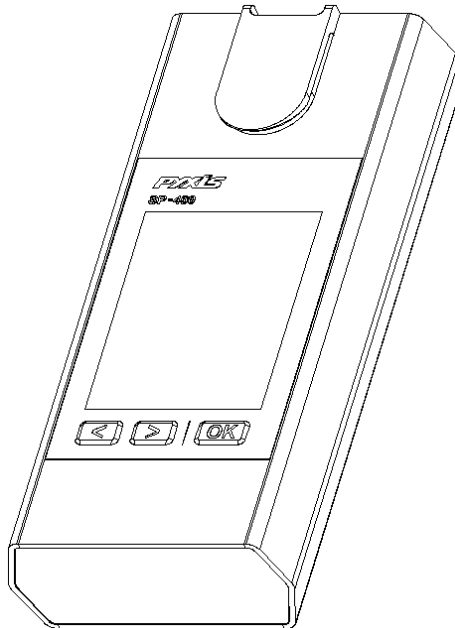# SP-400 Portable Water Analyzer

Operation Manual

Rev. A

Firmware version 1.02

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1 Contents

Confidentiality

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

PYXIS

PTSA	
Measurement Range	0 to 300 ppb
Excitation Wavelength	365 nm LED
Emission Wavelength	410 nm
Wavelength Accuracy	±1 nm
Resolution	0.1 ppb
Accuracy	±1% or ±1.0 ppb
Calibration Solution Point	0, 100, 200, and 300 ppb
Conductivity	
Measurement Range	0-15000 μS/cm
Accuracy	±10% or ±0.5uS (0 to20 μS/cm)
	±1% (20 to 10000 μS/cm)
	±2% (10000 to 15000 μS/cm)
Resolution	1 μS/cm
Time to Reading Stabilization	5 seconds
Calibration Solution Point	Combined, 1000μS/cm with 100ppb PTSA
	500,1000,2500, and 5000 μS/cm
	User defined (500-5000 μS/cm)
Temperature	
Measurement Range	5 – 45 °C (42-112 °F)
Resolution	0.1 °C (0.2 °F)
Accuracy	±1% of reading
Compensation Method	Automatic to 25 °C
Others	
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-400 Major Features

The Pyxis SP-400 analyzer simultaneously measures the electrical conductivity value and the concentration of fluorescent tracer PTSA of a water sample. Main features include:

- The SP-400 is pre-calibrated for measuring PTSA (pyrenetetrasulfonic acid) in the range of 0 to 300 ppb. The fluorescence PTSA measurement is automatically compensated for sample color and turbidity interference.

- Conductivity and PTSA fluorescence can be calibrated using a single combined standard through a user-friendly menu-driven procedure.

- 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 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.

1.4 Standard Accessories

- Quick instruction guide
- 9V alkaline battery
- Full instrument manual is available from www.pyxis-lab.com

1.5 Optional Accessories

- Carrying case for SP-400 (MA-400B)
- 100 ppb PTSA + 1000 μS/cm (KCl) combined standard in a 500 ml brown plastic bottle (MA-1010C)

1.6 Light Shield Cover

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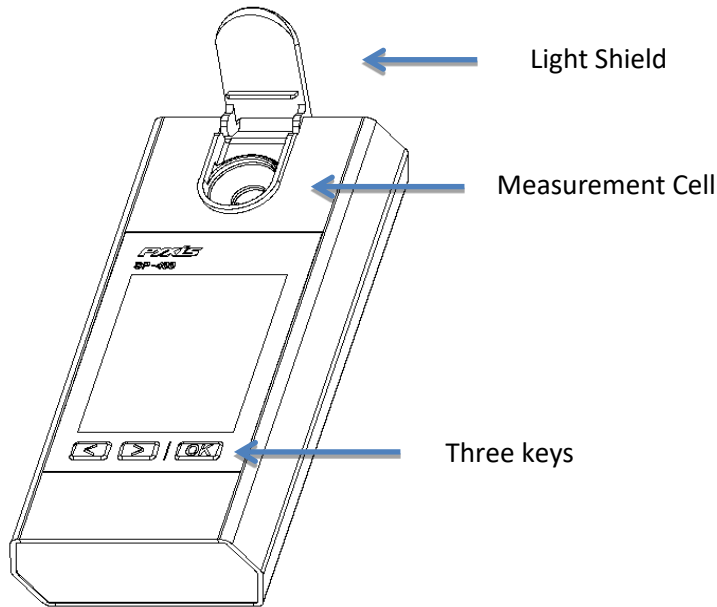
Light Shield

Measurement Cell

Three keys

Figure 1 Light Shield in the Open Position

2 Start Pyxis SP-400

2.1 Battery Installation

The SP-400 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-400 will display a LOW BATTERY warning for 5 seconds and then automatically turn off.

Replace the battery to resume operation of the SP-400 after the battery warning. The SP-400 will automatically turn on in the measurement mode after new battery installation.

The SP-400 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-400 from accidently being turned on due to vibration, please firmly tighten the two screws.

