

Pyxis[®]

SP-210 Bleach Handheld User Manual



Pyxis Lab[®] Inc.
1729 Majestic Drive Suite 05
Lafayette, Colorado 80026
www.pyxis-lab.com

SP-210 Bleach Handheld User Manual

August 23, 2021
Rev. 1.00

Pyxis Lab, Inc.
1729 Majestic Dr. Suite 5
Lafayette, CO 80026 USA
www.pyxis-lab.com

Table of Contents

1	Introduction	2
1.1	Main Features	2
2	Specifications	2
3	Unpacking Instrument	3
3.1	Standard Accessories	3
3.2	Optional Accessories	3
4	Installation	4
4.1	Battery Installation	4
5	Instrument Overview	5
5.1	Control Keys	5
5.2	Main Module On/Off	5
6	Measurement	6
6.1	Bleach Measurement	6
6.2	Suspended Solids Chromaticity Interference	6
7	Calibration	7
7.1	Bleach Calibration (Three-Point with Zero)	7
8	Device Information and Diagnosis	8
8.1	Bluetooth Connection to Devices	9
8.2	Factory Reset	9
9	Use with uPyxis® Mobile App	10
9.1	Download uPyxis® Mobile App	10
9.2	Connecting to uPyxis® Mobile App	11
9.3	System Screen	12
9.4	Setting Screen	13
9.5	Datalog Screen	14
10	Use with uPyxis® Desktop App	14
10.1	Install uPyxis® Desktop App	14
10.2	Connecting to uPyxis® Desktop App	15
10.3	System Screen	16
10.4	Setting Screen	17
10.5	Datalog Screen	17
11	Device Maintenance and Precaution	18
11.1	Maintenance Best Practices and Quick Tips	18
11.2	Storage	18
12	Contact Us	18

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. 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 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 loan 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 designate. 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 Authorization (RA) 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 <https://pyxis-lab.com/request-tech-support/>.

Pyxis Technical Support

Contact Pyxis Technical Support at +1 (866) 203-8397, service@pyxis-lab.com, or by filling out a request for support at <https://pyxis-lab.com/request-tech-support/>.

1 Introduction

The Pyxis SP-210Bleach Handheld measures the mass/mass concentration of Chlorine in Sodium Hypochlorite Bleach solution. Without any reagent kits, the SP-210 can quickly test high Sodium Hypochlorite Bleach concentration parameters on the spot with high sensitivity.

1.1 Main Features

The SP-210 includes the following features:

- Break-through technology measures disinfection liquids in high concentration.
- Direct read technology without dilution or reagent.
- Long standby mainframe 10,000+ measurements.
- Can store up to 8 GB of test data (including test time).
- Create user-defined standard curves, view historical data, or analyze data via the **uPyxis®** App.

2 Specifications

Table 1. SP-210 Specifications

Item	Specification*
Part Number (P/N)	50801
Range	0.01–16% mass/mass
Accuracy	0.01–2%: ±0.02% or ±3% of reading 2–16%: ±0.2% or ±3% of reading
Resolution	0.01–2%: 0.02% 2–6%: 0.2%
Temperature Range	40–106 °F (4–41 °C)
Humidity	85% at 106 °F (41 °C)
Data Storage	30,000 group data storage, Bluetooth transmission
Display	320×240 TFT-LCD, visible under direct sunlight
Power Supply	4 AA alkaline batteries
Typical Battery Life	10,000 readings
Dimension (L × W × H)	6.69 × 3.15 × 1.77 inch (170 × 80 × 45 mm)
Weight [§]	0.88 lbs (400 g)
Enclosure Rating	IP67
Regulation	CE/RoHS

* With Pyxis's continuous improvement policy, these specifications are subject to change without notice.

[§] Batteries excluded

3 Unpacking Instrument

Remove the instrument and accessories from the shipping container and inspect each item for any damage that may have occurred during shipment. 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

- Quick-Start Guide
- Four (4) AA alkaline batteries
- Bluetooth/USB Adapter for Desktop P/N: MA-NEB
- User Manual available online at <https://pyxis-lab.com/support/>

3.2 Optional 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 2.

Accessory Name	Part Number (P/N)
Pyxis Carrying Case for SP-210	50725

4 Installation

4.1 Battery Installation

The SP-210 is powered by four alkaline batteries. Typical battery life lasts for 10,000 measurements or 10 months. When the battery capacity is critically low, the SP-210 will display a "LOW BATTERY" warning for 5 seconds and then automatically turn off.

