MFA-400

Anionic Polymer Analyzer

TITRONEX
COMMAND WET CHEMISTRY.

order@pyxis-lab.com
21242 Spell Circle, Tomball TX 77375
+1 (866) 203-8397

Table of Contents

Warranty Information

Confidentiality

The information contained in this manual may be confidential and proprietary and is the property of Pyxis Lab, Inc. Information disclosed herein shall not be used to manufacture, construct, or otherwise reproduce the goods described. The information disclosed herein shall not be disclosed to others or made public in any manner without the express written consent of Pyxis Lab, Inc.

Standard Limited Warranty

Pyxis Lab warrants its products for defects in materials and workmanship. Pyxis Lab will, at its option, repair or replace instrument components that prove to be defective with new or remanufactured components (i.e., equivalent to new). The warranty set forth is exclusive and no other warranty, whether written or oral, is expressed or implied.

Warranty Term

The Pyxis warranty term is thirteen (13) months ex-works. In no event shall the standard limited warranty coverage extend beyond thirteen (13) months from the original shipment date.

Warranty Service

Damaged or dysfunctional instruments may be returned to Pyxis for repair or replacement. In some instances, replacement instruments may be available for short duration loans or lease.

Pyxis warrants that any labor services provided shall conform to the reasonable standards of technical competency and performance effective at the time of delivery. All service interventions are to be reviewed and authorized as correct and complete at the completion of the service by a customer representative or designer. Pyxis warrants these services for 30 days after the authorization and will correct any qualifying deficiency in labor provided that the labor service deficiency is exactly related to the originating event. No other remedy, other than the provision of labor services, may be applicable.

Repair components (parts and materials), but not consumables, provided during a repair, or purchased individually, are warranted for 90 days ex-works for materials and workmanship. In no event will the incorporation of a warranted repair component into an instrument extend the whole instrument's warranty beyond its original term.

Warranty Shipping

A Repair Material Authorization (RMA) Number must be obtained from Pyxis Technical Support before any product can be returned to the factory. Pyxis will pay freight charges to ship replacement or repaired products to the customer. The customer shall pay freight charges for returning products to Pyxis. Any product returned to the factory without an RA number will be returned to the customer. To receive an RMA you can generate a request on our website at Request Return or Repair - Pyxis Lab, Inc. (pyxis-lab.com)

Pyxis Technical Support

Contact Pyxis Technical Support at +1 (866) 203-8397 ext. 2., or by emailing service@pyxis-lab.com

1 Introduction

The Pyxis MFA-400 is a pre-mounted colorimetric analyzer with integrated ultrasonic flow control designed as a turn-key monitoring solution for anionic polymer measurement in industrial water treatment. Anionic polymers exhibit excellent chelating and dispersing properties. They form stable chelates with calcium and magnesium ions in water, preventing these ions from combining to form insoluble precipitates. Simultaneously, the polymers adsorb onto crystal micro-surfaces, disrupting the normal growth formation of scale crystals. This action keeps scale particles in a dispersed state, allowing them to be carried away by the water flow rather than adhering to equipment surfaces. The MFA-400 can improve polymer dosing control.

The MFA-400 integrates several key components into a compact, panel-mounted system to ensure accurate and reliable anionic polymer measurement. These components include a UC-60 display/controller, FS-100 ultrasonic flow meter, motorized regulating valve, motorized three-way valve, colorimeter and reagent cartridge. Together, these components work as a unified system to provide precise sample flow control, automatic reagent injection and accurate anionic polymer measurement based on the turbidimetric method.

MFA-400 Anionic Polymer Analyzer

1.1 Main Features

- The MFA-400 system requires low maintenance and only requires regular replacement of the reagent cartridge (Polymer-400) and periodic cleaning of the colorimetric chamber to ensure continuous operation.
- The UC-60 display/controller serves as the central interface for the MFA-400, offering the following:

  1. A **4.3-inch color touchscreen** for intuitive operation, and supports **two 4–20 mA analog outputs**, **one isolated RS-485 Modbus interface**, and **two passive relay outputs**.
  2. Integrated and deactivated 4G DTU module with a global SIM card enables automatic data transmission to the Pyxis Cloud server for remote monitoring and cloud access. Detailed information about 4G cloud connectivity can be found in the Activating the 4G DTU Gateway/Module section.
  3. The UC-60 controller supports multiple access levels, allowing only authorized personnel to access advanced settings and perform sensitive operations, while general users can view basic information, (see User Roles and Corresponding Access Permissions Section).

- The FS-100 is an ultrasonic flow meter that uses transit time difference technology, offering the following:
  1. Measurement sample flow range of 0–3,000 mL/min with a resolution of 1 mL
  2. Built-in temperature compensation and real-time flow monitoring.
  3. In the **MFA-400** system, the FS-100 operates exclusively in flow-control (C) mode. Using an internal PID algorithm, it continuously adjusts a pre-mounted regulating valve via a 4–20 mA output signal to maintain a programmable and stable flow rate regardless of sample water flow and pressure variations. This unique sample flow control method ensures that the water sample enters the colorimetric chamber at a constant flow and pressure, minimizing measurement variability due to flow or pressure fluctuations commonly associated with market alternative analyzers.
  4. 

2 MFA-400 Specifications

Item	MFA-400 (Generation 1)
P/N	45477
Target Analyte	Anionic Polymer
Range	0-20 ppm as Polyacrylate
Accuracy	±0.5 ppm or ±5%FS, whichever is greater
Detection Limit	0.5ppm
Measurement Method	Turbidimetric Method
Measurement Capacity (1)	Up to 16,000 Tests
Measurement Interval	Selectable: 1min, 2min, 5min, 10min, up to 360 min(1) – Configured via the controller menu.
Reagent Required	Polymer 400 (P/N 30545) 400mL per cartridge
Reagent Shelf Life	12 months
Sample Inlet Pressure	7.25-72.5psi (0.05-0.5MPa)
Sample Inlet Flow Range	100 - 500ml/min
Sample Inlet / Outlet	1/4-inch tube fitting
Sample Waste Outlet	1/4-inch tube fitting
Flow Measurement Method	FS-100 Ultrasonic Flow Meter Transit Time Difference
FS-100 Flow Range of Measure	0 – 3,000 mL/min
FS-100 Resolution	1mL/min
FS-100 Accuracy	10mL or ±1% of the value, whichever is greater
FS-100 Dimension (H x W x D)	H482 x W160 x D140 mm
FS-100 Display	1.44-inch color screen 128 x128 pixels
FS-100 Operation Mode	Operates in Flow-Control (C) Mode. Recommend control flow rate range is 100–500 mL/min
Flow Regulating Valve Control Method	4-20mA from FS-100 (*internally connected)*
Controller Display	4.3-inch color touchscreen 800*480 pixels
Controller Analog Outputs	2 × 4-20mA current outputs
Controller Digital Output	1 × Isolated RS485, Modbus RTU
Controller Relay Output Type	2 × SPST Relays (Dry Contact) Contact Rating: 5A 250VAC/30VDC
Controller Power Supply	100-240 VAC 50/60Hz
Controller USB Interface	For data downloading and firmware upgrade
Operation Temperature	32 – 122 °F (0 – 50 °C)
Storage Temperature	-4 – 158 °F (-20 – 70 °C)
Controller Dimension (H x W x D)	H490x W450 x D166 mm
Controller Humidity	5-95% No Condensation
Controller Protection	IP-65
Pyxis 4G CloudLink™	Included & Activated Upon Request with Enrollment – Contact Pyxis Lab for details

(1) A 5-minute sample interval supports continuous operation for up to 55 days (based on a total of 16,000 measurements) .

3 Unpacking Instrument

Remove the instrument and accessories from the shipping container and inspect each item for any damage that may have occurred during shipping. Verify that all items listed on the packing slip are included. If any items are missing or damaged, please contact Pyxis Customer Service at service@pyxis-lab.com.

3.1 Standard Accessories

- One **MFA-400** Analyzer (P/N: 45477)
- One **MA-1.5CR** – (Flying Lead Cable Male/Flying Lead 8-Pin Adapter – 1.5m) (P/N: 50746)
- One ¼-inch NPT plug for use with discharge water saving mode
- Two magnetic stirring bars
- Two (2) Lengths of ¼-inch tubing – 5m
- Cleaning Brush Kit (P/N:23577) (1x each Lambswool and Stiff Brush)
- Mounting Materials
- The full instrument manual is available for download at Support Documents - Pyxis Lab, Inc. (pyxis-lab.com)

3.2 Optional / Replacement Accessories

The following optional accessories can be ordered from Pyxis Customer Service (order@pyxis-lab.com) or Pyxis E-Store at https://pyxis-lab.com/shop/

Table 1

Accessory Name	Part Number
Polymer-400 Polymer Reagent Cartridge 0-20 ppm for MFA-400, 400mL	30545
MA-1.5CR Replacement Flying Lead Cable Male/Flying Lead 8-Pin Adapter – 1.5m	50746
Motorized Flow Regulation Valve - Replacement for MFA Series	27427
Motorized Three Way Valve-Replacement for MFA Series	21572
FS-100 Ultrasonic Flow Sensor - Replacement	54200
UC-60 Display/Controller Replacement - for MFA Series	79262
Replacement Reaction Chamber Kit-02 for MFA-400	27614
Replacement Pump Roller Assembly for MFA-Series	25662
Replacement Cleaning Brush Kit (1x each Lambswool and Stiff Brush)	23577
Replacement Magnet Stirrer Kit (5x each Magnetic Stirrers)	22483
Weatherproof Outdoor Cabinet for MFA-Series	21198
SP-800 Multiparameter Colorimeter Includes Calcium Hardness Method	50610
Pyxis Probe Cleaning Solution (500mL)	SER-01

