



DW-739 Series Inline Analyzers

Ultra-Low Turbidity Inline Analyzers for Drinking Water



Pyxis Lab® Inc.
21242 Spell Circle
Tomball, TX 77375
www.pyxis-lab.com

USER MANUAL




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			
Measurement Interval	Continuous Measurement			
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			
Output	2 x 4-20 mA / RS-485 Modbus - RTU / Modbus TCP/1 x Alarm			
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°)			
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			
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{81/2/3/4/5/7/12/13/14/20/28/66/7}	
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-739/8 can also be found in its respective Operation Manual.

Contact info@pyxis-lab.com for details or www.pyxis-lab.com.

2. Part Numbers & Ordering Details

Please find a table below outlining ordering details and part numbers for the DW-73X Series of analyzers and replacement-part parts.

Order Information

	P/N
DW-739 (<i>Drinking Water Turbidity Analyzer for EPA-180. 1 Compliant Markets</i>)	42143
DW-739B (<i>Drinking Water Turbidity Analyzer for ISO-702 7 Compliant Markets</i>)	42144
DW-739-G (<i>DW-739 with optional Pyxis Cloudlink™ 4G Gateway</i>)	42145
DW-739B- G (<i>DW-739B with optional Pyxis Cloudlink™ 4G Gateway</i>)	42146
DW-739-PLUS (<i>Auto Brushing Turbidity Analyzer 0.000 – 40.000 NTU</i>)	12005
DW-739-PLUS-G (<i>Auto Brushing Turbidity Analyzer 0.000 – 40.000 NTU with Gateway</i>)	12006

Optional / Replacement Accessories Information

	P/N
UC-100A Display/Data Logging Terminal	43054
LT-739 Ultra-Low Turbidity Sensor (<i>Warm White LED 0.000-40.00NTU</i>)	53221
LT-739B Ultra-Low Turbidity Sensor (<i>InfraRed 860nm LED 0.000-40.00NTU</i>)	53225
FR-100 Single Sensor Flow Reservoir Assembly	50779
FRP-100 (<i>Motorized Brush Cleaning Module for FR-100</i>)	50700-A16
FRP-100-1 (<i>Replacement Brush for FRP-100</i>)	50700-A14
L-CAL (<i>Portable Liquid Formazin Calibration Kit for LT-73X Series Sensors</i>)	53247
Pyxis Turbidity Calibration Std -2.0 NTU (<i>4,000ml</i>)	57010-2L
Pyxis Turbidity Calibration Std -10.0 NTU (<i>4,000ml</i>)	57010-10L
Pyxis Turbidity Calibration Std -30.0 NTU (<i>4,000ml</i>)	57010-30L

3. 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”)

4. 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.

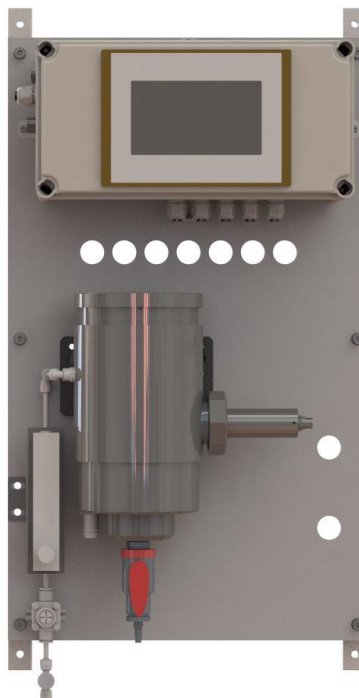
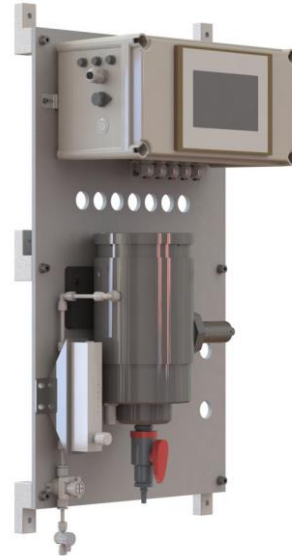


Figure 1 - DW-739 Series

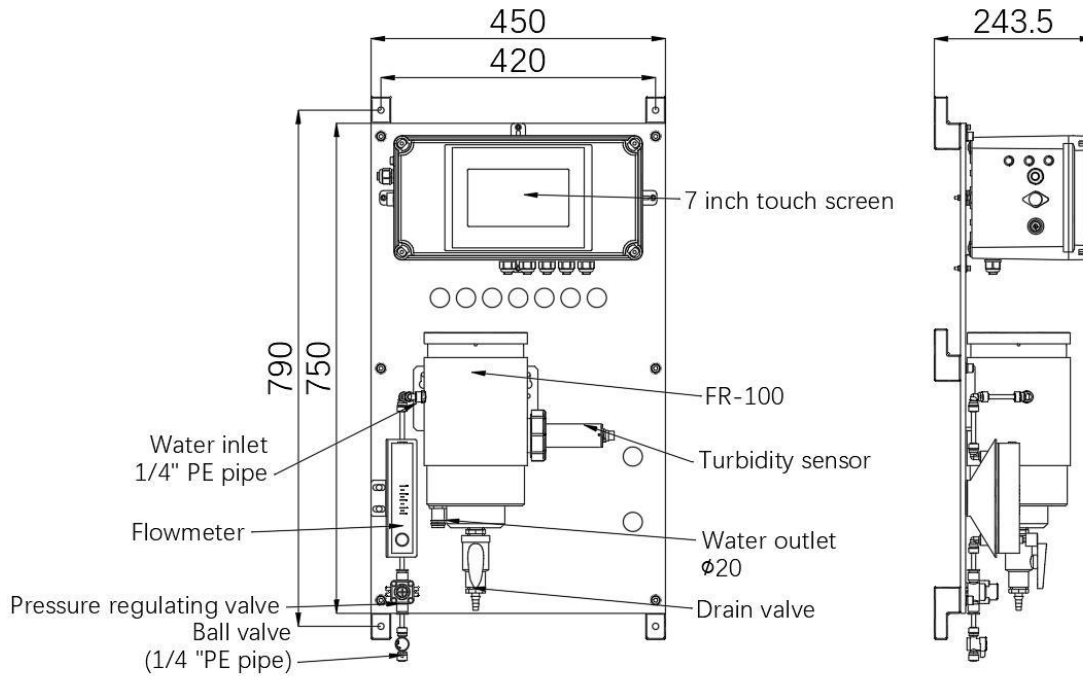
DW-739 Series Features

- 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 with in 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.