NOTE Do not use rechargeable nickel cadmium (NiCad) or lithium batteries.

Replace the batteries to resume operation of the SP-210 after the battery warning. The SP-210 will automatically turn on in the measurement mode after new batteries are installation.

The SP-210 battery compartment, shown in Figure 1, is on the back side of the instrument. Batteries are held in place by a cover secured with two Phillips-head screws.

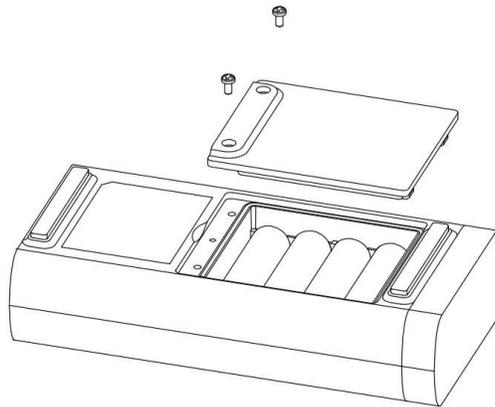


Figure 1. The SP-210 battery compartment

Install batteries using the following steps:

1. Remove the battery compartment cover by loosening the two screws.
2. Remove old batteries and dispose of them properly.
3. Following the positive and negative terminal signs in the compartment bottom, snap four new AA alkaline batteries firmly into the battery holder.
4. Replace the battery compartment cover and ensure that the sealing O-ring is lying flat on the battery holder.
5. Fasten the two screws.

NOTE Failure to properly seat the O-ring may result in water damage to the SP-210.

5 Instrument Overview



Figure 2.

5.1 Control Keys

The SP-210 has three control keys, as shown in Figure 2. The left (<), right (>), and OK (OK) keys are used to launch actions indicated on the LCD display directly above the keys. The labels above the keys indicate the function associated with each key and functions can be changed in different operation modes.

5.2 Main Module On/Off

To turn on the SP-210: Press OK momentarily and release.

To turn off the SP-210: Press and hold OK for about three seconds. Release OK when the LCD display turns off. The SP-210 turns itself off after 60 seconds without user interaction detected. This is done to conserve battery life.

NOTE This auto-time off setting may be customized by the user as desired through the **uPyxis®** Mobile or Desktop App.

6 Measurement

6.1 Bleach Measurement

1. When powered on, the SP-210 will be in the Bleach measurement mode. The sample can be transferred to the sample cell using a pipette or sample bottle, or sample valve.

NOTE *Special care should be taken when pouring the sample into the cell to avoid air bubble entrainment, which can interfere with reading accuracy.*

WARNING

Sodium hypochlorite solution is a highly corrosive and dangerous substance, avoid direct contact with the skin or eyes, in case of contact with sodium hypochlorite solution, please immediately wash the contact area with clean water continuously.

2. Before beginning a measurement, use pure water to rinse the sample cell at least 2–3 times. then fill the sample cell with pure water and click Zero for background calibration.
3. Pour out the pure water in the sample cell, rinse the sample cell with the Bleach solution to rinse the sample cell at least 2–3 times, then fill the sample cell with the Bleach solution to be tested, and click "Read" to Read the value.
4. The screen interface will display the concentration of Bleach solution.
5. After the measurement is completed, pour out the Bleach solution and flush the sample cell with clean water until there is no sodium hypochlorite residue.

NOTE *The time required to reach a stable reading may be slightly longer if the water sample temperature is significantly different than the environmental temperature at which the SP-210 had been equilibrated (stored).*

The SP-210 does not need to be turned off between measurements of samples. Rinsing the sample cell several times between samples is recommended. Ambient light does not affect the measurement. The sample cell does not need to be covered during the measurement.