4 Dimensions

4.1 Analyzer Dimensions(mm)

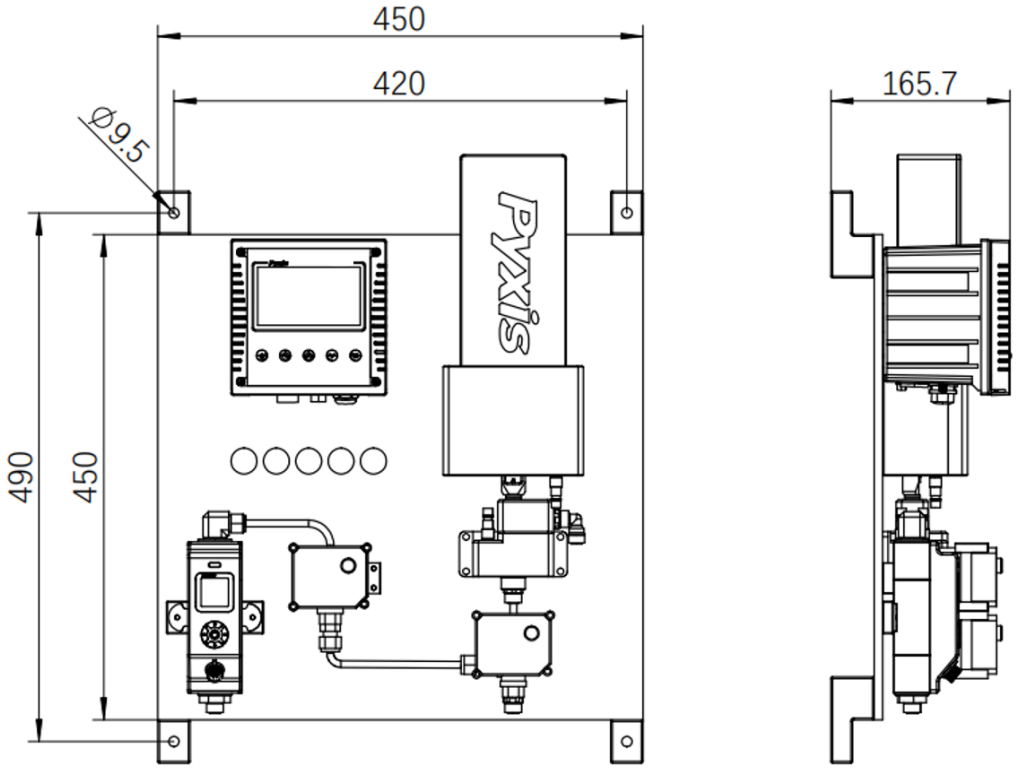


Figure 1

4.2 FS-100 Dimensions(mm)

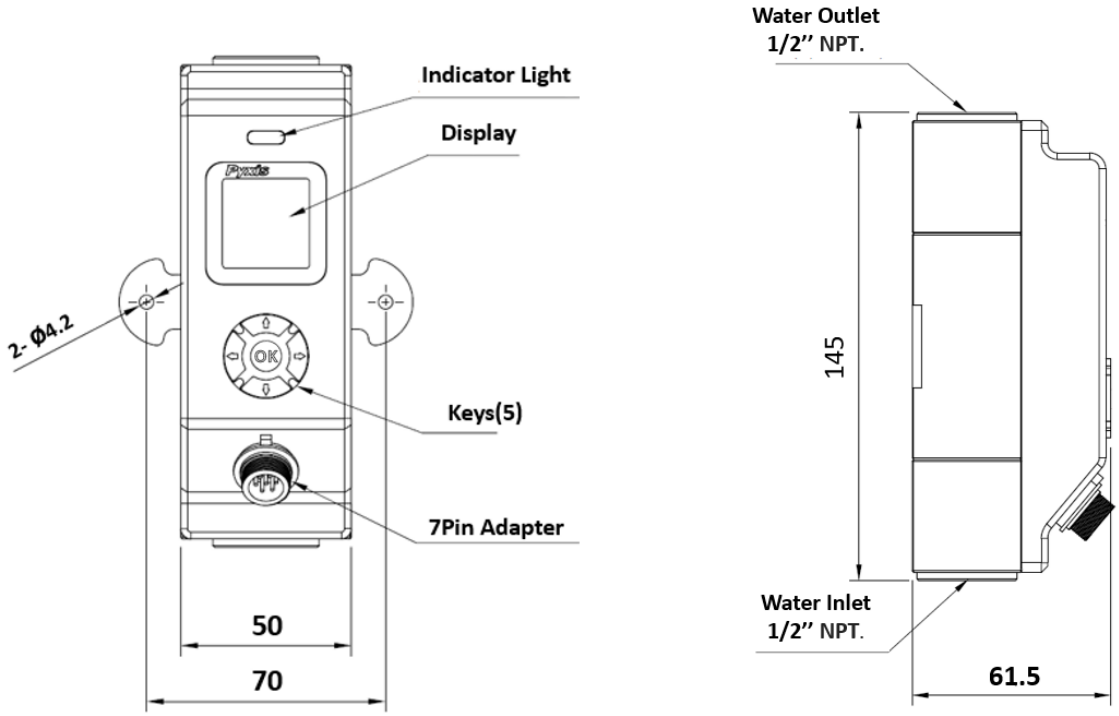


Figure 2

4.3 Controller Dimensions(mm)

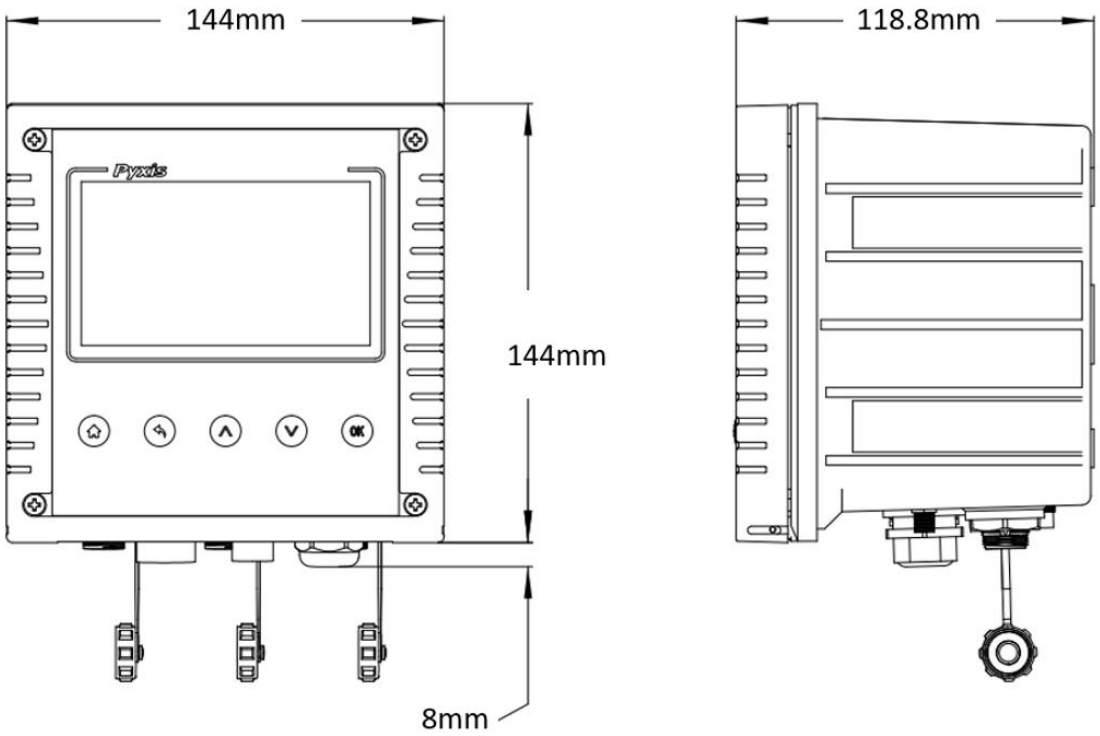


Figure 3

5 Analyzer Overview

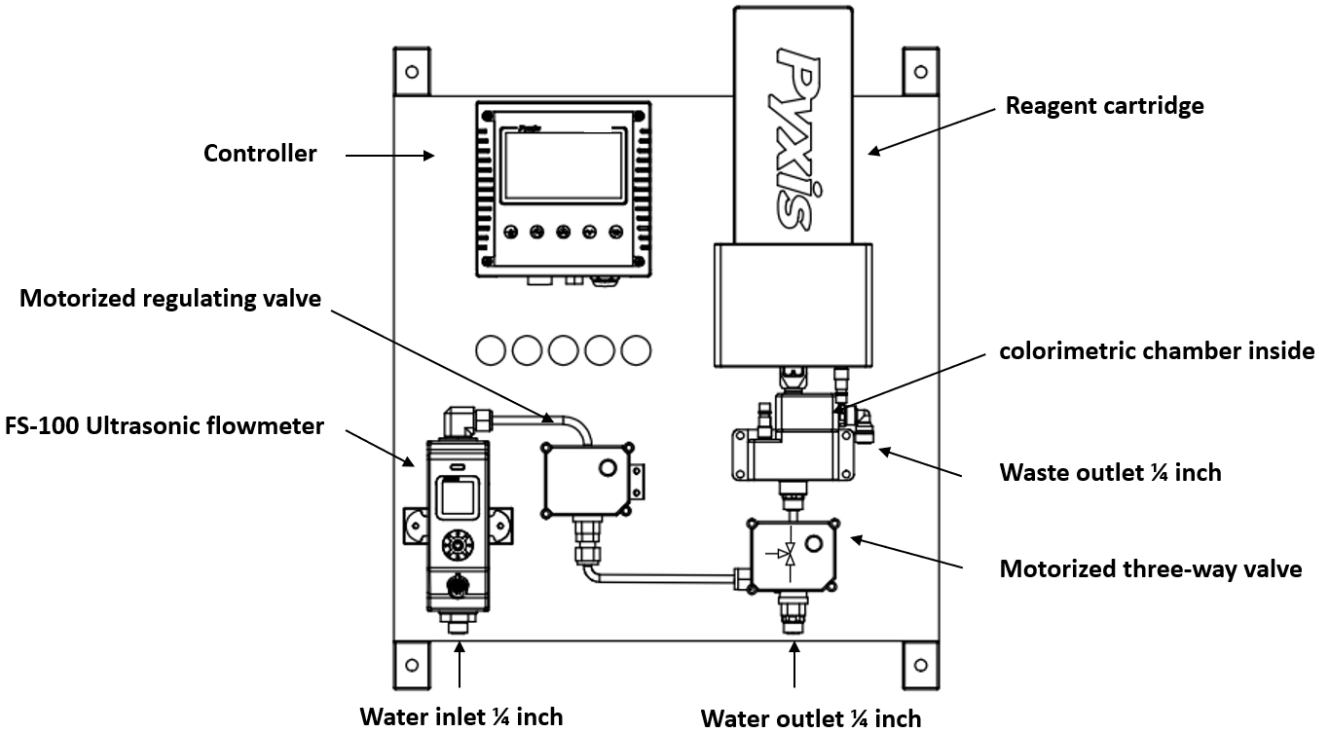


Figure 4

**IMPORANT NOTE*:* *The flow direction is controlled by a motorized three-way valve. When not measuring, water flows directly to the water outlet without entering the colorimetric chamber.*

Depending on the application need, the water outlet line can be sent to drain. For applications desiring to conserve water while operating the system in Water Saving Mode, this line may be plugged with the ¼-inch OD plug provided.

For Severely Fouled Waters including industrial process, cooling and wastewater effluent, pre-filtration of the water sample at a minimum of 100micron is suggested.

During the measuring phase, the three-way valve redirects the sample water through the colorimetric chamber and then discharges the sample via the waste outlet.

All water used for flushing and reagent mixing is routed to the waste outlet. It is recommended to collect this wastewater in an appropriate waste container or send it to appropriate drain.

Alternatively, if the user desires no flow to drain during the sample wait cycle, the water outlet may be plugged.

6 Electrical Connection

6.1 Controller - Bottom Interface View

The controller is equipped with multiple connectors located at the bottom. The unlabeled connectors are pre-assigned and factory-wired to other panel components (e.g., the FS-100, motorized valves). Users only need to be familiar with the following labeled interfaces:

- **USB Interface** – For export data log and firmware updates (see Data Export to USB or Upgrading The Device Firmware section).
- **Standard SMA connector for external antenna connection** – A matching antenna is supplied with the controller and should be placed in an open position to ensure stable 4G communication.
- **8-Pin Female Adapter** – This adapter is designed to mate with the MA-1.5CR, see Signal Pre-Wired Output Cable section for more details.
- **PG9 Cable Gland** - AC Power Inlet (3-Prong).

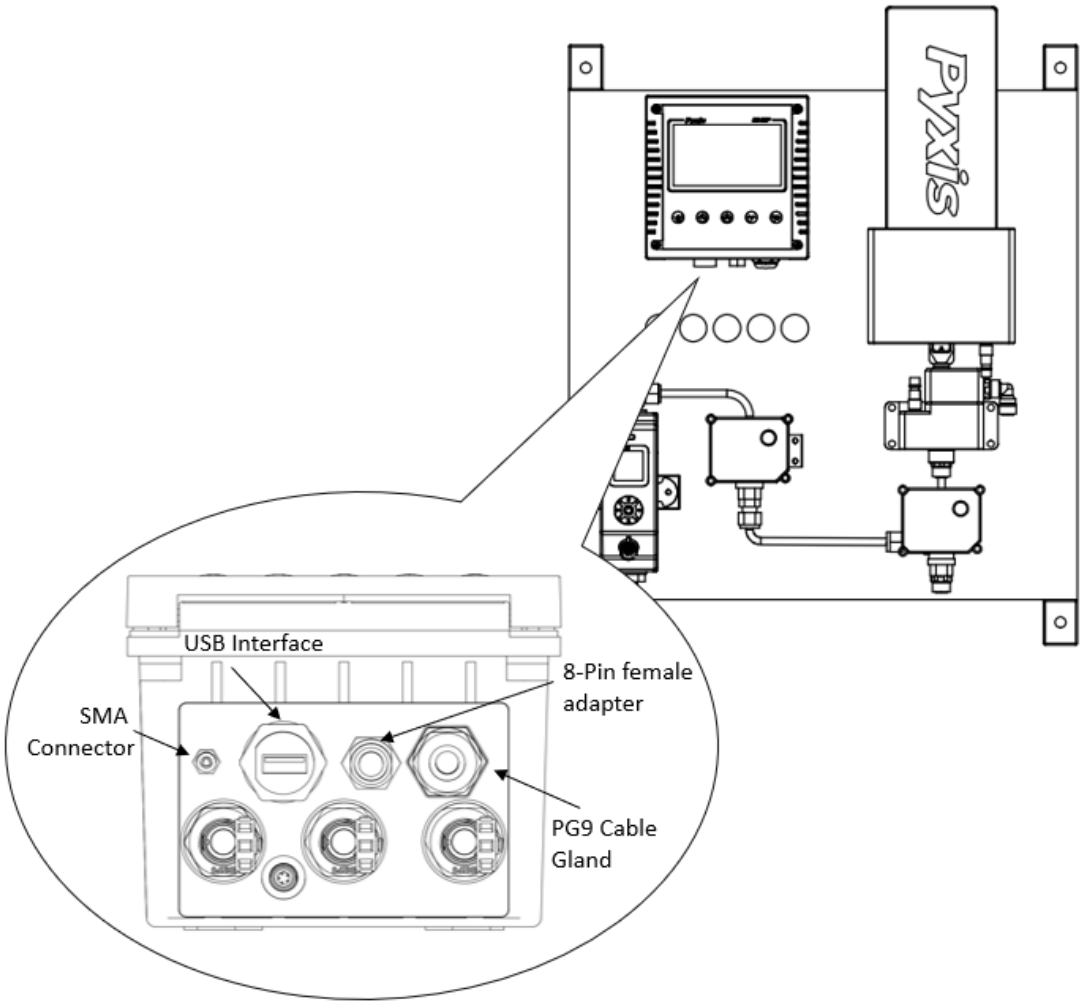


Figure 5

6.2 Signal Pre-Wired Output Cable

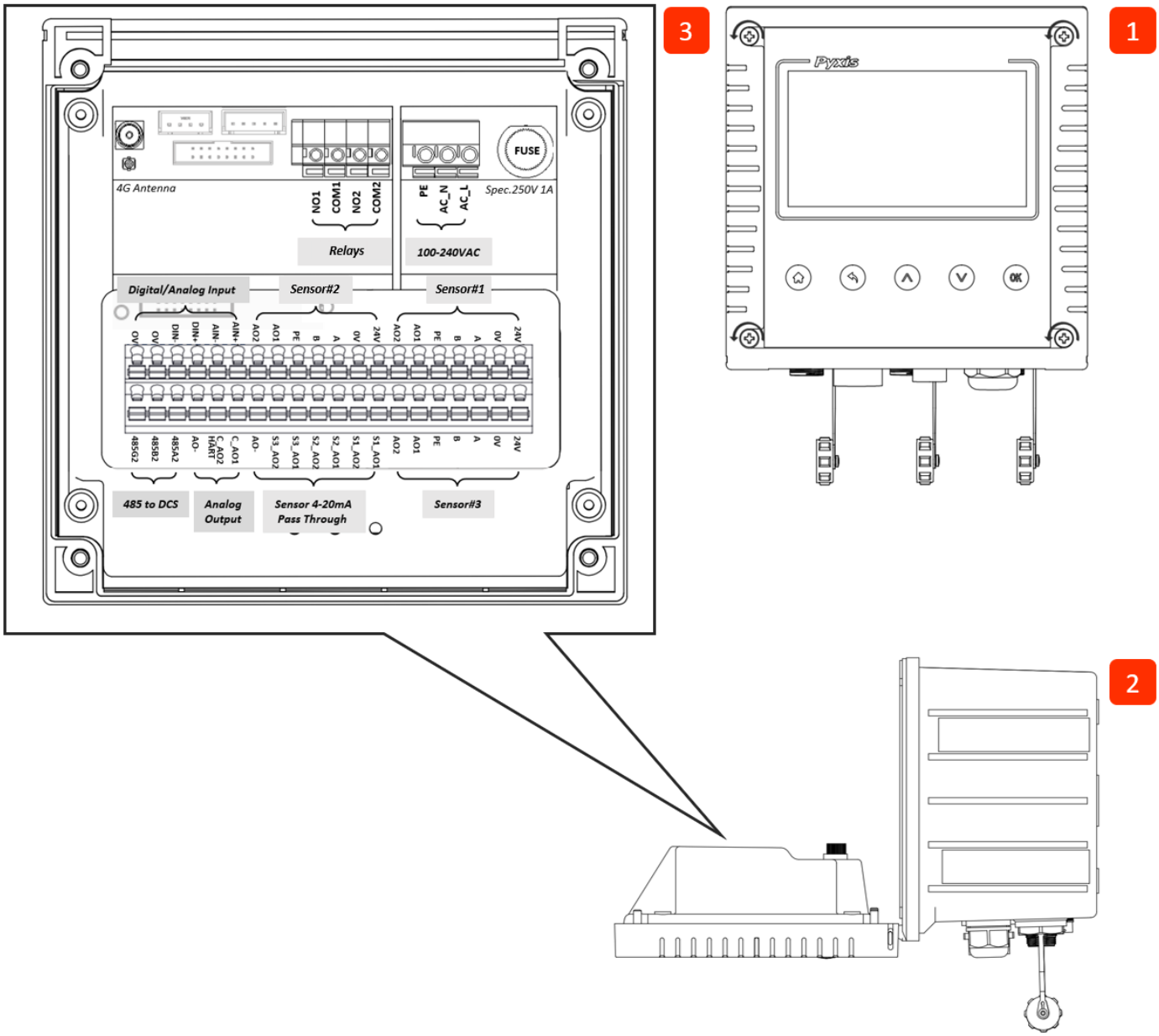


Figure 6

As outlined in previous section, the bottom side of the controller has an 8-pin female adaptor. This is essentially a **pigtail cable**: one end is pre-wired to the internal terminals, and the other end is exposed as an 8-pin female adapter for user wiring.

The 8-pin female adaptor is designed to mate with the loose flying-lead male adapter (MA-1.5CR) supplied with the panel. Through this 8-pin connection, two 4–20 mA signals and one RS-485 output can be passed to external PLC or DCS.

MA-1.5CR

For reference, **Table 2** lists the mapping between controller terminals and the pigtail wires.

Pre-Wired Controller Terminal to Pigtail Wire Assignment

Table 2

Wire Color	Controller Terminal Assignment
Green	Sensor #2 field - PE
Gray	Analog output field – AO-
White	Analog output field – C_AO1
Pink	Analog output field – C_AO2
Blue	485 to DCS field- 485A2
Yellow	485 to DCS field- 485B2

For user wiring, **Table 3** shows the pin/color assignments of the supplied MA-1.5CR flying-lead connector.

