ST-710, ST-711, ST-712, ST-720 & ST-726

Quick Start Instruction Guide

ST-710
Inline pH Sensor

ST-711
Inline ORP Sensor

ST-712
Inline pH + ORP Sensor

ST-720 & ST-726
Inline Conductivity Sensors

1. Standard Accessories Included

- One Tee Assembly ¾-inch FNPT with O-Ring & Sensor Nut (P/N: ST-001)
- Attached Sensor Bulkhead Cable w/Male 7-Pin Adapter (5ft)
- One 7-Pin Female Adapter/Flying Leads Cable (5ft) (P/N: MA-1100)

2. Replacement / Optional Accessories

Accessory Name	P/N
MA-WB Bluetooth/USB Adapter (*Pyxis Bluetooth/USB Adapter for 7Pin Pyxis Sensors*)	MA-WB
pH 4-7-10 Combination Pack – Refence Standard Solutions *(500ml/each)*	57007
ORP-200mV Calibration Standard Solution *(Calibration Solution 500mL)*	57020
Conductivity Reference Standard 1,000umhos *(Calibration Solution 500mL)*	57008
Conductivity Reference Standard 50,000umhos *(Calibration Solution 500mL)*	57101
Pyxis Probe Cleaning Kit *(Includes Sensor Cleaner 500mL + Accessories)*	SER-01
MA-102S Submersion Adapter (Submersible Adapter for Pyxis ST Series Probes– *1.5" NPT Assembly*)	MA-102S
MA-C10 Extension Cable *(10-foot Extension Cable for 7Pin Pyxis Sensors)*	50738
MA-C50 Extension Cable *(50-foot Extension Cable for 7Pin Pyxis Sensors)*	50705
MA-C100 Extension Cable *(100-foot Extension Cable for 7Pin Pyxis Sensors)*	50706

3. Calibration Standards

pH 4-7-10 Calibration Standard Combination Kit (P/N**:** 57007)
pH Calibration Solutions | 4.0, 7.0, 10.0 & Combo Pack | Pyxis Lab® (pyxis-lab.com)

ORP Reference Standard 200mV (P/N: 57020)
200mV ORP Calibration Solution | Pyxis Lab® (pyxis-lab.com)

Conductivity Reference Standard 1,000uS/cm (P/N: 57008)
Conductivity Reference Standard 50,000uS/cm (P/N: 57101)
1,000 or 50,000µS/cm Conductivity Cal Solution | Pyxis Lab® (pyxis-lab.com)

4. Specifications

4.1 ST-710 Series

Items	ST-710	ST-711	ST-712
P/N	53001	53002	53003
pH Range	0 – 14	NA	0 – 14
pH Precision	±0.01 pH	NA	±0.01 pH
ORP Range	NA	±1,500mV	±1,500mV
ORP Precision	NA	± 1.0mV Precision	±1.0mV Precision
Temperature Measure Range	0 - 100°C (32-212°F)	NA	NA
Temperature Precision	±0.2% of the value	NA	NA
Response Time	95% within 5 Seconds		
Power Supply	22-26 VDC, ~2W		
Output Signal	4~20 mA isolated, RS-485 isolated		
Operation Pressure	Up to 0.7 MPa (100PSI)		
Storage Temperature	-20 ~ 60 °C (-4~140 °F)		
Operational Temperature	0 ~ 49°C (32 ~ 120°F)		
Dimension	172mm (6.8 in) long / 36mm (1.44 in) diameter		
In-Line Installation	Includes Pyxis Tee (ST-001) – ¾-inch FNPT Socket-Thread w/union		
Body Material	UPVC		
Rating & Regulation	IP-67 / CE / RoHS		