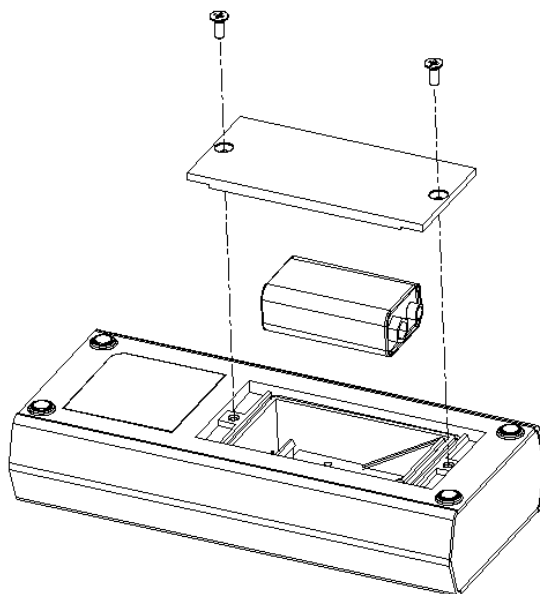Figure 2 Install Battery

2.2 Description of the Control Keys

The SP-400 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.
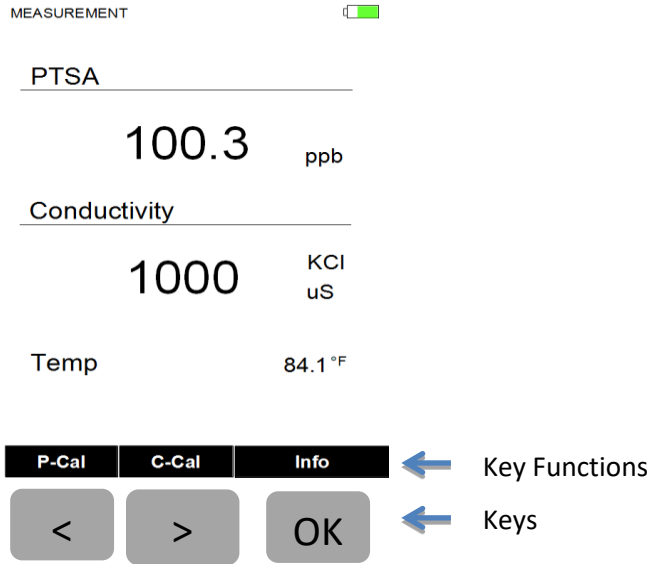
Figure 3 Keys and associated functions

2.3 Turning On/Off Pyxis SP-400

To turn on the SP-400, press OK momentarily and release.

To turn off the SP-400, press and hold the OK key. Release the OK key when the LCD display turns off (after about 3 seconds). The SP-400 will turn itself off after 60 seconds without user interaction through the keys.

3 PTSA and Conductivity Measurement

3.1 Measurement

When powered on, the SP-400 will be in the measurement (read) mode (see figure 3).

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 PTSA. If only conductivity is measured, the light shield can be left in the open position.

Allow 5 seconds for the SP-400 to reach stable PTSA and conductivity readings. 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-400 had been equilibrated (stored). For a sample with conductivity in the range of 100 to 6000 μS/cm, the measured conductivity value should be stabilized in the range of 98 – 102 to 5940 – 6060 μS/cm, respectively. For a sample containing 100 ppb PTSA, the measured PTSA should be stabilized within the range of 98 to 102 ppb.

The SP-400 does not need to be turned off between measurements of two samples. Rinsing the measurement cell several times is recommended, especially when switching to a sample with conductivity significantly different than the previous sample.

3.2 Conductivity Temperature Compensation

The displayed conductivity value is automatically corrected to the nominal value at the reference temperature 25.0°C with using the sample temperature measured. The commonly used linear correction equation is used:

Conductivity at 25°C = (Conductivity at $T_{measure}$)/ [1 + 0.02($T_{measure}$ – 25)], where $T_{measure}$ is the sample temperature in Celsius.

3.3 High Color and Turbidity Warning

The SP-400 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 PTSA measurement warning will be displayed. In such a case, the user should filter the sample for PTSA measurement.

4 Calibration

The SP-400 fluorescence PTSA measurement and conductivity measurement can be calibrated separately. To calibrate PTSA measurement requires the 100, 200, or 300 ppb PTSA standard solution. A standard with conductivity value 500, 1000, 2500, or 5000 **μS** can be used to calibrate conductivity. Optionally, the user can use a standard with any conductivity value in the range of 500 to 5000 **μS,** such as the commonly used 1412 (or 1413) μS standard, to calibrate the SP-400.

For convenience, the SP-400 can be calibrated using a combined standard with 100 ppb PTSA + 1000 **μS** KCl conductivity.

It is highly recommended to use the PTSA standalone calibration procedure if the user desires to achieve higher accuracy for low range PTSA measurements (< 20 ppb). The Combined PTSA/Conductivity Calibration procedure yields the PTSA calibration slope only and does not change the zero point.

PTSA Standalone Calibration (2 Point with Zero)

1) Rinse sample cell with DI water. Fill sample cell with DI water. Close the light shield.

NOTE: In emergency, "non-PTSA" water, such as city water, may be used, but re-calibrate using DI water for the zero step as soon as it is available.

2) Power on by a short press of OK key. Allow 5-10 seconds for meter to stabilize.

3) A screen similar to Figure 4 appears. The unit is actively reading and displaying both PTSA and Conductivity. The values will be very low if DI water is used; conductivity value is not critical but PTSA value should be near zero. A low non-zero value (e.g. 0.2 or 0.4, etc.) is not problematic.