MA-1.5CR Flying-Lead Connector Assignment

Table 3

Wire Color	Designation
Red	Not Used
Brown	Not Used
Green [(1)]	PE (Protective Earth)
Gray	4-20mA- Signal Ground Common
White	1# 4-20mA+ for Anionic Polymer
Pink	2# 4-20mA+ for % Reagent Remaining
Blue	RS-485 A
Yellow	RS-485 B

MFA-400 4-20mA Scaling

Table 4

MFA-400 4-20mA Scaling		
Unit of Measure	4mA Value	20mA Value
Anionic Polymer	0 ppm	20 ppm
Reagent Remaining Percentage	0%	100%

6.3 Relay Terminals

IMPORTANT NOTE *No pigtail is provided for the relay terminals. Users need to open the controller's housing and connect to the relay terminals directly.*

Refer to the Table 5 for wiring. The equivalent diagram of the relay terminals is shown in Figure 7.

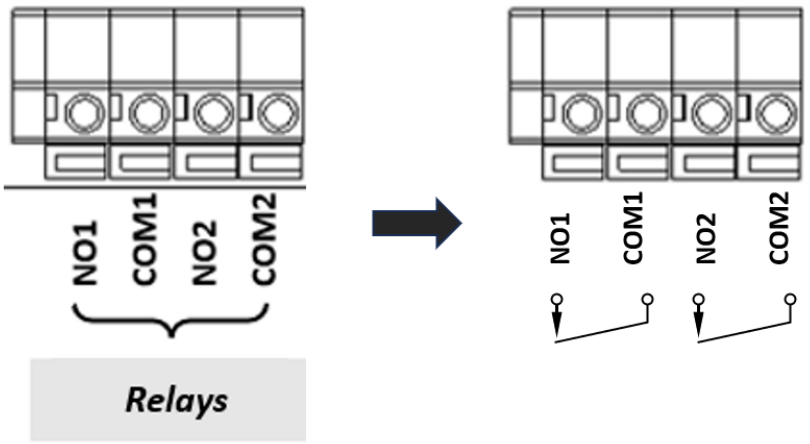


Figure 7

Table 5

Terminal Name	Definitions
NO1	Relay#1 – Normally Open
COM1	Relay#1 – Common
NO2	Relay#2 – Normally Open
COM2	Relay#2 – Common

7 Start-Up Preparation

Before operating the MFA Series analyzer, perform the following preparation.

1. Installing the Analyzer on the wall.

   For installation, use the included expansion screws to mount and secure the panel to the wall. Please leave at least 0.5m of installation space around the equipment for later maintenance.

2. Installing the Stirring Bar.

   VERY IMPORTANT - *Each MFA Series Analyzer is shipped with two magnetic stirring bars attached near the colorimetric chamber (one for use and one spare). Insert the magnetic stirring bar to the colorimetric chamber as shown in the image below.*

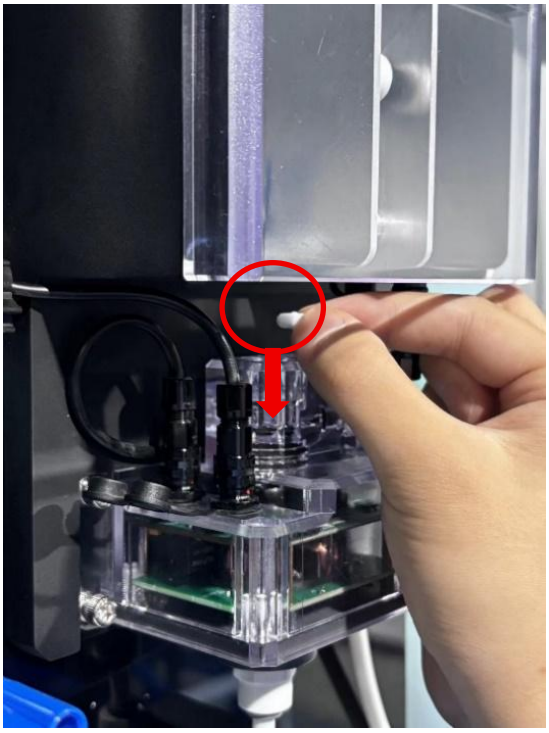


Figure 8

3. Installing the Reagent Cartridge.

   The reagent cartridge and the analyzer are packaged separately for shipment. Install the cartridge by following the steps below：

   A. Pull out the reagent cartridge lock pin to release the cartridge.
   B. Install the reagent cartridge
   C. After the cartridge is fully seated, push the lock pin back into place to secure it.

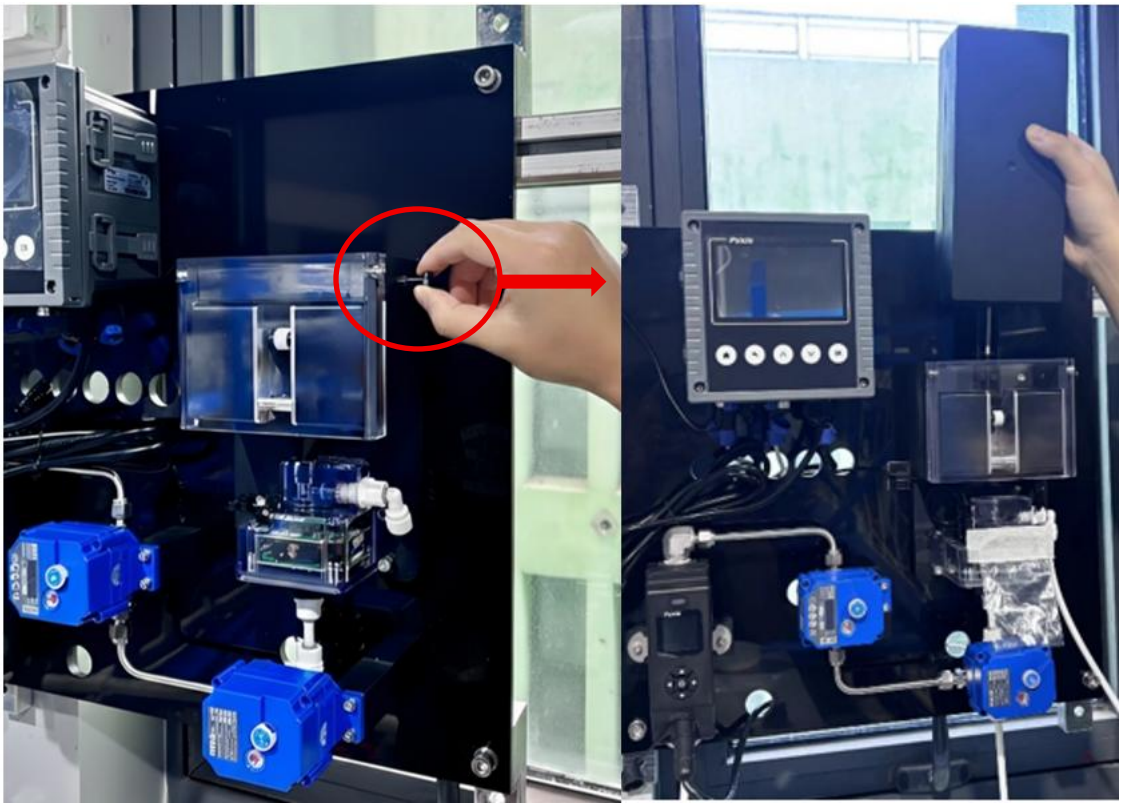


Figure 9

4. **Connect the sample inlet, sample outlet, and drain outlet**.

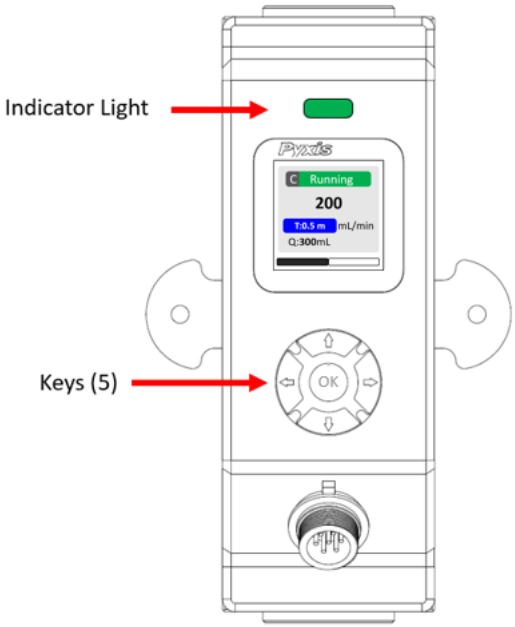
   For convenience, two **5 m lengths of ¼-inch tubing** are provided in the package for connecting the sample inlet, sample outlet, and drain outlet. Ensure that all connections are secure and leak-free. Refer to Analyzer Overview section for details.

5. **Connect the signal wiring to your receiving device.**
   Refer to Signal Pre-Wired Output Cable section for details.

6. **Plug in the three-prong power connector (100-240 VAC 50/60Hz).**
   Once powered on, the system will automatically initialize. You may now begin the **Polymer Measurement** process. Refer to Anionic Polymer Measurement Workflow section for details.

8 FS-100 Flow Sensor Operation

8.1 Keys Function



OK - Enter Key

- Turn on the Setting Menu from the home screen.
- In the Setting Menu: enter the **selected submenu**.
- In option lists: confirm the **selected option**.
- In value adjustment screens: execute the cursor-selected action (e.g., *Yes* to save, *Cancel* to discard).
- **Special case**: In the Device Information screen, press OK to return to the previous screen or press and hold OK to restore factory settings.

◀▶ - Left / Right Key

- In the Setting Menu: turn pages.
- In value adjustment screens: move the cursor to the left or right.
- **Special case**: Turn on/off the Trend Chart display from the home screen.

▲▼ - Up / Down Key

- To increase or decrease the displayed value.
  Long press for coarse adjustment, short press for fine adjustment
- In submenus: select items.
- In option lists: move between available options.
- **Special case**: In Home screen, press ▼ to pause/resume the timer, or press and hold ▼ to reset the timer.

8.2 LED Status Indicator Light

The status LED is used for a quick visualization of the flowmeter status.

LED Behavior	Status
Green	Normal Running
Red (1)	Alarm Information

(1) The flow meter indicator will turn RED under the following conditions:

- Flow rate exceeds the maximum range of 3000 mL/min
- In flow rate control (C) mode, the flow fails to reach the setpoint for over 2 minutes
- Flow rate exceeds user-defined upper or lower alarm limits

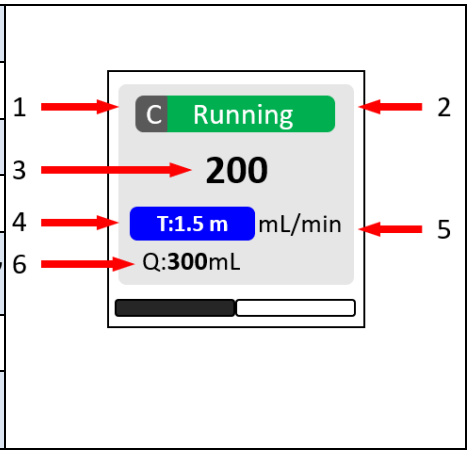
8.3 Home Screen

Upon power-up, the FS-100 flow meter automatically begins monitoring real-time flowrate (3) and calculating sample accumulated flow (6). A built-in timer (4) is also activated simultaneously and is used as the time base for sample flow accumulation.

NOTE *When leaving the Pyxis factory, the FS-100 is preset to operate in Flow Control (C) mode, with the flow setpoint configured at* ***200 mL/min****.*

Functional Areas

NO.	Description
1	Flow Detection Mode (1)
2	Working Status (same color as LED status indicator)
3	Flow Rate Value
4	Timer (2) (unit: auto range, **s** = seconds, **m** = minutes, **h** = hours, **d** = days).
5	Unit of measured flow value
6	Accumulated Flow Value (3) (unit: auto range, ml, L, kL)



(1) **R** = Average Flow Rate Mode / **M** = Instantaneous Flow Rate Mode / **C** = Flow Rate Control Mode
NOTE *For C-Mode please refer to Section 8.5 for programming details.*

(2) This timer serves as the time base for calculating total accumulated flow. The timer can be set by pressing the ▼ key.

- **Pause or Resume the Timer Display:** Press ▼ key momentarily and release.
  When the timer is paused, the accumulation of total flow is also paused. Flow will not be added to the totalizer until the timer is resumed.
- **Reset the Timer:** Press and hold ▼ key for about two seconds.
  Resetting the timer will also clear the accumulated flow and restart both time and flow accumulation from zero.

(3) The timer and the accumulated Flow totalizer are functionally linked. Any operation that pauses or resets the timer will directly affect the accumulated flow calculation.

8.4 Trend Chart

From the home screen, Press ◀ or ▶ to the trend chart screen. Flow values will be displayed as a line graph to show the real-time trend. Press ◀ or ▶ to return to the main screen.

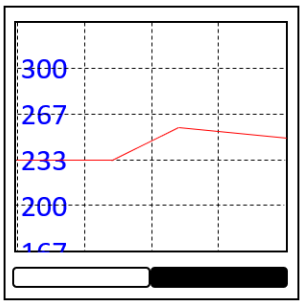


Figure 10

8.5 FS-100 - Setting The C-Mode for Sample Flow Control

In MFA-400 system, the FS-100 default to Flow Control (C) mode, which ensures that the sample enters the colorimetric chamber at a constant flow and pressure. This setting does not require adjustment by the user.

Figure 11 - Operating Mode

When Flow Control Mode (C) is selected, a user defined flow rate setpoint must be entered (see Figure 11 and Figure 12).

NOTE *The MFA Series colorimetric analyzer should be operated within the recommended flow rates of 100-500 mL/min, see MFA-400 Specifications section.*

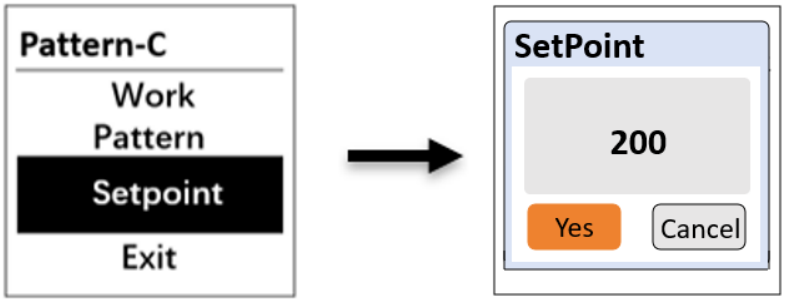


Figure 12 - Flow Control (C) Operating Mode with User Defined Setpoint

The FS-100 flow meter controls the valve position of the regulating ball valve by outputting the 4-20 mA signal. After the user assigns a desired flow set point in **Flow Control (C)** mode, the FS-100 will automatically calculate the error between the actual flow rate and the setpoint flow rate and adjust the appropriate 4-20mA output value through the preprogrammed PID algorithm to regulate the valve. This advanced capability and feature provides turn-key and real-time application use resulting in the sample flow rate infinitely close to the user programmed setpoint value. See the process diagram below.

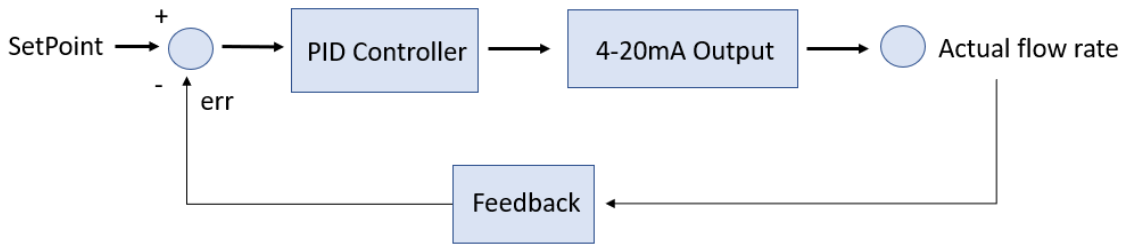


Figure 13

NOTE *If the actual flow rate does not reach the preset flow rate for a duration time of longer than two minutes, the FS-100 main screen and LED indicator will display **RED** alarm status.*

8.6 FS-100 Modbus Communication Settings

To adjust the Modbus communication parameter, select *[Com]* from the setting menu.
For proper operation, the following communication settings are pre-programmed into the FS-100 for direct communication with the controller display interface.