4.2 ST-720 Series

Items	ST-720	ST-726
Part Number	53101	53114
Conductivity Measure Range	1-100,000 µS/cm	10-300,000 µS/cm
Conductivity Precision	± 1µS/cm or 1.5%	± 10µS/cm or 1.5%
Temperature Measure Range	0 - 100°C (32 – 212°F)	
Temperature Precision	± 0.2% of the value	
Cell Constant (K)	0.3	
Power Supply	22-26 VDC, ~2W	
Output Signal	2X 4-20mA and RS-485 Modbus (Temperature & Conductivity)	
Operation Pressure	Up to 0.7 MPa (100PSI)	
Storage Temperature	-20 ~ 60 °C (-4~140 °F)	
Operational Temperature	0 ~ 49°C (32 ~ 120°F)	
Dimension	172mm (6.8 in) long / 36mm (1.44 in) diameter	
In-Line Installation	Includes Pyxis Tee (ST-001) – ¾-inch FNPT Socket-Thread w/union	
Body Material	UPVC	
Rating & Regulation	IP-67 / CE / RoHS	

5. Wiring & Quick 4-20mA Startup

5.1 ST-710 Wiring

Below are 2 wiring tables. The left represents the first generation of ST-710 sensor with only one 4-20mA output for pH (before and including serial #170084). The right represents the second generation of ST-710 sensor (after and including serial #170085) containing two 4-20mA outputs, one for pH and one for Temperature. Follow the wiring tables below to connect the **ST-710** sensor to a controller based on which sensor you have.

ST-710 – GENERATION 1 (pH Only)
(Serial # 170084 and before)

Wire Color	Designation
Red	24 V +
Black	24V Power ground and 4-20mA-
White	4-20 mA + for pH
Green	No Connect
Blue	RS-485 A
Yellow	RS-485 B
Clear	Shield, solution ground

ST-710 – GENERATION 2 (pH + Temperature)
(Serial # 170085 and after)

Wire Color	Designation
Red	24 V +
Black	24V Power ground and 4-20mA-
White	1#4-20 mA + for pH
Green	2#4-20 mA + for Temperature
Blue	RS-485 A
Yellow	RS-485 B
Clear	Shield, solution ground

ST-710 (Generation 1) Sensor 4-20mA Scaling		
Unit of Measure	**4mA Value**	**20mA Value**
pH	0	14

ST-710 (Generation 2) Sensor 4-20mA Scaling		
Unit of Measure	**4mA Value**	**20mA Value**
pH	0	14
Temperature	32°F	212°F

5.2 ST-711 Wiring

ST-711 (ORP) – For All Serial #'s

Follow the wiring table below to connect the **ST-711** probe to a controller.

Wire Color	Designation
Red	24 V +
Black	24V Power ground and 4-20mA-
White	4-20 mA + for ORP
Green	No Connect
Blue	RS-485 A
Yellow	RS-485 B
Clear	Shield, solution ground

ST-711 Sensor 4-20mA Scaling		
Unit of Measure	**4mA Value**	**20mA Value**
ORP	-1500mV	1500mV

5.3 ST-712 Wiring

ST-712 (pH + ORP) – For All Serial #'s

Follow the wiring table below to connect the **ST-712** probe to a controller.

Wire Color	Designation
Red	24 V +
Black	24V Power ground and 4-20mA-
White	1#4-20 mA + for pH
Green	2#4-20 mA + for ORP
Blue	RS-485 A
Yellow	RS-485 B
Clear	Shield, solution ground

ST-712 Sensor 4-20mA Scaling		
Unit of Measure	**4mA Value**	**20mA Value**
pH	0	14
ORP	-1500mV	1500mV

5.4 ST-720 & ST-726 Wiring

Follow the wiring table below to connect the **ST-720**, **ST-726** probe to a controller.