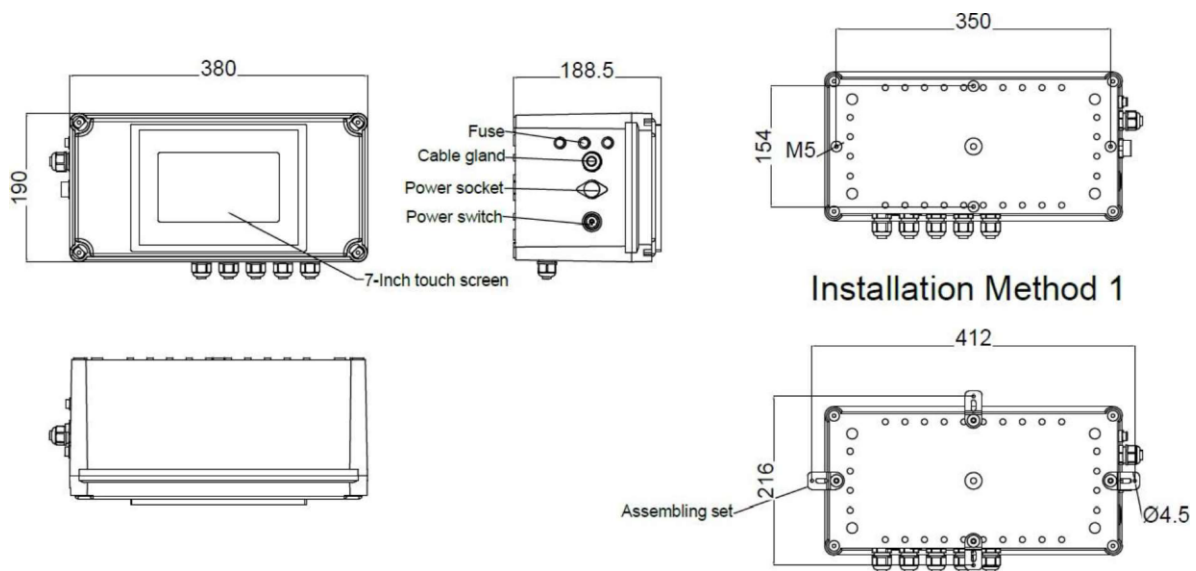


5. Dimension and Mounting

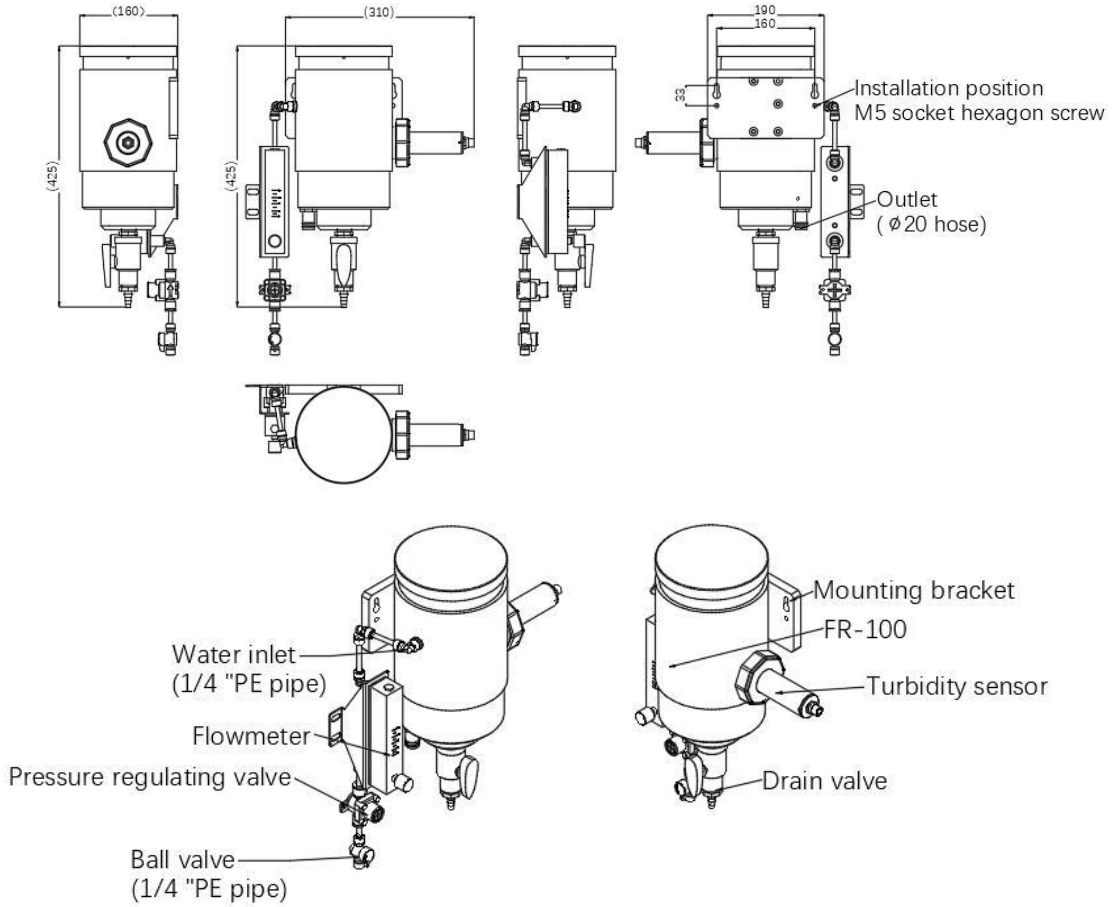
DW-739 Series Panel Dimensions (mm)



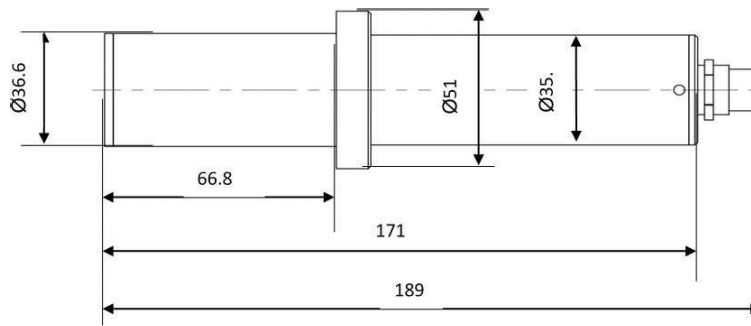
DW-739 Series UC-100A Controller Dimensions (mm)



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



DW-739 Series Sensor Dimensions (mm)



LT-739 / LT-739B Turbidity Sensor

6. Installation

6.1. 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 245D (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 area.

6.2. Tube Connection

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.

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

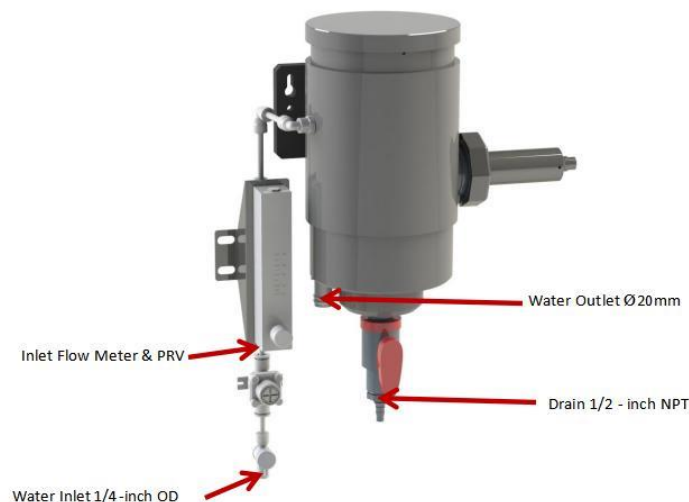


Figure 2 - DW-739 Series

6.3. 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. **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.

IMPORANT NOTE Device Serial Number 230019 and before should refer to the electrical diagram in Figure 3

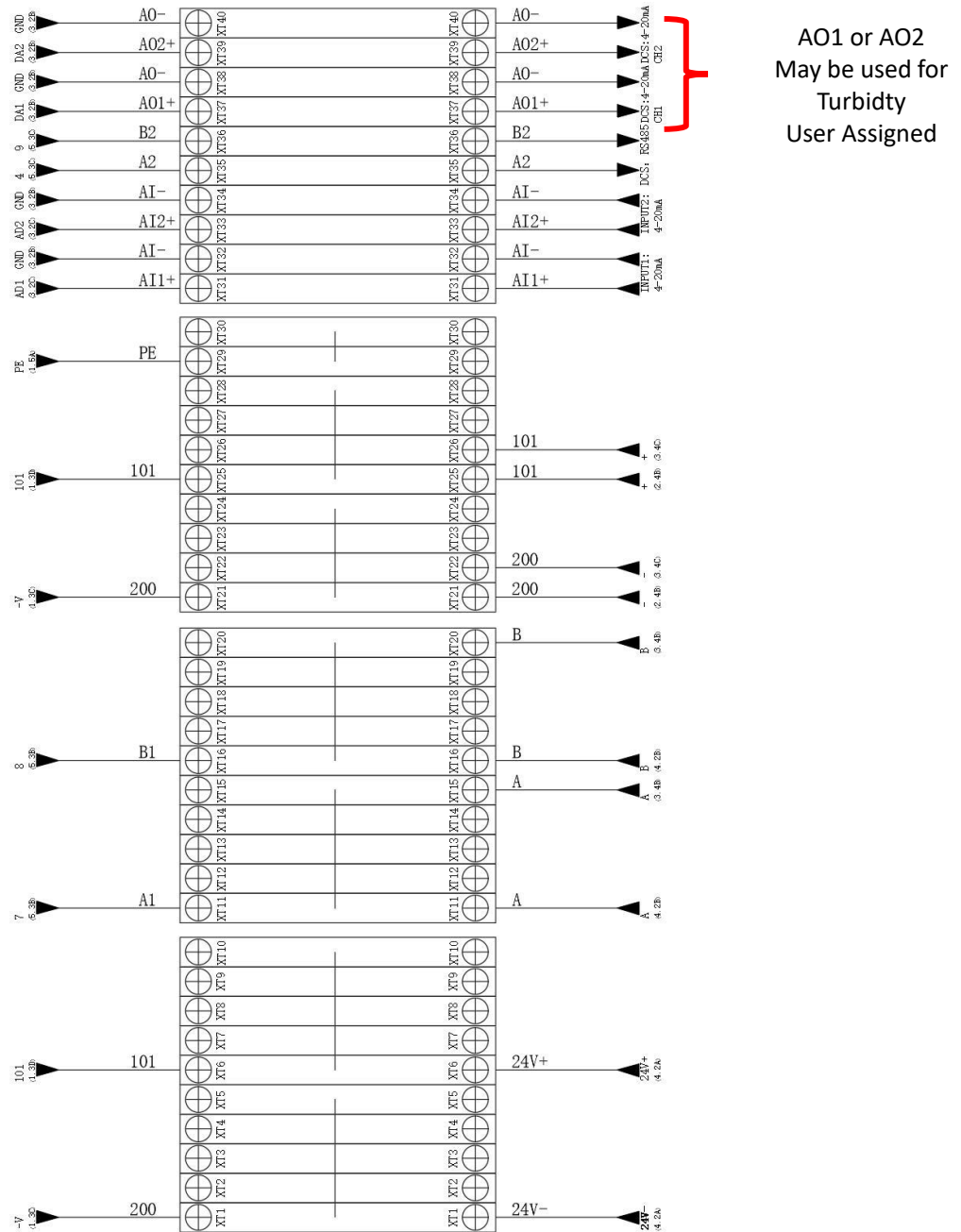


Figure 3 -Terminal Wiring Diagram for Serial #230019 and earlier

IMPORTANT NOTE - Device Serial Number 240001 and after should refer to the electrical diagram in Figure 4.

