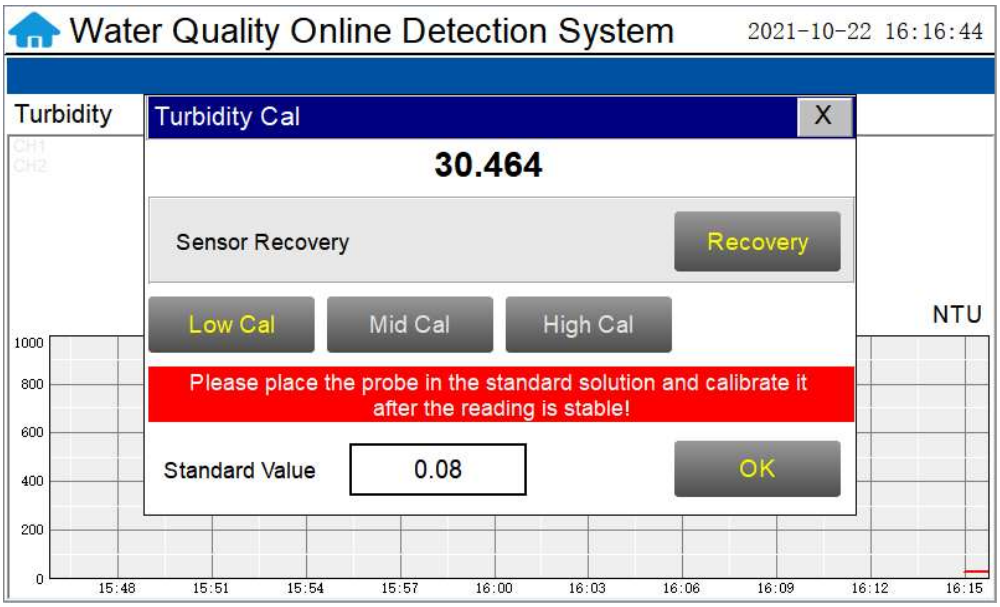


Figure. 18 - Enter the standard solution value

Low-Range Calibration Procedure DI Water in the Pyxis L-CAL Portable Turbidity Calibration Kit:

Isolate the panel and drain the piping and inline Tee assemblies. Remove the LT-739 sensor from the FT-100 flow tee. Triple rinse the LT-739 sensor surface, the FR-100 flow reservoir internals and the L-CAL Portable Turbidity Calibration Kit (P/N 53247) vessel with Deionized water. Insert the cleaned LT-739 turbidity sensor into the L-CAL calibration vessel and position the L-CAL vessel vertically (with the sensor inserted in a horizontal position to the ground as shown in the step-by-step images provided on page 21 of this manual). Remove the top cap and fill the L-CAL vessel with 500mL of bubble free deionized water. After the displayed turbidity data is stable, enter "0.05" for the low-range calibration value and click on "Low Range Calibration", a dialog box will pop up to confirm whether to perform this operation. Click "OK", if the calibration is successful, the dialog box will show "Calibration successful". *NOTE* Because there is no global standard for zero turbidity in the industry, Pyxis recommends 0.05 NTU as a target for Low-Point Calibration while using Bubble-Free DI Water.

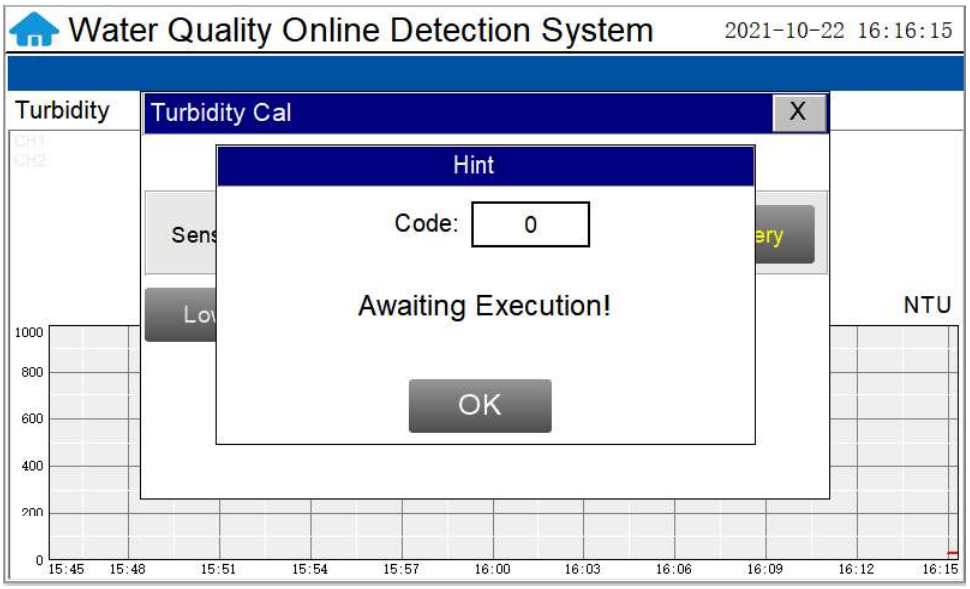


Figure. 19- Awaiting execution Screen of Turbidity Calibration

Mid-Range Calibration using the FR-100 Flow Reservoir:

After the low range calibration has been completed, rinse the L-CAL vessel with Deionized water and refill with 500mL of known turbidity standard solution between 5NTU and 10NTU for mid-range calibration (see page 21). After the displayed data is stable, enter the medium turbidity standard solution value and click on "Mid Range Calibration", a dialog box will pop up to confirm whether to perform this operation. Click "OK", if the calibration is successful, the dialog box will show "Calibration successful".

High-Range Calibration using the FR-100 Flow Reservoir:

If a high-range calibration is not required, the user does not need to perform a high-range calibration of the LT-739 series sensor. If a high calibration is required, proceed by rinsing the L-CAL vessel with deionized water and refill with known turbidity standard solution between 20NTU and 40NTU for high-range calibration (see page 21). After the displayed data is stable, enter the high turbidity standard solution value and click on "High Range Calibration", a dialog box will pop up to confirm whether to perform this operation. Click "OK", if the calibration is successful, the dialog box will show "Calibration successful".

Troubleshooting Calibration Failed Messages

If you receive a "Calibration Fails" message during the calibration steps above, the following items should be checked:

1) Ensure your source of Deionized water is not contaminated with turbidity
2) Ensure your turbidity calibration standard solutions have not been contaminated
3) Esnure the LT-739 sensor distillate end is not contaminated with debris or other substances
4) Ensure the FR-100 flow reservoir is not contaminated or circulation blocked by debris or other materials.