MEASUREMENT

PTSA

0.0 ppb

Conductivity

2.8 KCl uS

Temp 76.2 °F

| P-Cal | C-Cal | Info |
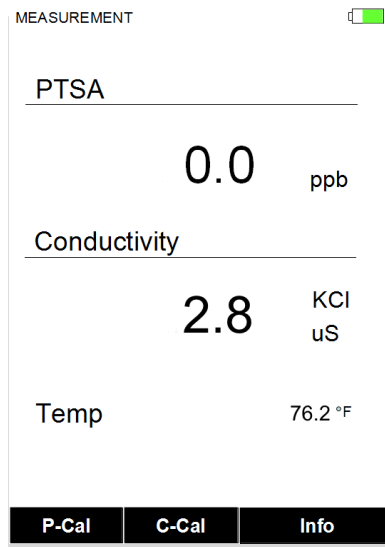
Figure 4

4) Press P-Cal labeled key (<).
5) Figure 5, the first screen of the PTSA (alone) calibration, appears.

PTSA CALIBRATION

🖊 Injecting DI water

☞ Press Zero Button

Zero	Slope	Exit

Figure 5

6) Press Zero labeled key (<) to set the zero point.
7) After successful zero set, a checkmark symbol will appear next to "Press Zero Button" to confirm success. The screen will also update to show the Slope steps, as in Figure 6. The Cycle command replaces Zero on the black bar and the possible PTSA selection is displayed in red. The default is 100 ppb.

PTSA CALIBRATION

🖊 Injecting DI water

☞ Press Zero Button   ✔

🖊 Injecting 100 ppb standard

☞ Press Slope Button

Press Cycle to choose solution

Cycle	Slope	Exit

Figure 6

8) Rinse the sample cell out thoroughly (twice at least) with the desired PTSA standard and with the measurement cell near full, close the light shield.

9) If the 100 ppb PTSA default is not the desired PTSA for calibration, press the Cycle labeled key (<) to cycle between the PTSA standards 100-200-300 ppb (it repeats). The value in red will update as the setting is changed. If the default of 100 is desired then the use of Cycle (<) is not required. Ensure the value selected matches the standard actually present.

10) Press the Slope labeled key (>) to set the slope of the standard desired and complete PTSA calibration.

11) If calibration is successful, the screen will update with a second checkmark for the Slope setting as in Figure 7, and the message Calibration Succeed will appear.
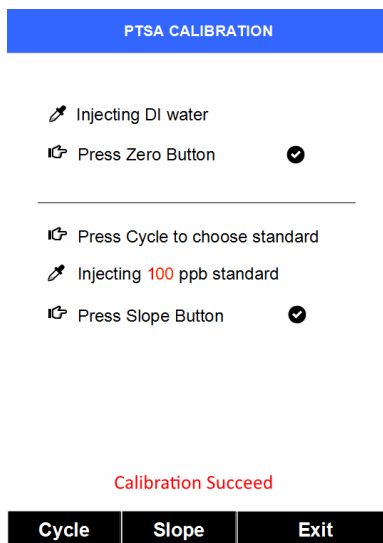

Figure 7

12) Press the Exit labeled key (OK) to return to the measurement screen. The screen will be similar to Figure 8. Slight variance in the PTSA value is not problematic. If Exit is done before the second checkmark appears, the calibration will not be completed and must be re-done.
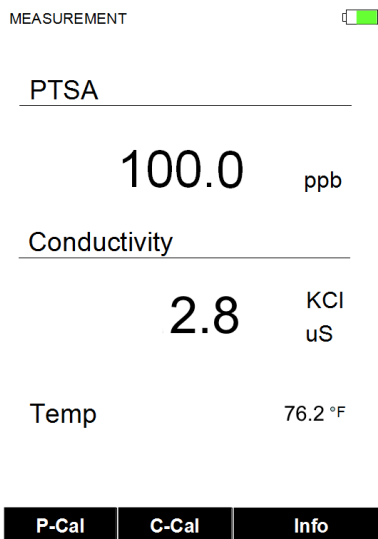
MEASUREMENT 🔋

PTSA
_____

100.0   ppb

Conductivity
_____

2.8   KCl
uS

Temp   76.2 °F

| P-Cal | C-Cal | Info |

Figure 8

Quick Tips

1) If the 100 ppb PTSA concentration (the default) is the desired calibration and it is what has been added to the measurement cell for the slope (step 9), then the key presses from the beginning, including the power on, are: OK, <, <, {refill with PTSA standard}, >, then after completion, Exit to return to Measurement Mode.

2) If screen darkens, the timer will shortly power down the meter. Any key press will reset the timer, but this press does not perform any activity other than timer restart. The next key press needed must still be done after this timer re-set press. The timer is set to help maximize battery life. After the key press to set the zero point, there is 40 seconds to rinse and refill the measurement cell with PTSA standard (and close the light shield), before the next key press of either "Cycle" (<) to change PTSA setting or "Slope" (>) to execute the final part of the calibration.