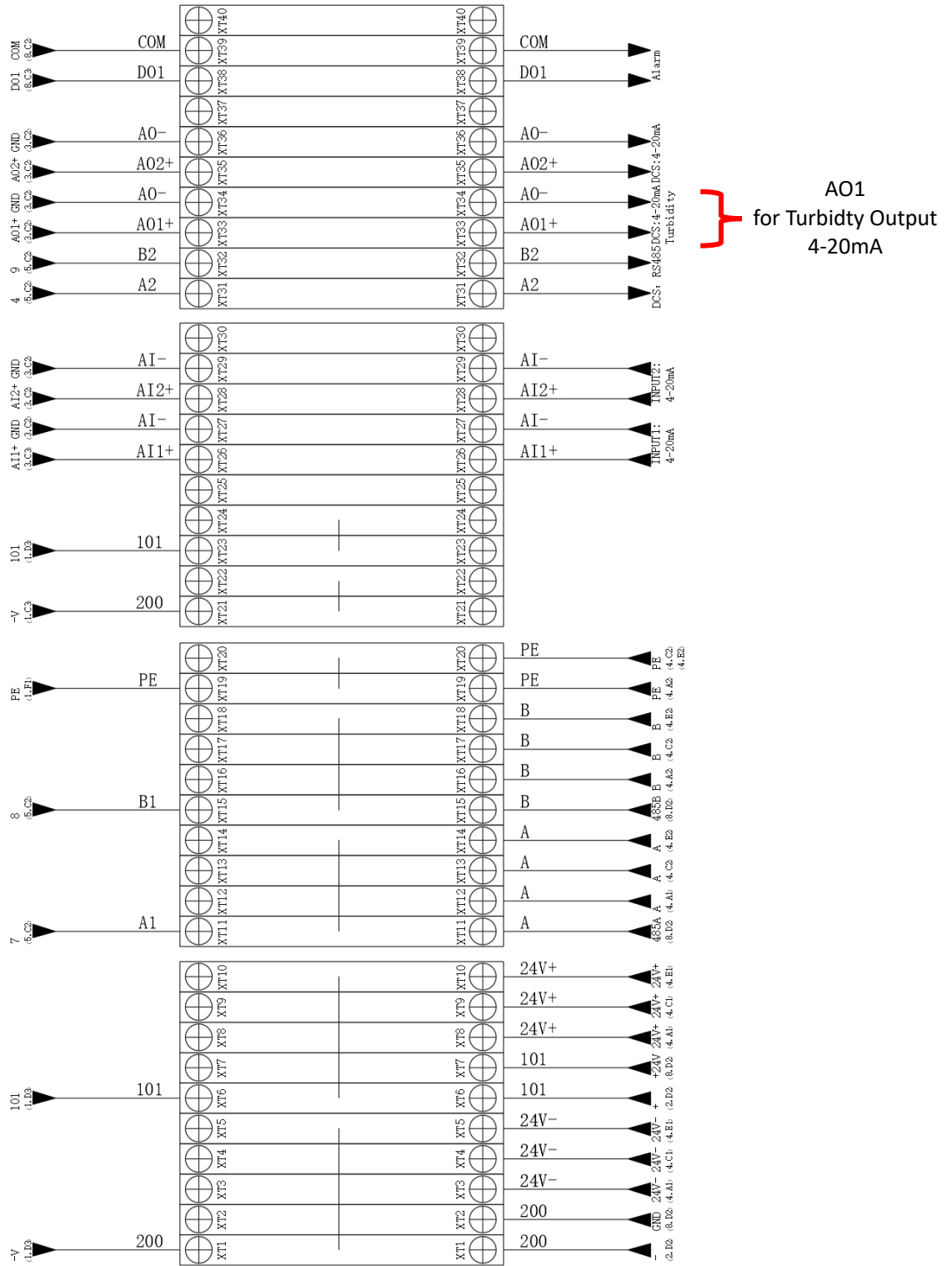


Figure 4 - Terminal Wiring Diagram for Serial #240001 and after

7. Touch Screen Operation

7.1. Main Screen

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

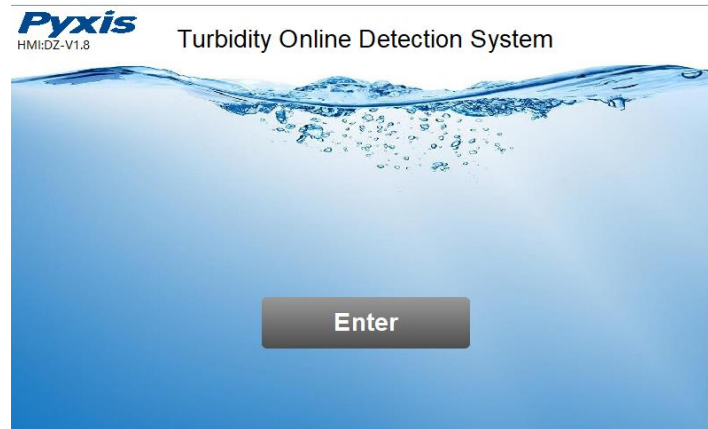


Figure 5 - Main Screen

7.2. User Login

After powering on the system, log in with the user name 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.

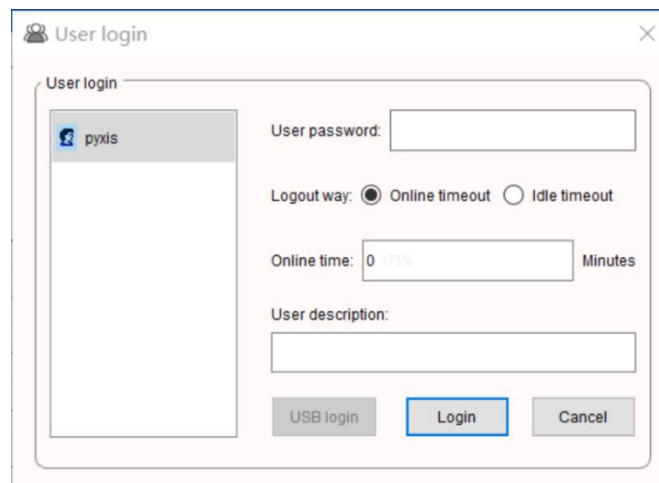


Figure 6 - User Login Screen

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.

7.3. 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.

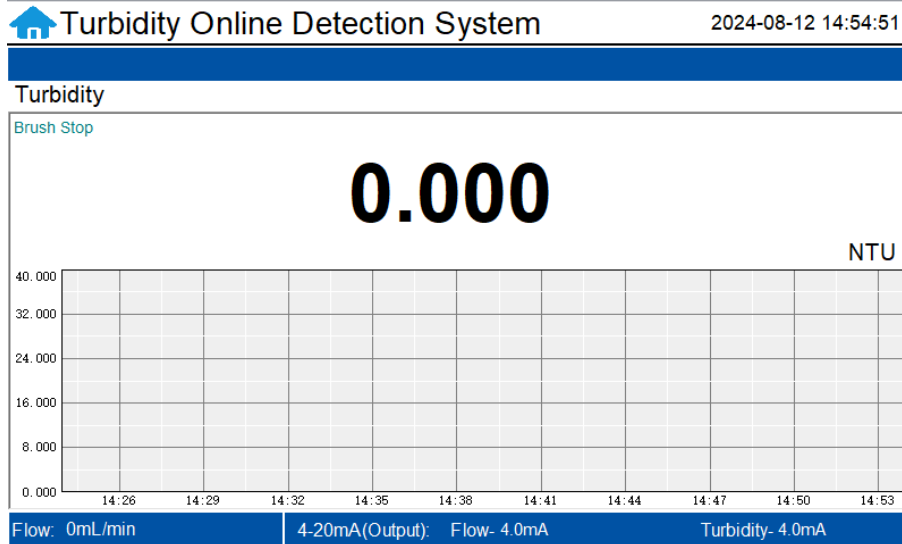


Figure 7 - Real-time Monitoring Screen

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 outer area of the screen to save and exit the setting screen after modifications are made. **NOTE** the upper value should correspond with the turbidity sensors range and typical application conditions.

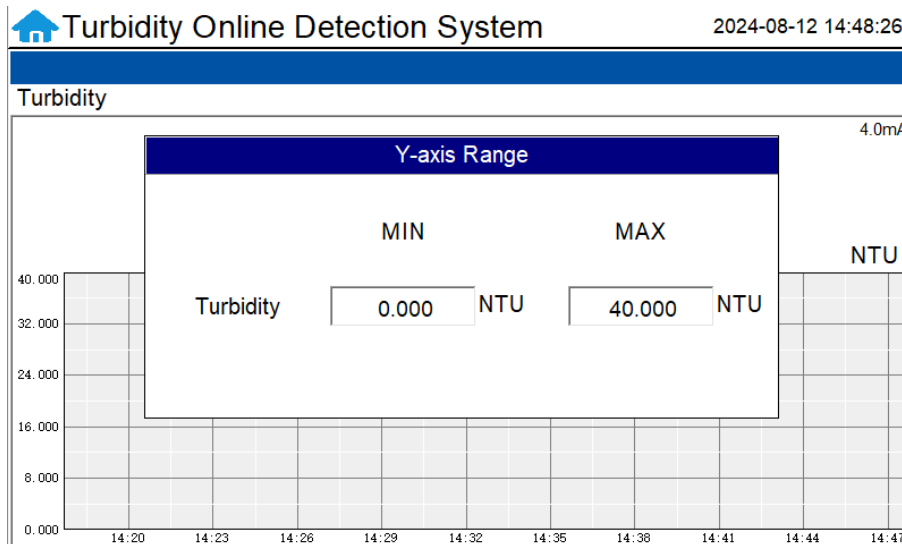


Figure 8 - Display Curve Range Setting

7.4. 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.

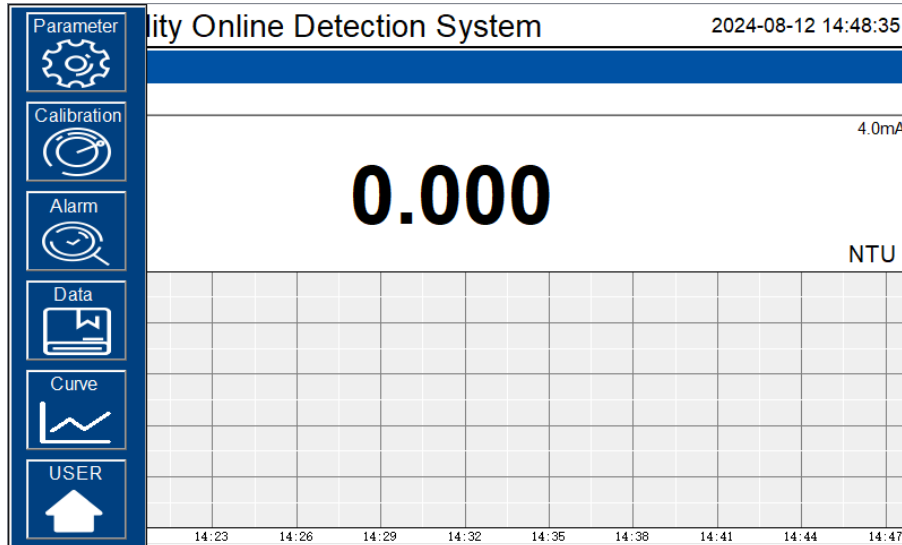


Figure 9 - Menu Bar

7.5. 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.

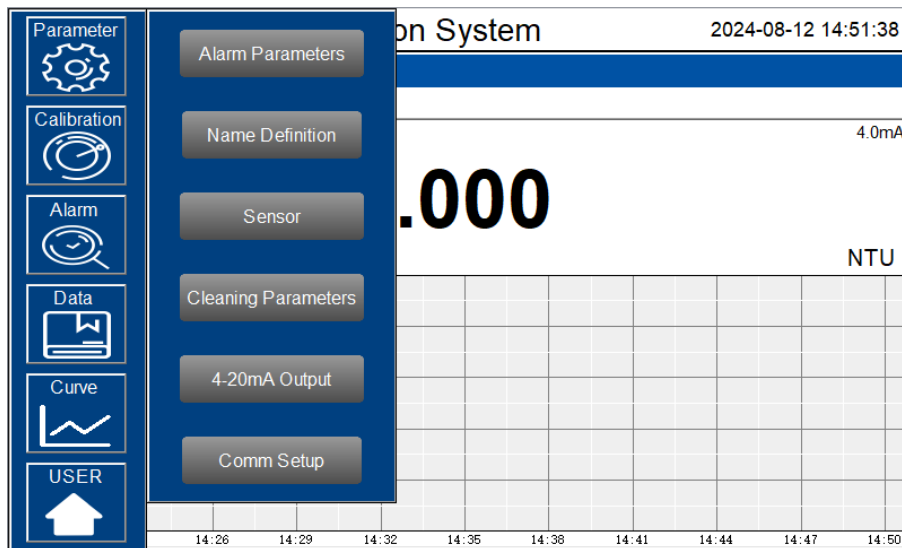


Figure 10 - Parameter Settings

7.5.1. Alarm Parameter Setting

When the online user has the right to operate, upper and lower alarm limits can be set. Click "Alarm Parameter" to enter the interface of alarm parameter setting. Here you can set the alarm upper limit and lower limit of each sensor. When "Control Selection" is selected as manual, you can click "ON" to output the signal.