NOTE *If the screen goes dark, the timer will quickly turn off the SP-210. Pressing any key will turn the timer back on. The timer is used to extend battery life.*

NOTE *To avoid residue or contamination from the previous solution, please clean the sample cell at least three times.*

NOTE *Be sure to clean the sample cell after each use of the SP-210 and dry it with a clean paper towel to avoid over force damage.*

6.2 Suspended Solids Chromaticity Interference

The SP-210 has extra channels to measure sample suspended solids and color which are used to automatically compensate for any interference caused by these contaminants as high as 20–50 mg/L. If the sample turbidity and color values determined are too high, an error will show. In such a case, the user should pre-filter the sample for the Bleach measurement within the compensation capability of the SP-210.

7 Calibration

7.1 Bleach Calibration (Three-Point with Zero)

The SP-210 is calibrated using a three-point calibration, i.e., the zero-point is calibrated with deionized water first, and then the slope is calibrated using a concentration of 1% and 10% sodium hypochlorite standard solution.

1. Rinse and fill the sample cell with deionized water.

NOTE *In case of emergency, you can use "no sodium hypochlorite" clean sample water, such as drink water, but please use deionized water to redo the zero calibration as soon as possible.*

2. Power on the SP-210 by pressing .
3. The SP-210 displays and measures the concentration of bleach. If deionized water is used, the measured value will be very low; the value of sodium hypochlorite should be close to zero. A relatively low non-zero reading (e.g., 0.01 etc.) is not a problem.
4. Press Cal/Sys () to launch the **Bleach CALIBRATION** screen (Figure 3).
5. Press **Zero** () to set the zero point.
6. If the calibration succeeds, a checkmark () and instructions for the slope calibration will appear (Figure 4).
7. Rinse the sample cell three times with the 1% sodium hypochlorite standard. Fill the sample cell with the 1% standard.
8. Press **Slope** ( or ) to start the low-point slope calibration.
9. If the calibration succeeds, a checkmark () and a "Calibration Success" message will appear (Figure 5). Otherwise, a warning message is displayed.
10. Press **Continue** ( or ) to continue to the high-point slope calibration (Figure 6).
11. Rinse the sample cell three times with the 10% sodium hypochlorite standard. Fill the sample cell with the 10% standard.
12. Press **Slope** ( or ) to start the high-point slope calibration.
13. If the calibration succeeds, a checkmark () and a "Calibration Success" message will appear (Figure 7). Otherwise, a warning message is displayed.
14. Calibration is now complete. Press **Exit** () to return to Bleach measurement mode.

NOTE *After calibration is completed, the SP-210 will not automatically return to Bleach measurement mode. If you press and hold **Exit**, the SP-210 will shut down instead of returning to the measurement mode.*



Figure 3.

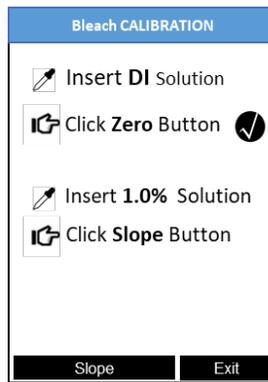


Figure 4.



Figure 5.

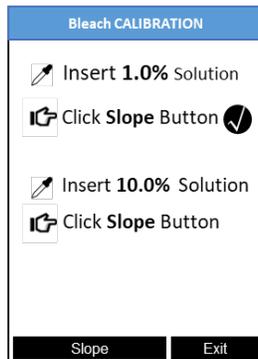


Figure 6.

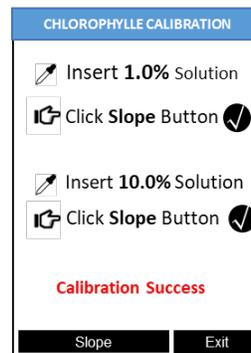


Figure 7.

8 Device Information and Diagnosis

The **DEVICE INFORMATION** screen is launched when **Sys/Cal** () is pressed in the measurement mode. This screen contains the device serial number, software version, and hardware version (Figure 8). The battery life as a percentage and the MAC addresses for main module also shown.

Press **Diagnosis** () to launch the **SYSTEM DIAGNOSIS** screen where raw measurement data are displayed (Figure 9). The information has no use for normal operation, but instead is used for device troubleshooting. Provide an image of both the **DEVICE INFORMATION** screen and the **SYSTEM DIAGNOSIS** screen when you contact Pyxis (service@pyxis-lab.com) for troubleshooting your device or call +1 (866) 203-8397.

