

Aqua4Plus 2.0 Software: User Manual



Control software for LevelSCOUTs, BaroSCOUTs, PT2X & CT2X sensors from the Seametrics range of precision environmental sensors.

Software developed by Seametrics in the USA

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What is Aqua4Plus 2.0?

Aqua4Plus 2.0 is an all new control software for Seametrics Smart Sensors. It is currently available for the LevelSCOUT, BaroSCOUT, PT2X, and CT2X, and will extend to the rest of our Smart Sensor family. Aqua4Plus 2.0 features an easy-to-use interface and updated communication driver. Our software can automatically detect your communication port and baud rate settings for a faster and more streamlined connection in the field with the use of Modbus communication protocol, an industry standard. Simply connect your sensor and USB/RS485 cable, open Aqua4Plus 2.0, and you will be connected and ready to go.

Use Aqua4Plus 2.0 control software to configure your Seametrics Smart Sensor for data logging, real-time data monitoring (now with a live graphing feature), and custom calibration setups. Our new software features an all new Reports section to manage your downloaded data, perform barometric compensations for PSIA sensors, and export your data (.csv or .a4d format). Aqua4Plus 2.0 is built on a platform that allows for automatic software updates so you always have the latest version on hand.

System Requirements

- Windows 7, 8, 8.1, 10 or later
- Screen capable of at least 1366x768 resolution
- 2GHz Dual Core Processor with SSE2 Support
- 2GB RAM System Memory
- 2GB of Hard-Drive Space

Please note:

When software updates are released Aqua4Plus software will automatically update when you have a connection to the internet.

Installation

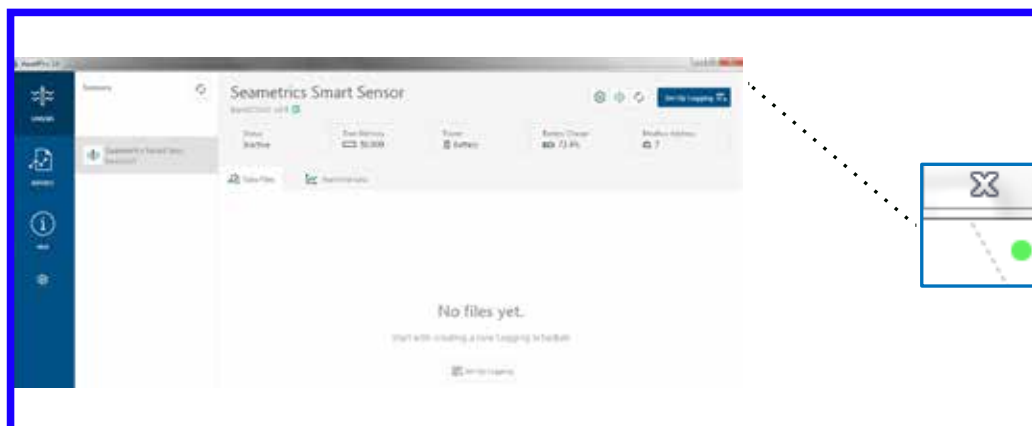
Aqua4Plus 2.0 is available to download from www.seametrics.com and is also provided on a USB stick with our USB/ RS485 communication kits. After downloading, or opening the USB stick, run the installation file. If installing on a PC with existing Aqua4Plus software be sure to specify an installation directory other than the default before proceeding with installation. Multiple versions of Aqua4Plus can be installed on one PC but must be located in separate directories. If you have never used our USB/RS485 communication cable make sure your PC is connected to the internet before plugging the cable in. As long as your PC is online it will load the necessary drivers automatically. USB to serial drivers are also available on the USB stick provided with the communication kit.

Connecting to Sensors

Aqua4Plus 2.0 is designed to automatically detect your communication cable and scan for sensors. It is recommended you connect your USB/RS485 cable to your PC and have the sensor connected before opening Aqua4Plus 2.0.



If your cable and sensor were not connected before opening Aqua4Plus 2.0 simply connect and click Rescan. While scanning is active you'll see a green dot flash in the upper right corner of the program. Scanning is complete when this dot stops flashing.




If your sensor still won't connect you can expand the Modbus address range under program settings here:




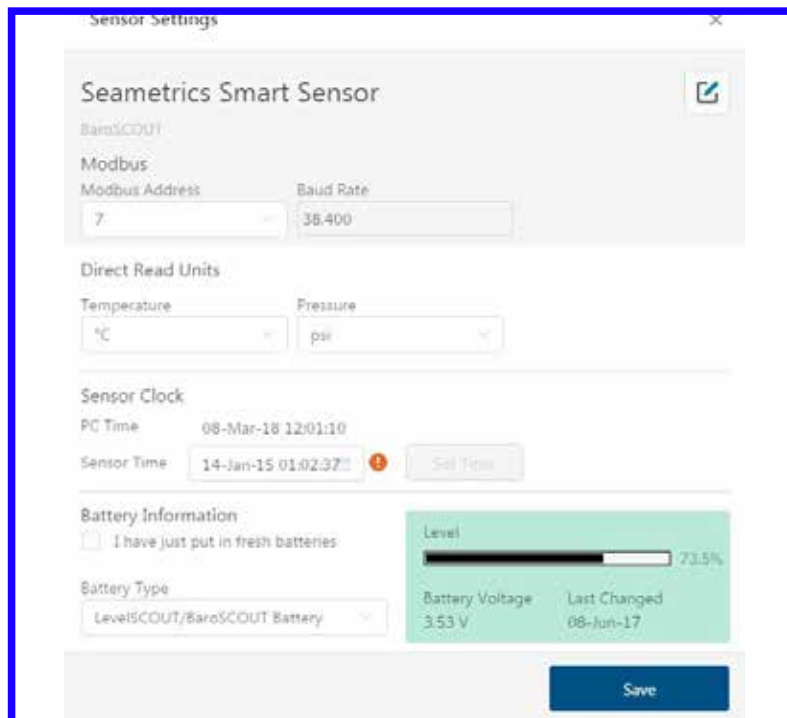
Simply drag the Address Range slider higher up to increase the maximum Modbus address scanned. If you've scanned all the way up through address 255 and still have no connection click Troubleshooting for further troubleshooting or contact Seametrics Tech Support for assistance.

Click  at any time to refresh sensor information.

Sensor Settings

Once connected you'll see the Sensor screen appear and display the connected sensor(s) details. Mousing over icons will provide tool-tips, mouse over  to view sensor firmware and serial number details.

To change general sensor settings click  in the sensor screen. This allows you to change the following:



Click  to rename the sensor.