Wire Color	Designation
Red	24 V +
Black	24V Power ground and 4-20mA-
White	1#4-20 mA + for Conductivity
Green	2#4-20 mA + for Temperature
Blue	RS-485 A
Yellow	RS-485 B
Clear	Shield, solution ground

ST-720 Sensor 4-20mA Scaling		
Unit of Measure	**4mA Value**	**20mA Value**
Conductivity	1µS/cm	100,000µS/cm
Temperature	32°F	212°F

ST-726 Sensor 4-20mA Scaling		
Unit of Measure	**4mA Value**	**20mA Value**
Conductivity	1µS/cm	300,000µS/cm
Temperature	32°F	212°F

NOTE *The upper value (20mA) is adjustable to a lower desired value using the uPyxis 1.0 or 2.0 Mobile APP. See ST-720 Series 4-20mA SPAN overview section of this document.*

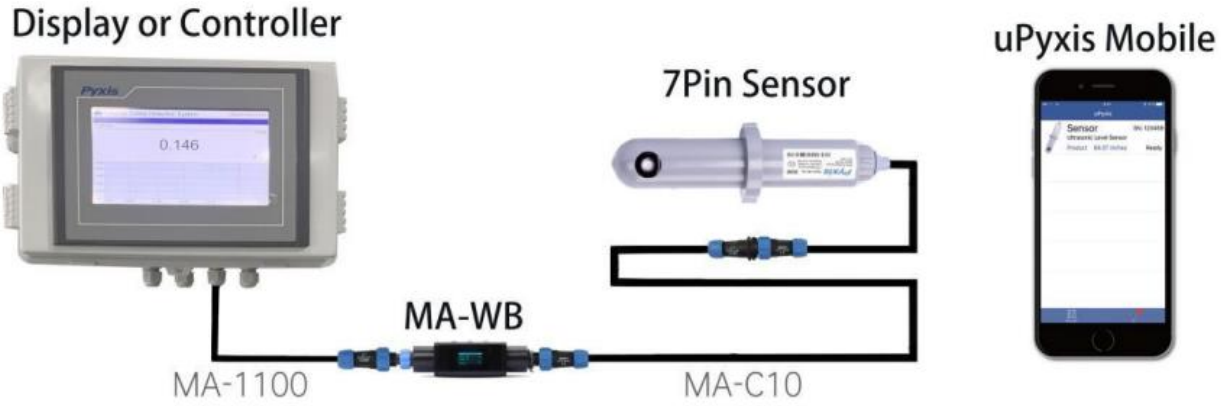
6. Calibration and Diagnosis by uPyxis 2.0Mobile App

MA-WB Bluetooth Adapter

MA-WB -Bottom Type-C interface

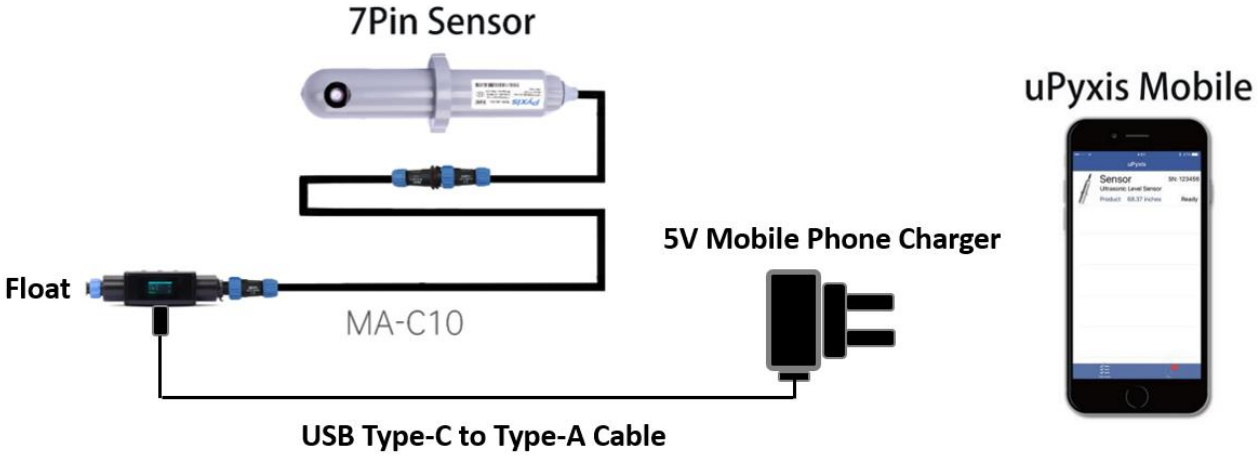
Connection Diagram #1 (Using Controller Connection for Power Supply)

Connect and power the sensor using the MA-WB Pyxis Bluetooth adapter (P/N: MA-WB) as shown in the following connection diagram. The power should be sourced from a 24 VDC power terminal of a controller. If a controller is not available, please purchase a 24VDC power supply.