LT-739 Calibration using L-CAL Portable Turbidity Calibration Kit

As an alternative to using the FR-100 flow reservoir for LT-739 sensor calibration, Pyxis Lab has developed a portable and reusable liquid-state turbidity calibration kit for rapid calibration of the all LT-73X Series inline ultra-low turbidity sensors. The L-CAL calibration kit allows users to calibrate all LT-73X Series ultra-low turbidity sensors using smaller volumes of Formazin turbidity calibration standards providing an affordable and reusable solution for long term sensor reliability. The unique design of the L-CAL liquid calibration kit allows the LT-73X sensor to be easily inserted and calibrated with the sensor in a horizontal position, allowing air bubbles to be evacuated through the integrated air-vent line ensuring superior accuracy of the sensor calibration. The L-CAL has an easy to remove lid allowing users to fill and empty the calibration kit with DI water for vessel/sensor cleaning and Formazin calibration standards for sensor calibration.

L-CAL Liquid Turbidity Calibration Kit (P/N 53247)

Turbidity Calibration Principals & Considerations

The precision, resolution and the low detection limit of the LT-73X Series sensors are not affected by the calibration method, regardless of using certified Formazin standards and the L-CAL kit. The calibration only affects the turbidity sensor accuracy. The nature of turbidity measurement makes an absolute turbidity value not easily obtainable for any sensor manufacturer although proper standards and methods are followed. For example, turbidity values greater than 1.0 NTU measured on real-world samples with different sensors, even from the single manufacturer, could differ significantly. For ultra-low turbidity (less than 0.3 NTU) measurement using the same methods (ISO-7027 or EPA-180.1), it is likely that the values from different sensors can agree within 0.05 NTU. As such, the user should choose a calibration method and remain with the same calibration method for consistency.

L-CAL Specifications

Item	L-CAL Portable Liquid Formazin Calibration Kit
P/N	53247
Sensor Name	LT-739 / LT-739B
Calibration	**Recommended Calibration Standard Solution Range**
Low-Range (0.05NTU Recommended for Calibration)	Bubble Free DI Water or Sample <0.1 NTU
Mid-Range	5 – 10 NTU
High-Range	20 – 40 NTU

L-CAL Portable Liquid Formazin Calibration Kit Use Method

After removing the LT-73X sensor, gently wipe off the flat distal end with a soft cloth to ensure it is clean. The LT-73X Sensor should then be calibrated using the L-CAL portable liquid calibration kit using the following steps, and wirelessly calibrated via the uPyxis Mobile or Desktop APP. Please refer to LT-73X Series Operation Manual for details.

Insert LT-73X Sensor

Tighten Sensor Nut

Position Vertically and Remove Lid

Preclean by adding DI-Water (200mL)

Insert Lid

Gently Shake Then Empty Contents

Add Calibration Standard (500mL)

Insert Lid and Remove Air Bubble Vent Line Cap

FOLLOW CALIBRATION STEPS

NOTE *Sensor Brace Included with L-CAL Kit for Stability*

YouTube **WATCH PROCEDURE VIDEO** https://www.youtube.com/watch?v=1MuJM5Q5VB4

6.7. Recovering Data

Click the restore button in the calibration interface of each sensor to restore the data of the turbidity sensor. If a user error is made during calibration and other operations, you may restore the factory settings of the sensor through the restore function.

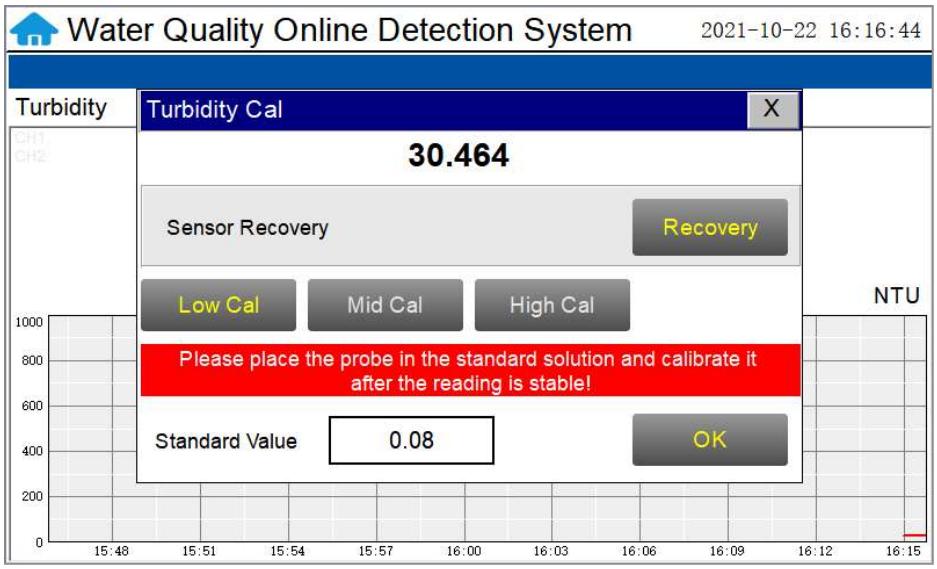


Figure. 20 - Data Recovery Screen

6.8. Alarm View

Click the "Alarm View" button on the main screen to enter the alarm view screen.

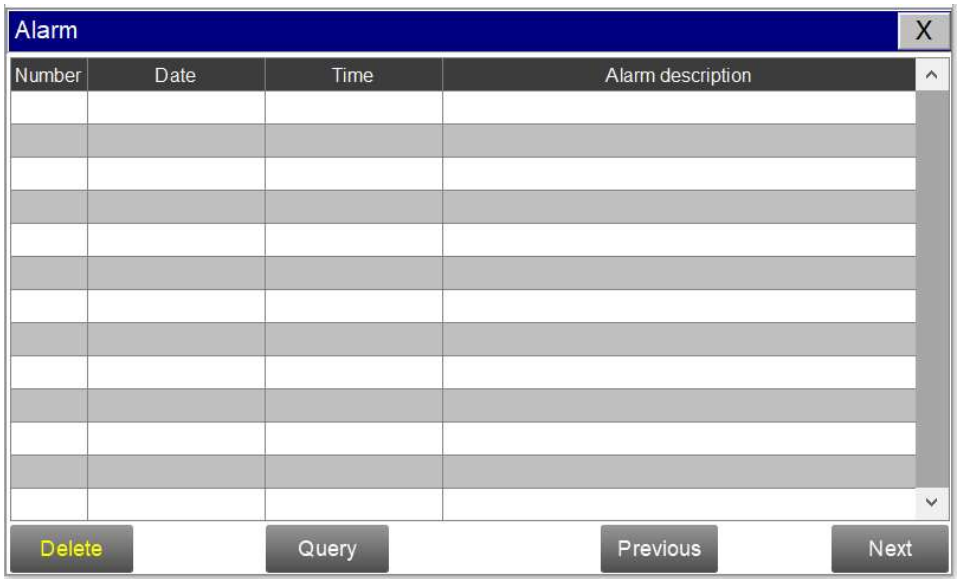


Figure. 21- Alarm View

In this screen users can browse all logged alarms. Drag the right scroll bar up and down to view the history of alarms. Click "Previous" and "Next" to advance to the next page. Click “Query” then enter the alarm number in the pop-up box to query that alarm.