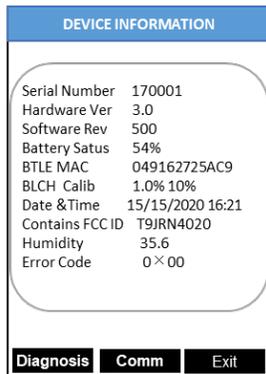


Figure 8.

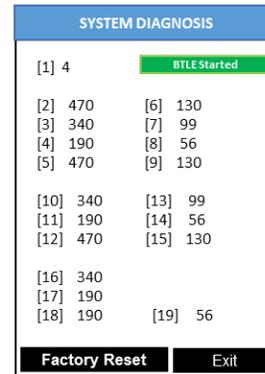


Figure 9.

8.1 Bluetooth Connection to Devices

The SP-210 uses a built-in Bluetooth Low Energy Connection (BTLE) to connect wirelessly to a smart phone via the **uPyxis®** Mobile App or to a computer via the included Bluetooth Adapter (P/N: MA-NEB) and the **uPyxis®** Desktop App. To allow the SP-210 to connect via Bluetooth with other devices follow the steps below:

1. Power on the SP-210 by pressing **OK**.
2. Press **Sys/Cal** (**OK**) to launch the **DEVICE INFORMATION** screen.
3. Press **Diagnosis** (**<**) to launch the **SYSTEM DIAGNOSIS** screen.
4. Allow 5–10 seconds for the message in the top-right corner of the display change from **Starting BTLE...** to **BTLE Started** (Figure 9).
5. Choose to connect via one of two options:
 - (a) The **uPyxis®** Mobile App (see the **Use with uPyxis® Mobile App** section), or
 - (b) The **uPyxis®** Desktop App (see the **Use with uPyxis® Desktop App** section).

8.2 Factory Reset

Use the following steps to restore all device parameters to factory default:

1. Power on the SP-210 by pressing **OK**.
2. Press **Cal/Sys** (**OK**) to launch the **DEVICE INFORMATION** screen.
3. Press **Diagnosis** (**<**) to launch the **SYSTEM DIAGNOSIS** screen.
4. Allow 5–10 seconds for the message in the top-right corner of the display change from **Starting BTLE...** to **BTLE Started**.
5. Press **Factory** (**<**). The display updates as shown in Figure 10.
6. Press **OK** (**>**) to start the factory reset.
7. The message “Factory reset done.” will appear on the display.

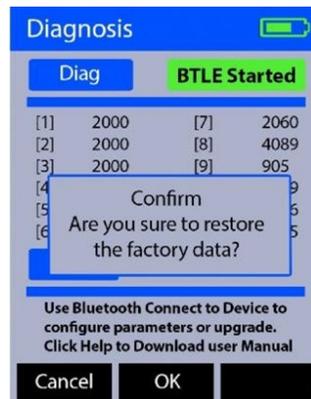


Figure 10.

9 Use with uPyxis® Mobile App

9.1 Download uPyxis® Mobile App

Download uPyxis® Mobile App from [Apple App Store](#) or [Google Play](#).



Figure 11. uPyxis® Mobile App installation

9.2 Connecting to uPyxis® Mobile App

Connect the SP-210 sensor to a mobile smart phone according to the following steps:

1. Follow the steps in the **Bluetooth Connection to Devices** section to make the SP-210 discoverable.
2. Open **uPyxis®** Mobile App.
3. On **uPyxis®** Mobile App, pull down to refresh the list of available Pyxis devices.
4. If the connection is successful, the SP-210 and its Serial Number (SN) will be displayed (Figure 12).
5. Press on the **SP-210 image**.



Figure 12.

9.3 System Screen

When connected, the uPyxis® Mobile App will default to the **System** screen. From the **System** screen, users can change the **Device Name**, find the **Serial Number**, **Hardware Version**, and **Firmware Version**, as well as update the firmware of the SP-210 by pressing **Check Update**. If a firmware update is available, press **Get Firmware**. Once the new firmware is downloaded, press **Upgrade Firmware**.

NOTE *The firmware update process takes some time and will require the SP-210 to stay within range (approximately 10 ft without obstructions) for the entire duration of the update.*

Once the update is complete, the SP-210 will reboot which will disconnect the SP-210 from the uPyxis® Mobile App.