3) After returning to read mode after calibration, rinse several times with the first sample. The unit will continue to read the sample values without any further key presses if it has not powered off. If there are no key presses for 20 seconds the screen will darken (40 seconds in a calibration mode), and after another 20 seconds without key activity will power down. If you have multiple samples a quick press on OK or the other keys will keep the timer going, giving you time to add the next one. To ensure accurate results and avoid sample carry-over/contamination, rinse at least twice with the next sample before closing light shield.

4) Always rinse the unit with clean water after use and dry by clean tissue or paper towel. Be gentle handling the open light shield.

5) After a successful calibration, the unit does not automatically return to the measurement mode. If Exit is held down too long the unit will power down rather than returning to the measurement mode.

4.1 Standard Conductivity Calibration (500, 1000, 2500, or 5000 μS)

Example based on 1000 μS

1) Rinse sample cell with desired conductivity standard.
2) Power on by a press of OK key. Allow 5-10 seconds for meter to stabilize.
3) A screen similar to Figure 9 will appear. The unit is reading both conductivity and PTSA if the light shield is in the closed position. For conductivity measurement or calibration, the light shield is not required to be closed. The conductivity reading should be close but not necessarily the same as the value of the standard added.

MEASUREMENT

PTSA

0.0 ppb

Conductivity

1000 KCl uS

Temp 76.2 °F

| P-Cal | C-Cal | Info |
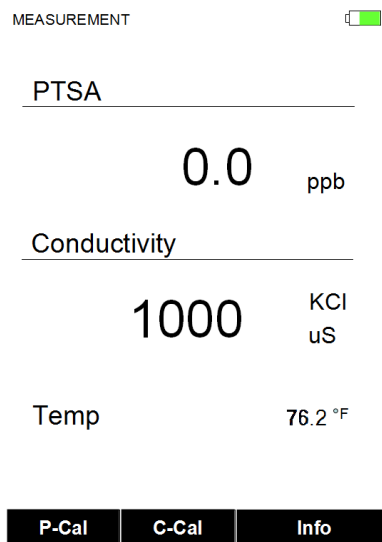
Figure 9

4) Press C-Cal labeled key (>).
5) A screen similar to Figure 10 will appear. This is the default conductivity calibration mode, which is a Combined Calibration (this requires a combined standard with both PTSA and Conductivity). It is easily changed to the other calibration modes as desired.

COMBINED CALIBRATION

Target   Use < and > to cycle

1000 µS with 100 ppb PTSA

Measured

µS

ppb

Temp   76.2 °F

Hold Calib 3 seconds to Exit
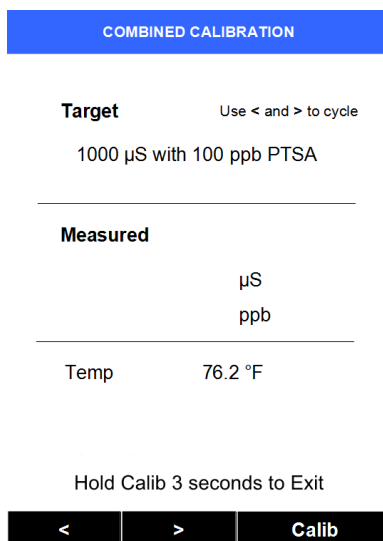
| < | > | Calib |

Figure 10

6) Use the > key to cycle to the desired calibration, e.g. 1000 µS. The Standard Conductivity selections are 500, 1000, 2500 or 5000 µS. For other conductivity values the User Defined calibration mode must be used. With each press of >, various elements of the display will update, such as the calibration title, the type ("Target"), and the black bar. When the 1000 µS calibration is selected the screen will appear as in Figure 11.

CONDUCTIVITY CALIBRATION

Target   Use < and > to cycle

1000   µS

Measured

µS

Temp   76.2 °F

Hold Calib 3 seconds to Exit

| < | > | Calib |

Figure 11

13
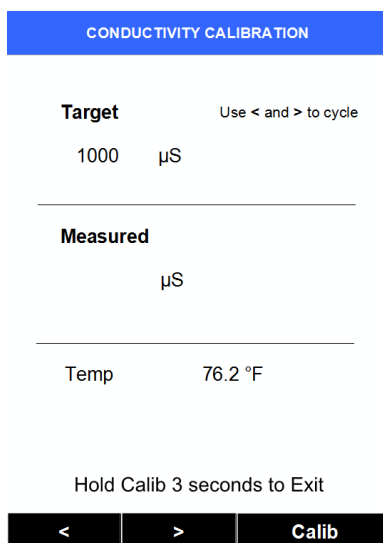
7) Press OK key (labeled Calib) to confirm the specific Conductivity calibration desired. The screen will update as in Figure 12.

