

# SP-395T

## Fluorometer

# Operation Manual

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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](mailto: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 – 10.0 ppm Tolytriazole (reagentless)
Item Identification	SP-395T (Part #50221)
Detection Limit	0.1ppm TTA
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 Pyxis SP-395T Major Features

The Pyxis SP-395T analyzer is an ultraviolet fluorometer. It measures non-halogenated Tolytriazole (TTA) directly without reagent. Main features include:

- Sample acidification is not required. TTA 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 necessary for use of this device and variations associated with the cuvette are eliminated.
- Large color graphical screen display that can be read in direct sunlight.

### 1.3 Unpacking the 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](mailto:service@pyxis-lab.com).

### 1.4 Standard Accessories

- Quick instruction guide
- 9V alkaline battery
- Full instrument manual is available by emailing your request to [service@pyxis-lab.com](mailto:service@pyxis-lab.com) or visiting [www.pyxis-lab.com](http://www.pyxis-lab.com)

### 1.5 Optional Accessories

- MA-700 Carry Case for SP395T (Part #50725)
- Pyxis Handheld Cleaning Kit Solution (Part #SER-02)
- 1ppm TTA Standard Solution / 2ppm TTA Standard Solution

### 1.6 Light Shield Cover

The light shield cover is shown in Figure 1. It should be in the closed position during measurement.

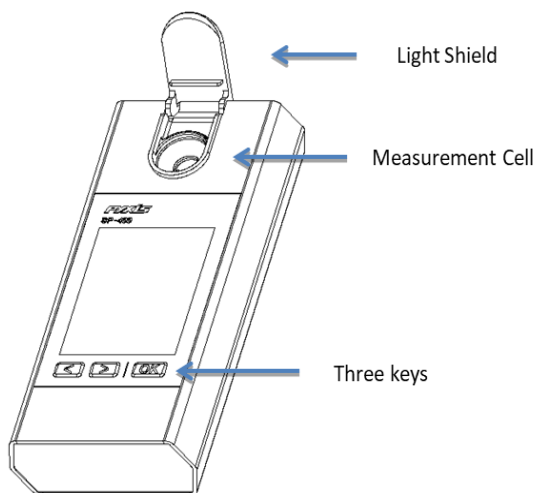


Figure 1 Light Shield in the Open Position

## 2 Start Pyxis SP-395T

### 2.1 Battery Installation

The SP-395T 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-395T will display a LOW BATTERY warning for 5 seconds and then automatically turn off.

Replace the battery to resume operation of the SP-395T after the battery warning. The SP-395T will automatically turn on in the measurement mode after new battery installation. The SP-395T 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. 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.
2. Replace the battery compartment cover, making sure that the sealing O-ring is lying flat on the battery holder. To prevent the SP-395T from accidentally being turned on due to vibration, please firmly tighten the two screws.

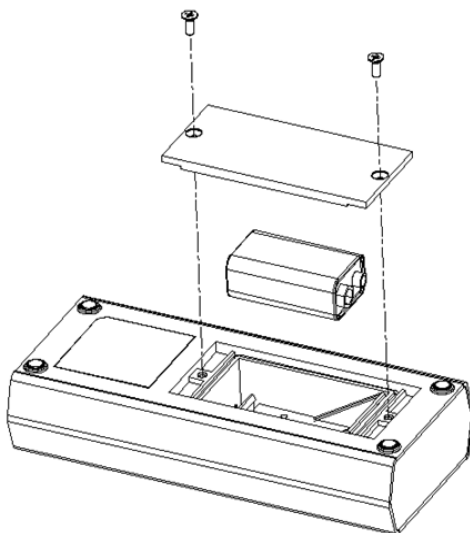


Figure 2 Install Battery

## 2.2 Description of the Control Keys

The SP-395T 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 touch screen. The labels above the keys indicate the function associated with the keys and can change according to the screen modes.



Figure 3 Keys and associated functions

## 2.3 Turning On/Off Pyxis SP-395T

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

### 3 Wireless Connection

The Pyxis SP-395T can be connected to a smart phone or a computer via Bluetooth/WiFi 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-395T wireless functions, please contact Pyxis Lab Inc [service@pyxis-lab.com](mailto:service@pyxis-lab.com).

### 4 Device Information and Diagnosis

The device information is shown when the Info labeled OK key in the measurement mode is pressed momentarily. The screen contains the device serial number, software version, and hardware version (Figure 4). The battery life as a percentage and the standard that were used in the last calibration are also shown.

Press the diagnosis labeled key to switch to the diagnosis screen where raw measurement data are displayed (Figure 5). 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](mailto:service@pyxis-lab.com)) for troubleshooting your device.