To change Modbus address and/or Baud Rate simply select the desired address and/or Baud Rate from the drop down menus. Sensor will automatically reconnect at new address and/or Baud Rate.

To change the Direct Read output units (for direct Modbus or SDI12 integration) simply select the desired output units from the drop down menus. To change Aqua4Plus display units scaling see Program Settings.

Sensor Clock can be synced with your PC time or set manually if desired. To set manually enter your desired date/time and click Set Time.

When batteries are changed out make sure to reset the battery information here, simply check the I have just put in new batteries box and select the battery type that was installed from the drop down menu.

Program Settings

To view/change Aqua4Plus settings click  in the blue side-bar menu.

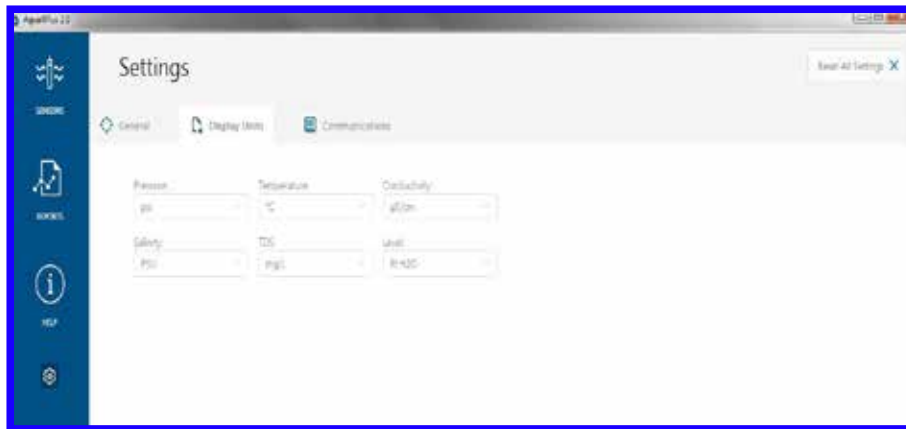
Under the General Settings tab you can change the default data folder location. This is where your Reports are saved to on your PC.

The Zoom Factor slider can be used to adjust the font size within Aqua4Plus.

Uncheck the Allow app to collect anonymous usage statistics box if you would like to opt out. This information is used to track Aqua4Plus reliability across different system configurations.



Under the Display Units tab you can select your desired display units for the supported channels. These may be changed at any time and associated Real-Time readings and Reports will rescale to the currently selected display unit. To change Direct Read units scaling see Sensor Settings.



Under the Communications tab you can change your Modbus communication settings. Typically you will only need to change the address range to connect to sensors outside of Modbus address 1-10. In certain cases we may need to change the Retry and Timeout settings to overcome communication issues on very long, or corroded cabling. See Troubleshooting section or contact Seametrics Tech Support for details.



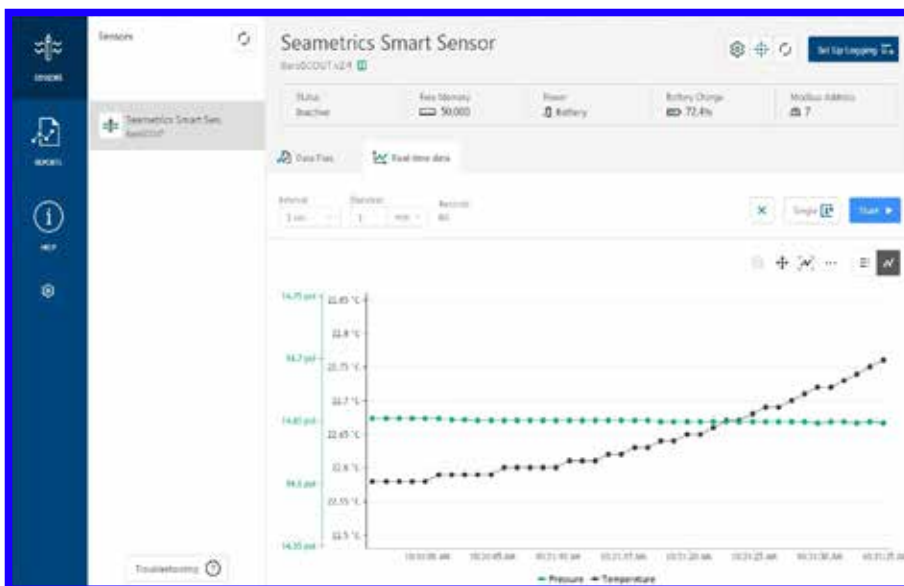
To restore factory default settings click [Reset All Settings](#) X

Real-Time Data

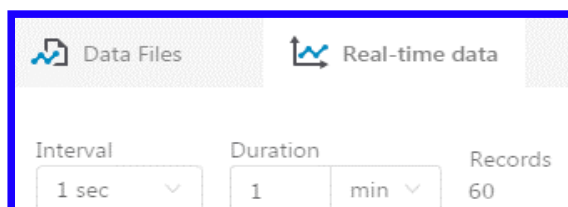
Connect to sensor and select the Real-time data tab



To start real-time readings click Start, readings default to table view. To switch to Real-time graphing view click the graph icon



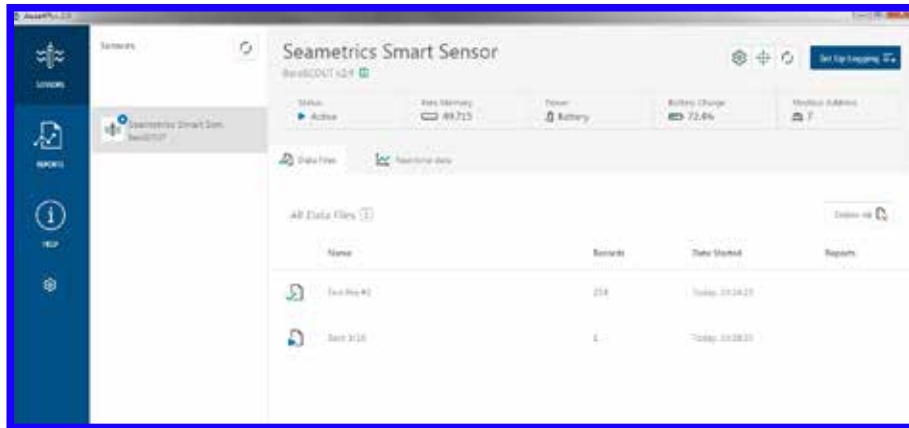
Real-time readings default to a 1 second interval for 1 minute, to adjust enter your desired settings here:



Note: Currently this data is not saved and is for viewing current conditions only. To save the data to sensor memory see Data Logging section. You can run Real-time Data while logging is active.