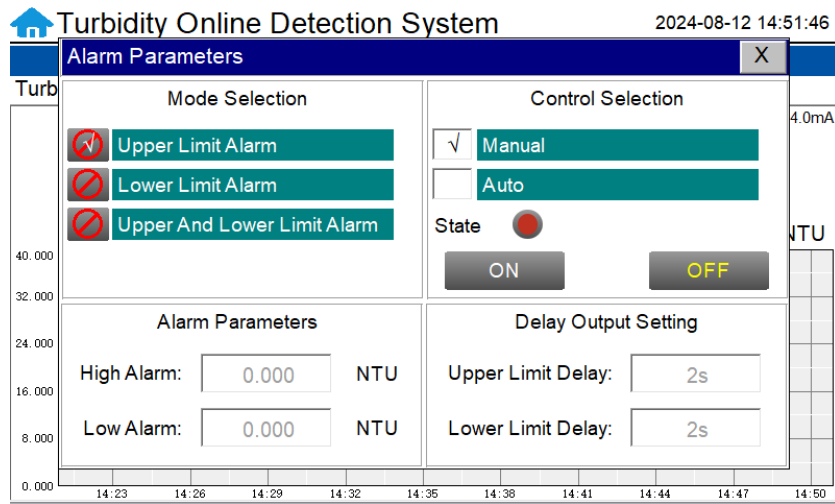


Figure 11 - Alarm Parameter Setting

When "Control Selection" is selected auto, the device will alarm and signal output according to the parameters set below. It should be noted that when you select "upper limit alarm" or "lower limit alarm", only the upper limit or lower limit will alarm. Only by selecting "Upper limit and lower limit alarm", there will be both upper limit and lower limit alarm.

In automatic mode, the user can set the corresponding upper and lower alarm delay times in the interface of "Delay Output Setting". If the sensor detects that the value exceeds the upper or lower limit at a certain moment, the system will start a delayed judgement. If the sensor detects that the value still exceeds the upper or lower limit within the set time, it is decided that the alarm should be output.

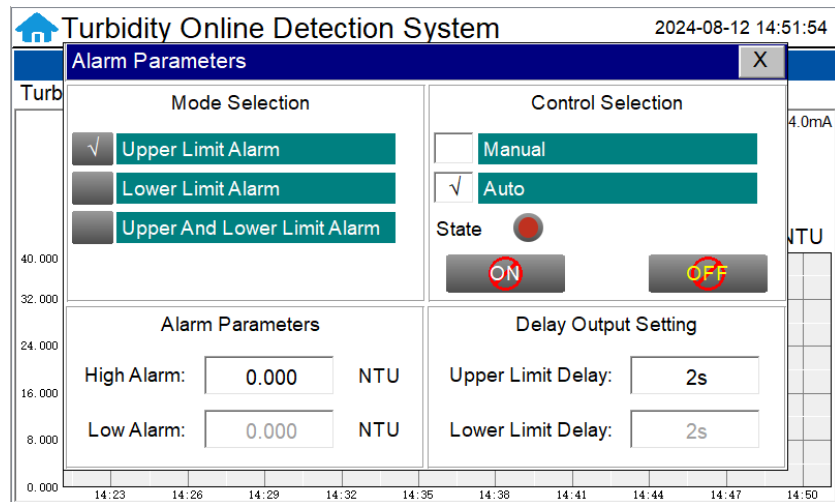


Figure 12 - Upper Limit Alarm

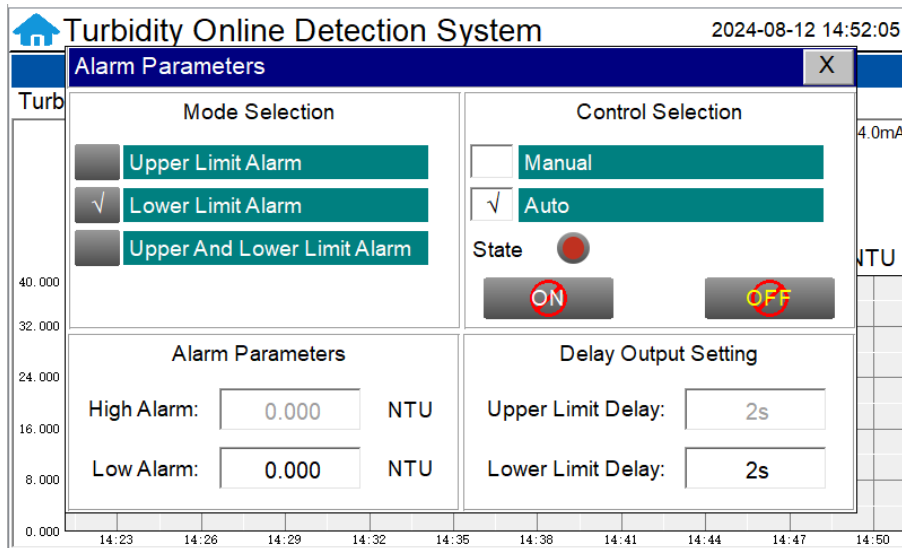


Figure 13 - Lower Limit Alarm

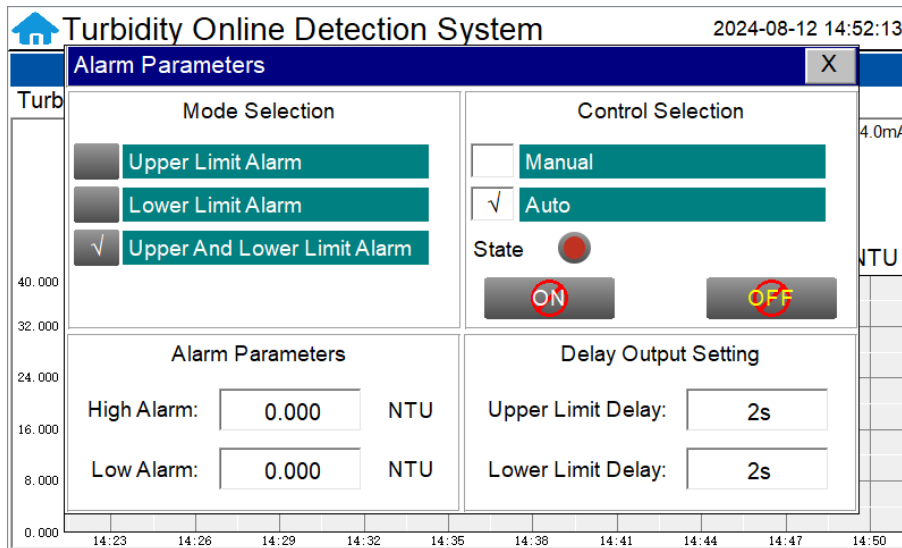


Figure 14 - Upper and Lower Limit Alarm

7.5.2. User Defined Settings

The “User Defined” setting function allows users to assign a customized name, unit of measure

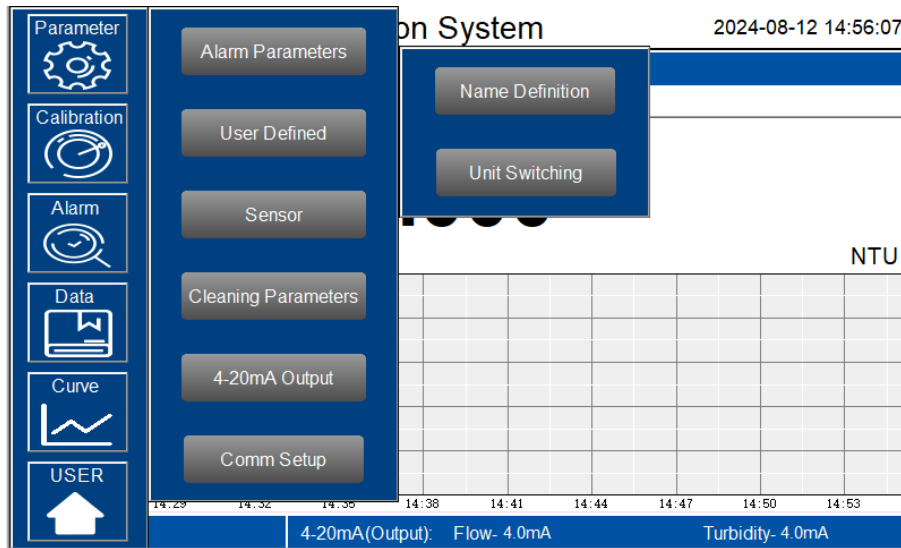


Figure 15 - User Defined

Parameter Name Definition Adjustment

Click the orange dialog box to customize the sensor name. Here users can also change the unit of measure for temperature display.