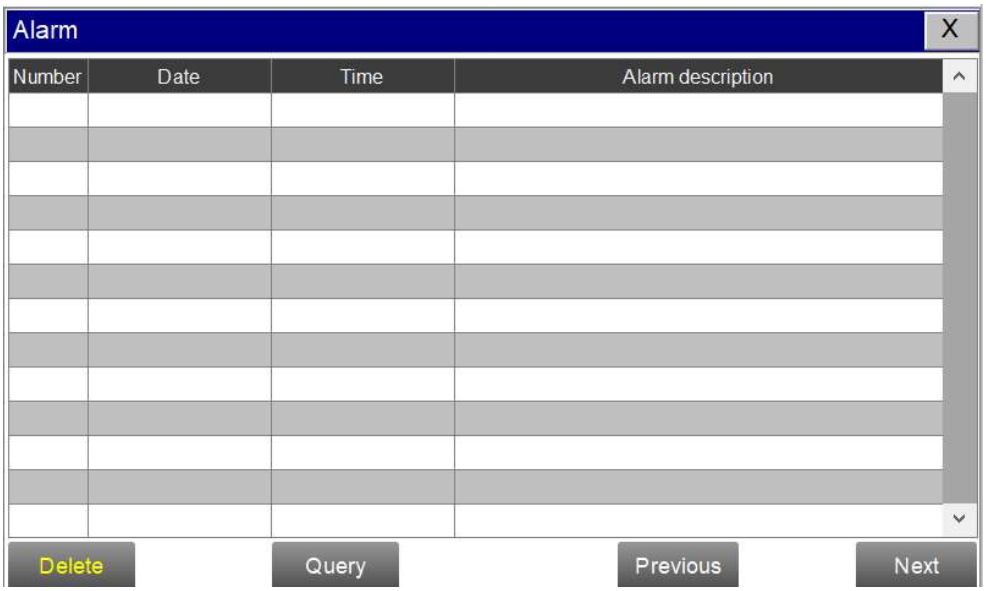


Figure. 22- Alarm Data Query Screen

The Delete button in the lower left corner will delete all alarm records. After clicking delete, you must exit the screen and reenter before the historical data within the data report will be cleared.

6.9. Historical Data

Click the "Historical Data" button in the menu bar to enter the data report interface.

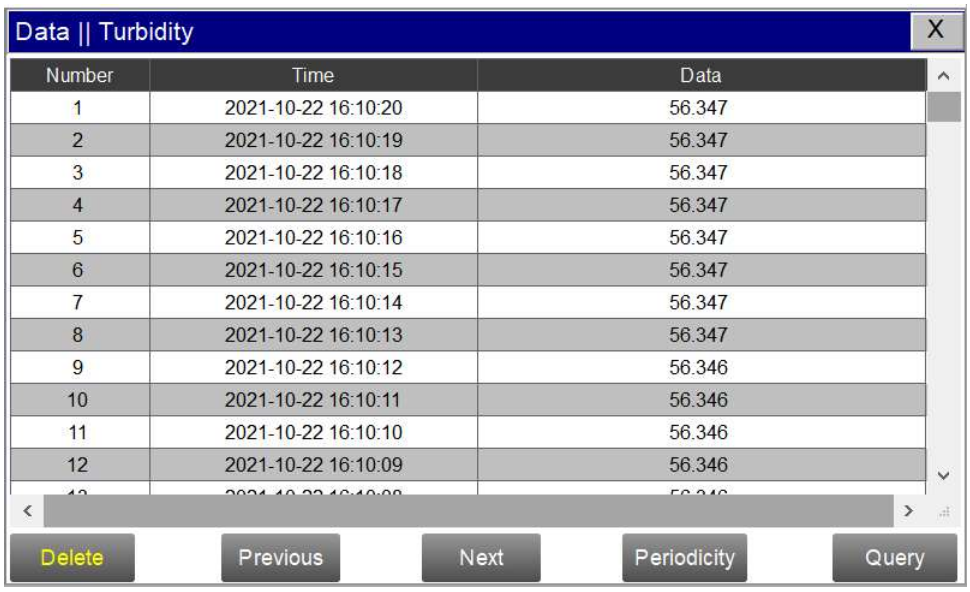


Figure. 23 - Historical Data Screen

In the data report, the user can view the stored data of all parameters. The system records sensor readings every 4 seconds by default but this can be edited by the user if desired. Drag the scroll bar on the right to slide up or down or click "Previous" and "Next" to view historical data records. The data record can save up to 100,000 data entries. New data will overwrite the previously saved data after recording 100,000 data entries. The user can click the “Periodicity” button to change the data recording time interval.