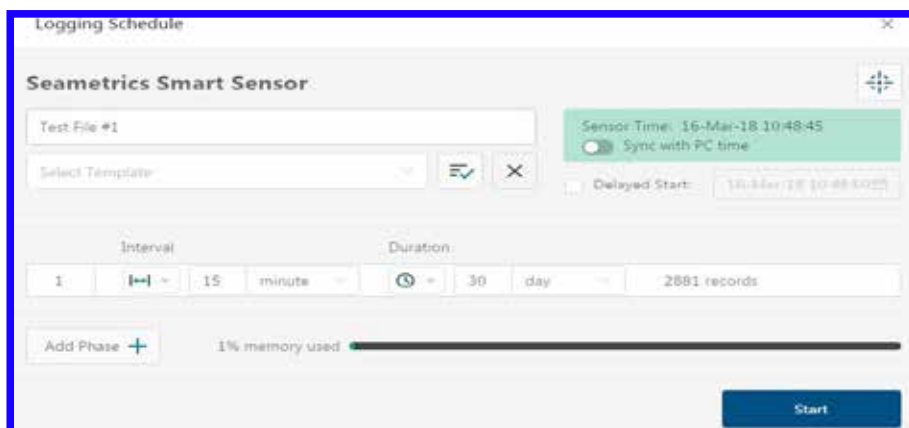
Data Logging

Select Set Up Logging from the sensor screen. If there are no files currently on the sensor you'll see the Set Up Logging button active under the Data Files tab as well as in the upper menu. Once files have been started/logged on the sensor they will be displayed under the Data Files tab.



Set Up Logging Window

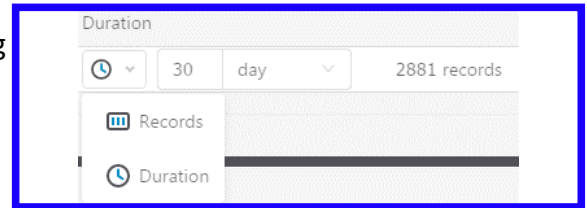
Here you will name your data file and set up the recording interval and duration of each logging phase. Select your desired recording interval and duration for each phase, Aqua4Plus 2.0 will display the available memory at the bottom of the window.




Click to switch between interval and continuous data recording (PT2X & CT2X only) Select your continuous rate from the drop down box (on the right).



Duration can be set by either number of records or by setting a duration time, as shown on the right.

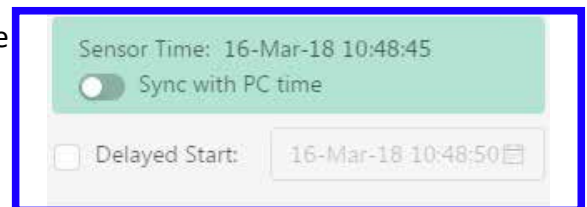


When set by number of records the time of the recording phase will be displayed detailing how long that phase will run. When set by time, the total number of records for that phase will be displayed.

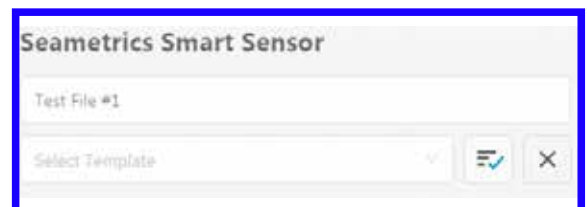
If you need to check settings or perform a calibration click  before proceeding with logging setup to switch to the Settings and Calibration screen.

You may sync the sensor clock with the PC clock when starting logging by clicking the slider shown on the right.


Check the Delayed Start box and enter the desired date/ time you would like logging to start. This is useful for syncing data when setting up multiple sensors on a site. Data will start logging at the set date/time rather than immediately when Start is pressed.



Data file name defaults to Test File # and may be re-named here, like on the right.



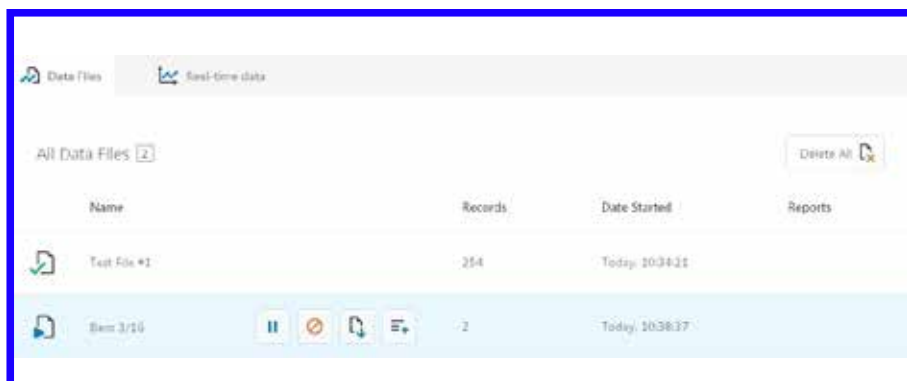
The three previous Logging Schedules that were programmed to a sensor will be listed under the Select Template drop down menu. There you will also find pre-programmed logging schedules such as 24 hour pump test, along with any custom logging schedules saved by the user.


To save a logging schedule as a template enter desired settings and click . This will add your custom schedule to the Select Template menu.

Once all the desired settings are made simply click Start to begin logging.

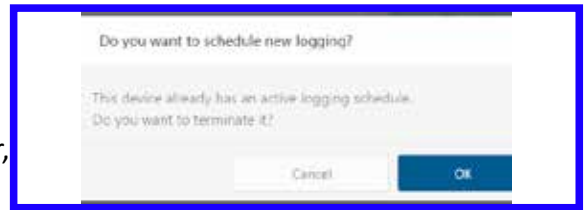


This will return you to the Sensor screen and your status will change to Active with the data file displayed under the Data Files tab. Mouse over an active file to pause, terminate, download, or view logging setup details.