IMPORTANT NOTE *These values should NOT BE ALTERED; otherwise flow control failure will occur.*

- Modbus Address *= 95*
- Baud Rate *= 9600*
- Parity = *Even*

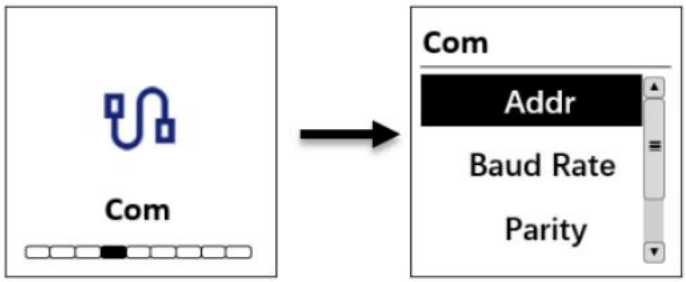


Figure 14

8.7 FS-100 Device Information & Diagnosis

To view the device information, select *[Info]* from the setting menu. The first screen, **DEVICE INFORMATION**, contains the device name, serial number, software version, and hardware version. The second screen is the **DIAGNOSIS** screen, which displays raw parameters related to the measurement. The third screen displays the current Modbus communication parameters. Provide an image of both the **DEVICE INFORMATION** screen and the **DIAGNOSIS** screen when you contact Pyxis (service@pyxis-lab.com) for troubleshooting your device or call +1 (866) 203-8397 ext 2.

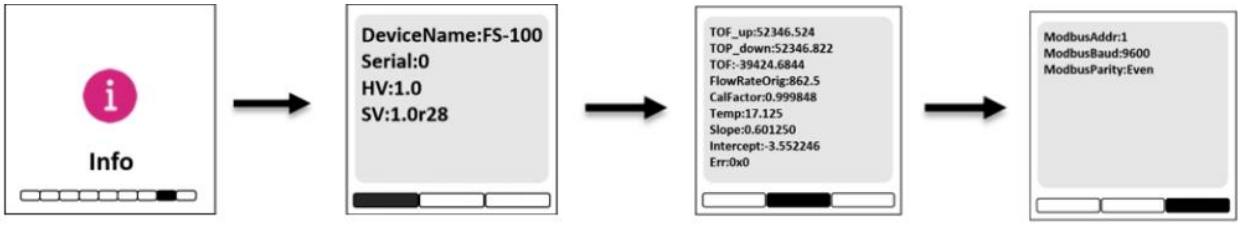


Figure 15 Device Information, Diagnosis and Modbus Parameters

8.8 FS-100 Factory Reset

If the user wants to restore all device settings to factory default parameters, Navigate to *[Info]* screen, press and hold ⏻ key for about two seconds, the FS-100 will reboot itself (*Figure 16- Factory Reset*).

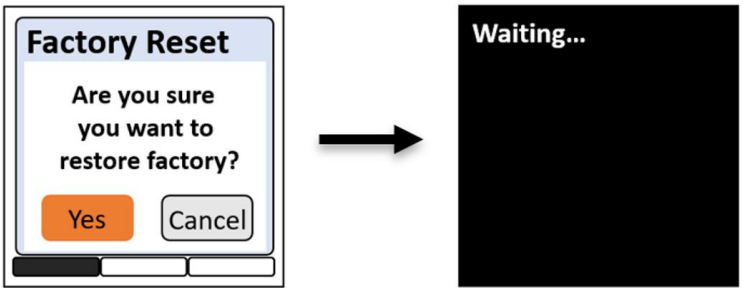


Figure 16- Factory Reset

9 UC-60 Controller Operation

9.1 UC-60 Controller Operation logic

The UC-60 controller supports two operation methods:

- **Touchscreen operation** (tap, swipe, on-screen virtual buttons)
- **Key operation** using the front-panel keys

NOTE *For convenience, the procedures in this section are all described using* ***touchscreen operation****.*

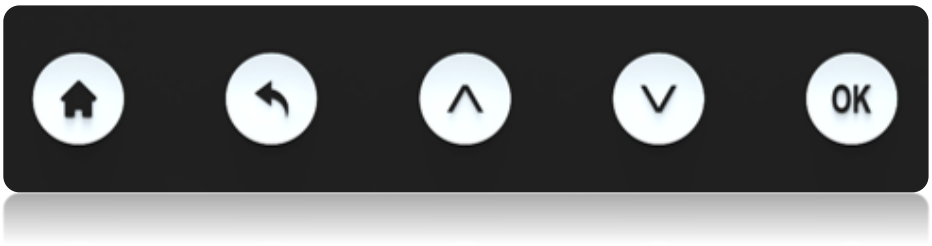


Figure 17

Keys Function

⌂ - Home key

- Press to return to the Home screen from any screen.

↰ -Back key

- Press to go back to the previous screen.

Λ V - Up/Down key

- Use to move the highlight/focus between selectable items on the current screen (e.g., menus, lists, fields, or the on-screen keyboard).

OK -Enter key

- Press to confirm and execute the highlighted selection;

- If the highlight/focus is on an **editable value field** (e.g., a calibration or numeric parameter), pressing **OK** will open the on-screen keyboard for value entry;

- If the highlight/focus is on a drop-down list (e.g., the **Language** setting), pressing **OK** will open the list;

- If the highlight/focus is on a **toggle switch** (an on/off setting, such as manual relay configuration), pressing **OK** will toggle the setting between **On** and **Off**.

9.2 Home Screen

Figure 18

Functional Areas

Table 6

NO.	Description
1.	**Status Bar** – detailed description can be found in next page
2.	**Reagent Information Area** – Displays the type of reagent in use, its remaining percentage, expiration date and depletion date (1).
3.	**Measurement Display Area** – Shows the real-time Polymer reading along with its unit (2), current measurement interval and process step status (3).
4.	**Navigation Button** – Allows access to the setup menu
5.	**Real-Time Graph** – Visualizes recent measurement data trends
6.	**Relay Status** – Indicates current ON/OFF status of Relay#1 and Relay#2.
7.	**4-20mA Output Status Area** – Displays theoretical current output values of AO#1 and AO#2, along with status indicators for each current loop (4)

(1) The **Expiration date** is based on the reagent's shelf life, while the **Depletion date** is dynamically calculated based on the configured measurement interval.

(2) The default unit is **ppm** and it can be switched to **mg/L**, see Changing The Display Unit section.

(3) See Anionic Polymer Measurement Workflow section for details.

(4) = 4-20mA properly connected, = 4-20mA open circuit.

9.3 Status Bar Icon

Status bar icons may appear or disappear dynamically based on system status and configuration.

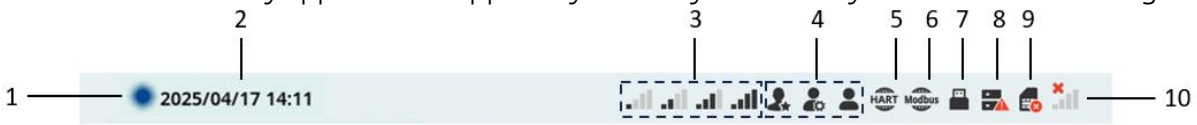


Figure 19

Table 7

NO.	Description
1.	**Run Status** – This icon flashing indicates that the device is operating normally
2.	**Time & Date** – Shows the current system time in the format: yyyy/mm/dd hh:mm
3.	**4G Signal Strength** – Indicates the strength of the cellular network signal.
4.	**User Role** – Displays the current active user role (User or Admin).
5.	***HART Communication** – Appears when a HART session is actively established.
6.	**Modbus Communication** — Appears when the UC-60 has successfully established MODBUS-RTU communication with the PLC/DCS via the RS-485 DCS port.
7.	**USB Drive Connected** – A USB flash drive is detected and ready for use.
8.	**Cloud Connection Error** – Displayed when the device fails to connect to the Pyxis cloud server.
9.	**SIM Card Missing** – Displayed only when no valid SIM card is detected. The icon disappears once a SIM card is properly inserted and recognized.
10.	**No Signal Icon** – Displayed when the device fails to register with the cellular network, despite a SIM card being present. This may occur in areas with no 4G coverage. Once a connection is established, the icon will be replaced by the 4G signal strength icon.

*** HART is currently under development.**

9.4 Anionic Polymer Measurement Workflow

Users can swipe right on the main screen to view the anionic polymer measurement workflow.

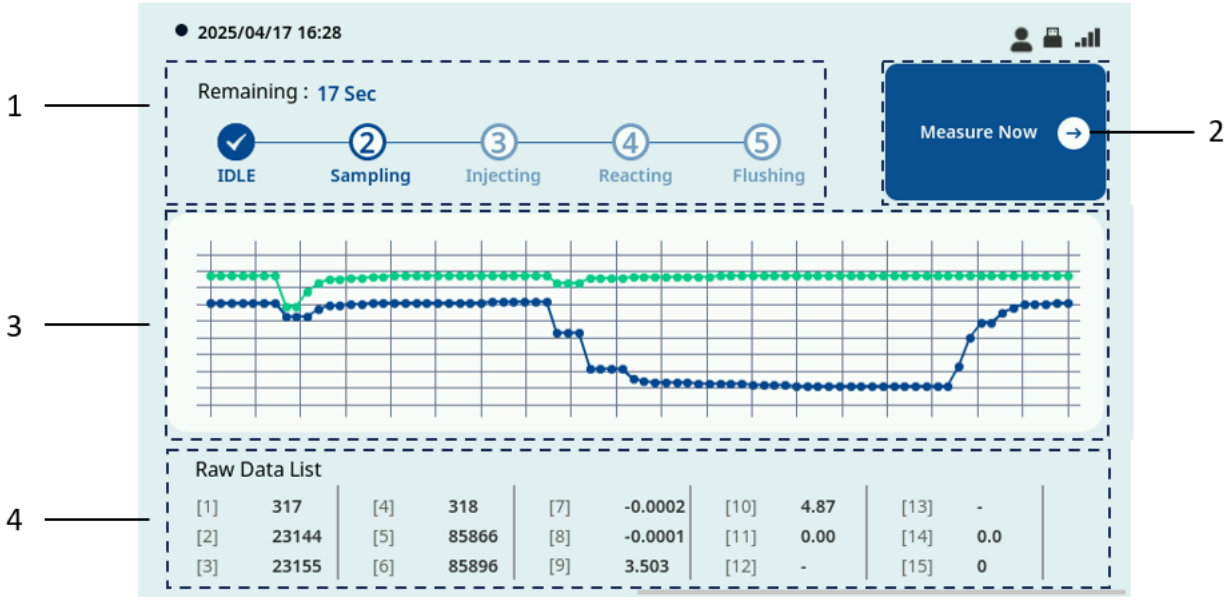


Figure 20

Table 8

NO.	Description
1.	Measurement Process Status –Indicates the current step in the measurement process (idle – sampling – injecting – reacting – flushing), along with the corresponding remaining time.
2.	Manual Measurement Button –Tap to bypass the idle phase and start an immediate measurement.
3.	Signal Trend Chart during measurement – This trend graph helps technical personnel quickly identify and diagnose problems.
4.	Raw Data List – Tabulated view of raw data points collected during the measurement.

9.4.1 Normal Mode Measurement Workflow

1.Idle

The system remains in standby mode, waiting for a user-defined measurement interval or manual trigger to start the measurement. No active processes are running during this phase, and the sample water bypasses the internal colorimetric chamber and flows directly to the outlet.

2.Sampling

The controller activates the motorized three-way valve to redirect the sample water into the colorimetric chamber. This allows the system to collect a background signal of the sample water prior to reagent injection. After this step, the valve returns to the bypass position, isolating the sample as a static volume in the chamber.

3.Reagent Injection

A precise volume of reagent formulated with **cationic polymer** is injected into the colorimetric chamber, initiating an interaction with **anionic polymer** in the sample. During this step, the internal stirrer activates to ensure thorough mixing of the reagent and the sample. Once mixing is complete, the stirrer stops and the reaction phase begins.

4.Reacting

The system allows a predefined reaction time for the colorimetric reaction to occur and continuously monitors the optical response during this phase. As reaction proceed, the mixture becomes increasingly turbid, resulting in reduced transmittance and increased absorbance. Within the measurement range, this absorbance is linearly proportional to the anionic polymer concentration.

5.Flushing

After the measurement is complete, the controller switches the three-way valve to the chamber–to–waste position. The sample inside the colorimetric chamber is discharged through the waste line, and an automatic flush cycle is performed to clean the chamber and flow path. This ensures no residual reagent affects future measurements.

When flushing is finished, the controller switches the three-way valve back to the bypass position. Sample water again flows directly to the outlet, leaving the chamber empty. The system then returns to idle mode, awaiting the next measurement cycle.

9.4.2 Water Saving Mode Measurement Workflow

This workflow applies only when **Water-Saving mode** is enabled, see section 9.7.2 for details.

NOTE: *In Water-Saving mode, the bypass (water outlet) path is not utilized. The motorized three-way valve is operated in two positions:* ***CLOSED*** *(no sample water is introduced to the colorimetric chamber) and* ***OPENED*** *(sample water is introduced to the colorimetric chamber and discharged via the waste outlet).*

1.Idle

The system remains in standby mode, waiting for a user-defined measurement interval or manual trigger to start the measurement. The motorized three-way valve is set to the **closed** position, so no sample water is introduced during the Idle wait phase. Before the sampling phase starts, the valve opens to pre-establish inlet flow, and a pre-flush is performed to purge stagnant water from the tubing.

2.Sampling

With inlet flow already established, the system collects a background signal of the sample water prior to reagent injection. After sampling is complete, the valve returns to the **closed** position again to isolate the sample as a static volume in the colorimetric chamber.

3.Reagent Injection

A precise volume of reagent formulated with **cationic polymer** is injected into the colorimetric chamber, initiating an interaction with **anionic polymer** in the sample. During this step, the internal stirrer activates to ensure thorough mixing of the reagent and the sample. Once mixing is complete, the stirrer stops and the reaction phase begins.

4.Reacting

The system allows a predefined reaction time for the colorimetric reaction to occur and continuously monitors the optical response during this phase. As reaction proceed, the mixture becomes increasingly turbid, resulting in reduced transmittance and increased absorbance. Within the measurement range, this absorbance is linearly proportional to the anionic polymer concentration.

5.Flushing

After the measurement is complete, the three-way valve is set to the **Open (chamber-to-waste)** position. The sample inside the colorimetric chamber is discharged through the waste line, and an automatic flush cycle is performed to clean the chamber and flow path. This ensures no residual reagent affects future measurements.

When flushing is finished, the valve returns to the **Closed** position. No sample water is introduced , leaving the chamber empty. The system then returns to idle mode, awaiting the next measurement cycle.

9.5 User Roles and Corresponding Access Permissions

This device supports 2 user roles: **User** and **Admin**.

- **"User"** role is intended for end users. This role provides access to basic device configuration and calibration functions.

Users should log in as **"User"** role to access the setup menu.
Default Password: 8888888 *(can be changed, see* Changing The Login Password section *for details)*.

- The **"Admin"** role is reserved for technical service personnel only. Contact Pyxis Lab for details.