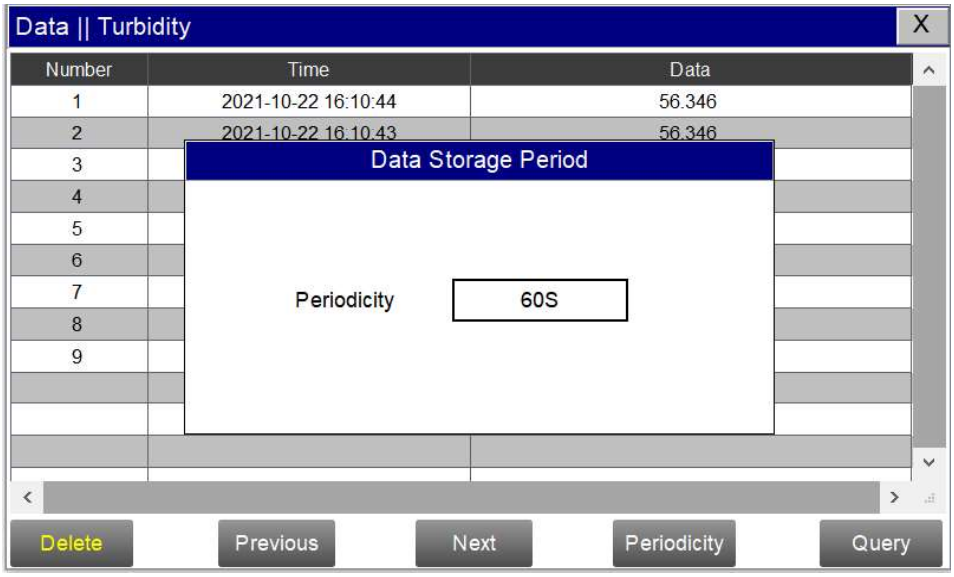


Figure. 24 - Data Storage Cycle Time Setting

Click “Delete” in the lower left corner. After entering the retention time, click the “Delete” button to clear all historical data within the retention time range.

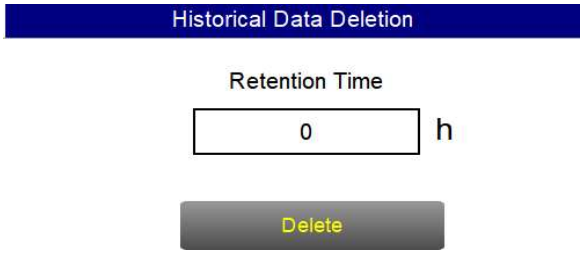


Figure. 25 - History Data Deletion Screen

Click the “Query” button in the lower right corner, enter the start time and end time and then click the “Query” button. Note that the start time and end time must be filled in exactly and completely according to the system time format.

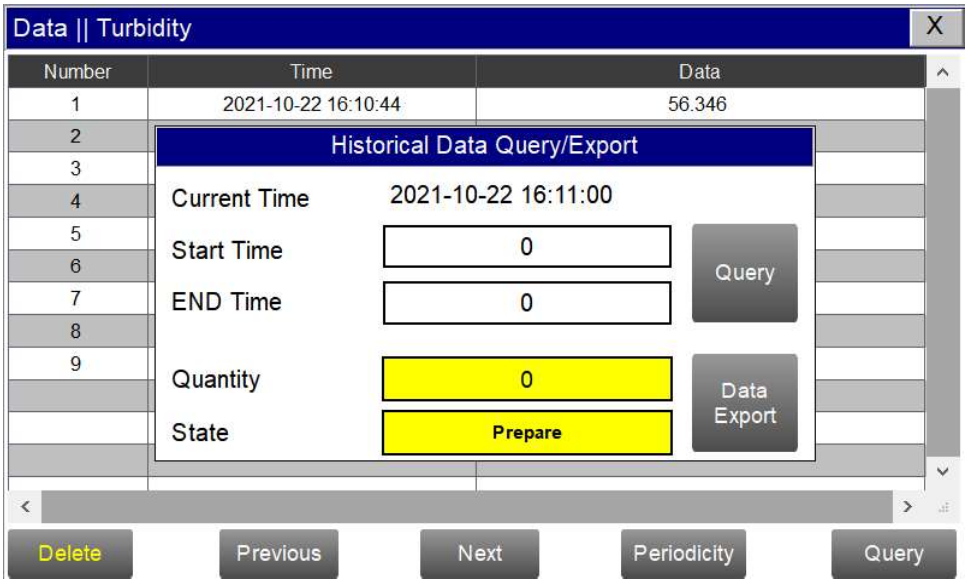


Figure. 26 - Historical Data Query and Export Screen

Insert a USB disk behind the display screen and enter the time range of the data to be exported in the query area. Click on the “Data Export” to download the data to the USB disk. The data quantity will be shown as a positive number if data export is successful. If the data export was not successful, please check whether the time format is correct.

6.10. Historical Data Curves

Click the "Historical Curve" button in the menu bar to enter the trend curve interface. You can click the buttons below the X-axis to browse and view the values in a different time range. Click on Y-axis Range to change the minimum and maximum Y-axis values for a proper range.