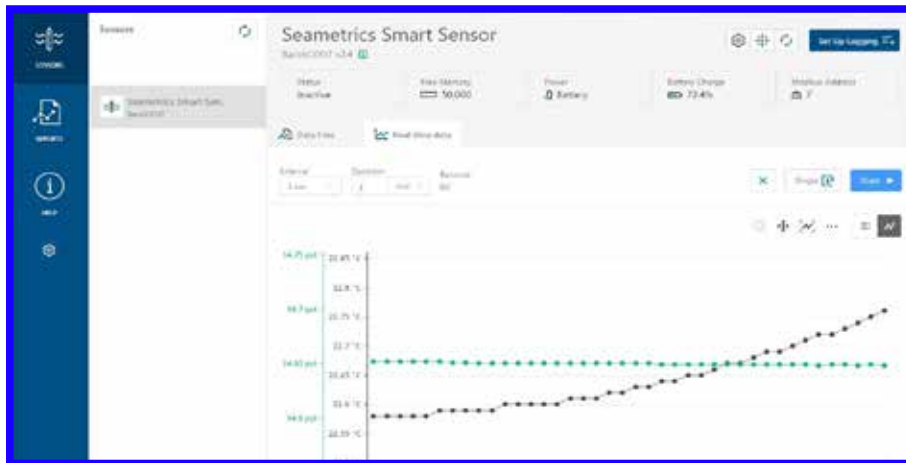


Data files already downloaded will show  in the Reports column, clicking here will bring you to the reports screen to view the data. See Reports section for details.

You may only have 1 active data file recording on each sensor, however you can store multiple files in memory if desired.

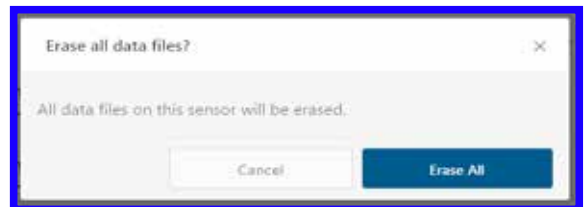


Starting a new file will automatically terminate the active logging and begin the new logging schedule. Real-time data is available during active logging.



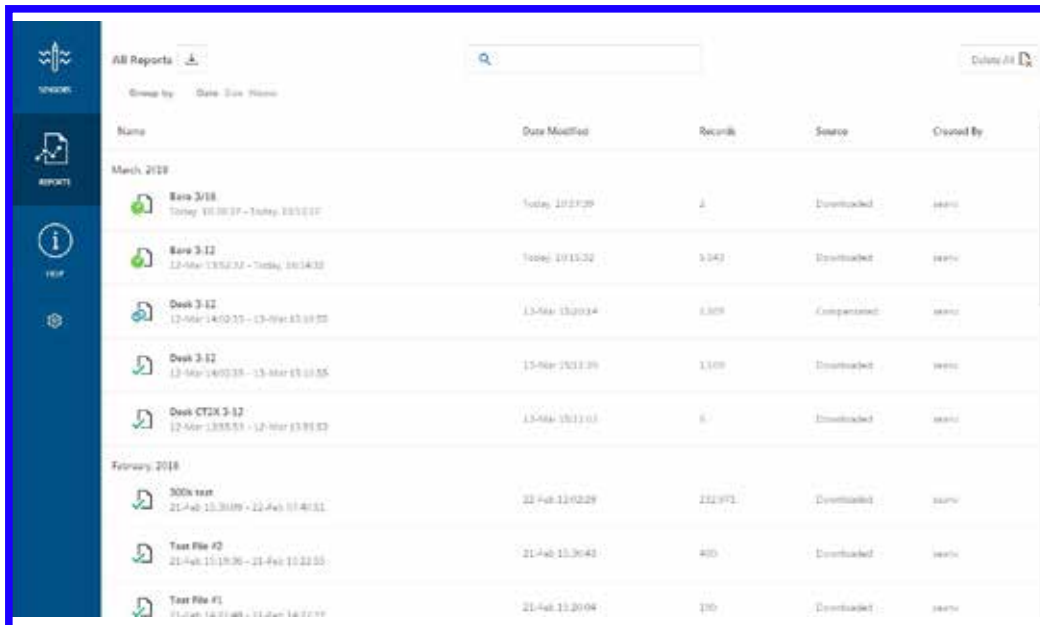
To delete files from memory make sure they have all been downloaded to Reports. Files are removed from memory all at once rather than individually.

Once confirmed files are permanently deleted from the sensor memory.



Reports

Data downloaded from your sensor is stored in the Reports section of Aqua4Plus 2.0 for viewing and editing. The files will be saved to default data folder on your PC as well. See Program Settings for default data folder location.



Name	Date Modified	Records	Source	Created By
March 2018				
Bare 2/18 Today 10:30:27 - Today 10:30:27	Today 10:30:27	2	Downloaded	user
Bare 3/12 12-Mar-18 10:30:32 - Today 10:30:27	Today 10:30:32	1,043	Downloaded	user
Dock 3/12 12-Mar-18 10:30:35 - 13-Mar-18 10:30:35	13-Mar-18 10:30:35	1,009	Compressed	user
Dock 3/12 12-Mar-18 10:30:35 - 13-Mar-18 10:30:35	13-Mar-18 10:30:35	1,009	Downloaded	user
Dock CTX 3/12 12-Mar-18 10:30:35 - 13-Mar-18 10:30:35	13-Mar-18 10:30:35	6	Downloaded	user
February 2018				
300k test 21-Feb-18 10:30:35 - 22-Feb-18 10:30:35	22-Feb-18 10:30:35	222,972	Downloaded	user
Test File #2 21-Feb-18 10:30:35 - 21-Feb-18 10:30:35	21-Feb-18 10:30:35	400	Downloaded	user
Test File #1 21-Feb-18 10:30:35 - 21-Feb-18 10:30:35	21-Feb-18 10:30:35	100	Downloaded	user

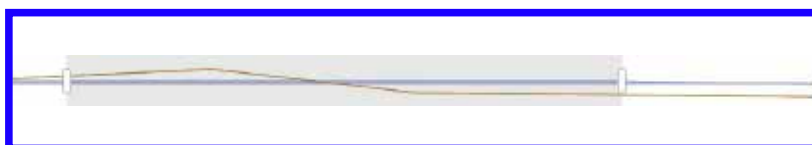
In the main view you'll see a list of reports sorted by date, size, or file name as selected here



You can also search reports by keyword using the search box

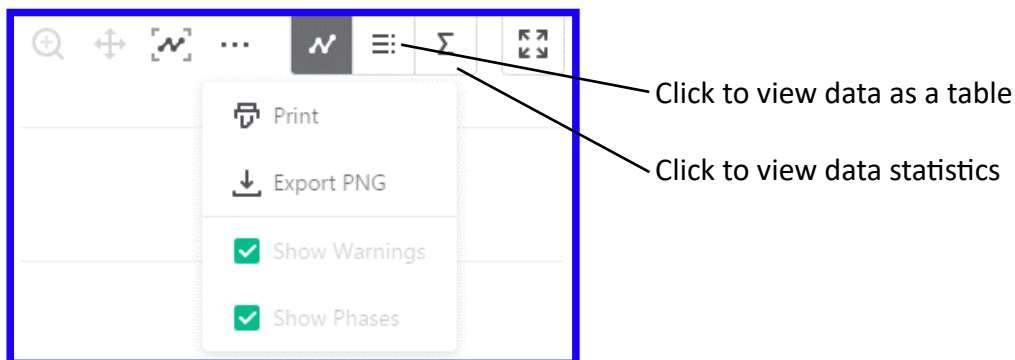
Click on a report to bring up the report details.