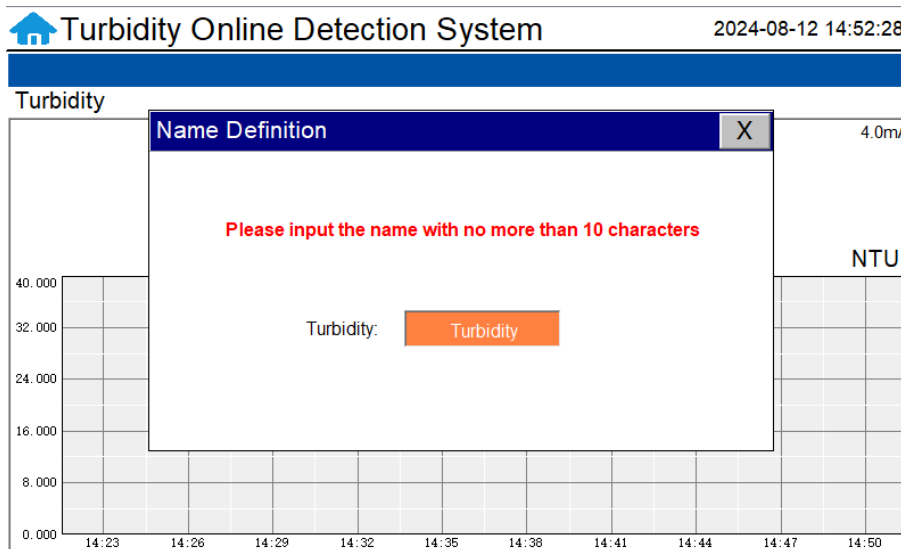


Figure 16 - Name Definition

7.5.3. Sensor

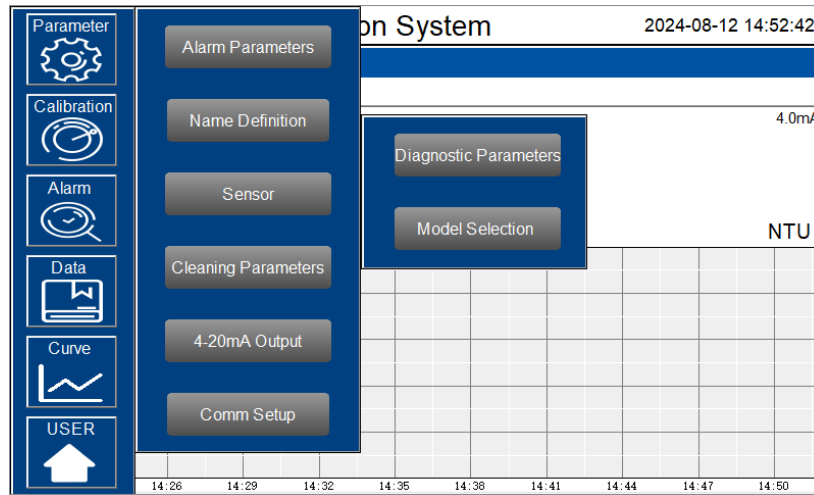


Figure 17 – Sensor

Diagnostic Parameters

Click “Diagnosis Parameters” to enter the diagnosis page. In the diagnosis page, the raw data measured by the probe is displayed. To help troubleshooting possible issues with the probe, please take an image of this data when the probe is placed in a clean water (tap water or deionized water), in a standard, and in the sample that the probe is intended for. These images may be sent to service@pyxis-lab.com for troubleshooting support.

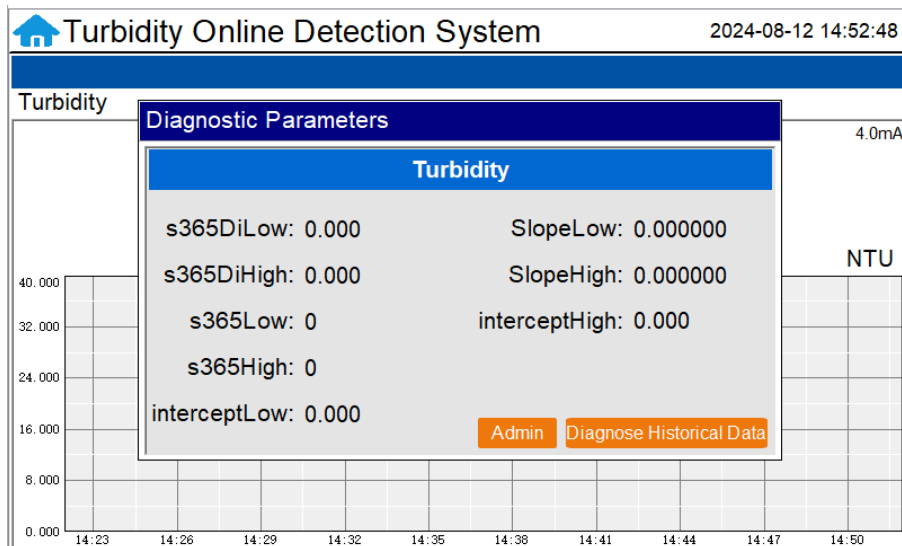


Figure 18 - Diagnostic Parameters

Model Selection Based on Turbidity Sensor Used

The corresponding sensor model will be selected in the factory, if the sensor is replaced, please select the new sensor model in this interface and follow the prompts to operate step by step. ***NOTE*** The option of LT-736 (0-1,000 NTU) sensor is offered in the DW-739 platform.

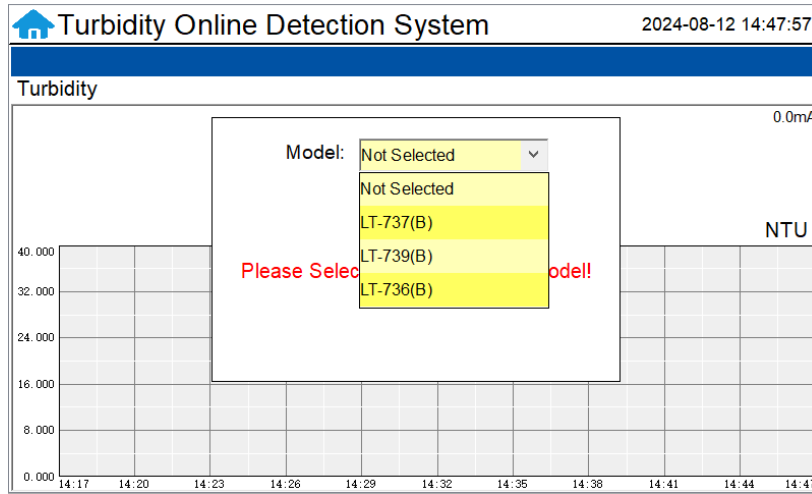


Figure 21 - Model Selection

7.5.4. Automatic Brush Cleaning Parameter Settings

The DW-73X-PLUS offers an auto-brushing flow reservoir for the LT-739 turbidity sensor. When entering the cleaning control parameter setting interface for the first time, a notice screen will appear to ensure the panel has the auto-brushing assembly in place (FRP-100). After confirming that the cleaning control module is installed, click Enable to enter the parameter setting interface.

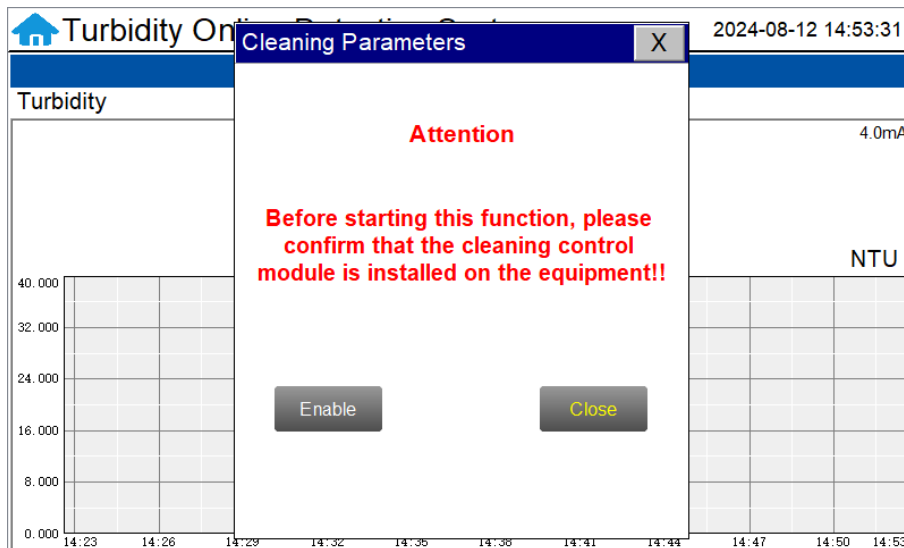


Figure 22 - Cleaning Module Confirmation Interface

On the parameter setting interface, users can program the automatic cleaning cycle frequency (minutes) and brush rotation cycles per cleaning. ***IMPORTANT NOTE*** - A setting of 1 for Time will result in 30 brush rotations (Example. If you desire the clean the sensor with 30 brush rotations you would set the Brush Rotations Per Cleaning to 1) Brush operation in either AUTO or MANUAL mode can be set.

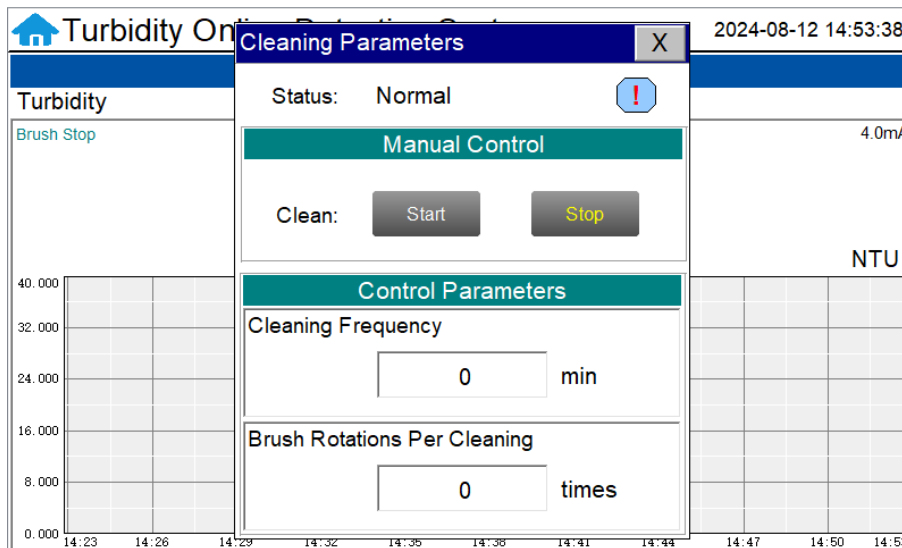


Figure 23 - Cleaning Parameters Setting

7.5.5. 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 or range of application use. Default 4-20mA output values are provided in Figure. ***NOTE*** The closer the value is set to the measurement value the more precise the data. It is recommended to set according to the range of the sensor and application needs.