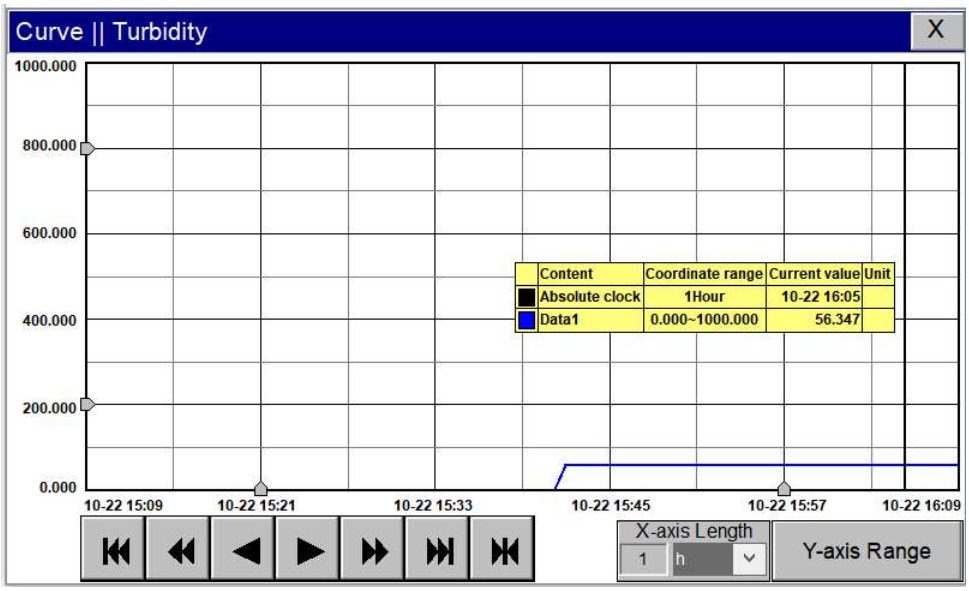


Figure. 27 - Historical Data Curves

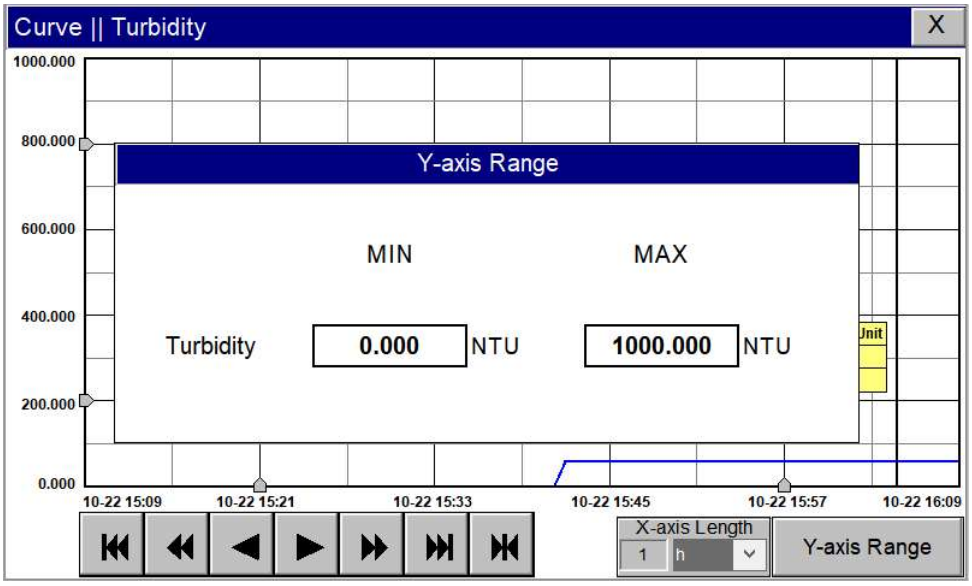


Figure. 28 Y-axis Range Setting

- The curve will scroll back (to the left of the X-axis) one page
- The curve will scroll back (to the left of the X-axis) half the page of the curve
- The curve will scroll backward (to the left of the X-axis) to a position where the main line is drawn
- The curve will scroll forward (to the right of the X-axis) to a position where the main line is drawn
- The curve will scroll forward (to the right of the X-axis) half the page of the curve
- The curve will scroll forward (to the right of the X-axis) one page
- A dialog box will pop up to reset the starting time of the curve

Figure 29 - Button Function Review

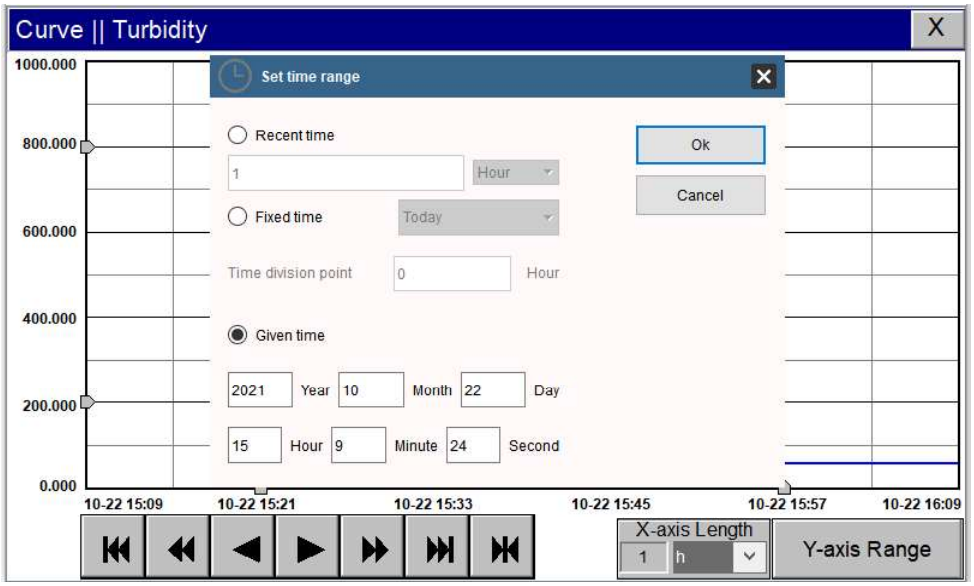


Figure 30 - Time Setting Screen

6.11. User Management

Click the “User Management” button on the menu bar and then you can select “Login”, “Logout” and “Manage” operations.

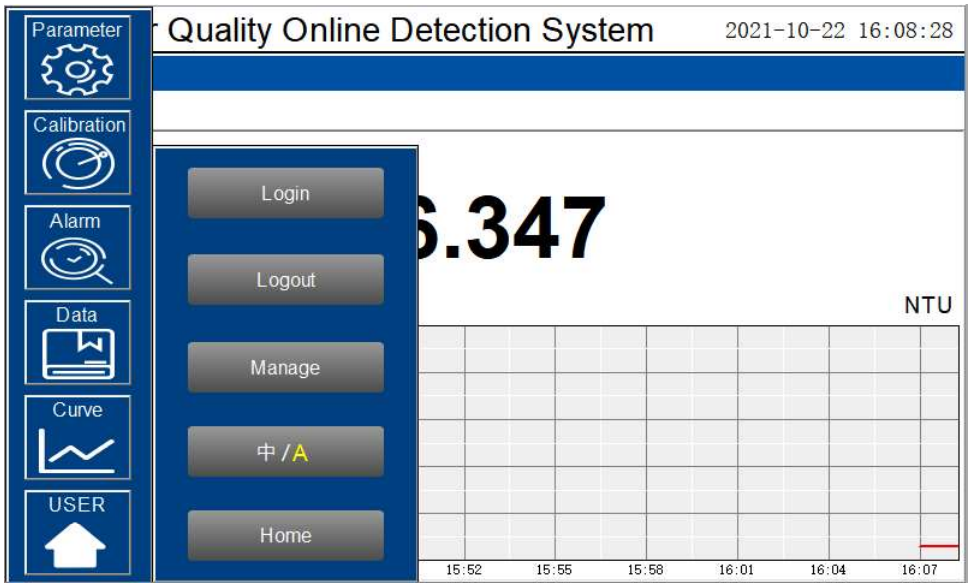


Figure 31 - User Management

Logout enables the user to log out of the logged-in state and only view the real-time readings, but cannot perform operations such as parameter settings. Click “Manage” to enter the user management interface, where you can add users, change passwords and other operations. Users can set their own user name and password and select the user group they belong to. Only users in the administrator group can set parameters such as calibration.