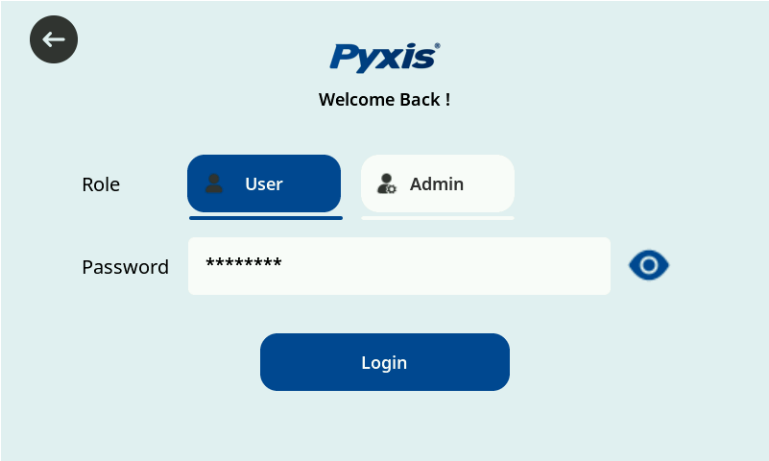


Figure 21

9.6 Setting Menu

Access to the **Setting Menu** requires valid login. The **current user role is indicated on the status bar of the Home screen**, and this role determines which settings are available. Once logged in, the Setting Menu (Figure 22) provides a tile-based interface for convenient navigation. The following sections describe each menu item in detail.

NOTE *Depending on the logged-in role, some tiles may be hidden. To switch roles, log out and sign in again.*

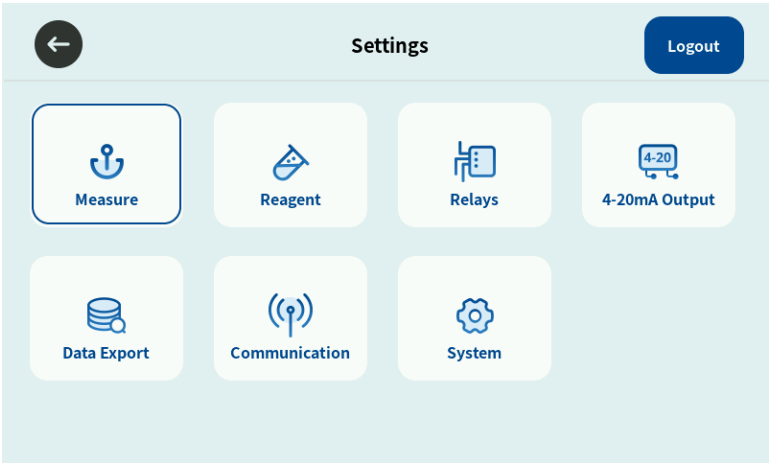


Figure 22

9.7 Measurement Settings

Select **Measure** icon in the settings menu. The Polymer measurement process can be customized through a range of user-configurable parameters.

Available Parameters:

1. **Measurement Interval**: Defines how often the polymer measurement is performed (user-selectable from 1 to 360 minutes).
2. **Sample Injection Time:** Specifies how long the sample water is introduced into the colorimetric chamber. This parameter is predefined by the system and can only be modified under the **"Admin"** role.
3. **Dosing Cycles:** Sets the number of dosing cycles to control the reagent addition. This parameter is predefined by the system and can only be modified under the **"Admin"** role.
4. **Reaction Time:** The time allowed for the chemical reaction to complete before measurement. This parameter is predefined by the system and can only be modified under the **"Admin"** role.
5. **Flushing Time:** Duration used to flush the system after a measurement cycle. This parameter is predefined by the system and can only be modified under the **"Admin"** role.

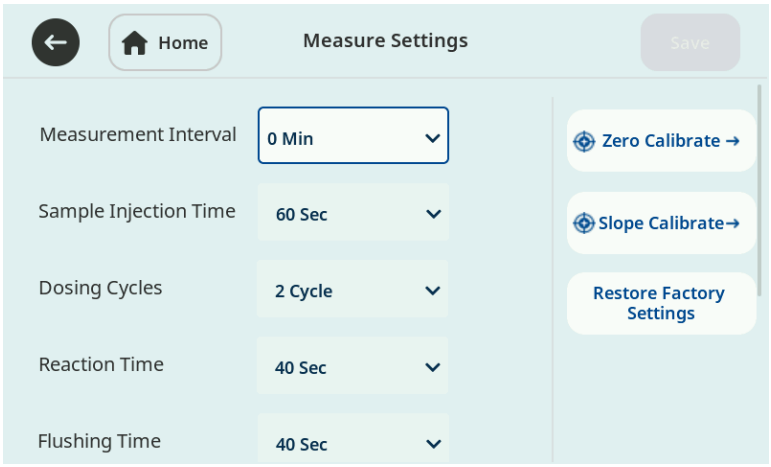


Figure 23

9.7.1 *Changing The Display Unit*

To change the display unit, go to the Measure Settings screen. Then, scroll down to reveal the **Unit** section. Tap the drop-down list and select ppm or mg/L.

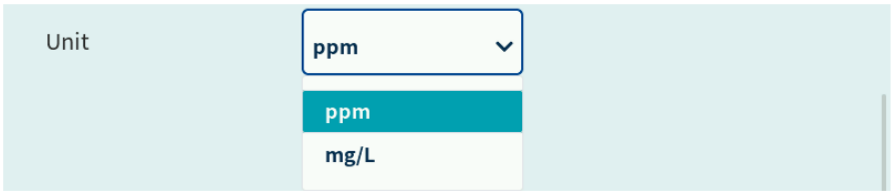


Figure 24

9.7.2 Water Saving Mode and Flow Established Time

To active the Water-Saving mode, go to the **Measure Settings** screen. Then scroll down to reveal the **Water Save Function** section.

Water Saving Function: Select **Yes** to enable Water Saving mode (no flow is allowed during the Idle wait period) or select **No** to use Normal mode. When enabled, use the included ¼-inch NPT plug to plug the water outlet, as shown in Figure 25.

Flow Detect Time (Water Saving mode only): Select the time and the analyzer will wait to establish inlet flow before each sampling cycle.

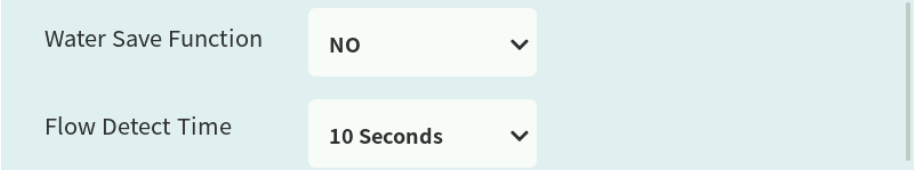


Figure 25

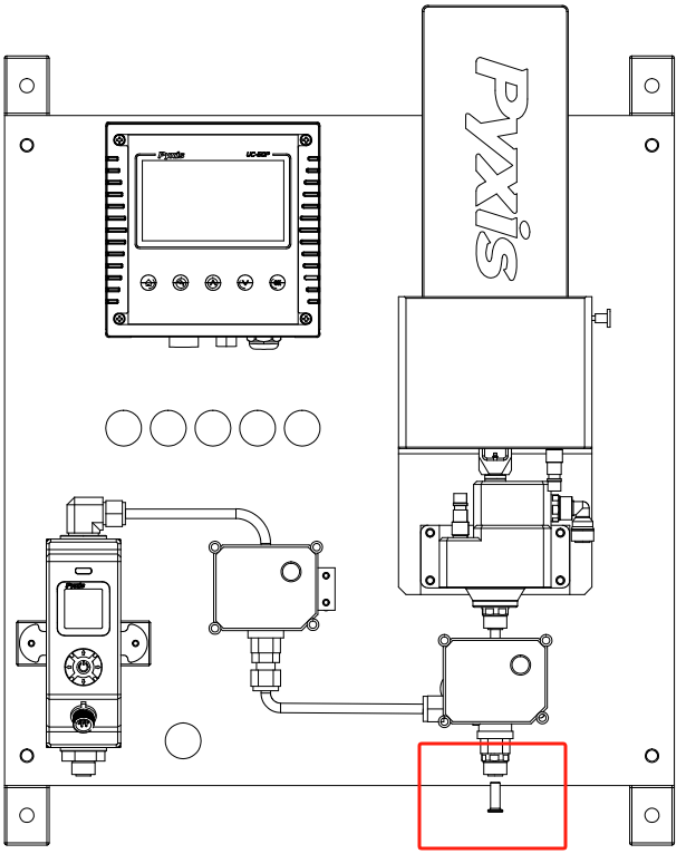


Figure 26

9.8 Calibration

To calibrate the analyzer, select **Measure** icon in the settings menu. The device can be calibrated with a one-point calibration or two-point calibration procedure.

NOTE *Each MFA-400 is factory calibrated using sodium polyacrylate before shipping. Because different polymers may produce different turbidimetric responses, Pyxis recommends performing a user calibration using the same polymer applied on site for best accuracy.*

Before calibration, verify that the reagent cartridge is not expired and sufficient reagent remains.

9.8.1 *One-Point Calibration*

The one-point calibration only calibrates the slope of the calibration equation. For best accuracy, prepare the calibration solution using the same polymer product applied on site, and ensure that the concentration of the solution is between 0.1 to 20.0 ppm.

1. **Prepare the calibration solutions:**
   Connect an external pump to deliver the prepared calibration solution into the MFA-400 sample inlet.

2. **Switch the sample source**:
   Turn off the sample inlet valve, disconnect the current sample inlet tubing from the flow cell, and connect it to the calibration solution.

3. **Introduce the calibration solution**:
   Activate external pump to fill the tubing with the calibration solution.

4. **Start measurement**:
   From the home screen, tap **Measure Now** button to start an immediate measurement, as shown in Figure 20. Waiting for a complete measurement cycle to finish.

5. **Enter the Polymer concentration and wait for the calibration result**:
   Navigate to **Setup Menu> Measure Settings**. Tap **Slope Calibrate** button in **Measures Settings** screen and enter the Polymer concentration, as shown in Figure 27. One-point calibration complete.

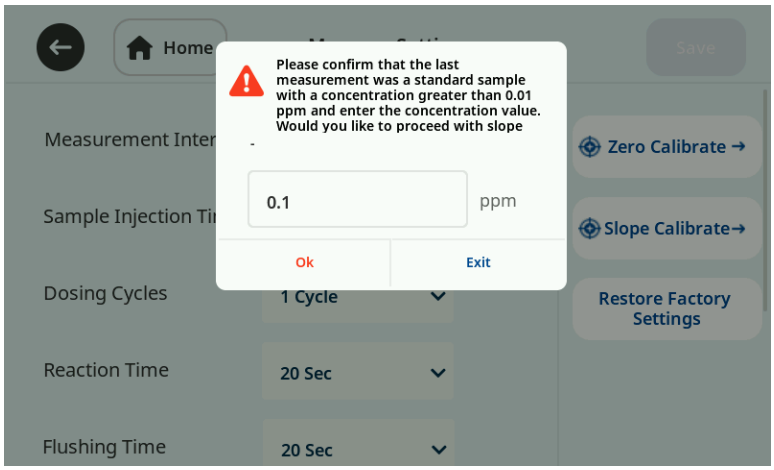


Figure 27

9.8.2 *Two-Point Calibration*

1. **Prepare the calibration solutions:**
   Zero calibration solution: Use deionized water.
   Slope calibration solution: Prepare the calibration solution using the same polymer product applied on site, and ensure that the concentration of the solution is between 0.1 to 20.0 ppm.
2. **Switch the sample source to the zero-calibration solution:**
   Turn off the sample inlet valve, disconnect the current sample inlet tubing from the flow cell, connect an external pump to deliver the deionized water into the MFA-400 sample inlet.
3. **Introduce the zero-calibration solution**:
   Turn on the sample inlet valve, activate the external pump to fill the tubing with the deionized water.
4. **Start measurement:** From the home screen, tap **Measure Now** button to start an immediate measurement, as shown in Figure 20. Waiting for a complete measurement cycle to finish.
5. **Perform zero calibration and wait for the calibration result**:
   Navigate to **Setup Menu> Measure Settings**. Press **Zero Calibrate** button in **Measures Settings** screen, as shown in Figure 28.

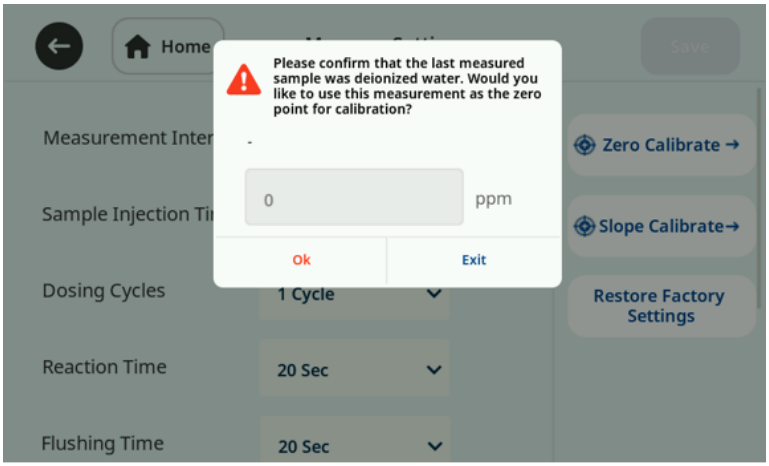


Figure 28

6. **Switch the sample source to the slope calibration solution:**
   After zero-calibration is complete, turn off the sample inlet valve, disconnect the current sample inlet tubing and switch it to the slope calibration solution. Connect an external pump to deliver the calibration solution into the MFA-400 sample inlet.
7. **Introduce the slope calibration solution**:
   Activate the external pump to fill the tubing and flow cell with the calibration solution.
8. **Start measurement again:** From the home screen, tap **Measure Now** button to start an immediate measurement, as shown in Figure 20. Waiting for a complete measurement cycle to finish.

9. Enter the Polymer concentration and wait for the calibration result:
   Navigate to **Setup Menu> Measure Settings**. Press **Slope Calibrate** button in **Measures Settings** screen and enter the polymer concentration, as shown in Figure 28. Two-point calibration complete.

9.8.3 Restore Factory Calibration

This function allows the device to restore calibration parameters to factory defaults if for some reason user calibration was conducted incorrectly.

1. Navigate to the measure settings screen.

2. Tap **Restore Factory Settings** button.

3. Tap **Ok** to confirm. The device will now apply factory calibration values when performing measurements.

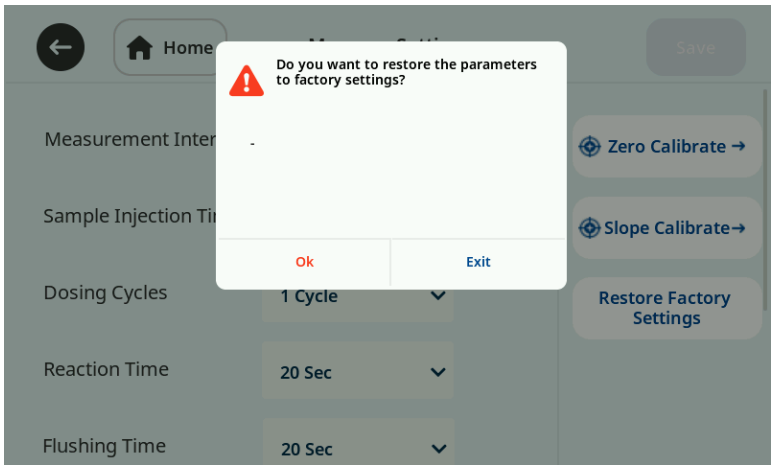


Figure 29

9.9 Replacing The Reagent Cartridge

Select **Reagent** icon in the settings menu.