Reports are displayed in graphing view by default. You can zoom to specific sections by selecting a section with your mouse or by adjusting the slider below the graph.



Click 'all screen' to switch to full screen graphing view

Graph saving and export options are available here.



Report Details

Desk 3-12

Status: Incomplete Records: 1,509 Date Started: 12-Mar-18 14:02:55

Information Data Schedule

Name	Temperature °C	Conductivity µS/cm	Pressure psi	Salinity PSU	TDS mg/L
Sensor Range	150K ohm	0-300 mS/cm	500 psia	unknown	unknown
Min	21.02	337.8	14.535	0.1626	165.5
Max	23.45	360.0	14.700	0.1725	176.4
Mean	22.51	346.4	14.632	0.1664	169.7
Variance	0.54	38.4	0.002	0.0000	9.2
Deviation	0.74	6.2	0.045	0.0020	3.0
Calibration Date	unknown	19-Feb-18 12:48:17	21-Feb-18 14:22:57	unknown	unknown

The Information tab is a new feature allowing users to add metadata to their reports such as site location, field notes, or comments. The Schedule tab will display the logging setup details for the report

Report Details

Desk 3-12

Status: Incomplete Records: 1,509 Date Started: 12-Mar-18 14:02:55

Information Data Schedule

Report Name: Desk 3-12

Location(GPS or Job Site):

Comment:

Sensor name: Seametrics Smart Sensor

Sensor type: CT2X

Serial number: 0021746043

Last modified: 13-Mar-18 15:11:39

Downloaded: 13-Mar-18 15:11:39

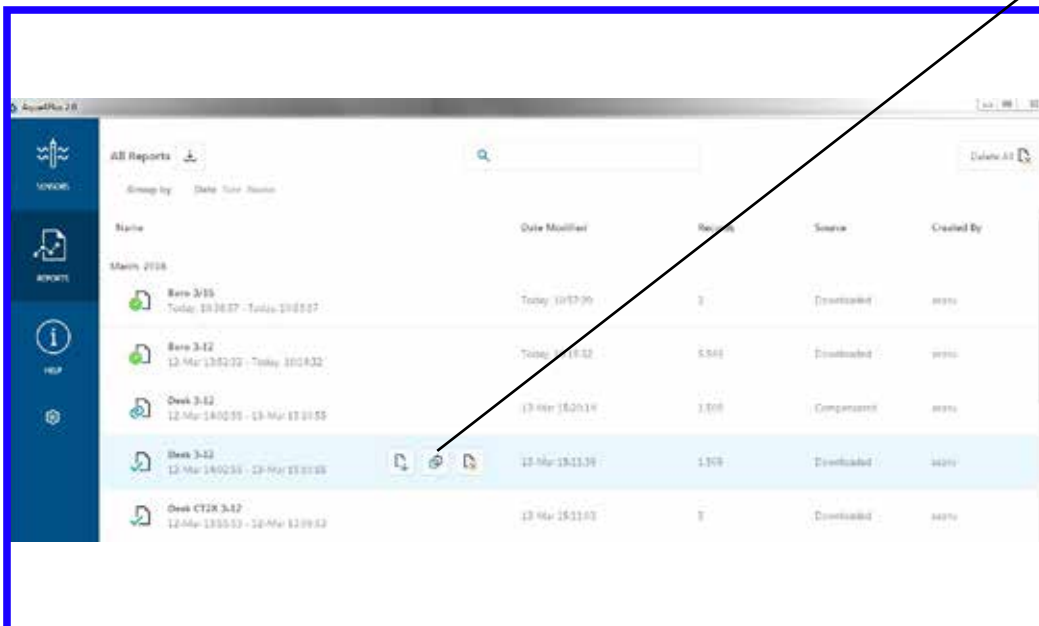
Click Export to export the report as a .csv file or .a4d file for distribution or use in 3rd party software.

Click Delete to delete the report from Aqua4Plus 2.0

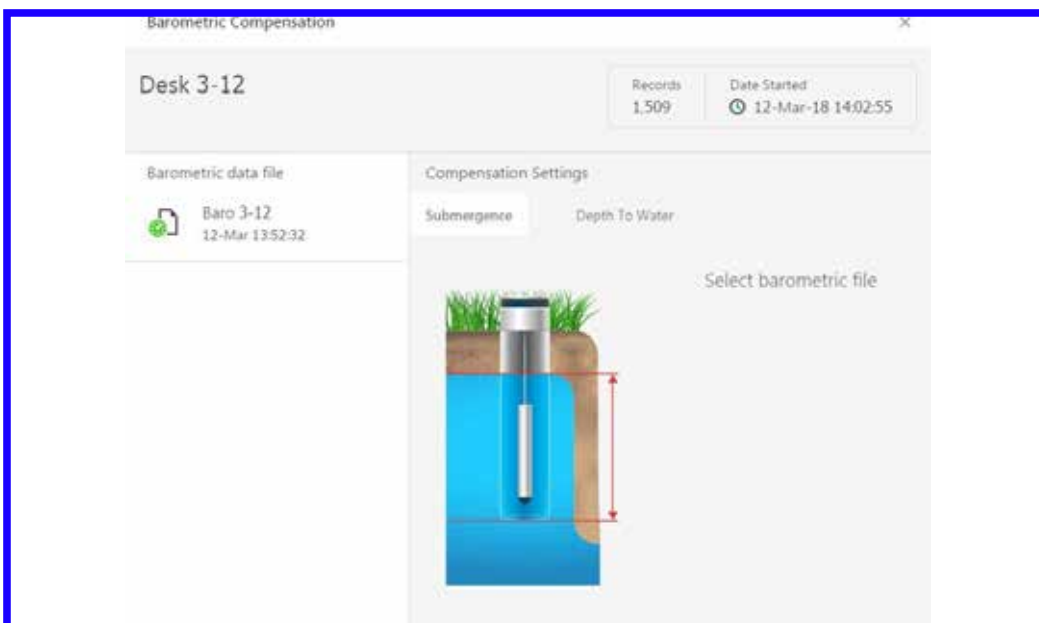
You can also import .a4d files from compatible sensors into Aqua4Plus 2.0 by clicking the arrow at the top of the Reports screen.