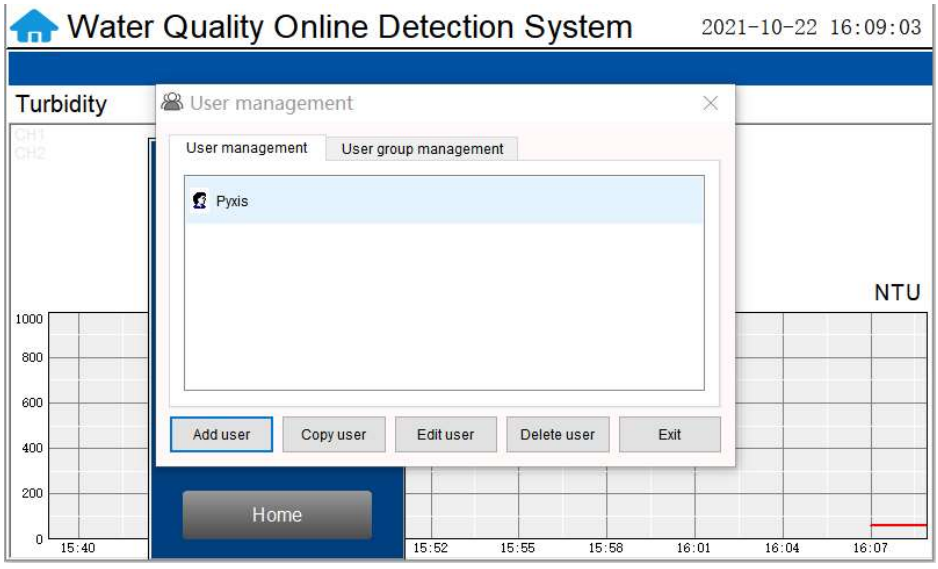


Figure 32 - User Management Screen

Modify Password: Select the user you want to change, then click Modify User button, enter the user's own password in the User Password column and Confirm Password column, and click Confirm to modify successfully. ***NOTE*** *If you do not want to set the password, you can delete the password and save it.*

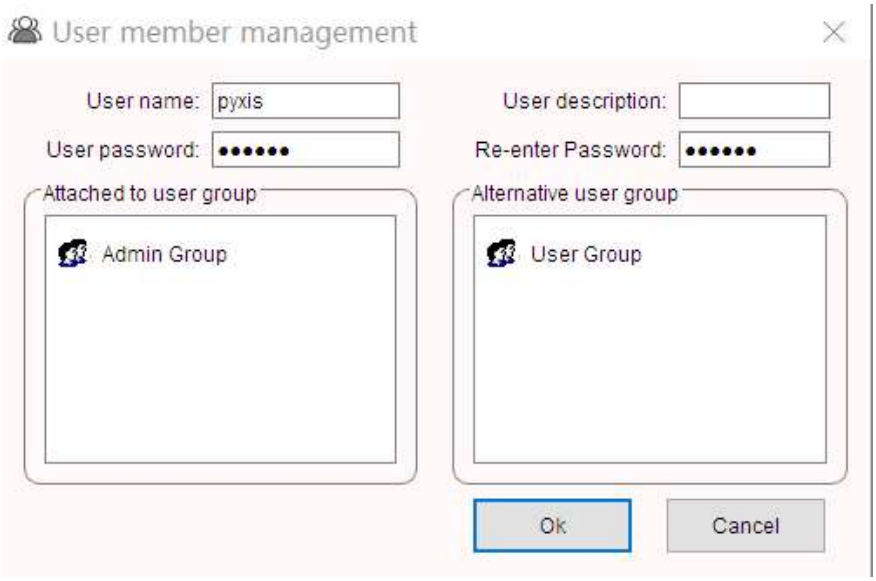


Figure 33 - Modifying the User Screen

7. Maintenance

7.1. Correspondence Address

Serial Number	Definition	Address	Format	Mode	Unit	Note
1	Channel 1 display	1	float	Read Only	NTU	Data format ABCD
2	Channel 2 display	3	float	Read Only	NTU	Data format ABCD
3	Channel 3 display	5	float	Read Only	NTU	Data format ABCD
4	Channel 4 display	7	uint	Read Only	NTU	Data format ABCD
5	Channel 5 display	9	uint	Read Only	NTU	Data format ABCD
6	Channel 6 display	11	uint	Read Only	NTU	Data format ABCD
7	The sensor communication in channel 1 is abnormal	13	uint	Read Only		0=Normal 1=Alarm
8	The sensor communication in channel 2 is abnormal	14	uint	Read Only		0=Normal 1=Alarm
9	The sensor communication in channel 3 is abnormal	15	uint	Read Only		0=Normal 1=Alarm
10	The sensor communication in channel 4 is abnormal	16	uint	Read Only		0=Normal 1=Alarm
11	The sensor communication in channel 5 is abnormal	17	uint	Read Only		0=Normal 1=Alarm
Communication Protocol: Standard Modbus-RTU						
Communication Parameters: Baud Rate - 9200, Data Bit - 8, Stop Bit - 1, Parity Bit - Even						
Station Number: 100						
Communication Protocol: Standard Modbus-TCP						
Communication parameters: IP: 192.168.0.3 (can be set); port: 502						
Station Number: 1						

Table 2- Correspondence Address

7.2. Operation and Maintenance

After the analyzer is installed by a qualified technician, it can begin to monitor water quality. The DW-739 inline detection system is designed to be simple to operate, but still requires some regular maintenance. Actual system maintenance may vary depending on the installation conditions and usage. Please refer to the table below as a general recommended maintenance schedule guidelin. Minimal operator intervention is required during normal operation.

Required Services	Recommended Frequency
Cleaning DW-739 Inlet Water Filter	Monthly or Cleaned As Needed
Cleaning of FR-100 Flow Reservoir and Photoelectric Pole	Monthly
Turbidity Calibration	Every 6 Months

Table 3- Maintenance Intervals

7.3. Instrument Alarms and Descriptions

Please refer to the instrument alarms and descriptions table when troubleshooting the DW2100P inline inspection system issues an alarm or indicates abnormal measurement data.

