# SP-395 Fluorometer

# Operational Manual
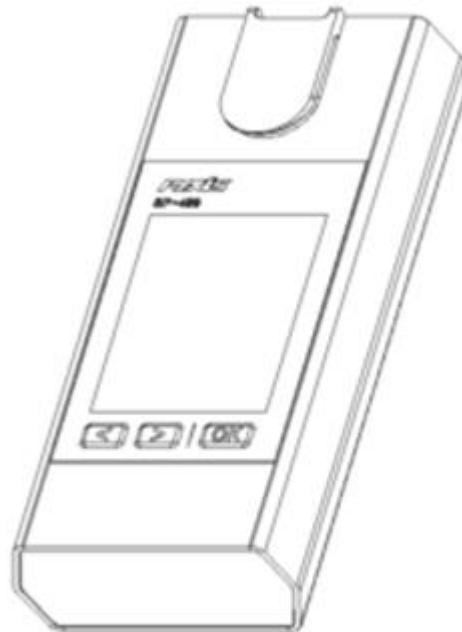


Version 1.2        October 2018

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## 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 disclosed herein. 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 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 in the course of 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.

### Shipping
A Repair Authorization Number (RA) must be obtained from the Technical Support (service@pyxis-lab.com) 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.

# 1. General Description

## 1.1. Specification

| Measurement Range | 0.1-7.5 ppm HST |
|---|---|
| Detection Limit | 0.1 ppm HST |
| Accuracy | ±0.1 ppm HST |
| Battery | 9V alkaline battery |
| Typical Battery Life | 3200 readings (480mAh battery) |
| Display | 320x240 TFT-LCD, visible under direct sunlight |
| Dimension | L160 W74 H33 (mm) |
| Weight | 310g (without battery) |
| Temperature Range | 40 to 106 °F (4 to 41 °C) |
| Humidity | 85% at 106 °F (41 °C) |
| Environmental | IP67, dustproof and waterproof |

## 1.2. SP-395 Features

The Pyxis SP-395 analyzer is an ultraviolet fluorometer. It measures Halogenated tolytriazoles (HST) in a water sample. Main features include:

- Sample acidification is not required. HST measurement is independent of sample pH in the range of 6 to 10.

- Extra color and turbidity parameters measured are used for automatic compensation to eliminate interference.

- No sample cuvette is needed and variations associated with the cuvette is eliminated.

- Large color graphic screen that can be read in direct sunlight.

- A single conductivity calibration using a single standard covers the whole measurement range of 0 to 15000 µS/cm.

## 1.3. Unpacking the Instruments

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.

## 1.4.    Standard Accessories

- Quick Instruction Guide
- 9V Alkaline Battery
- Full Instrument Manual in available from www.pyxis-lab.com.

## 1.5.    Optional Accessories

- Carry Case for SP-395
- 1 ppm HST Standard
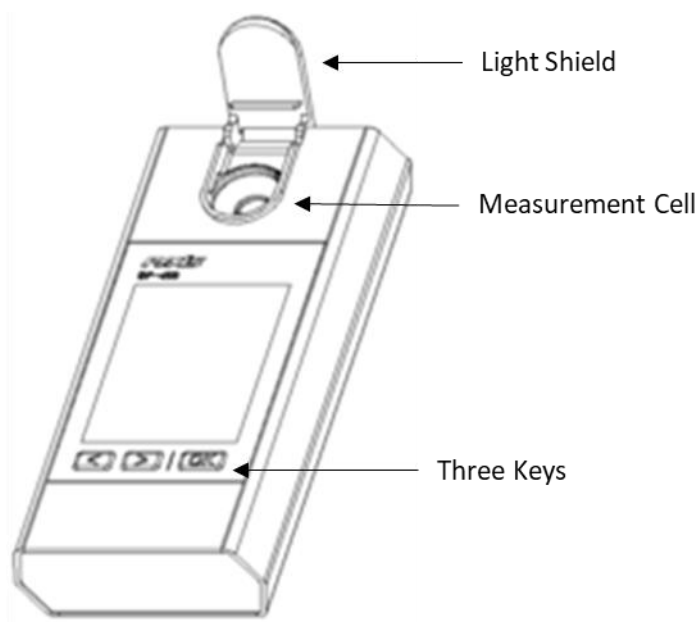- 1 Syringe

## 1.6.    Light Shield Cover



Figure 1 Light Shield in the Open Position

## 2. Starting SP-395

### 2.1. Battery Installation

The SP-395 is powered by a 9-volt alkaline battery. Do not use rechargeable nickel cadmium (NiCad) or lithium batteries. A typical 9V battery lasts for two months and enables about 3000 measurements. When the battery capacity is critically low, the SP-395 will display a LOW BATTERY warning for 5 seconds and then automatically turn off.

Replace the battery to resume operation of the SP-395 after the battery warning. The SP-395 will automatically turn on in the measurement mode after new battery installation.

The SP-395 battery compartment, shown in Figure 2, is on the back side of the instrument.

Install battery as follows:

1. Remove the battery compartment cover by loosening two screws.

2. Make sure that the smaller circular terminal (positive) of the battery is aligned with the hexagonal socket (positive) of the battery holder and the hexagonal socket (negative) of the battery with the circular terminal of the holder. Snap the battery firmly into the battery holder.