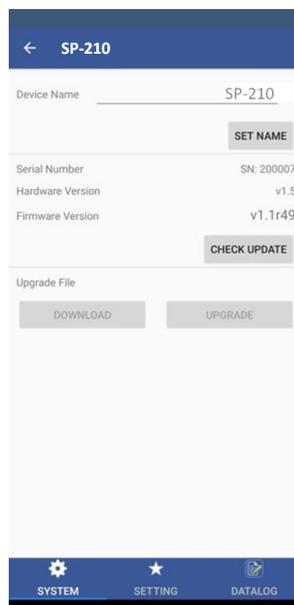


Figure 13.

9.4 Setting Screen

From the **Setting** screen, the user can set the **Power off time** and **Screen off time** in seconds.

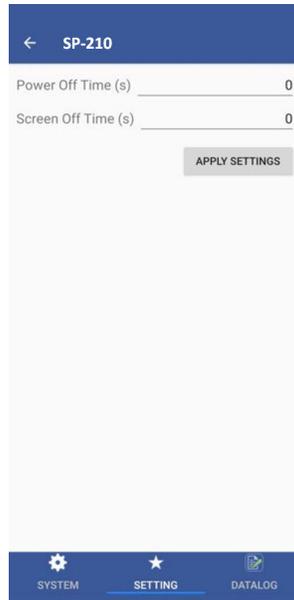


Figure 14.

9.5 Datalog Screen

From the **Datalog** screen, the user can view and export the internal log files of the SP-210 by pressing **Read Datalogs** and selecting the desired datalog (these are separated by month). The SP-210 will then populate any relevant log event from the selected datalog which can be viewed in more detail by pressing **Read Record** or exported as a CSV document by pressing **Export/Share**.

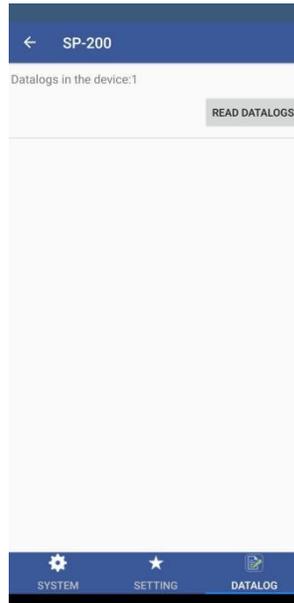


Figure 15.

10 Use with uPyxis® Desktop App

10.1 Install uPyxis® Desktop App

Download the latest version of **uPyxis®** Desktop software package from: <https://pyxis-lab.com/upyxis/> this setup package will download and install the Microsoft.Net Framework 4.5 (if not previously installed on the PC), the USB driver for the USB-Bluetooth adapter (MA-NEB), the USB-RS485 adapter (MA-485), and the main **uPyxis®** Desktop application. Double click the **uPyxis.Setup.exe** file to install.

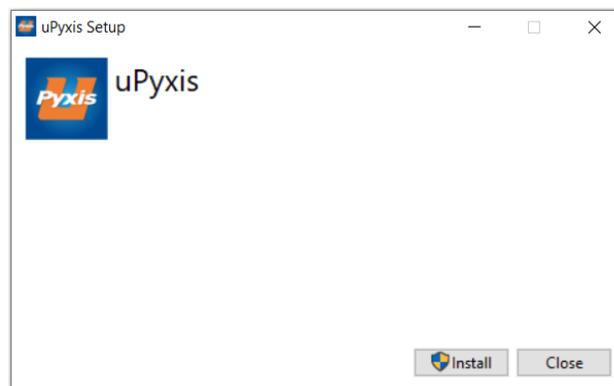


Figure 16. uPyxis® Desktop App installation

Click **Install** to start the installation process. Follow the screen instructions to complete the USB driver and uPyxis installation.

10.2 Connecting to uPyxis® Desktop App

Connect the SP-210 to a Windows computer using a Bluetooth/USB adapter (P/N: MA-NEB) according to the following steps:

1. Follow the steps in the **Bluetooth Connection to Devices** section to make the SP-210 discoverable.
2. Plug the Bluetooth/USB adapter into a USB port in the computer.
3. Launch **uPyxis®** Desktop App.
4. On **uPyxis®** Desktop App, click Device → **Connect via USB-Bluetooth** (Figure 17).
5. If the connection is successful, the SP-210 and its Serial Number (SN) will be displayed in the left pane of the **uPyxis®** window.