Alarms	Description	Symptoms	Solutions/Recommendations
PLC Communication Abnormalities	PLC without Communication		Check if the wiring inside the PLC and control box is loose
Turbidity Sensor Communication Abnormality	Turbidity Sensor without Communication	No Turbidity Measurements	Check the connection between the sensor and the circuit board. If the problem persists, contact Pyxis.
Turbidity Upper Limit Alarm	Turbidity above the Alarm Setting	Information Only	Compare with manual measurement readings. Check and clean line valves. Check that water flow is normal. Check that the sensor is clean.
Turbidity Lower Limit Alarm	Turbidity below the Alarm Setting	Information Only	
Turbidity Calibration Failure Code 259	Low Calibration Standard Solution out of Range	Turbidity Calibration Failure	Check that the flow cell and sensor are clean and that the standard solution is not contaminated
Turbidity Calibration Failure Code 260	Mid Calibration Standard Solution out of Range	Turbidity Calibration Failure	
Turbidity Calibration Failure Code 261	High Calibration Standard Solution out of Range	Turbidity Calibration Failure	
Turbidity Calibration Failure Code 262	Slope f1 out of Range	Turbidity Calibration Failure	
Turbidity Calibration Failure Code 263	Slope f2 out of Range	Turbidity Calibration Failure	

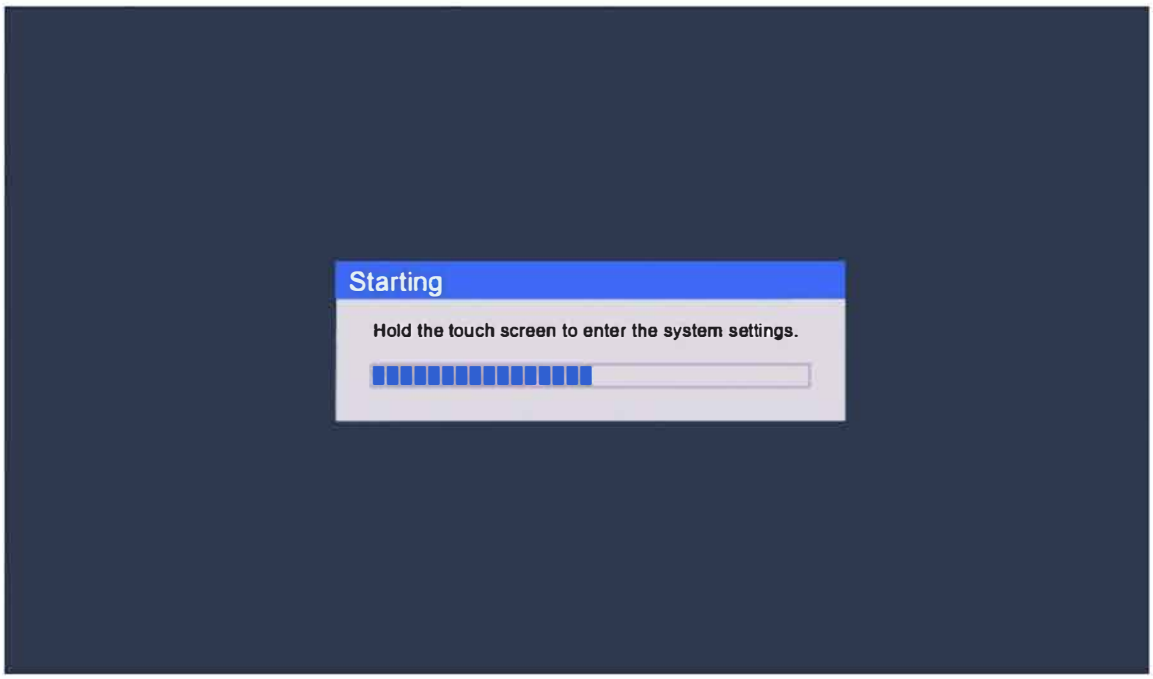
Table 4 - Common Alarms

UC-80 & UC-100 Series

8. Setting Date, Date and Updating Firmware Procedure

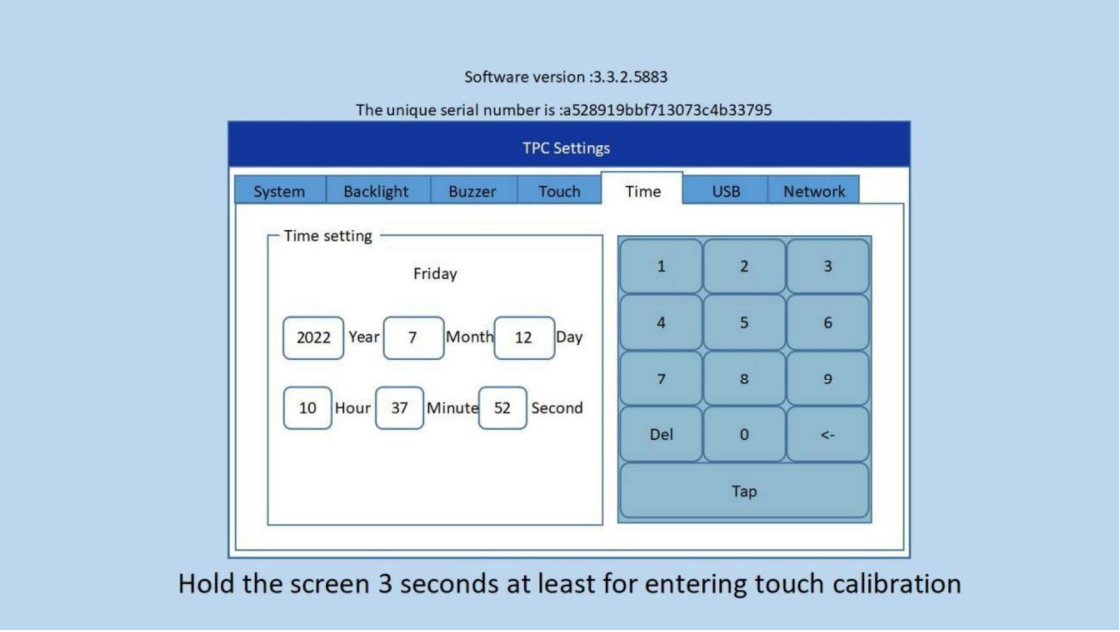
8.1 Setting the Date and Time

1) When the device is powered on again, when the following screen appears on the screen, tap the screen immediately



2) Enter the system interface, as shown in the figure below, click the button "System setting"

3) Enter the setting interface, select the time parameters, as shown in the figure below, and modify the time. After the modification is completed, click the "OK" button to confirm. After closing the setting interface, click "Run project" to enter the program running interface.