CONDUCTIVITY CALIBRATION

Target   Use < and > to cycle

1000   µS

Confirm

M   **Start Calibration?**

Temp   76.2 °F

Hold Calib 3 seconds to Exit

Cancel	Exit	OK
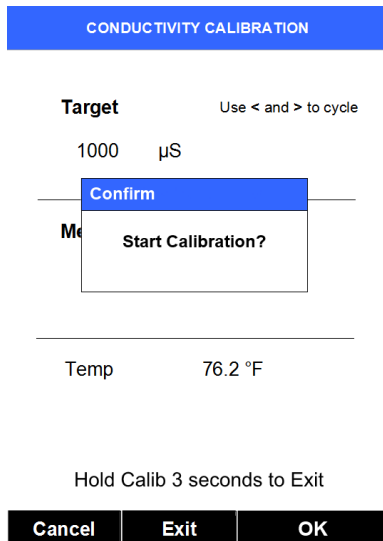
Figure 12

8) Start the calibration by a press of OK key (skip 9 and 10).
9) Or, press Cancel (< key) to return to the Conductivity calibration selection screen (as in Figure 10). If desired, the conductivity calibration type can be changed with use of ">" or "<".
10) Or, press Exit (> key) to abandon calibration, and return to the basic read mode (Figure 1). No calibration will be done.
11) After successful conductivity calibration, the meter will read the sample and display the value in the measured section. A slight variance from the target is not problematic. A message will display in red "Calibration Succeed". The meter display will appear similar to Figure 13.

```
┌─────────────────────────────────────────┐
│         CONDUCTIVITY CALIBRATION         │
├─────────────────────────────────────────┤
│                                          │
│   Target            Use < and > to cycle │
│                                          │
│     1000      µS                         │
│   ────────────────────────────────────   │
│                                          │
│   Measured                               │
│     1000      µS                         │
│                                          │
│   ────────────────────────────────────   │
│                                          │
│    Temp            76.2 °F               │
│                                          │
│                                          │
│         Calibration Succeed              │
│        Hold Calib 3 seconds to Exit      │
├──────────────┬──────────┬────────────────┤
│      <       │    >     │     Calib      │
└──────────────┴──────────┴────────────────┘
```
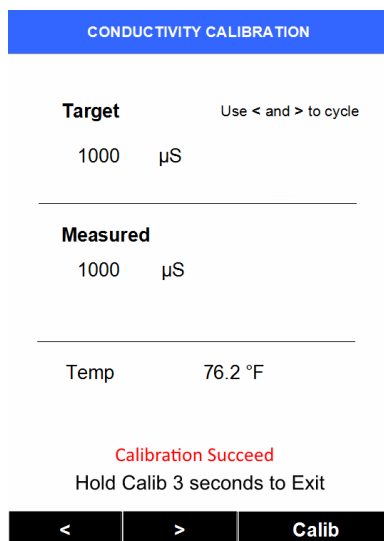
Figure 13

12) After successful calibration, press and hold OK key for 3 seconds (labeled Calib), to return to the basic read (measurement) screen. Return to read mode is not automatic, except through a power-off cycle.

13) The unit will auto-read the conductivity and PTSA of a fresh sample in the measurement cell without further key presses. Allow 5-10 seconds for the meter to stabilize after closing the light shield. The new sample should be rinsed at least twice in and out of the chamber to ensure no carryover from the standard or other samples. If the display darkens, press any key to re-set the timer. If multiple samples are being done this will be necessary to prevent the automatic power down that protects the battery life.

Quick Tips

6) If the 1000 µS Conductivity is the desired calibration, then the key presses from the beginning (including power on) are: OK, > (C-CAL), > and > (to move to 1000 µS), OK (confirm 1000), and OK (start calibration). A final long press of OK (3 seconds) exits to read.

7) 500, 2500 and 5000 µS all work like 1000 µS except there will be different numbers of > presses to cycle to the one desired. The screens will appear as above except for the value of the target.

8) Other conductivity values can be calibrated. The User Defined procedure will be required, and the appropriate conductivity solution desired.   Ensure the value set matches the conductivity standard used. See the User Defined procedure.

4.2 User Defined Conductivity Calibration Procedure

1) Rinse sample cell with desired conductivity standard.
2) Power on by a press of OK key. Allow 5-10 seconds for meter to stabilize.
3) A screen similar to Figure 14 will appear. The unit is reading both conductivity and PTSA. The PTSA will be low or zero if the standard is solely a conductivity one. The conductivity reading should be close but not necessarily the same as the value of the standard added.

MEASUREMENT

PTSA

0.0   ppb

Conductivity

1412   KCl
         uS
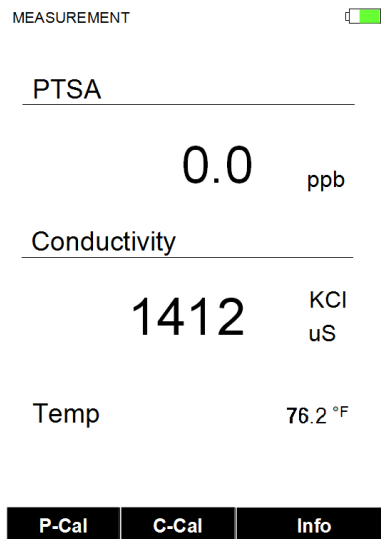
Temp   76.2 °F

| P-Cal | C-Cal | Info |

Figure 14

Press C-Cal labeled key (>).

4) A screen similar to Figure 15 will appear. The normal default conductivity calibration mode is the Combined Calibration, but is easily changed to the other calibration modes as desired.