Connection Diagram #2 (Using USB Connection for Power Supply)

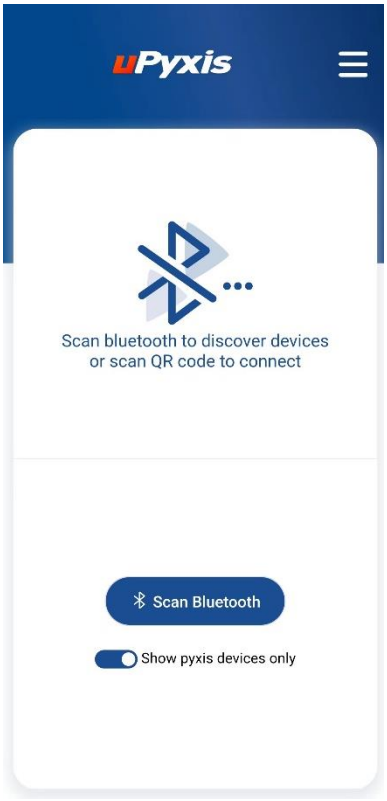
Connect a USB Type-C cable to the port at the bottom of the MA-WB and to the USB port of the mobile phone charger. This will provide power the MA-WB from the charger, meanwhile, the MA-WB will boost the 5V of the regular USB to 24V to power the sensor.



Download and install the **uPyxis2.0®** app from the **Apple App** Store or **Google Play**. Make sure that the Bluetooth® function on your smart phone is turned on. DO NOT pair the device to your phone, **uPyxis2.0®** will do the pairing! ***Note* To use uPyxis2.0® please enable Bluetooth® and location permissions.**

6.1 Connecting ST-710 to uPyxis Mobile App

Open the **uPyxis2.0®** app on the device. Click the **Scan Bluetooth** button to scan the available Pyxis Bluetooth devices. The discovered devices will be listed as shown in Figure below.