3. Replace the battery compartment cover, making sure that the sealing O-ring is lying flat on the battery holder. To prevent the SP-395 from accidently being turned on due to vibration, please firmly tighten the two screws.
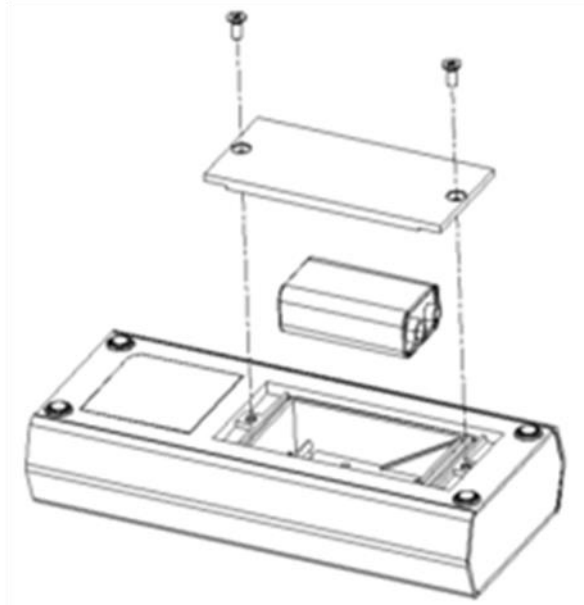
Figure 2 Install Battery

## 2.2.    Description of Control Keys

The SP-395 has three keys as shown in Figure 1. The left (**<**), right (**>**) and **OK** keys are used to launch an action indicated on the screen directly above the keys. Please note that the screen is not a tough screen. The labels above the keys indicate the function associated with the keys and can change according to the screen modes.

Figure 3 Key and Functions

## 2.3.   Turning On/Off SP-395

To turn on the SP-395, press **OK** momentarily and release.

To turn off the SP-395, press and hold the **OK** key. Release the **OK** key when the LCD display turns off (after about 3 seconds). The SP-395 will turn itself off after 60 seconds without user interaction through the keys.

## 3.  HST Measurement

## 3.1.   Measurement

When powered on, the SP-395 will be in the measurement (read) mode (see figure 3).  The displayed value is the concentration of HST.

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The light shield should be in the closed position in order to measure HST.  If only conductivity is measured, the light shield can be left in the open position.

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The SP-395 does not need to be turned off between measurements of two samples.  Rinsing the measurement cell several times is recommended.

## 3.2.    High Color and Turbidity Warning

The SP-395 has extra channels to measure sample turbidity and color to automatically compensate sample color and turbidity interference. If sample turbidity and color values determined are too high, a warning will be displayed.  In such a case, the user should filter the sample for HST measurement.

## 4.  Calibration

Calibration SP-395 requires deionized water and a standard solution.  HST calibration uses the 1 ppm or 2 ppm HST standard solution.

To calibrate HST, first select the HST measurement mode. Press the **Calib** key (**<**) to start the calibration procedure. Rinse the sample cell with deionized water three times.  Fill the cell with deionized water, close the light shield, and then press **ZERO** (**<**) to finish the zero calibration step.  If the zero calibration is successful, a check mark will be displayed next to Press **Zero** Button.  If any abnormal signal is detected, an error message will be shown.

Rinse the sample cell with the 1 ppm HST standard.  Fill the sample cell with the 1 ppm standard, close the light shield, and press **Slope** to finish the slope calibration step.  If the zero calibration is successful, a check mark will be displayed next to Press **Zero** Button.  If any abnormal signal is detected, an error message will be shown.

Figure 4



Figure 5

Figure 6

## 5. Device Information and Diagnosis

The device information is shown when the Info labeled **OK** key in the measurement mode is pressed momentarily (Figure 3). The screen contains the device serial number, software version, and hardware version (Figure 7). The battery life as a percentage and the standard that were used in the last calibration is also shown.

Press the diagnosis labeled key to switch to the diagnosis screen where raw measurement data are displayed (Figure 8). The information has no use for normal operation. Please 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.

Figure 7                               Figure 8

## 6. Wireless Connection

The Pyxis SP-395 can be connected to a smart phone or a computer via WIFI or Bluetooth for upgrading the device software.  The SP-395 can be wirelessly paired with other Pyxis devices for exchanging data. In the normal operation modes, the wireless function is turned off.  If you want to explore the SP-395 wireless functions, please contact Pyxis Lab Inc.

## 7. How to Clean SP-395

Soak the sampling cup of the SP-395 meter with handheld cleaning solution for 30 minutes. Rinse the SP-395 sampling cup with distilled water, wipe down sampling cup with Q-tip, rinse with distilled water once again, and then check for the flashing blue light inside the sampling cup of the SP-395 meter. If the surface is not entirely clean, continue to soak the SP-395 meter sampling cup for an additional 30 minutes. Pyxis Lab Handheld Cleaning Solution can be purchased at our online Estore/Catalog: https://pyxis-lab.com/product/handheld-device-cleaning-kit/.

Video on how to clean handheld meters: https://www.youtube.com/watch?v=OJDnCOjw7-M.