COMBINED CALIBRATION

Target   Use < and > to cycle

1000 µS with 100 ppb PTSA

Measured

µS

ppb

Temp   76.2 °F

Hold Calib 3 seconds to Exit
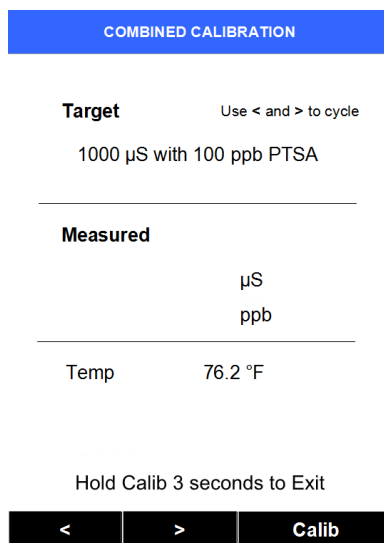
| < | > | Calib |

Figure 15

5) Use the < or > keys to cycle to the User Defined calibration. With each press various elements of the display will update, such as the calibration title, the type ("Target"), and the black bar. When the User Defined calibration is selected the screen will appear similar to Figure 16.

USER DEFINED CALIBRATION

Target   Use + and - to change

1412   µS

Measured

µS

Temp   76.2 °F

Press Set to Confirm

| - | + | Set |

Figure 16

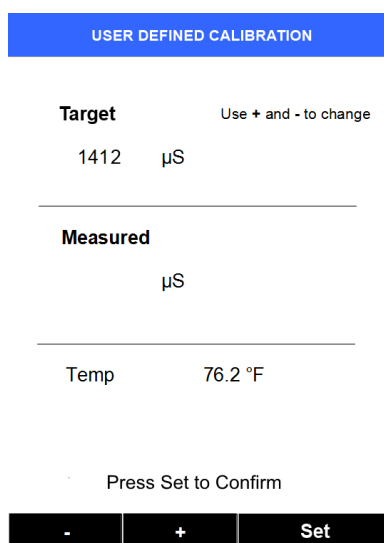6) If the displayed Target numeric value is not that desired, use the - and + labeled keys (< or >) to adjust the value to that desired. Holding them down will scroll the values at a speedier rate. Once the value is as desired, press Set (OK) to confirm the numeric value to be used. Ensure the selected value matches the standard being calibrated with. The black bar will update as in Figure 17 (it now shows Calib rather then Set). Press Calib (OK). The screen will update to Figure 18 with the Confirmation popup.
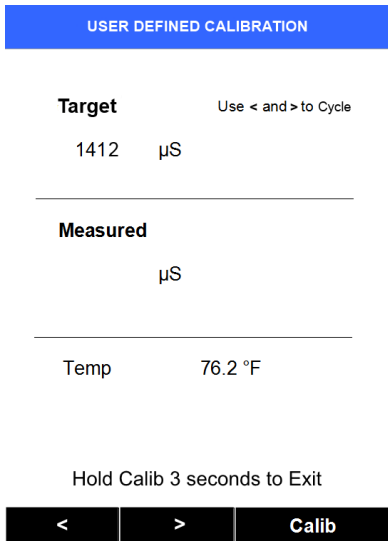
USER DEFINED CALIBRATION				USER DEFINED CALIBRATION		
Target	Use < and > to Cycle			**Target**	Use < and > to Cycle	
1412	µS			1412	µS	
				Confirm		
Measured				M	**Start Calibration?**	
	µS					
Temp	76.2 °F			Temp	76.2 °F	
Hold Calib 3 seconds to Exit				Hold Calib 3 seconds to Exit		
<	>	Calib		Cancel	Exit	OK

Figure 17   **Figure 18**
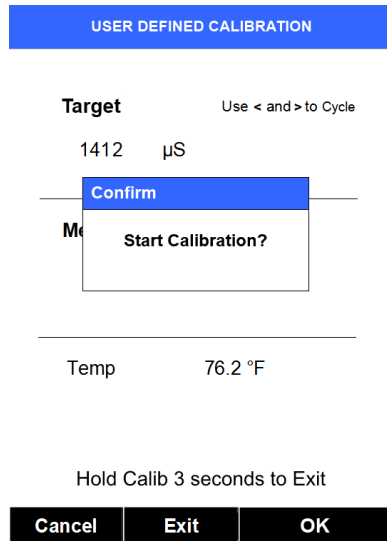
7) Press OK key to execute the User Defined Conductivity calibration. (Skip 9 and 10.)
8) Or, press Cancel (< key) to return to the User Defined Calibration (as in Fig. 3), where if desired, the numeric valued of the desired User Defined calibration value can be changed with use of "-" or "+".
9) Or, press Exit (> key) to abandon calibration, and return to the basic read mode (Figure 14). No calibration will be done.
10) After successful User Defined calibration, the meter will read the sample value and display the value in the measured section. A slight variance from the target is not problematic. A message will display in red "Calibration Succeed". The meter will appear similar to Figure 19, depending on the value selected for the User Defined numeric value.
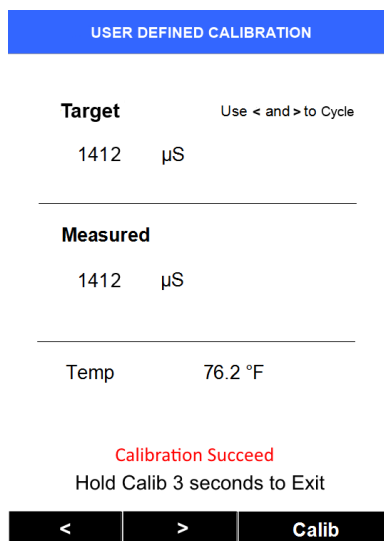
USER DEFINED CALIBRATION

Target   Use < and > to Cycle

1412   µS

_____

Measured

1412   µS

_____

Temp   76.2 °F

Calibration Succeed
Hold Calib 3 seconds to Exit

| < | > | Calib |

Figure 19

11) After successful calibration, hold for a long press (3 seconds) the Calib key, to return to the basic read (measurement) screen. Return to read mode is not automatic, except through a power-off cycle.