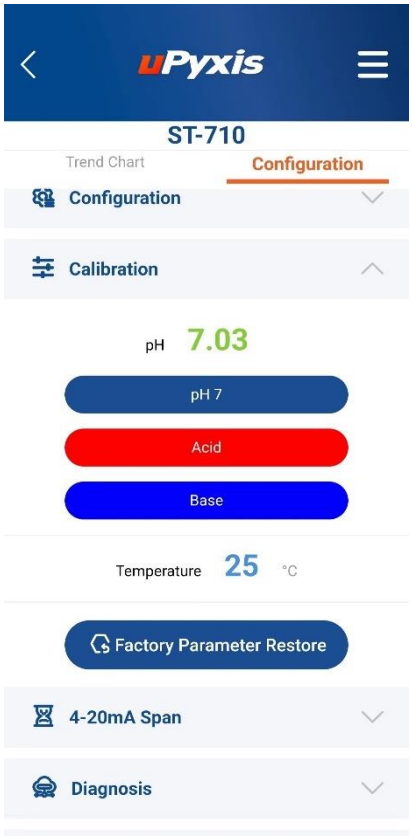


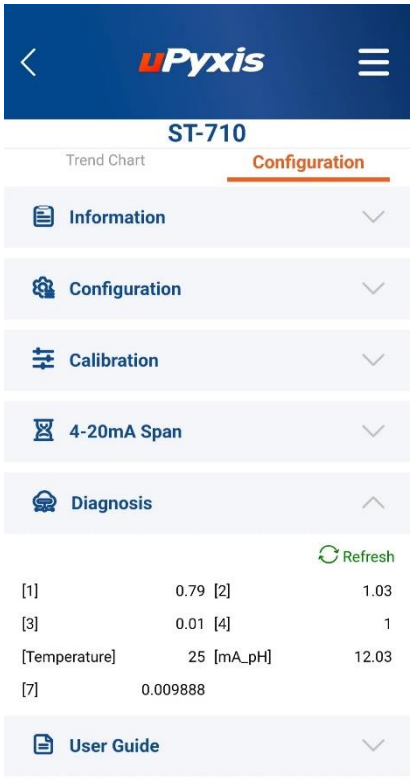
When connected, uPyxis will default to the **Trend Chart** page after connected to the sensor via the MA-WB Bluetooth adapter. The measurement value will be displayed as a line graph to show the real-time trend.

Tap **Configuration** on the top of the app page to launch the configuration page. Six functional tabs of each are available on this page: Information, Configuration, Calibration, 4-20mA Span, Diagnosis and User Guide.

Sensor Calibration

From the Calibration tab, you can see the readings and calibrate the ST-710 probe. To perform pH Mid Calibration, click on **pH7** and follow the uPyxis app prompts. To perform pH Low Calibration, click on **Acid** and follow the uPyxis app prompts. To perform pH High Calibration, click on **Base** and follow the uPyxis app prompts.



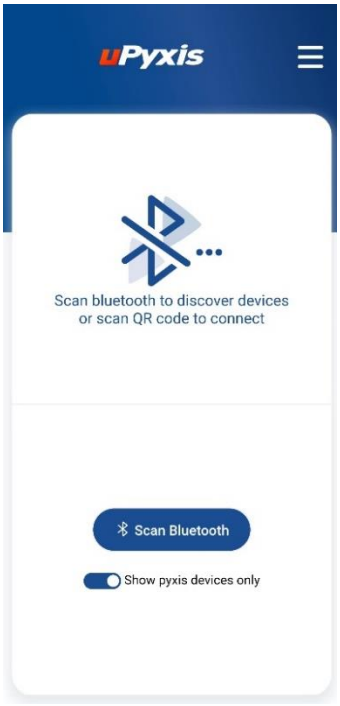


Sensor Diagnosis

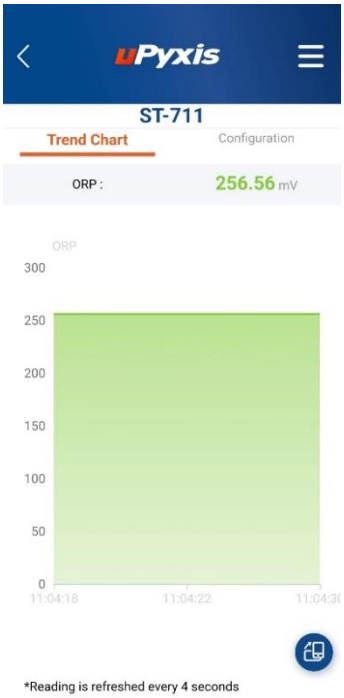
When in the **Diagnosis** tab you can view the Diagnosis Condition of the device. This feature may be used for technical support when communicating with **service@pyxis-lab.com**.

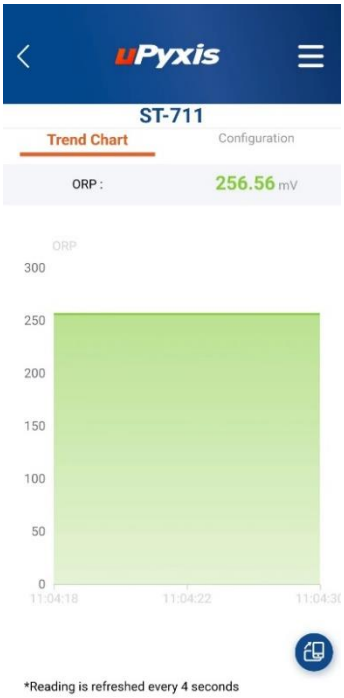
6.2 Connecting ST-711 to uPyxis Mobile App

Open the **uPyxis2.0®** app on the device. Click the **Scan Bluetooth** button to scan the available Pyxis Bluetooth devices. The discovered devices will be listed as shown in Figure below.