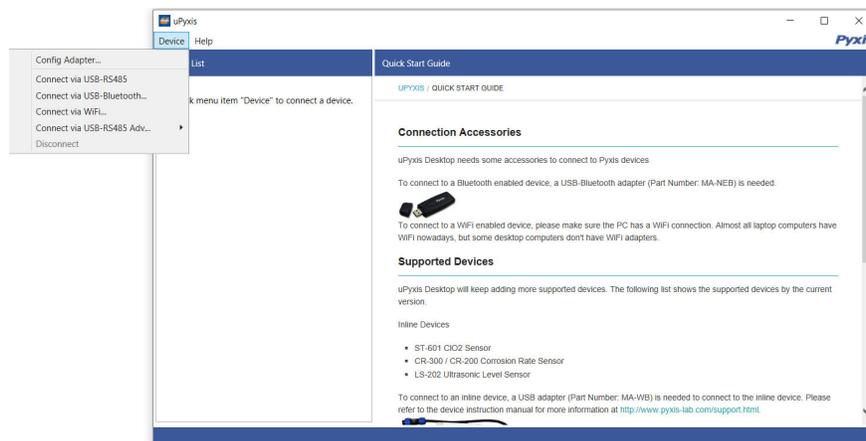


Figure 17.

10.3 System Screen

Once connected to the device, a picture of the device will appear on the top-left corner of the window and the uPyxis® Desktop App will default to the **System** screen. From the **System** screen, users can upgrade the firmware by selecting an appropriate firmware file (contact service@pyxis-lab.com for these firmware files) and clicking **Upgrade Firmware**.

NOTE *The firmware update process takes some time and will require the SP-210 to stay within range (approximately 10 ft without obstructions) for the entire duration of the update.*

Once the update is complete, the SP-210 will reboot which will disconnect the SP-210 from the uPyxis® Mobile App.

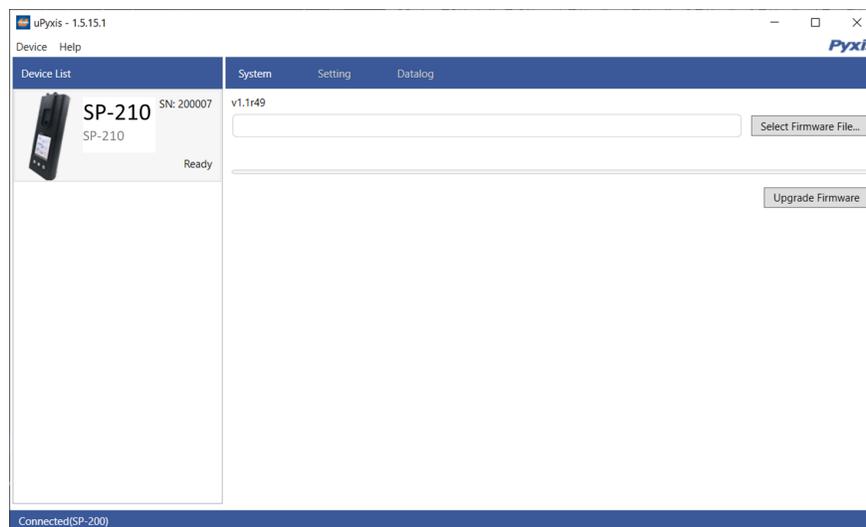


Figure 18.

10.4 Setting Screen

From the **Setting** screen, the user can set the **Power off time** and **Screen off time** in seconds.