12) The unit will auto-read the conductivity and PTSA of a fresh sample in the sample cell without further key presses. Allow 5-10 seconds for the meter to stabilize after closing the light shield. The new sample should be rinsed at least twice in and out of the chamber to ensure no carryover from the standard or other samples. The unit will power down if no further key presses, after 40 seconds (darkens at 20). Press of any key will re-set the timer, and allow additional time. If multiple samples are being done, this will be necessary to prevent the automatic power down that protects the battery life.

Quick Tips

1) If the initial displayed numeric value for the User Defined target in Figure 16 is that desired, then a short key press path (including power on) are: OK, >, <, OK, OK, OK, and a long 3 second press of OK to return to read mode. (Using < here will go directly to User Defined rather than all possible target calibration types.)

2) If after Figure 15 (Step 6) a path showing all calibration targets types is desired, use a > rather than < as above (< goes directly to User Defined, > goes in the "opposite direction). This will need more > presses then the single < press above.

3) If in Figure 16, the user defined numeric value must be adjusted, additional use of + or – (as < or >) in Step 7 will be required, in addition to the keys listed in Quick Tip 1.

4) Once the target selection focus has been moved to User Defined as in Figure 16 and show the - and + labels on the black bar, the keys are no longer set to cycling through the calibration types but to adjust the User Defined numeric value. To get back to being able to cycle the types, you must go forward to the pop up screen of Figure 18 and Exit. From Figure 16, press OK, twice (once as Set and once as Calib), until the pop up appears. Then press > (Exit). ("Cancel" will return you to adjusting the User Defined target numeric value.) Press C-CAL and you will be able to cycle through the conductivity calibrations as desired.

4.3 Combined Calibration Procedure

1) Rinse sample cell with Combined Standard and close light shield.
2) Power on by a press of OK key. Allow 5-10 seconds for meter to stabilize.
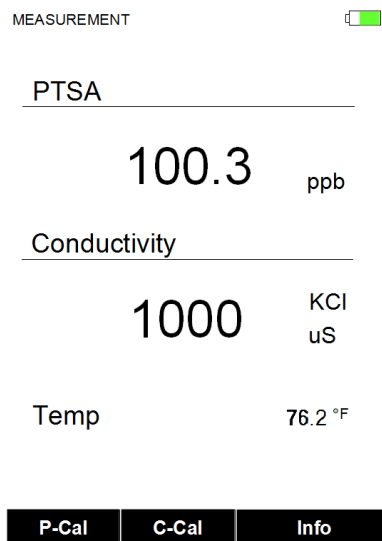3) A screen similar to Figure 20, the basic Measurement (read) screen, appears.

MEASUREMENT

PTSA

100.3 ppb

Conductivity

1000 KCl
uS

Temp   76.2 °F

| P-Cal | C-Cal | Info |

Figure 20

Unit is actively reading and displaying both PTSA and Conductivity.

4) Press C-Cal labeled key (>).
5) The default conductivity calibration screen appears (Figure 21), the Combined Calibration. This will calibrate both Conductivity (at 1000 µS) and PTSA (at 100 ppb) when using the appropriate Combined Standard. However, if desired the conductivity calibration that is to be performed can be easily changed to several

others (see the other Calibration Procedures). Otherwise, proceed with the steps below for use with the Combined Standard.

COMBINED CALIBRATION

Target   Use < and > to cycle

1000 µS with 100 ppb PTSA

Measured

                              µS

                              ppb

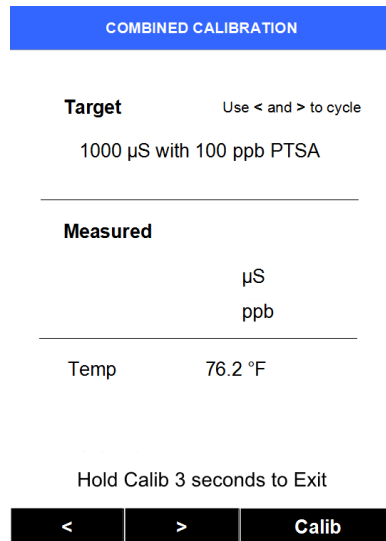Temp   76.2 °F

Hold Calib 3 seconds to Exit

| < | > | Calib |

Figure 21

6) Ensure the Meter is filled with Combined Standard and press Calib labeled key (OK) to confirm the desired calibration.
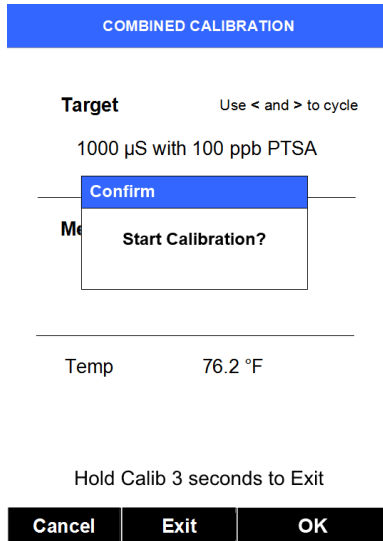7) A Confirmation popup will appear as in Figure 22.