When connected, uPyxis will default to the **Trend Chart** page after connected to the sensor via the MA-WB Bluetooth adapter. The measurement value will be displayed as a line graph to show the real-time trend.

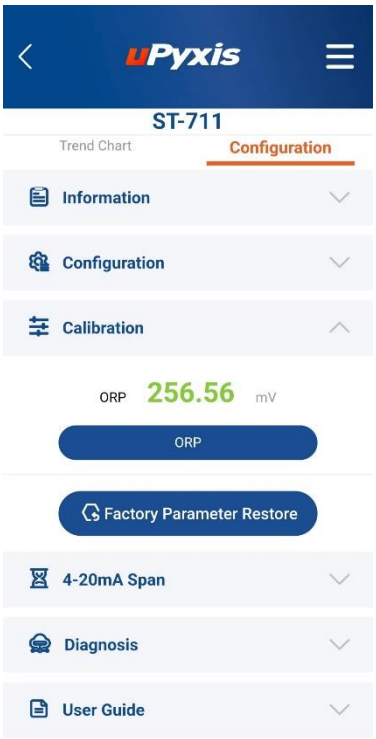


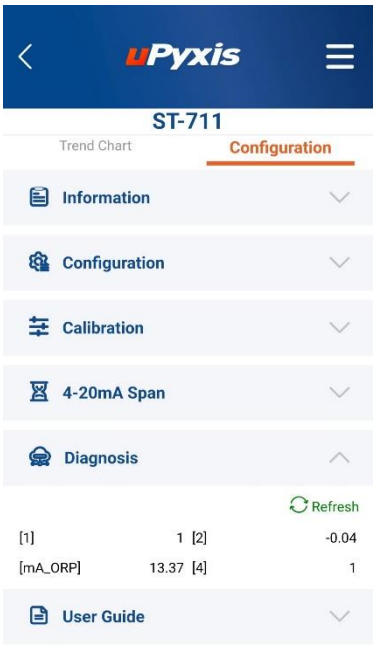


Tap **Configuration** on the top of the app page to launch the configuration page. Six functional tabs of each are available on this page: Information, Configuration, Calibration, 4-20mA Span, Diagnosis and User Guide.

Sensor Calibration

From the Calibration tab, you can see the readings and calibrate the ST-711 probe. To perform ORP calibration, click on **ORP** and follow the uPyxis app prompts.



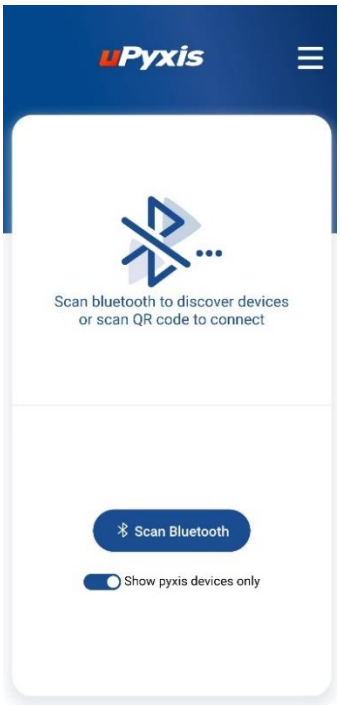


Sensor Diagnosis

When in the **Diagnosis** tab you can view the Diagnosis Condition of the device. This feature may be used for technical support when communicating with **service@pyxis-lab.com**.

6.3 Connecting ST-712 to uPyxis Mobile App

Open the **uPyxis2.0®** app on the device. Click the **Scan Bluetooth** button to scan the available Pyxis Bluetooth devices. The discovered devices will be listed as shown in Figure below.