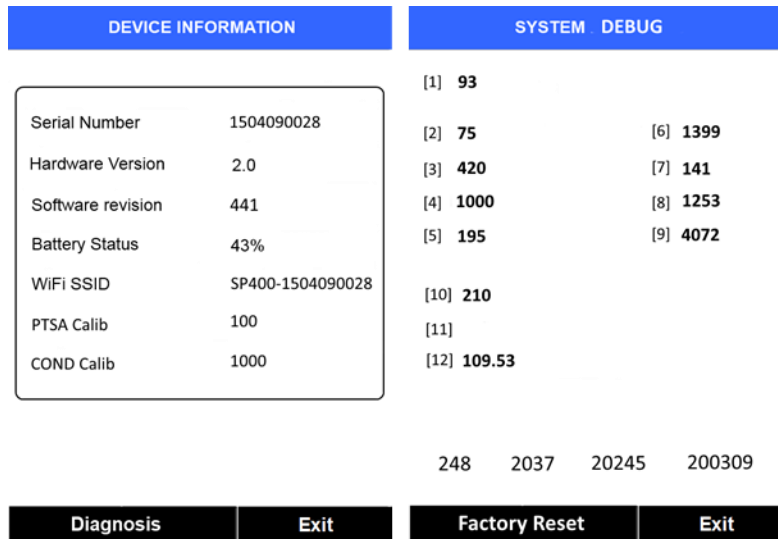


Figure 4

Figure 5



## 5 TTA Measurement

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

Conversion to Alternate Species = To convert the reading value to Halogenated Azole (HRA), you may multiply your TTA value reading by a factor of 0.75.

ie.  $3.6\text{ppm as TTA (SP-395T Reading)} \times 0.7 = 2.7\text{ppm as Halogenated Azole}$

The water sample can be transferred to the measurement cell using a pipette or filled directly from a faucet, sample bottle, or sample valve.

The light shield should be in the closed position in order to measure TTA.

Allow 5 seconds for the SP-395T to reach stable readings. For a sample containing 2 ppm TTA, the measured TTA should be stabilized within the range of 1.9 to 2.1 ppm.

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

### 5.1. High Color and Turbidity Warning & Background Fluorescence

The SP-395T has extra channels to measure sample turbidity and color. These measured parameters are used in internal algorithms to automatically compensate sample color and turbidity interference from your final TTA value. 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 TTA measurement. Please note some surface makeup waters can contain background fluorescence from organic contamination. In applications like this it is important to pre-determine your background fluorescence and subtract that value from your final reading. Measure the untreated surface makeup water and record the value. Determine background for final reading adjustment.

## 6 Calibration

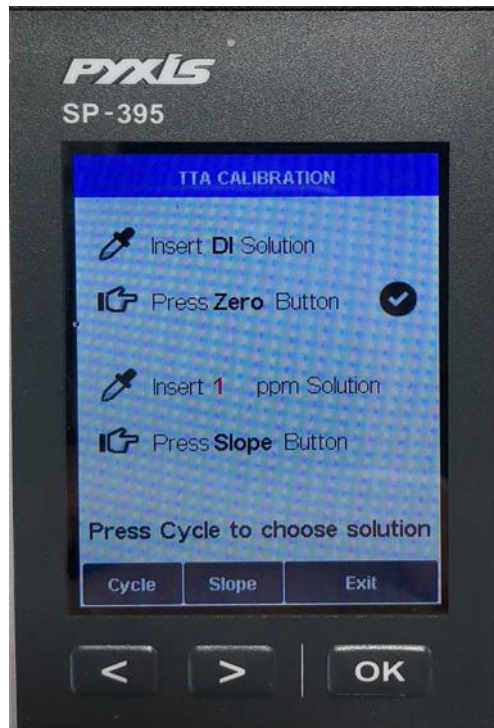
Calibration of the SP-395T requires deionized water and a standard solution. TTA calibration uses the 1 ppm (TTA 1ppm PN: 57012) or 2 ppm (TTA 2ppm PN: 57013) TTA standard solution. Pyxis Calibration Standards can be purchased at our online Estore/Catalog <https://pyxis-lab.com/product-category/calibration-standards-reagents/>

To calibrate TTA 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 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 TTA 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.



DI Solution



1 ppm Solution



Calibration Succeed

## 7 Cleaning Procedure for SP-395T Sample Well

The Pyxis Handheld Devices from Pyxis Lab have proven to be an industry leader in accurately detecting PTSA fluorescent tracer in cooling and process water applications while compensating for color and turbidity. Over time, inorganic films will develop on the sample well that can gradually result in an interference and calibration loss. We've found that our cleaning solution also helps ensure the accuracy of your TTA reading through complete removal of this film contamination. Pyxis recommends a minimum cleaning frequency of once per month be maintained dependent on application needs and foulant level. High stress applications with excessive suspended solids and corrosion/scale by-product can result in the need to increase the frequency of cleaning your handheld device. For field use, Pyxis has developed a custom field cleaning kit for all your Pyxis handheld devices specifically designed to target a wide variety of inorganic deposits and foulants commonly experienced in cooling water applications. Pyxis Handheld Device Cleaning Solution can be purchased at our online Estore/Catalog <https://pyxis-lab.com/product/handheld-device-cleaning-kit/>.



### Procedure

- Soak your handheld device in 10 mL of cleaning kit solution
- Allow to soak for 30 minutes
- Then use cotton swab or soft cloth to gently remove excessive deposit after soaking
- Rinse with DI water then check for flashing blue light inside your handheld device
- If surface is not entirely clean soak the device for an additional 30 minutes then repeat check