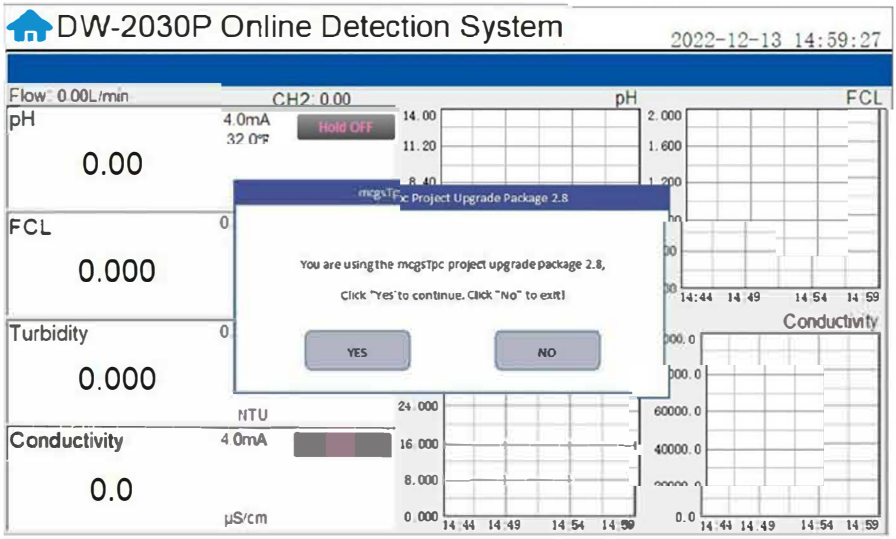


8.2 Firmware Update Procedure

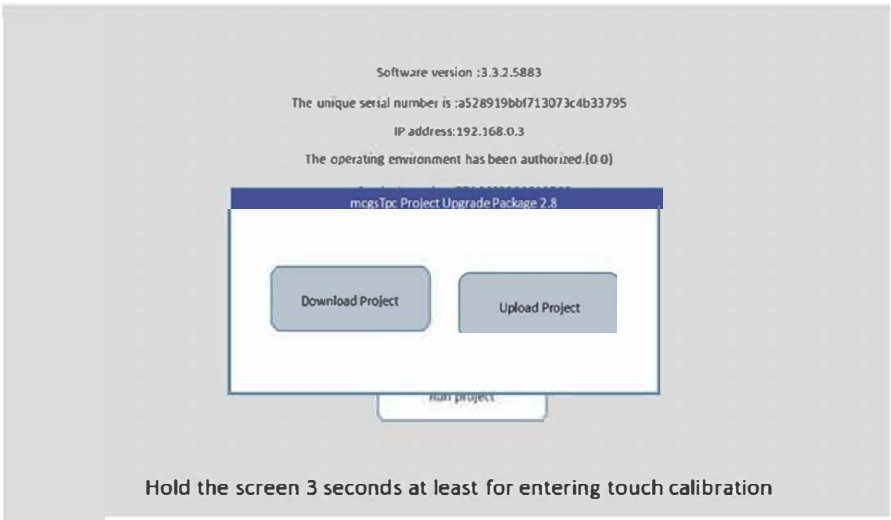
1) Decompress the program update package, copy the "tpcbackup" file and save it to a USB flash drive in "FAT32" format. ***NOTE*** *You need to copy the entire folder to the root directory of the USB flash drive.*

2) Insert the USB flash drive into the USB1 port on the rear of the touch screen.

3) After inserting the USB flash drive, the touch screen will pop up. Click "**YES**" and wait for the screen to jump, as shown below.



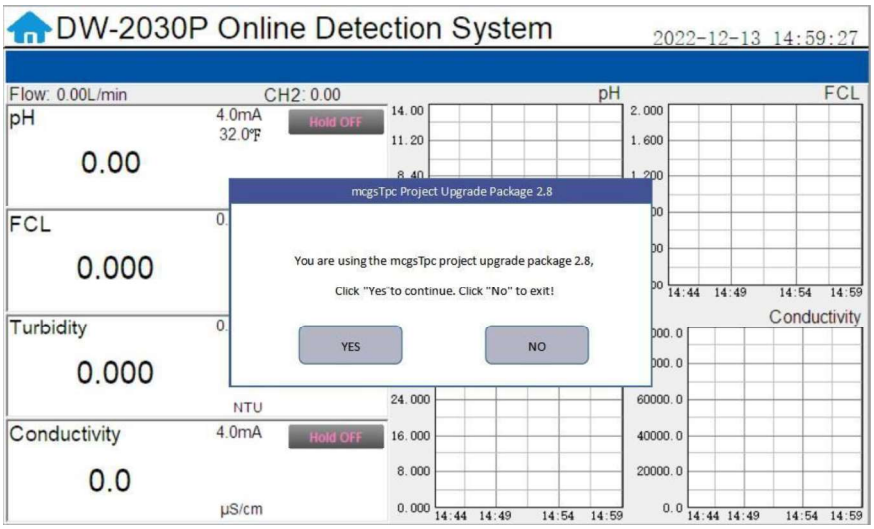
4) In the new pop-up box, click "**Download Project**", as shown below.



5) In the new pop-up box, select the program name on the left and click "**Download**". The touch screen

6) When the rewind is over, the touch screen will restart, and the screen will turn black during the restart. At this time, you can pull out the USB disk, as shown in Figure 4

7) If the update screen appears again after restart, please click "**NO**" and pull out the USB disk, as shown in Figure 5



9. Order Information

Order Information	P/N
DW-739 *(Drinking Water Turbidity Analyzer for EPA-180.1 Compliant Markets)*	42143
DW-739B *(Drinking Water Turbidity Analyzer for ISO-7027 Compliant Markets)*	42144
DW-739-G *(DW-739 with optional Pyxis CloudLink™ 4G Gateway)*	42145
DW-739B- G *(DW-739B with optional Pyxis CloudLink™ 4G Gateway)*	42146

Optional / Replacement Accessories Information	P/N
UC-100A Display/Data Logging Terminal	43054
LT-739 Ultra-Low Turbidity Sensor *(Warm White LED 0.000-40. 00 NTU)*	53221
LT-739B Ultra-Low Turbidity Sensor *(InfraRed 860nm LED 0.000-40. 00 NTU)*	53225
FR-100 Single Sensor Flow Reservoir Assembly	50779
FRP-100 *(Motorized Brush Cleaning Module for FR-100)*	50700-A16
FRP-100-1 *(Replacement Brush for FRP-200)*	50700-A14
T-CAL 739 *(Solid State Calibration Kit for LT-739 - 0.1 / 8.0 / 25 NTU)*	53229
T-CAL 739B *(Solid State Calibration Kit for LT-739B - 0.1 / 8.0 / 25 NTU)*	53239
L-CAL *(Portable Liquid Formazin Calibration Kit for LT-73X Series Sensors)*	53247
Pyxis Turbidity Calibration Std – 10.0 NTU *(4,000mL)*	57010-10L

Table 5 Order Information