To ensure accurate and consistent measurement results, the reagent cartridge must be replaced when it is depleted or expired. The device may display a warning message when the reagent level is low. Details about replacement reagent cartridges are available in the Optional Accessories section.

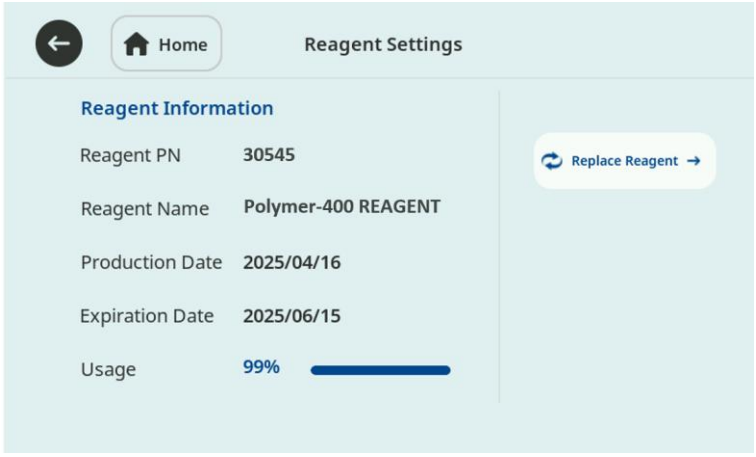


Figure 30

Tap the Replace Reagent button and follow the on-screen instructions to replace the Reagent cartridge.

1. A prompt will appear: **"Replacing the reagent will interrupt the ongoing test. Do you want to continue?"** Select **"Yes"** to proceed or **"No, give up"** to cancel.

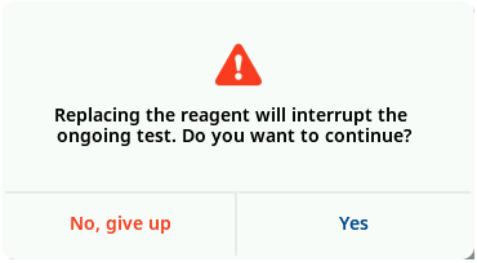
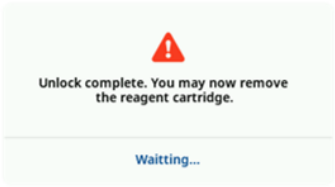


Figure 31

2. When the message **"Unlock complete. You may now remove the reagent cartridge"** appears on the screen, first pull out the **mechanical lock pin** to release the cartridge (see Figure 9). Then, gently lift and remove the reagent cartridge as shown below.



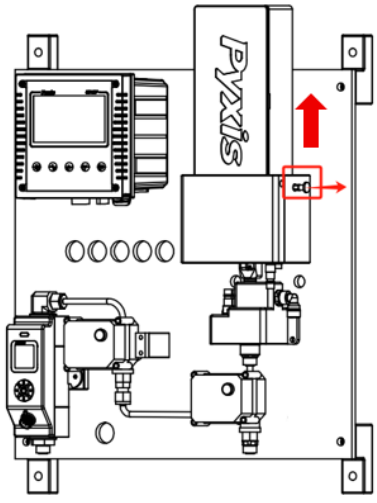


Figure 32

3. When the message **"The reagent cartridge has been removed. Please insert a new one"** appears on the screen, insert the new cartridge as shown below. After the cartridge is fully seated, push the lock pin back into place to secure it.

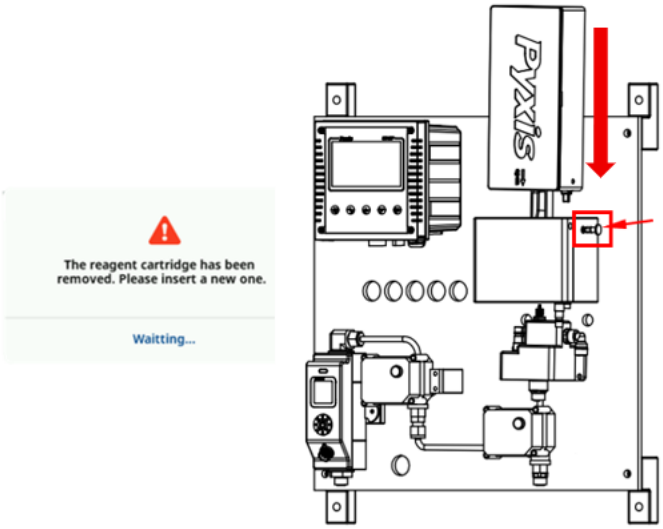


Figure 33

4. Once the new reagent cartridge is properly inserted, the system will automatically detect it and display a message indicating that the replacement is complete.

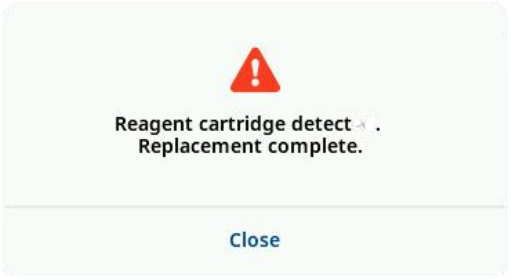


Figure 34

9.10 Relay Configuration

To configure the relays, select **Relay** icon in the settings menu.

The device offers flexible relay configuration to suit various application scenarios. The system displays all available configuration parameters in the relay interface, regardless of their current availability. Depending on the selected **Control Mode**, certain settings become **active and highlighted**, indicating they can be modified. Parameters that are **not applicable under the current mode** are shown in **grayed-out text** and cannot be adjusted. The following control mode can be configured:

- **Disable Manual Control**

When enabled, this option completely disables the relay output.

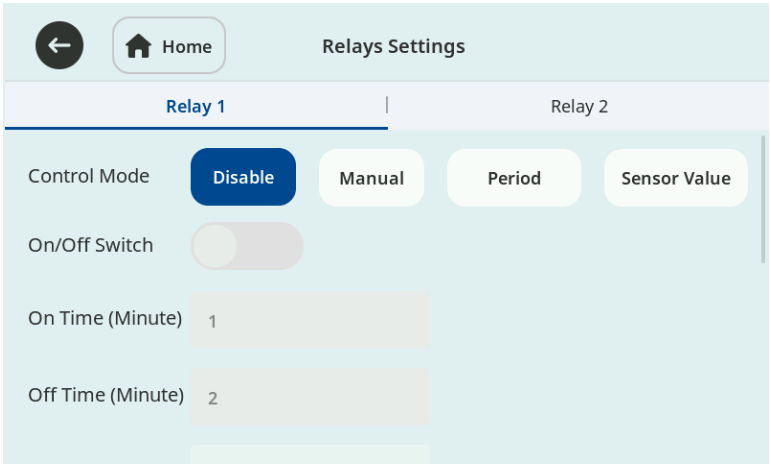


Figure 35

- **Manual Control**

Allows users to manually turn the relay on or off via the **On/Off Switch**.
This mode is useful for testing or temporary control without relying on automatic logic.

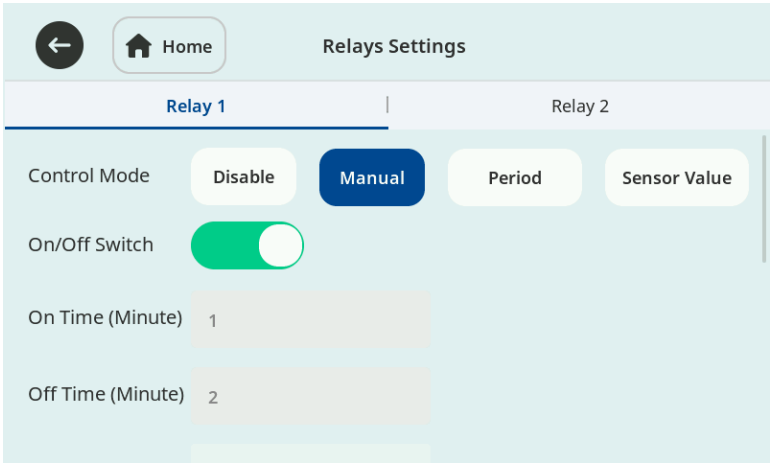


Figure 36

- Timed Operation (Period Mode)

This mode enables the relay to turn ON and OFF based on a user-defined schedule. Users can configure active (**On Time**) and inactive (**Off Time**) durations (**in minutes**) to create periodic switching behavior (e.g., ON for 1 minutes, OFF for 2 minutes). The timing diagram is shown in Figure 38.

Remember to tap the Save button in the upper-right corner of the screen to save and apply your changes.

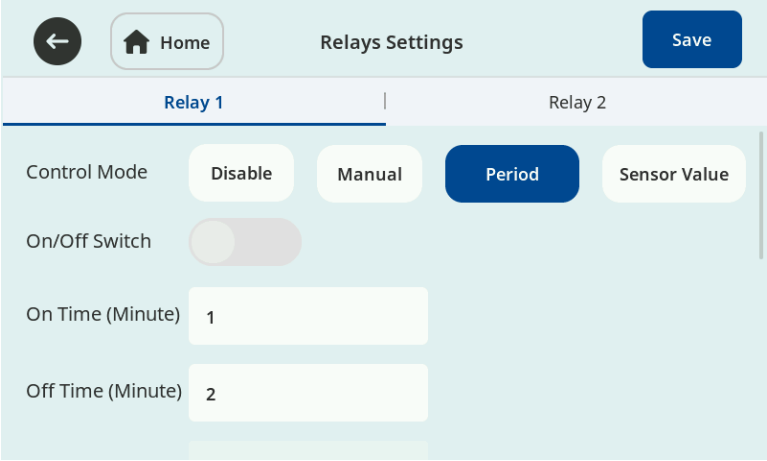


Figure 37

Timing Diagram

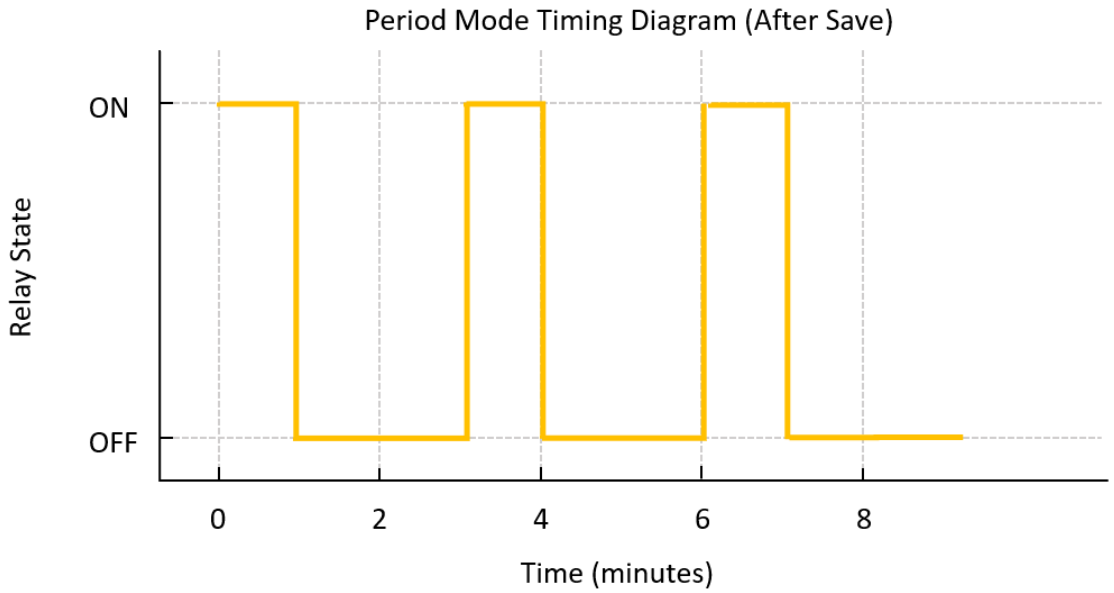


Figure 38

- Sensor-Value Activation

The relay can be automatically controlled based on real-time sensor readings. Users can select the target parameter such as Polymer (ppm), or reagent remaining percentage (%) as the **control source**.

Relay behavior is determined by the **Limit Function**. In addition, users must define both an **Upper Limit** and a **Lower Limit** to establish the operating thresholds. Depending on the selection, the relay operates in one of two modes: **Low Alarm Mode** or **High Alarm Mode**.

When the configuration is complete, remember to tap the Save button in the upper-right corner of the screen to save and apply your changes.

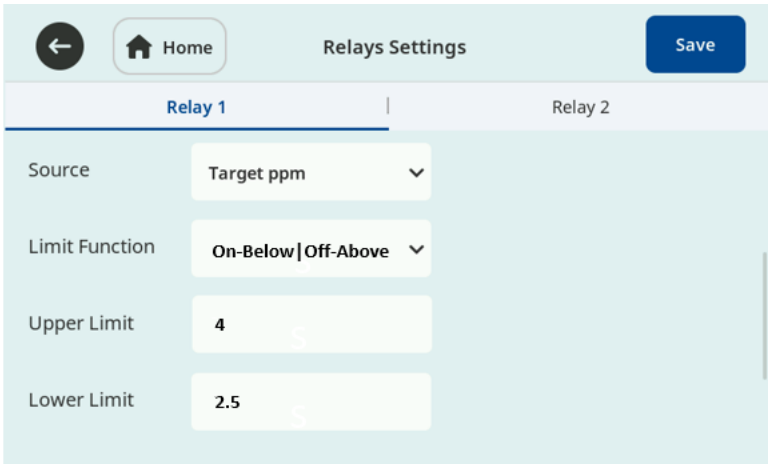


Figure 39

A. Low Alarm Mode (After Save)

Select *Limit Function = On-Below | Off-Above* in the Relay Settings menu.
In this mode, the relay turns **ON** when the source value drops **below the lower limit** and turns **OFF** once it rises **above the Upper limit**.

This mode is suitable for applications where a parameter falling too low must be flagged.

Timing Diagram

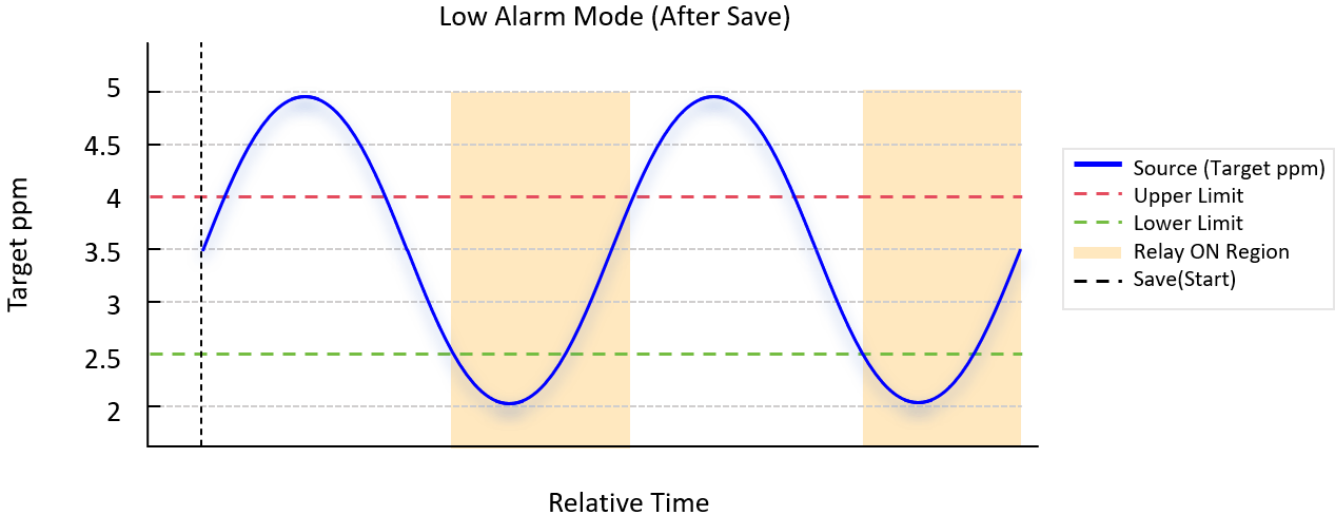


Figure 40

B. High Alarm Mode (After Save)

Select *Limit Function = On-Above | Off-Below* in the Relay Settings menu.
In this mode, the relay turns **ON** when the source value rises **above the upper limit** and turns **OFF** once it falls **below the lower limit**.
This mode is suitable for applications where a parameter rising too high must be flagged.