Barometric Compensation

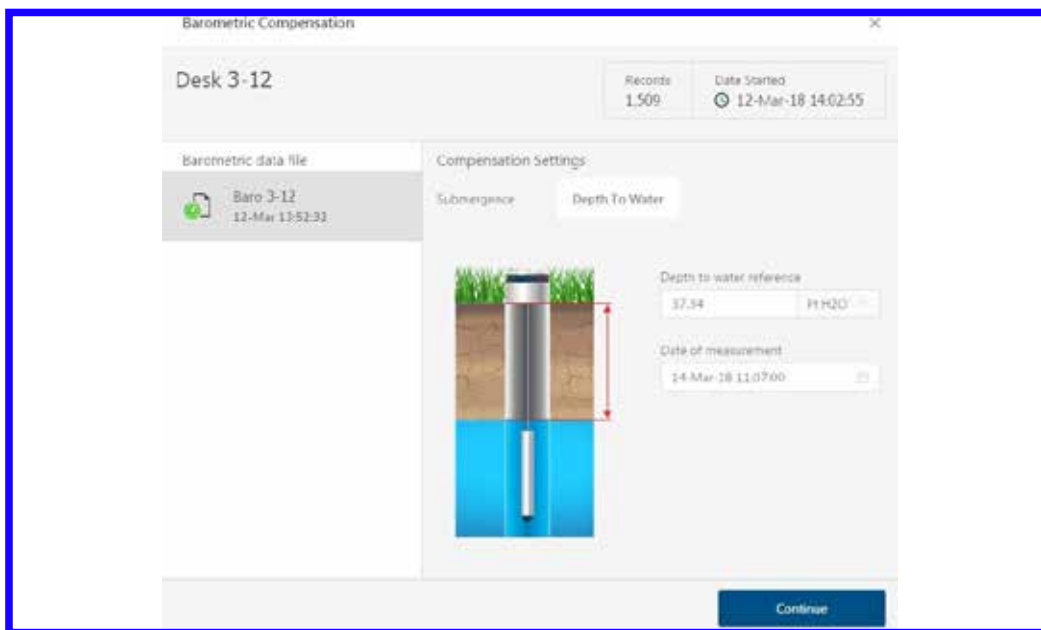
For PSIA sensors we've built a new barometric compensation utility into the Reports section. Click on a report to compensate the data for barometric pressure.



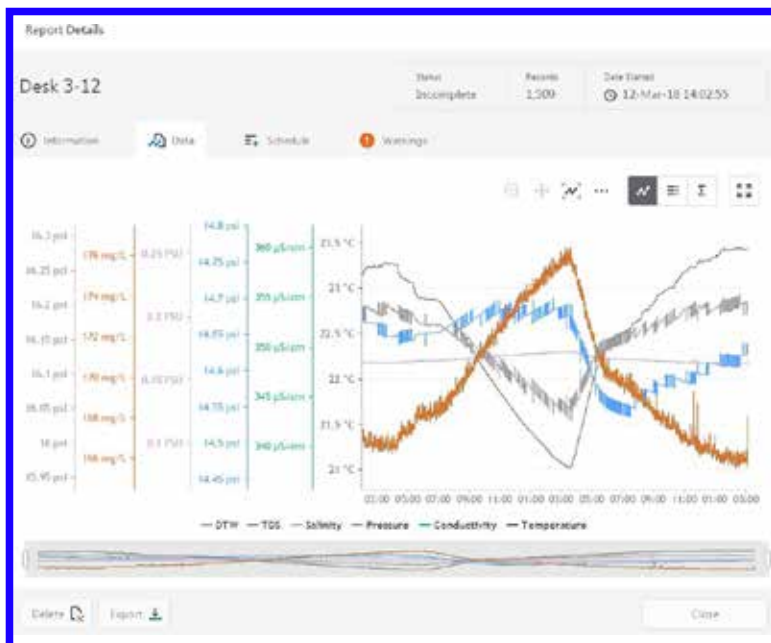
Corresponding barometric files are filtered by date/time and displayed to the left. Select the barometric file you would like to use to compensate the report, select either the Submergence or Depth To Water tab, then click Continue.



If compensating for Depth to Water enter your depth to water reference measurement and the date/time the measurement was taken (typically taken with a water level indicator before data is uploaded from the sensor) before clicking Continue.



Aqua4Plus 2.0 will perform the barometric compensation and create a new compensated report. Original reports are retained as uploaded.



Compensated report can then be viewed and exported as needed.

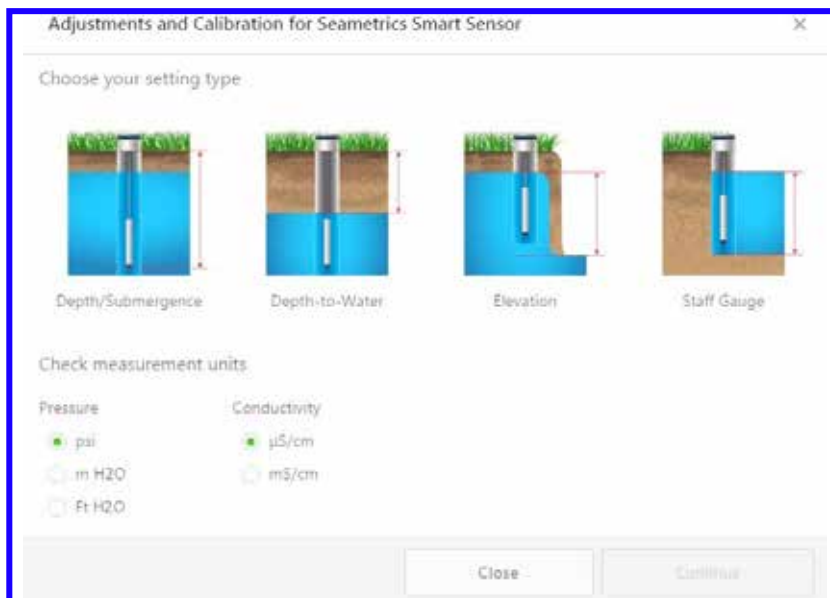
Pressure Calibration

To perform a calibration setup on the pressure channel first connect to the sensor and ensure all data has been uploaded and erased from the sensor. Next select the calibration button

Next select the calibration setup you'd like to perform:

Confirm desired measurement units and click Continue.