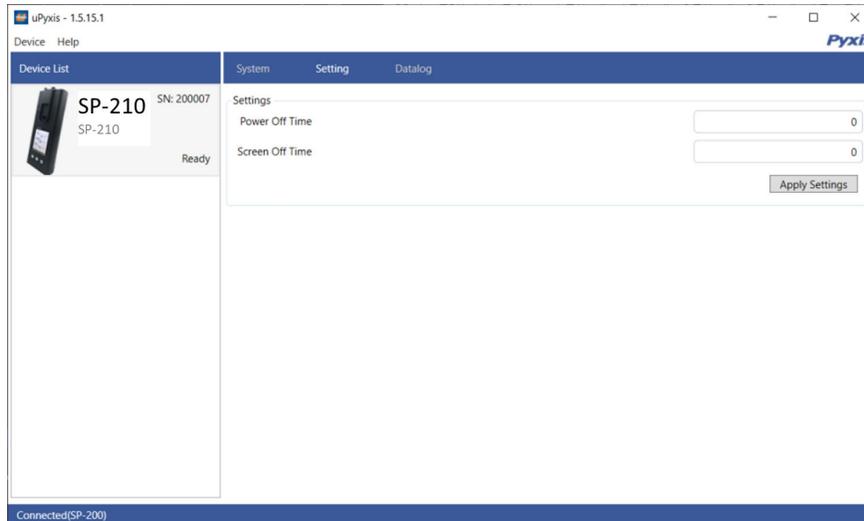


Figure 19.

10.5 Datalog Screen

From the **Datalog** screen, the user can view, delete, and export the internal log files of the SP-210 by clicking **Read Datalog List** and selecting the desired datalog (these are separated by month). The SP-210 will then populate any relevant log event from the selected datalog which can be viewed in more detail by clicking **Read Datalog**, deleted by clicking **Delete**, or exported by clicking **Export as .CSV File**.

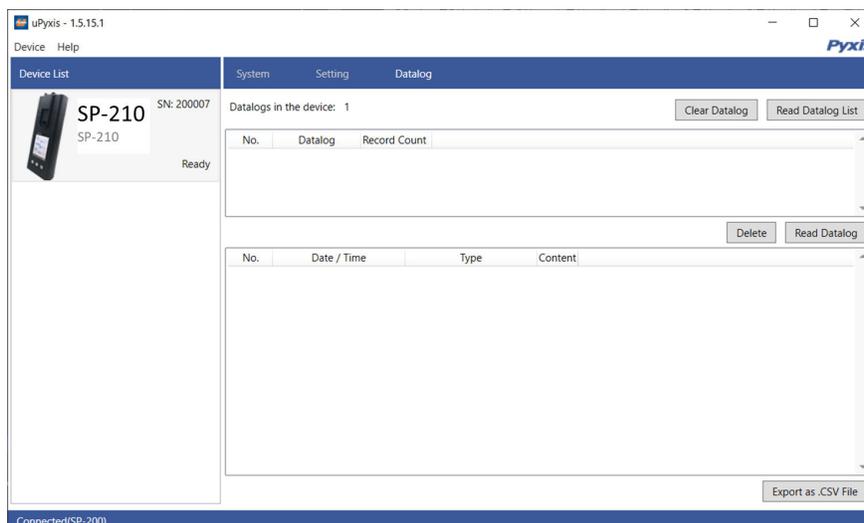


Figure 20.

11 Device Maintenance and Precaution

11.1 Maintenance Best Practices and Quick Tips

For greatly increased working life and ease of use of the SP-210 follow the list of maintenance best practices and quick tips below:

- Use a soft cloth or lint free paper tissue to clean the sample cell periodically. Remove debris, scale, and deposit promptly.
- Although the SP-210 is protected from water damage, it is a good practice to avoid water entering the sample cell. Deposits left behind when the water is evaporated could affect performance.
- During storage and transportation, do not leave sample water in the sample cell.
- Replace batteries when the SP-210 displays a warning message indicating LOW BATTERY voltage. Remove batteries from the SP-210 battery compartment if the SP-210 is going to be placed in storage for a long period time.
- When the SP-210 is shipped, a desiccant pack is included in the desiccant compartment underneath the cover of the battery compartment. It is recommended that a new desiccant pack is replaced each time the batteries are replaced.

11.2 Storage

The SP-210 should be stored in the temperature range of 0–140 °F (-18–60 °C) and relative humidity less than 85% at 106 °F (41 °C). Do not leave the SP-210 in a parked vehicle as the temperature inside can reach above 150 °F in summer and -20 °F in winter. Remove batteries from the SP-210 battery compartment when in storage for a long period time.

12 Contact Us

Pyxis Lab, Inc

1729 Majestic Dr. Suite 5

Lafayette, CO 80026 USA

www.pyxis-lab.com

Phone: +1 (866) 203-8397

Email: service@pyxis-lab.com