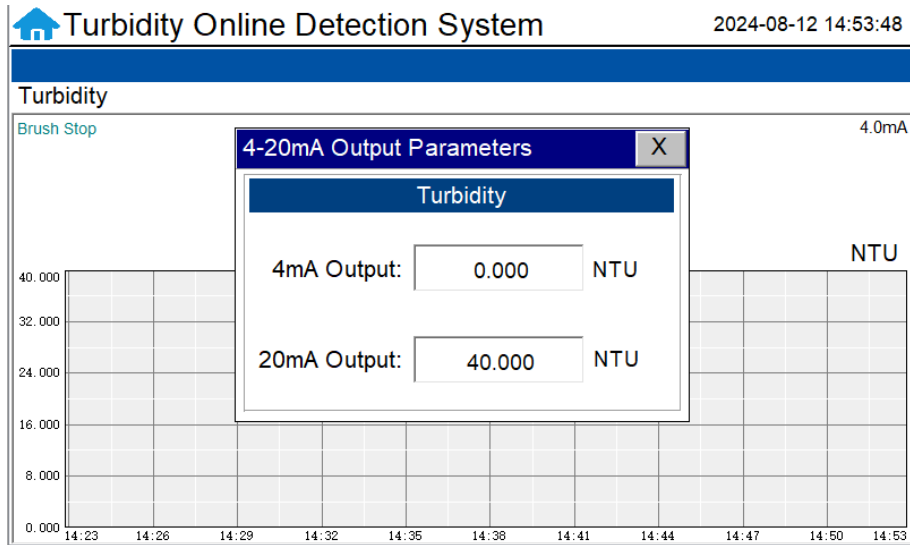


Figure 24 - 4-20mA Output Setting

7.5.6. Communication Setting

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

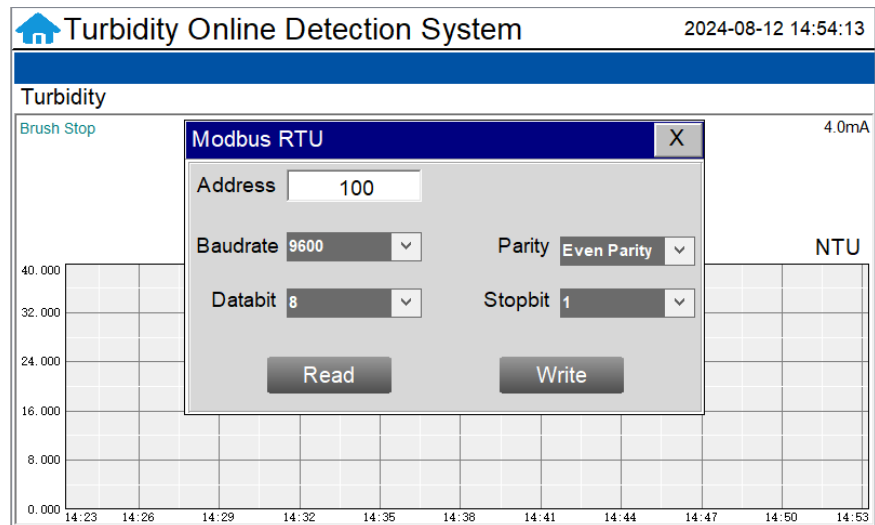


Figure 25 - Modbus RTU

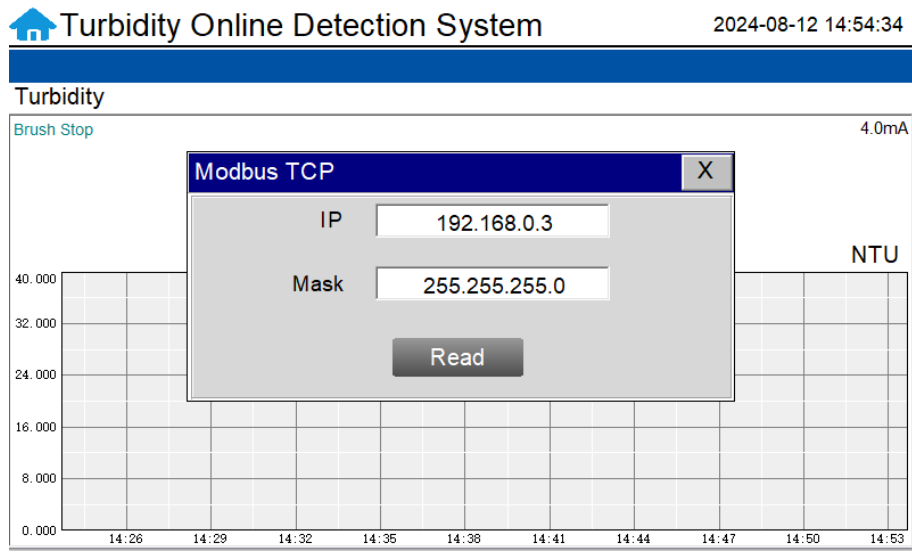


Figure 26 - Modbus TCP

7.6. Calibration

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

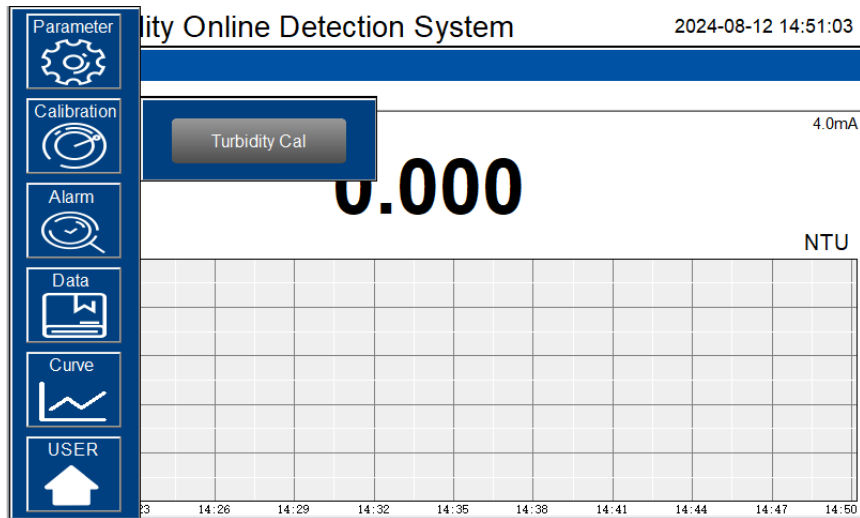


Figure 27 - Sensor Calibration

The LT-739 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. ***NOTE*** Pyxis recommends the sensor be calibrated to the application range of its use only. Example – for ultralow turbidity applications, the user only needs to calibrate the sensor for Low-Range and Mid and High range calibration is not necessary. If the potential measurement range covers the full span of sensor range, all points (low/mid/high) calibration are suggested.

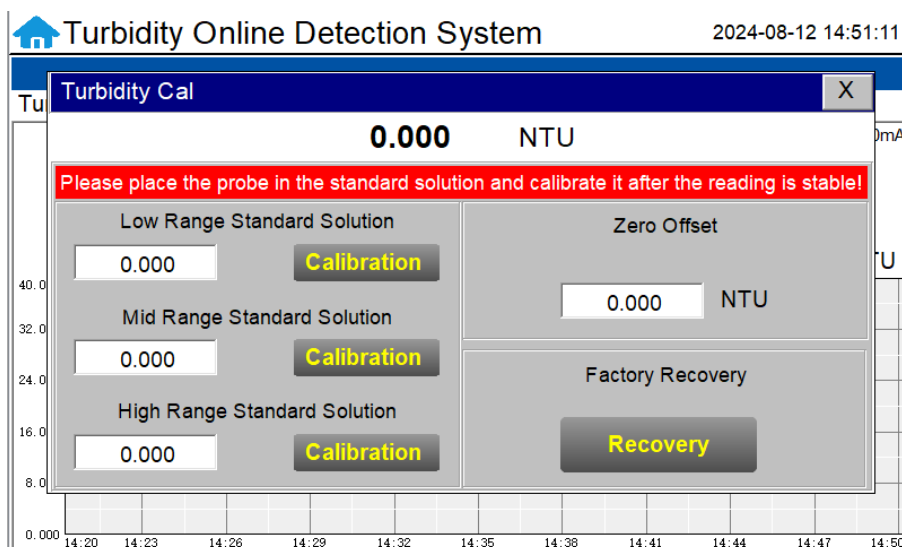


Figure 28 - Turbidity Calibration Screen

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 FR-100 flow reservoir. 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). 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.

Mid-Range Calibration using the L-CAL Portable Turbidity Calibration Kit:

If a mid-range calibration is not required, the user does not need to perform a mid-range calibration of the LT-739 sensor. If a mid calibration is required, proceed by rinsing the L-CAL vessel with Deionized water and refill with 500mL of known turbidity standard solution between 5NTU and 10NTU for LT-739 mid-range calibration and between and between 5NTU and 50NTU for LT-736 mid-range calibration. 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 L-CAL Portable Turbidity Calibration Kit:

If a high-range calibration is not required, the user does not need to perform a high-range calibration of the LT-739 or LT-736 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 LT-739 high-range calibration and 500NTU and 1,000NTU for LT-736 high-range calibration. 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".

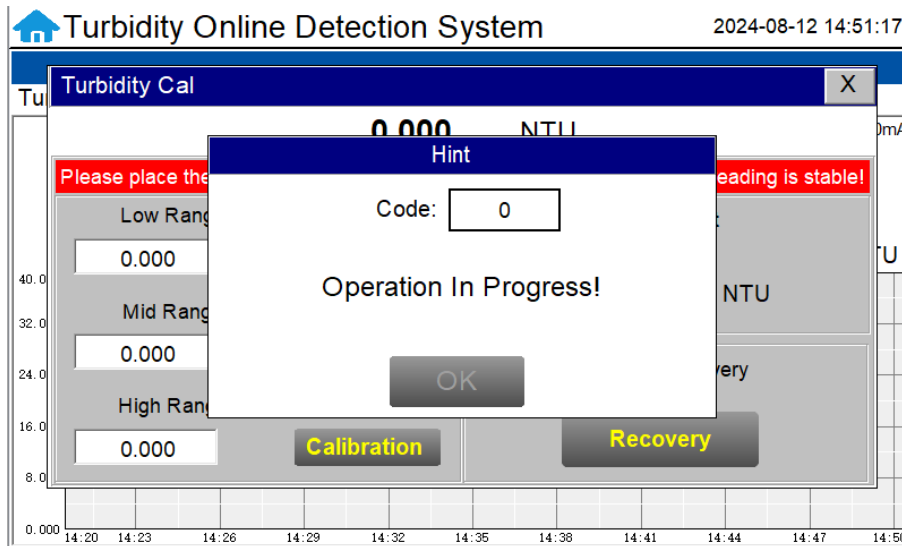


Figure 29 - Awaiting execution Screen of Turbidity Calibration

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) Ensure the LT-73X series sensor distillate end is not contaminated with debris or other substances

LT-739 / LT-736 Calibration using L-CAL Portable Turbidity Calibration Kit

Pyxis Lab has developed L-CAL as 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 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	LT-736 / LT-736B
Calibration	Recommended Calibration Standard Solution Range	
Low-Range (0.05NTU Recommended for Calibration)	Bubble Free DI Water or Standard <2.0 NTU	
Mid-Range	5 – 10 NTU	5 – 50 NTU
High-Range	20 – 40 NTU	500 – 1,000 NTU

Pyxis Turbidity Calibration Standard	Pyxis P/N
Pyxis 10 NTU Formazine Turbidity Calibration Std (500mL Bottle)	57010-4
Pyxis 30 NTU Formazine Turbidity Calibration Std (500mL Bottle)	57010-8
Pyxis 500 NTU Formazine Turbidity Calibration Std (500mL)	57010-2
Pyxis 1,000 NTU Formazine Turbidity Calibration Std (500mL)	57010-3

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*



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

7.7. 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.