COMBINED CALIBRATION

Target   Use < and > to cycle

1000 µS with 100 ppb PTSA

Confirm

Me   **Start Calibration?**

Temp   76.2 °F

Hold Calib 3 seconds to Exit

Cancel	Exit	OK

Figure 22

8) Press OK key to execute both conductivity and PTSA calibrations. (Skip 9 and 10.) Only 1 key press is needed.
9) Or, press Cancel (< key) to return to the conductivity calibration type selection screen (as in Figure 21), where if desired the calibration can be changed with use of "<" or ">". (In this case ensure the correct standard is present for the conductivity calibration desired. See the other Conductivity Calibration Procedures.)
10) Or, press Exit (> key) to abandon calibration, and return to the basic read mode (Figure 20). No calibration will be done.
11) If Combined Calibration is successful, the Measured field will update to the Target conductivity value (1000 µS), or very close. A small variance is not problematic. A checkmark will show. The screen will momentarily appear as in Figure 23.
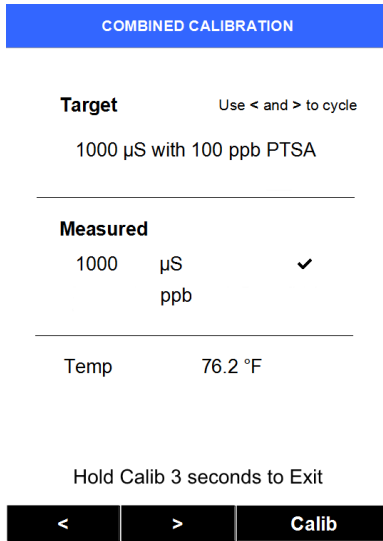
COMBINED CALIBRATION

Target   Use < and > to cycle

1000 μS with 100 ppb PTSA

Measured
1000   μS   ✔
            ppb

Temp   76.2 °F

Hold Calib 3 seconds to Exit

<	>	Calib

Figure 23

12) After a second, if the PTSA calibration is successful, the PTSA value will also be displayed in the Measured section below the conductivity value, and a checkmark will appear. A small variance is acceptable. The message "Calibration Succeed" will appear in red, as in Figure 24.

COMBINED CALIBRATION

Target   Use < and > to cycle

1000 μS with 100 ppb PTSA

Measured
1000   μS   ✔
100   ppb   ✔

Temp   76.2 °F

Calibration Succeed
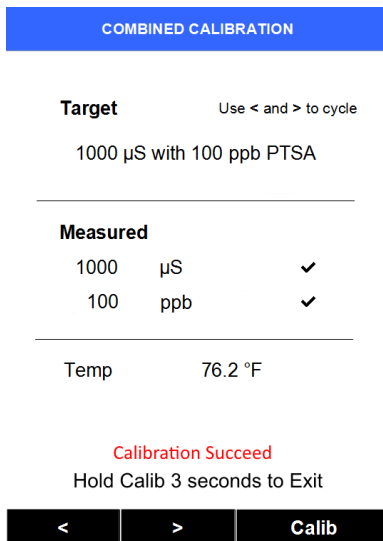Hold Calib 3 seconds to Exit

<	>	Calib

Figure 24

23

13) After successful calibration, press and hold the Calib key for 3 seconds to return to the basic read screen (Figure 20). Return is not automatic, except through a power-off cycle. Do not do so before the second checkmark and the message appear, or the calibration will not complete.

Quick Tips:

1) If the Combined Calibration is default, the key presses from the beginning including power on are OK, >, OK, OK. Then a 3 second long press of OK to return to the read mode.
2) Rinse the sample chamber well, at least twice, with the standard, before turning on.
3) After returning to read mode after calibration, rinse several times with the first sample. The unit will continue to read the sample values without any further key presses if it has not powered off. If there are no key presses for 20 seconds the screen will darken, and after another 20 seconds without key activity will power down. The press of any key while the screen is dark will re-set the timer and the screen will re-light. (This press will not step along the calibration process; the next press needed will still be required in the sequence).
4) Always rinse the unit with clean water after use and dry by clean tissue or paper towel. Be gentle handling the open light shield.

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 25). 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 26). 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.

DEVICE INFORMATION	
Serial Number	1504090028
Hardware Version	2.0
Software revision	441
Battery Status	43%
WiFi SSID	SP400-1504090028
PTSA Calib	100
COND Calib	1000

Diagnosis	Exit

Figure 25

SYSTEM _ DEBUG	
[1] 93	
[2] 75	[6] 1399
[3] 420	[7] 141
[4] 1000	[8] 1253
[5] 195	[9] 4072
[10] 210	
[11]	
[12] 109.53	

248   2037   20245   200309

Factory Reset	Exit

Figure 26

6 Wireless Connection

The Pyxis SP-400 can be connected to a smart phone or a computer via WIFI or Bluetooth for upgrading the device software. The SP-400 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-400 wireless functions, please contact Pyxis Lab Inc.(service@pyxis-lab.com)