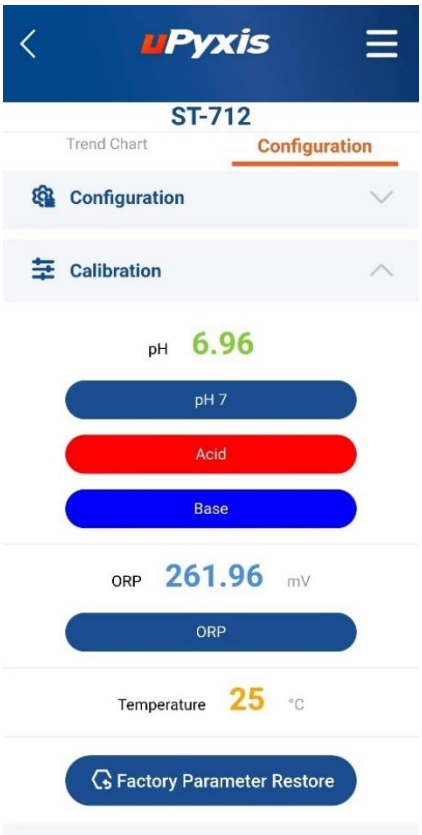


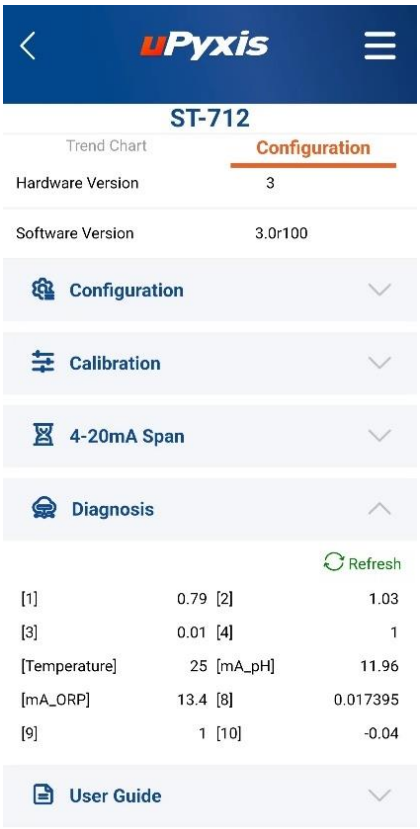
When connected, uPyxis will default to the **Trend Chart** page after connected to the sensor via the MA-WB Bluetooth adapter. The measurement value will be displayed as a line graph to show the real-time trend.

Tap **Configuration** on the top of the app page to launch the configuration page. Six functional tabs of each are available on this page: Information, Configuration, Calibration, 4-20mA Span, Diagnosis and User Guide.

Sensor Calibration

From the Calibration tab, you can see the readings and calibrate the ST-712 probe. To perform pH Mid Calibration, click on **pH7** and follow the uPyxis app prompts. To perform pH Low Calibration, click on **Acid** and follow the uPyxis app prompts. To perform pH High Calibration, click on **Base** and follow the uPyxis app prompts. To perform ORP calibration, click on **ORP** and follow the uPyxis app prompts.



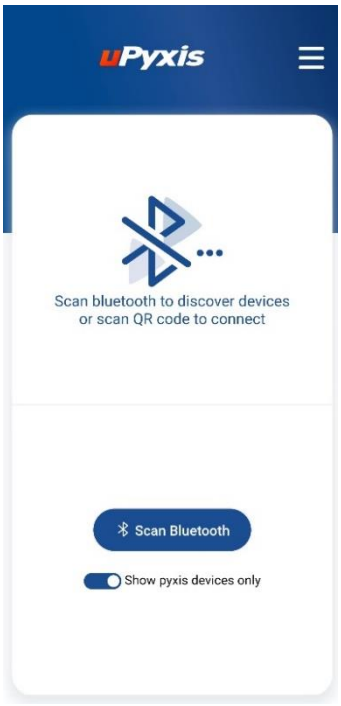


Sensor Diagnosis

When in the **Diagnosis** tab you can view the Diagnosis Condition of the device. This feature may be used for technical support when communicating with service@pyxis-lab.com.