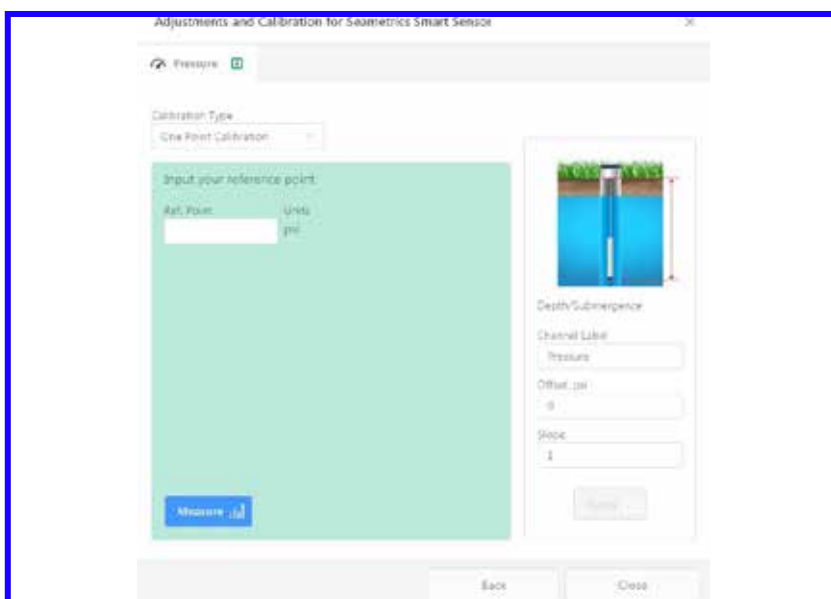
Submergence:
One Point/Zero Point Calibration:



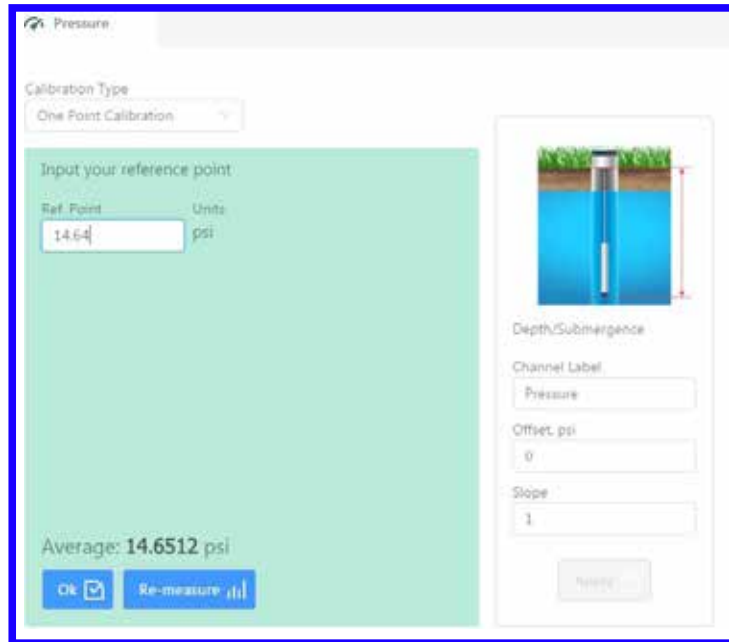
To zero pressure output to atmospheric pressure position the sensor in air in its desired installation position (typically vertical, if sensor will be installed horizontally position as such during 0 point calibration). Select 1 point Calibration under Calibration Type.

For PSIG sensors use 0 as the reference value and click Measure.

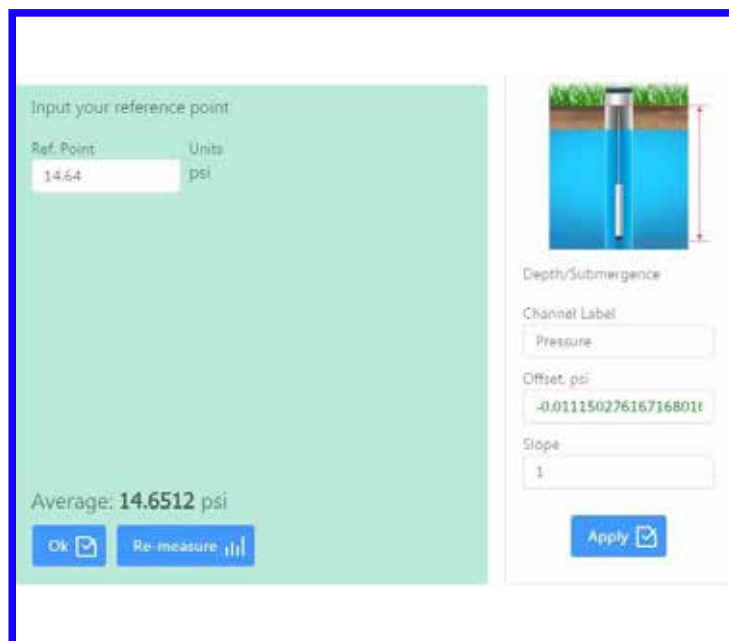
For PSIA sensors enter current barometric pressure from a known accurate barometer set to matching units. Enter your reference value in the Ref. Point box and click Measure.



Aqua4Plus will take 10 readings and display the average. Watch for stability while Aqua4Plus is measuring to ensure an accurate calibration.



Click OK to accept the reading and Aqua4Plus will calculate a new pressure offset. Click Apply to confirm the new offset value and Aqua4Plus will provide a real time reading to verify calibration was successful:

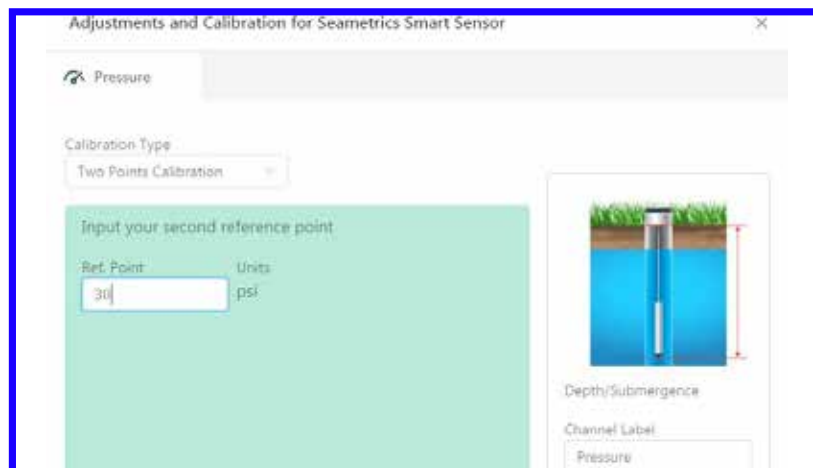


2 Point submergence calibration **ONLY RECOMMENDED IF YOU HAVE AN ACCURATE PRESSURE REFERENCE**. Our Smart Sensors rarely change slope during normal use, however if you have an accurate pressure source it is possible to perform a 2 point calibration on the pressure channel.