Timing Diagram

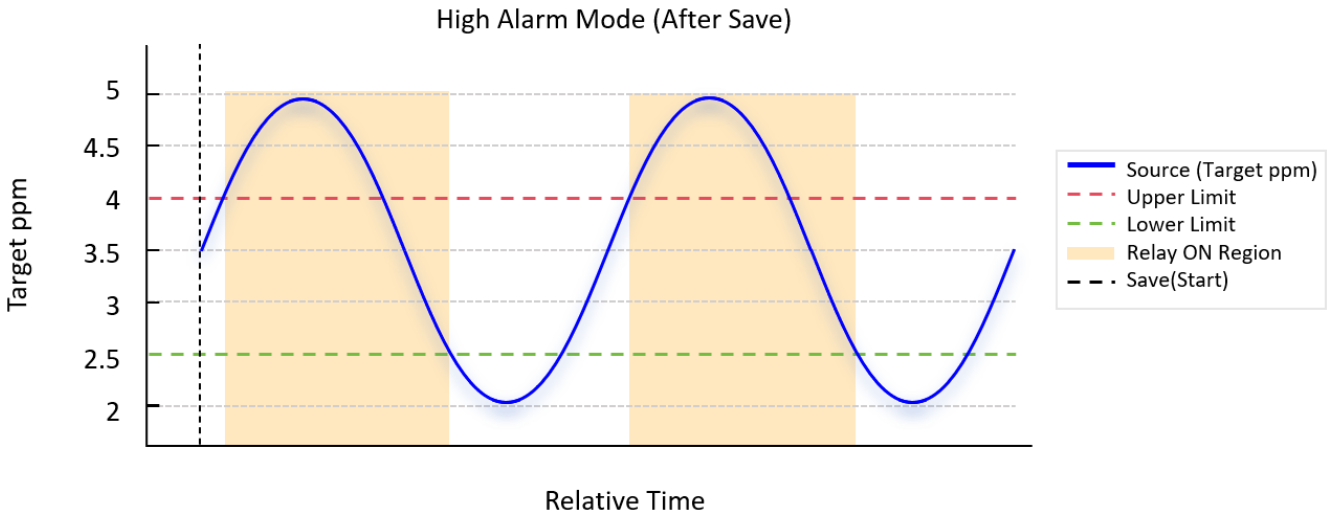


Figure 41

9.11 4-20mA settings

To configure the 4-20mA analog signal, select **4-20mA Output** icon in the settings menu.

9.11.1 *Linear output mode*

In this mode, the output current is scaled linearly to the selected measured value. The minimum range reading corresponds to 4mA, the maximum range reading corresponds to 20mA, and intermediate values are proportionally mapped.

Users can configure the mapping parameters via the dropdown menu next to the **Source** setting, as shown in Figure 42. Additionally, the corresponding process values for **4 mA** and **20 mA** can be manually adjusted, enabling flexible scaling to match custom concentration ranges or application requirements.

When the configuration is complete, remember to tap the Save button in the upper-right corner of the screen to save and apply your changes.

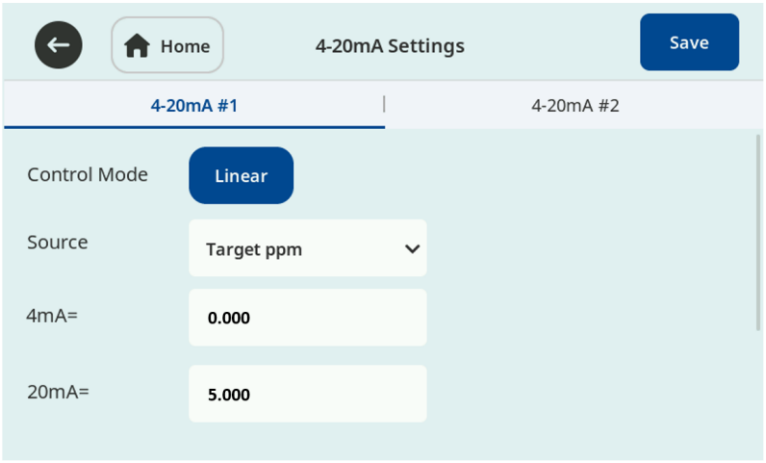


Figure 42

9.12 Data-Log

Select **Data Export** icon in the settings menu.

9.12.1 Data Export to USB

The device allows users to export historical data directly to a USB flash drive for offline analysis.

1. Plug an empty and **FAT32/Ex Fat** formatted USB flash drive into the controller's USB port.
2. Navigate to the Export Menu: Setup Menu > Data Export.
3. Tap the **Export All** button. The system will export all available data to the connected USB drive. The exported file will be saved in the root directory of the USB drive with the filename format: **MFA_Serial-number_DateTime.csv**
4. Wait until the export progress bar reaches 100% before removing the USB drive to avoid data loss or corruption.

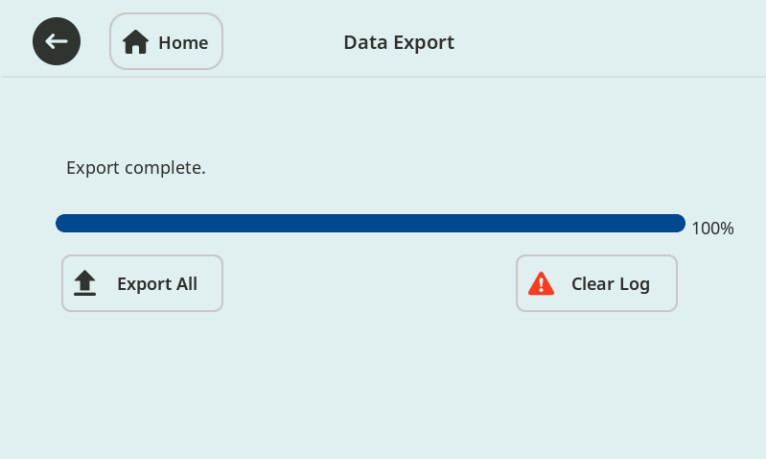


Figure 43

9.12.2 *Clear Data-log*

Tap the **Clear Log** button to delete all recorded data from the system. This action is irreversible and will permanently remove all stored historical data. Make sure to export any important data before proceeding.

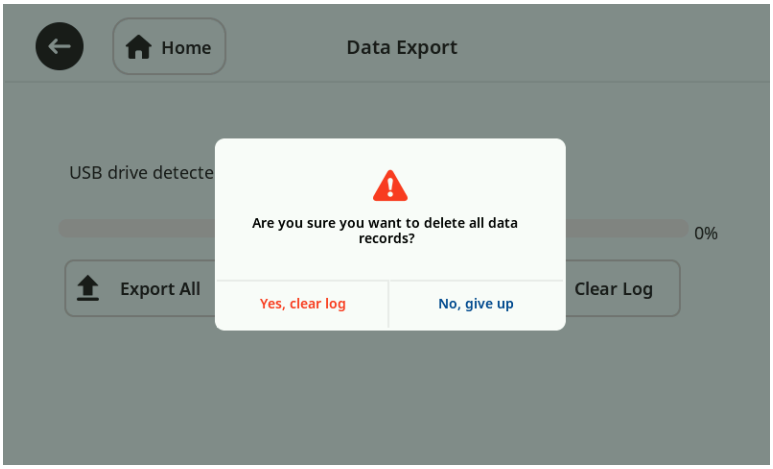


Figure 44

9.13 Modbus Communication Settings

Select **Communication** icon in the settings menu.
This screen allows the user to adjust Modbus communication parameters used for connecting the MFA-400 to an external **DCS** or **PLC** via RS-485, as shown in Figure 45.
The following communication settings are available:

- **Modbus Address** *(Range: 1~247, default: 99)*
- **Baud Rate** *(Options: 9600 / 19200 / 38400 / 57600 / 115200, default: 9600)*
- **Data bit** *(Fixed: 8bit)*
- **Stop bit** *(Fixed: 1bit)*
- **Parity** *(Options: None / Odd / Even, default: Even)*

When the configuration is complete, remember to tap the Save button in the upper-right corner of the screen to save and apply your changes.

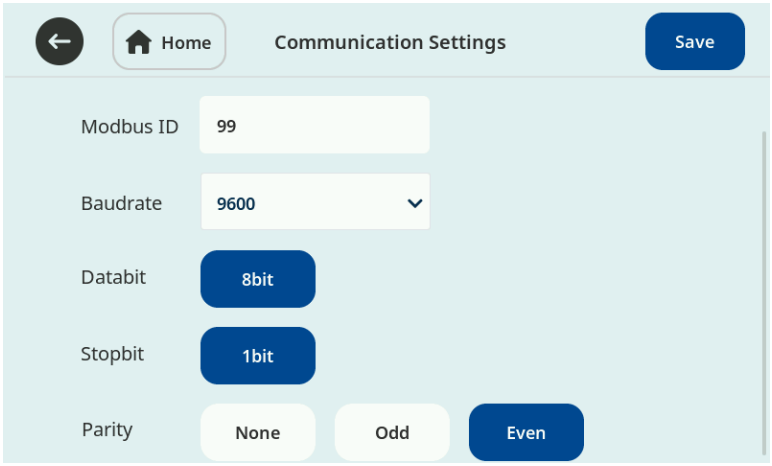


Figure 45

9.14 System Settings

Select **System** icon in the settings menu.

9.14.1 *Upgrading The Device Firmware*

**IMPORTANT NOTE*: Do not power off the device during the upgrade process.*

1. Obtain the latest firmware file by contacting Pyxis technical support at service@pyxis-lab.com. Firmware file format: **MFA-400GCC_software_version.bin**
2. Copy the firmware file to a FAT32/ExFAT formatted USB flash drive and make sure it is placed in the **root directory**.
3. Insert the USB drive into the device and navigate to **Setup Menu> System Settings**
4. Tap the **Upgrade** button to initiate the upgrade process, as shown in Figure 46. The system will switch to **boot** mode, as shown in Figure 47.
5. In boot mode, you will see two options:
   Upgrade Firmware – Tap this button to begin the firmware installation process.
   Boot to Application – Tap this button to cancel the upgrade and return to the normal operating interface.
6. If **Upgrade Firmware** is selected, the system will first verify the firmware file for validity. Once confirmed, the upgrade process will begin automatically, accompanied by a progress bar indicating the update status.
7. Once the progress bar reaches 100%, as shown in Figure 48, tap **Boot to Application** button to restart the device and launch the updated firmware. You may then remove the USB drive safely.

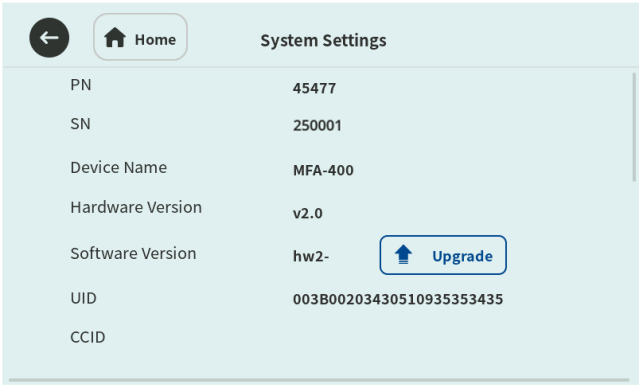


Figure 46

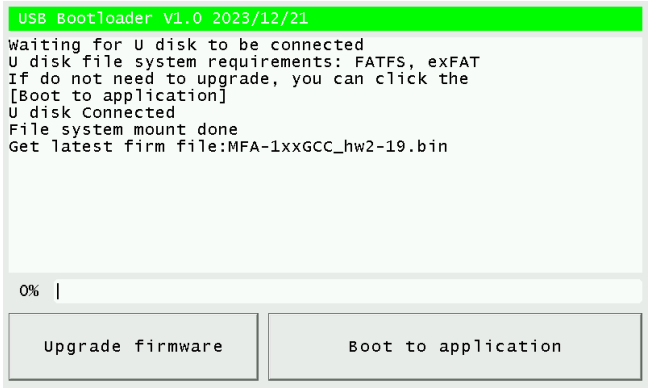


Figure 47

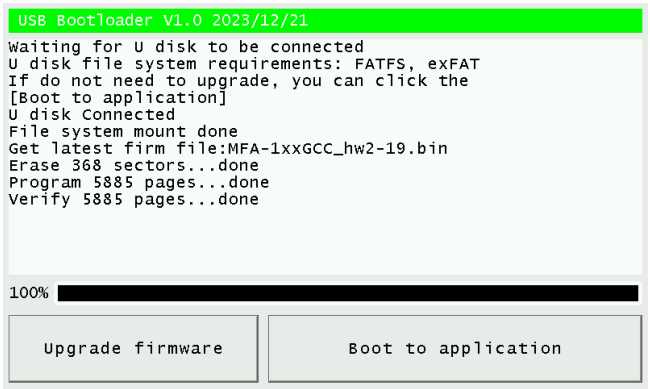


Figure 48

9.14.2 Configuring The Date & Time

To configure the system's time, go to the **System Settings** screen, as shown in Figure 46. Then, **swipe down** to reveal the **Date & Time** section.

Users can either:

- Enable **"Use Network Time"**, the device will obtain time from the 4G base station (default setting), or

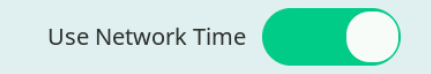


Figure 49

- Disable **"Use Network Time"** to manually set the date and time by entering values for Year, Month, Day, Hour, and Minute.

NOTE *Enabling "**Use Network Time**" will hide the manual date and time input fields.*

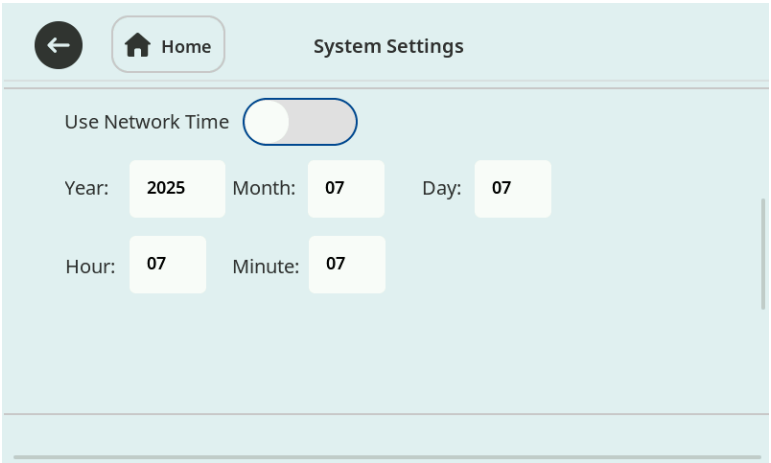


Figure 50

9.14.3 Changing The Login Password

The system maintains separate passwords for each user role (e.g., User and Admin). When you change the password using the procedure below, the new password applies **only to the currently logged-in role**.