6.4 Connecting ST-720/726 to uPyxis Mobile App

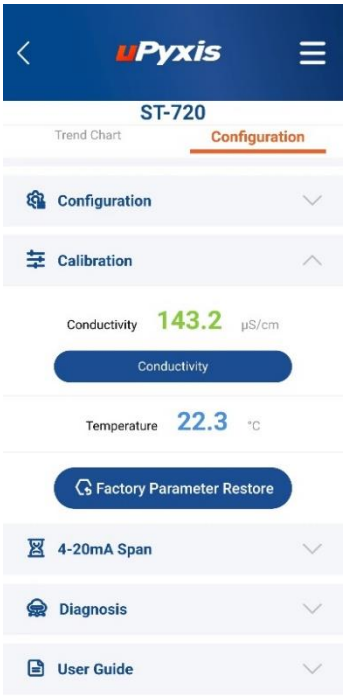
Open the **uPyxis2.0®** app on the device. Click the **Scan Bluetooth** button to scan the available Pyxis Bluetooth devices. The discovered devices will be listed as shown in Figure below.



When connect, uPyxis will default to the **Trend Chart** page after connected to the sensor via the MA-WB Bluetooth adapter. The measurement value will be displayed as a line graph to show the real-time trend.

Sensor Calibration

From the Calibration tab, you can see the readings and calibrate the ST-720 probe. To perform conductivity calibration, click on **Conductivity** and follow the uPyxis app prompts.



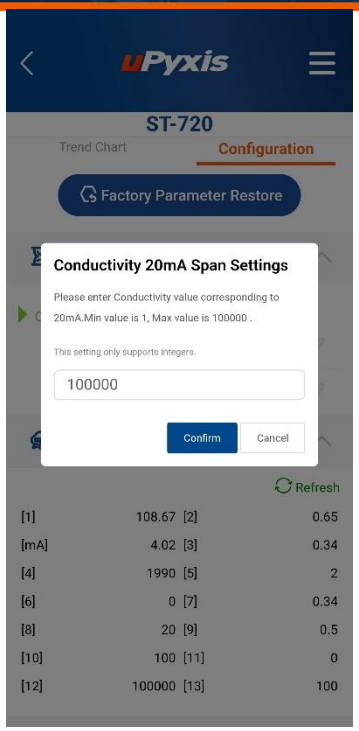
4-20mA Span Adjustment

From the Pyxis factory, the 4–20mA output of the ST-720 and ST-726 sensor is scaled as follows:

ST-720 Sensor 4-20mA Scaling		
Unit of Measure	**4mA Value**	**20mA Value**
Conductivity	1µS/cm	100,000µS/cm
Temperature	32°F	212°F

ST-726 Sensor 4-20mA Scaling		
Unit of Measure	**4mA Value**	**20mA Value**
Conductivity	1µS/cm	300,000µS/cm
Temperature	32°F	212°F

Users may alter the output scale using **4-20mA Span** to change the conductivity value corresponding to the 20mA output. ***NOTE*** *the 20mA may only be set to a LOWER value than factory maximum range.*



Sensor Diagnosis

When in the **Diagnosis** tab you can view the Diagnosis Condition of the device. This feature may be used for technical support when communicating with service@pyxis-lab.com.

7. Sensor Cleaning and Maintenance

Soak the lower half of the probe in 100 mL inline probe cleaning solution for 5-10 minutes then remove and lightly clean with the provided Q-tips and brush. If the surface is not entirely clean, continue to soak the probe for an additional time until clean. Rinse the probe with distilled water. Pyxis Lab Inline Probe Cleaning Solution can be purchased at our online Estore/Catalog at https://pyxis-lab.com/product/probe-cleaning-kit/

Please refer to this link for a detailed instructional video on how to use uPyxis for diagnosis, cleaning and calibration of Pyxis ST-Series sensors.

https://www.youtube.com/watch?v=hFmk2znyvjs&pp=ygUIcHl4aXMgbWE%3D

8. Contact Us

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