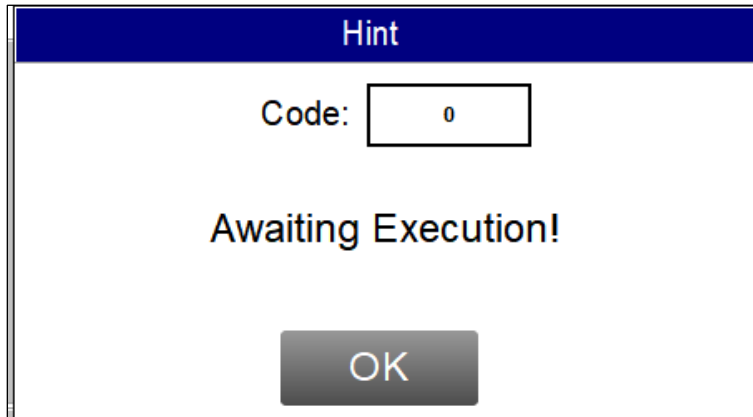


Figure 30 - Data Recovery Screen

7.8. Alarm View

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

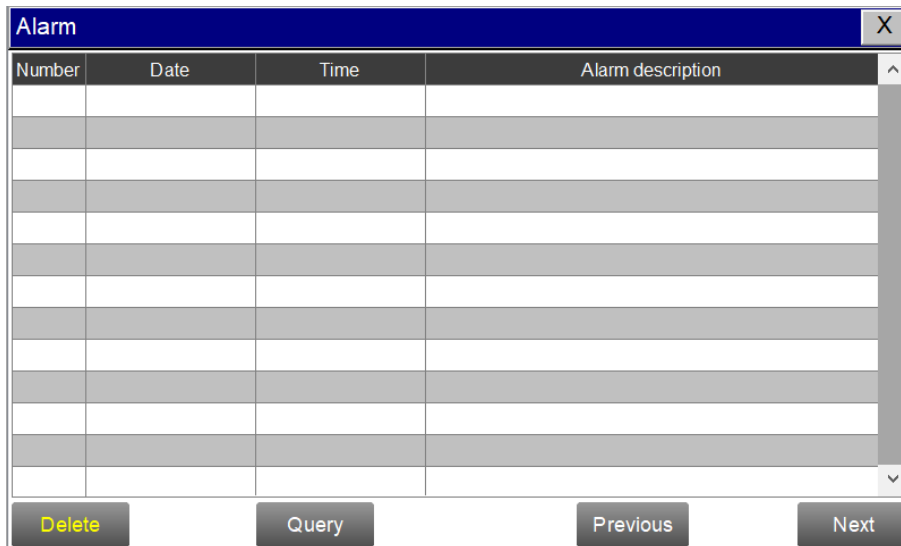


Figure 31 - Alarm View

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.

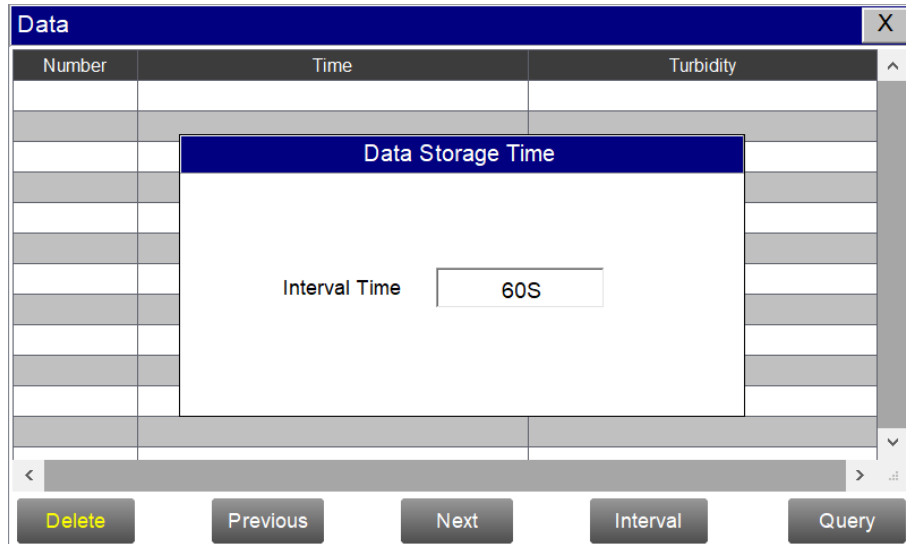


Figure 34 - Data Storage Cycle Time Setting

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.

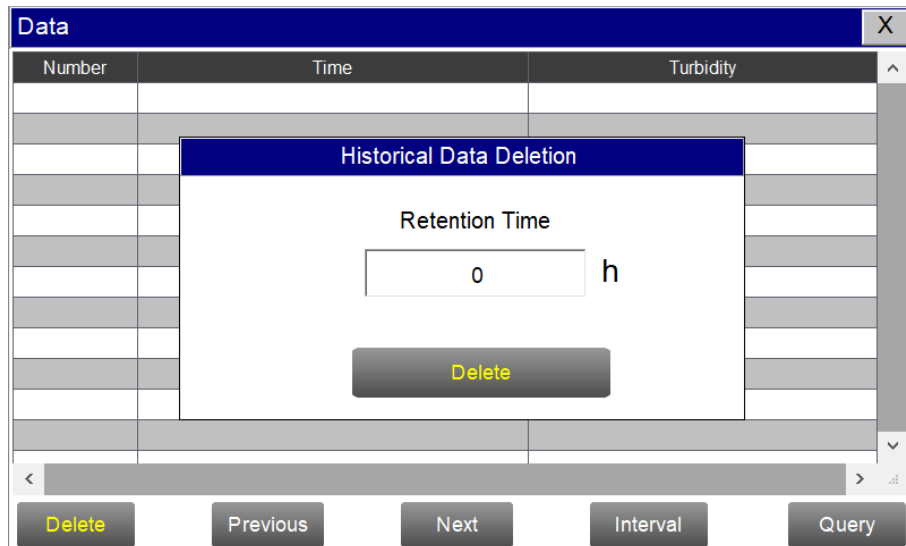


Figure 35 - History Data Deletion Screen

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.

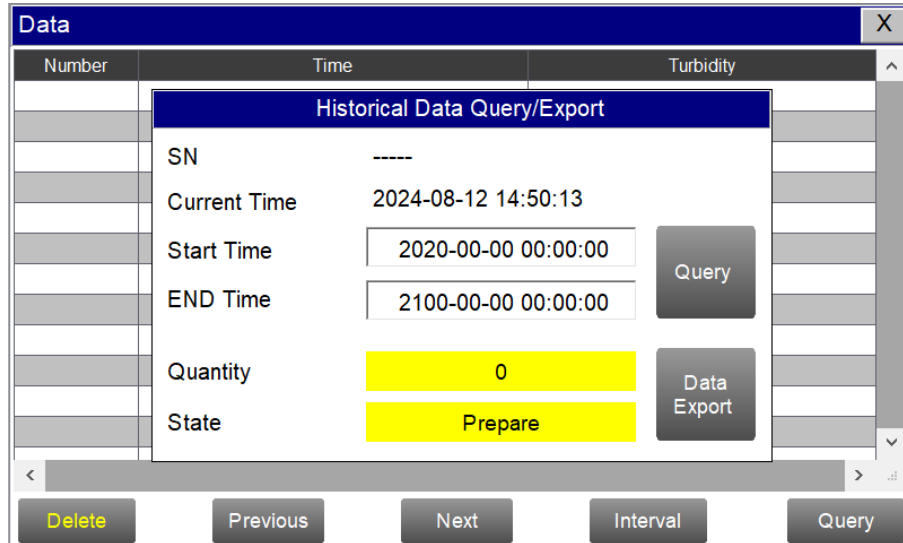


Figure 36 - Historical Data Query and Export Screen

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.

If a USB Download Alarm appears please refer to the following table for description of the problem.

Table. 1-USB Download Alarm Description

Alarm	Description
-1001	Progress or control data object type is incorrect
-1004	Group object name does not exist or the group object does not have the save property
-1020	The start time of the export is greater than the end time
-1021	USB flash drive is not inserted
-1022	Only one export task is allowed at the same time
-1023	The number of records read is 0
-1024	File operation failed
-1025	Export path is empty
-1026	Export path is not legal
-1027	Incorrect time format
-1028	Unsupported export mode

7.10. 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.