To change the password for a different role, first log in with that role and go to the **System Settings** screen, as shown in Figure 46. Then, swipe down to reveal the **Password** section.

1. Enter the **Old Password** to authenticate.
2. Input the **New Password**
3. Confirm the **New Password** by entering it again.
4. Tap **Set New Password** button to apply the changes.

NOTE *Choose a strong password that includes a combination of letters, numbers, and special characters. Avoid using default or easily guessable passwords.*

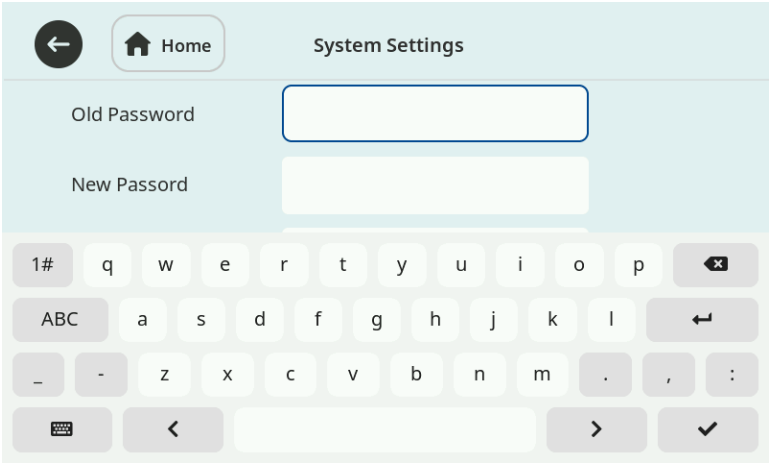


Figure 51

9.14.4 Changing The System Language

To change the system's language, go to the **System Settings** screen, as shown in Figure 52. Then, scroll down to reveal the **Language** section.

A drop-down menu provides a list of available languages. After selecting the desired language and pressing **OK**, the interface will immediately refresh and display in the chosen language.

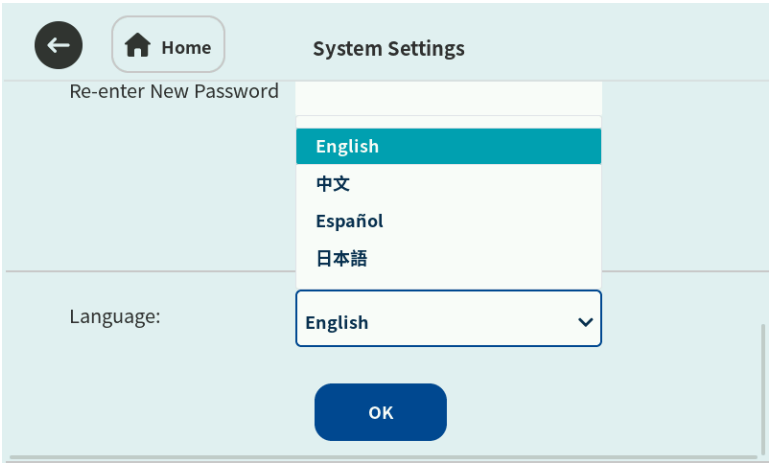


Figure 52

10 Activating the 4G DTU Gateway/Module

Each MFA series Analyzers comes with a 4G DTU module with global SIM card to push measurement data to the Pyxis Cloud server. By default, the 4G DTU module is disabled. Please contact Pyxis Lab for pricing details and to activate the 4G DTU by emailing service@pyxis-lab.com. When the 4G DTU module is enabled, real-time measurement readings and historical data trends are available in the **uPyxis Plus** mobile app and the **Pyxis Cloud web** application. The data upload interval of the 4G DTU follows the analyzer's measurement interval. The 4G signal strength is displayed in the upper-right corner of the UC-60 display screen.

When contacting Pyxis Lab, please provide the PN and SN of the Pyxis device, which can be viewed in the label at the top right corner of the device or in the Device Information screen, as shown in Figure 53.

For example, "PN-45477 and SN-250001" in the image below. A sequential combination of these numbers will also serve as the 4G number of the device (i.e. 45477250001). After activation Pyxis Lab will provide user ID and Password details to allow for immediate cloud data access sufficient for 1-year.

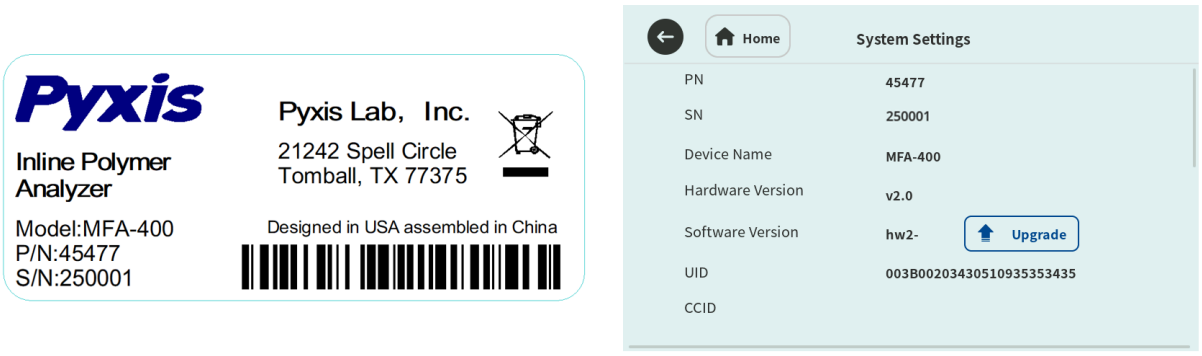


Figure 53

11 Analyzer Maintenance

11.1 Cleaning the Colorimetric Chamber

Color pigment precipitation, suspended solids, or other deposits may accumulate on the inner wall of the colorimetric chamber over time. These contaminants can affect optical stability and measure repeatability. Clean the chamber as needed using the tube brushes provided in the package.

Included Cleaning Tools

One Cleaning Brush Kit (P/N: 23577) containing two brushes is provided:

Pig-bristle tube brush (stiff): for heavy deposits.

- **Lamb-wool tube brush (soft):** for routine cleaning.

Procedure:

1. ***IMPORTANT*** Make sure the current measurement status is Idle, then power off the analyzer before maintenance.
2. **Unlock and remove the reagent cartridge.**

   A. → Pull out the reagent cartridge **lock pin** to release the cartridge.
   B. → Gently lift and remove the reagent cartridge as shown below.

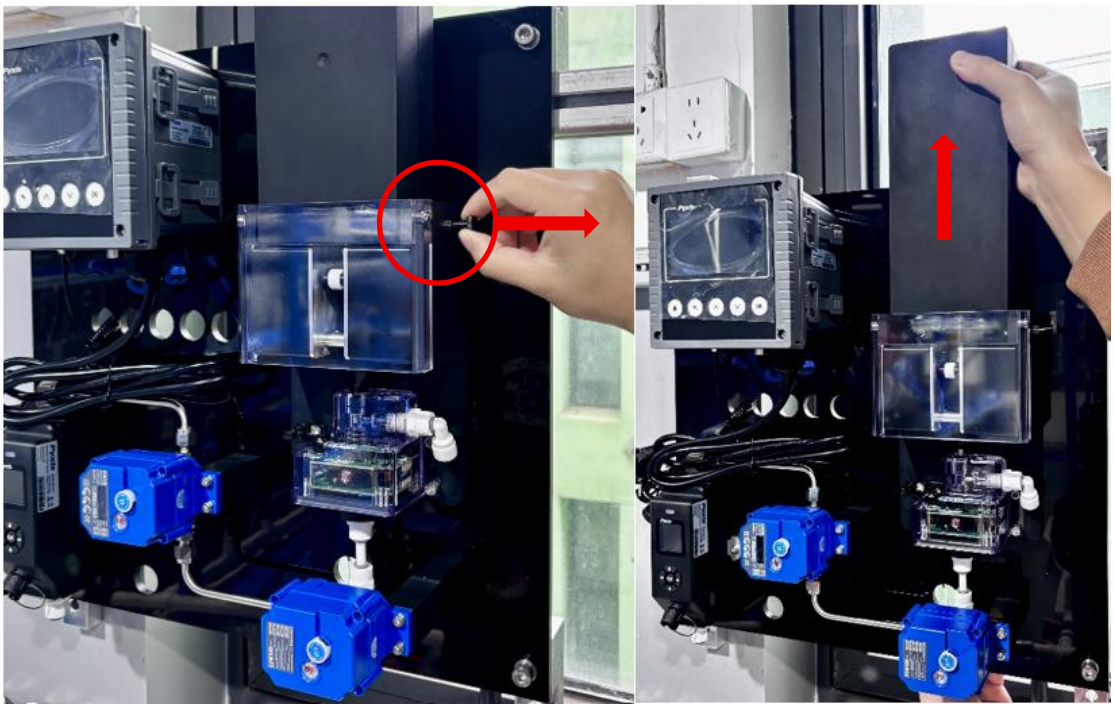


Figure 54

3. **Remove the magnetic stirring bar before cleaning.**

   ***NOTE*:** *The tube brush has a magnetic handle; you may use the handle end to attract and remove the magnetic stirring bar, see Figure 55.*

Figure 55

Figure 56

4. Brush-clean the colorimetric chamber. Insert the brush straight into the colorimetric chamber. Perform repeated up-and-down strokes while gently rotating the brush to scrub the chamber wall (rotate, lift slightly, re-insert, and repeat), see Figure 56. Continue until visible deposits are removed. Pyxis Probe Cleaning Solution (P/N: SER-01) may be used for heavy deposits.

5. Reinstalling the Stirring Bar and Reagent Cartridge.
   A. ReInsert the magnetic stirring bar to the colorimetric chamber.
   B. Reinstall the reagent cartridge.
   C. Push the lock pin back into place to secure the cartridge.

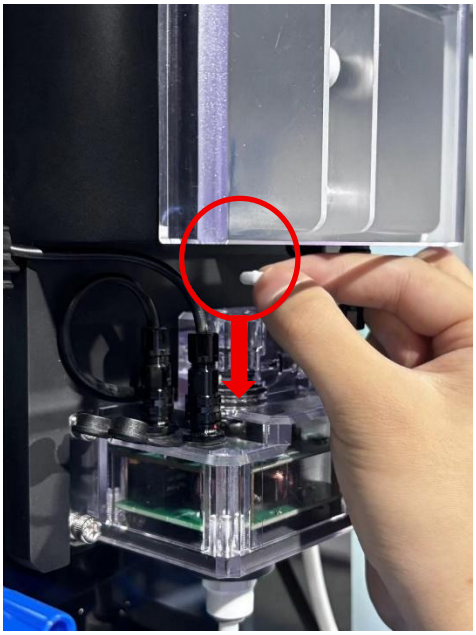


Figure 57

12 Troubleshooting

12.1 Magnetic Stirring Bar Missing

The colorimetric chamber includes an integrated **Hall-effect sensor** that detects the **magnetic stirring bar**. At the start of every measurement cycle, this check is performed during the **Idle** countdown phase. If the stirring bar is not detected, a warning banner appears on the status bar, *"Magnetic stirring bar missing".* The sampling phase will not start and the analyzer will remain in **Idle mode indefinitely. Power off the analyzer and install the stirring bar** as described in the Start-Up Preparation section.

12.2 Flow Interlock Mechanism

The UC-60 controller monitors the inlet flow rate by reading real-time data from the FS-100 ultrasonic flow sensor. If the measured inlet flow rate falls below **20 mL/min** during a flow-required phase, the MFA-400 triggers the Flow Interlock mechanism and immediately pauses the active measurement. When this occurs, the controller holds the current step and the step countdown timer freezes, meaning the remaining time will not continue to decrement while the low-flow condition is present, a warning banner appears on the status bar, *"Low inlet water flow. Measure halted"*, indicating that the measurement is interlocked (see Figure 58).

Once the inlet flow rate recovers to normal (**≥20 mL/min**), the Flow Interlock condition clears automatically, and the controller resumes the measurement from the same step where it was paused. The countdown continues from the paused value, and the measurement proceeds normally.

***NOTE* In Normal Mode: flow is always required so the** *Flow Interlock Mechanism is active throughout the entire cycle (I.e., Idle, Sampling, Injecting, Reacting, and Flushing).*

NOTE* In Water-Saving Mode:** *The analyzer allows* ***no flow during the Idle wait period*. Flow Interlock is only active in the* ***Sampling and Flushing*** *phase.*

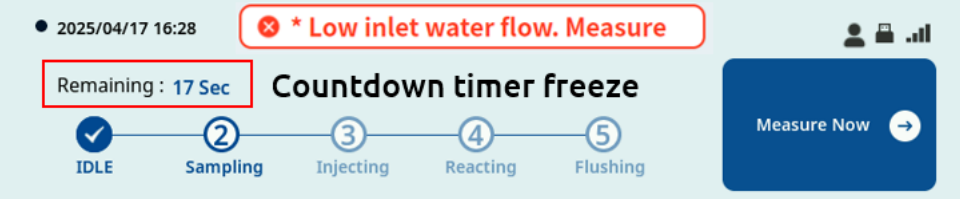


Figure 58

13 Communication Using Modbus RTU

The MFA-400 polymer analyzer is configured as a Modbus slave device. Users can view the measured values via a **Modbus RTU** connection. *Refer to Electrical Connection section for wiring.*

Default Modbus Communication Parameters

Slave Address	99
Baud Rate	9600 bps
Data Bits	8-bit
Stop Bit	1-bit
Parity Check	Even
Bus Type	RS-485

Modbus communication parameters can be configured directly from the controller setup menu, see Modbus communication settings section.

Modbus RTU Protocol

Register Address Model	Address Base 0

IMPORTANT NOTE *Register addresses in this document are zero-based (base0). When configuring PLCs systems that use one-based addressing (base1), add 1 to the listed register address.*

Supported Function Code

03	Read Holding Register

Register Map

Register Address	Number of registers	Data Type & Byte order	Register Name	Description
46006-46007	2	Float/CDAB	ppm1	Anionic Polymer Reading
46016-46017	2	Float/CDAB	AO1	4-20mA#1 output value
46018-46019	2	Float/CDAB	AO2	4-20mA#2 output value
46020	1	16-bit unsigned integer/AB	Relay1	Relay#1 Status (1)
46021	1	16-bit unsigned integer/AB	Relay2	Relay#2 Status (1)
46025	1	16-bit unsigned integer/AB	Reagent Percent	Reagent Remaining percentage(%)
46026	1	16-bit unsigned integer/AB	Stir-speed-rpm	Stirring Speed (unit: rpm)
46027	1	16-bit unsigned integer/AB	Input-Flow-ml/min	Inlet Flow Rate (unit: mL/min)

NOTE(1) *0 indicates that the relay contacts are open and 1 indicates that the contacts are closed.*

14 Contact Us

Pyxis Lab, Inc
21242 Spell Circle
Tomball, TX. 77375 USA
www.pyxis-lab.com
Phone: +1 (866) 2038397
Email: service@pyxis-lab.com