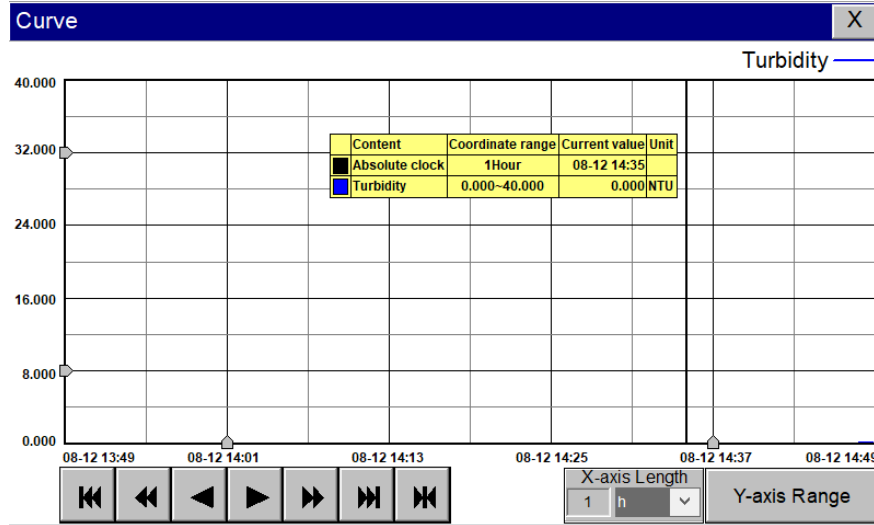


Figure 37 - History Curve Screen

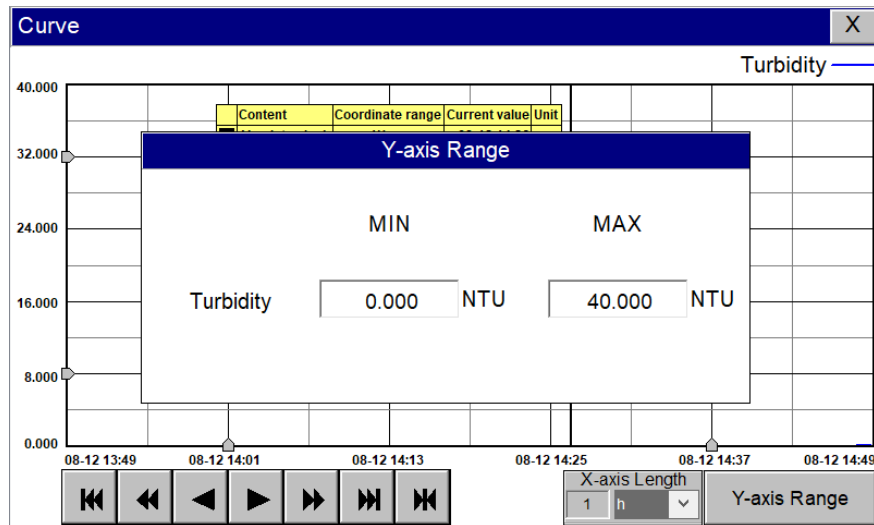


Figure 38 - Y-axis Range Setting

- ⏪ 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 39 - Button Function Review

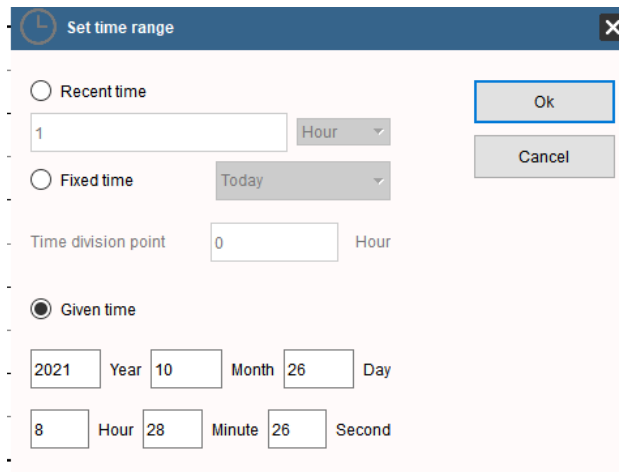


Figure 40 - Time Setting Screen

7.11. User Management

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

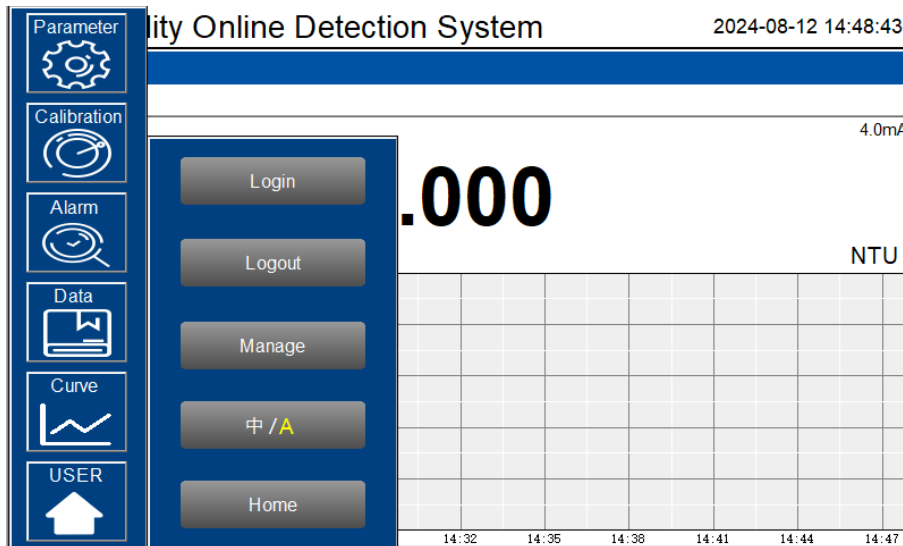


Figure 41 - User Management

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.

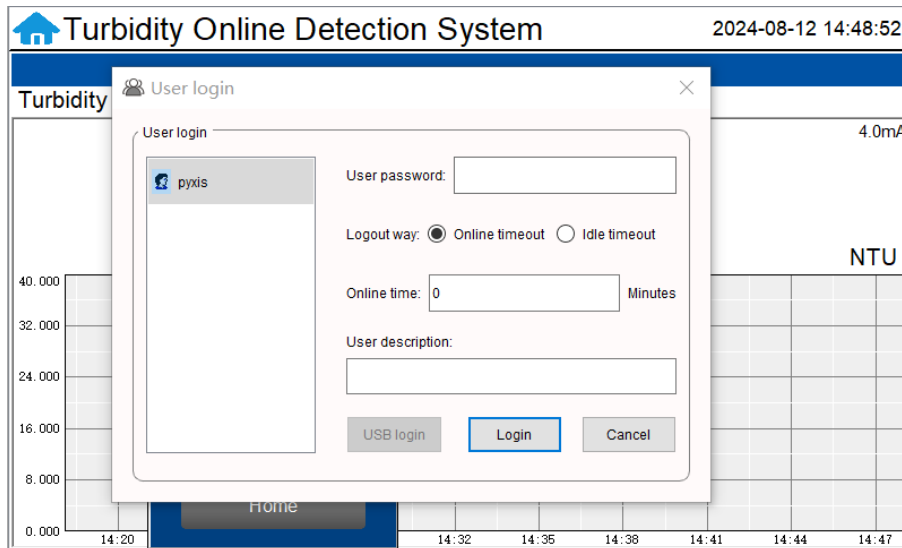


Figure 42 - User Management Screen

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.

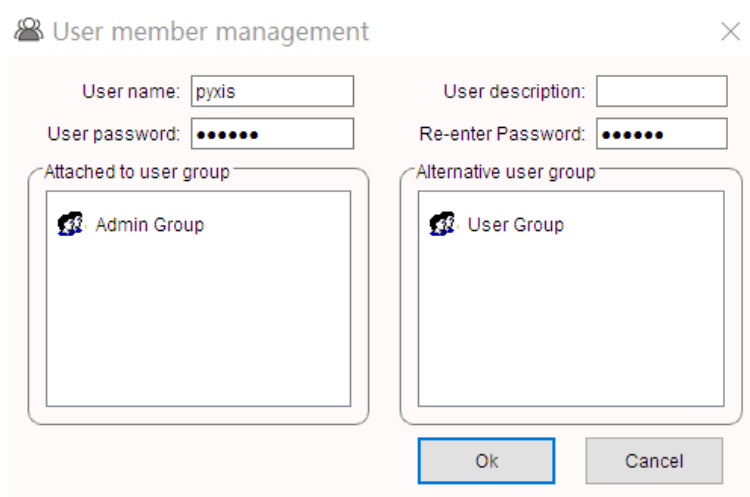


Figure 43 - Modifying the User Screen

8. Modbus Communication & Recommended Maintenance

8.1. Modbus Correspondence Address

Number	Definition	Address	Format	Mode	Unit	Note
1	Turbidity	1	float	Read Only	NTU	Data Format: ABCD
2	Flow	3	float	Read Only	mL/min	
3	Abnormal communication of turbidity sensor	5	uint	Read Only		0: Normal 1: Alarm
4	Abnormal communication of flow module	6	uint	Read Only		0: Normal 1: Alarm
5	Turbidity upper limit alarm	7	uint	Read Only		0: Normal 1: Alarm
6	Turbidity lower limit alarm	8	uint	Read Only		0: Normal 1: Alarm
7	Abnormal communication of 4-20mA output module	9	uint	Read Only		0: Normal 1: Alarm
8	Abnormal communication of cleaning module	10	uint	Read Only		0: Normal 1: Alarm
9	Abnormal brush	11	uint	Read Only		0: Normal 1: Alarm
10	Abnormal communication of Relay module	12	uint	Read Only		0: Normal 1: Alarm
Communication Protocol: Standard Modbus-RTU						
Communication Parameters: Baud Rate -9600; Data Bit -8; Stop Bit -1; Parity Bit - even						
Station Number: 100						
Communication Protocol: Standard Modbus-TCP						
Communication Parameters: IP: 192.168.0.3 (configurable); Port: 502						
Station Number: 1						

Table 1 - Modbus Correspondence Address

8.2. Suggested Maintenance

After the analyzer is installed by a qualified technician, it can begin to monitor water quality. The DW-73X series 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 guideline. Little operator intervention is required during normal operation.

Required Services	Recommended Frequency
Cleaning DW-73X Series Sensor	Monthly or Cleaned As Needed
Cleaning of FR-100 Flow Reservoir	Monthly or Cleaned As Needed
Replacement of FRP-100 Brush Head	Annually or As Needed
Turbidity Calibration (<i>Low Point Only For Pure Water</i>)	Every 6 Months or As Desired

Table 2 - Maintenance Intervals

9. Contact Us

Pyxis Lab Inc.

21242 Spell Circle

Tomball, TX. 77375

info@pyxis-lab.com for general inquiries

service@pyxis-lab.com for technical service and support

order@pyxis-lab.com for order and pricing inquiries

1-866-203-8397 Phone USA for all needs

Office Hours 7AM – 5PM Central Time USA