Select 2 point Calibration under Calibration Type

Perform first point calibration as listed above and click Next

Enter known pressure value in matching units in the Ref. Point box for second point measurement



Aqua4Plus will take 10 measurements and display the average. Watch for stability while Aqua4Plus is measuring to ensure an accurate calibration.

Click OK and Aqua4Plus will calculate the new slope and offset values. Click Apply to confirm the new slope and offset values and Aqua4Plus will provide a real time reading to verify calibration was successful.

Groundwater Elevation

Position the sensor in its desired location and ensure all data has been uploaded and erased from the sensor before proceeding with calibration.

Once positioned connect to sensor and select the calibration button, followed by selecting the Groundwater Elevation option. Double check measurement units selection before proceeding.

Enter your current Groundwater Elevation reading in the Ref. Point box, making sure to match measurement units.

Click Measure and Aqua4Plus will take 10 readings and display the average. Watch for stability while Aqua4Plus is measuring to ensure an accurate calibration.

Click Accept and Aqua4Plus will calculate a new offset, click Apply to accept the new offset and Aqua4Plus will provide a real time reading to verify calibration was successful.

Staff Gauge

Position the sensor in its desired location and ensure all data has been uploaded and erased from the sensor before proceeding with calibration.

Once positioned connect to sensor and select the calibration button, followed by selecting the Staff Gauge option. Double check measurement units selection before proceeding.

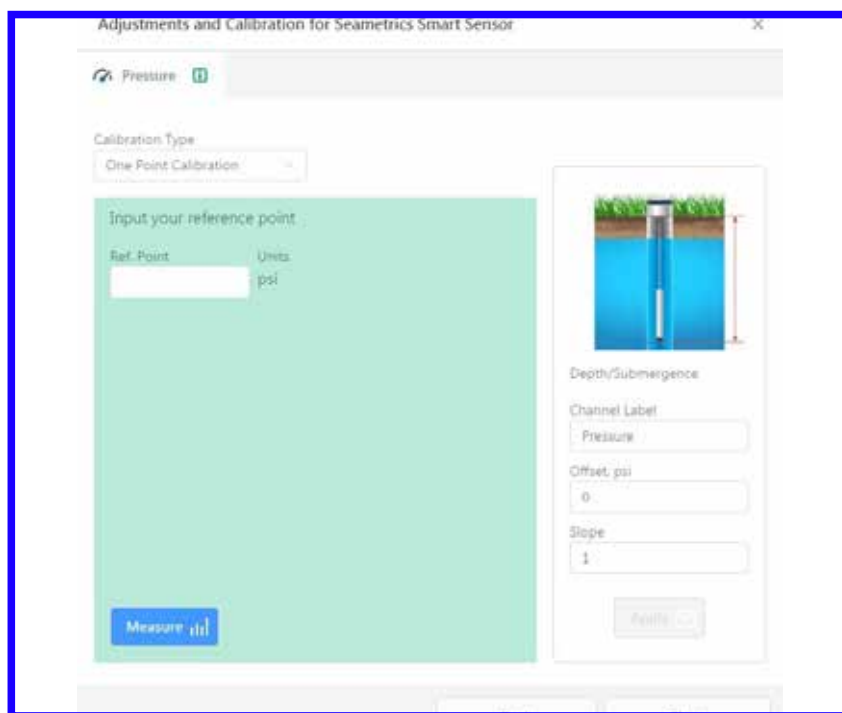
Enter your current Staff Gauge reading in the Ref. Point box, making sure to match measurement units.

Click Measure and Aqua4Plus will take 10 readings and display the average. Watch for stability while Aqua4Plus is measuring to ensure an accurate calibration.

Click Accept and Aqua4Plus will calculate a new offset, click Apply to accept the new offset and Aqua4Plus will provide a real time reading to verify calibration was successful.

Removing calibration setup values

To return to factory default simply enter an offset of 0 and slope of 1 in the Offset and Slope boxes:



Click Apply to confirm settings and Aqua4Plus will provide a real time reading to confirm.

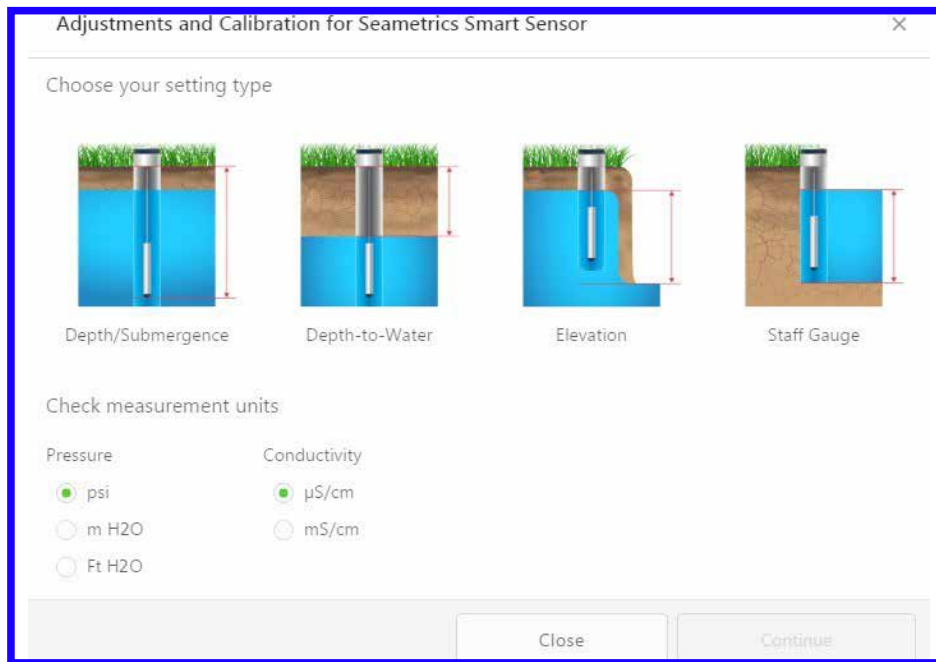
Adjusting for specific gravity

You may enter the specific gravity of your fluid in the Slope field to adjust for specific gravity when needed. Click Apply to confirm settings and Aqua4Plus will provide a real time reading to confirm.

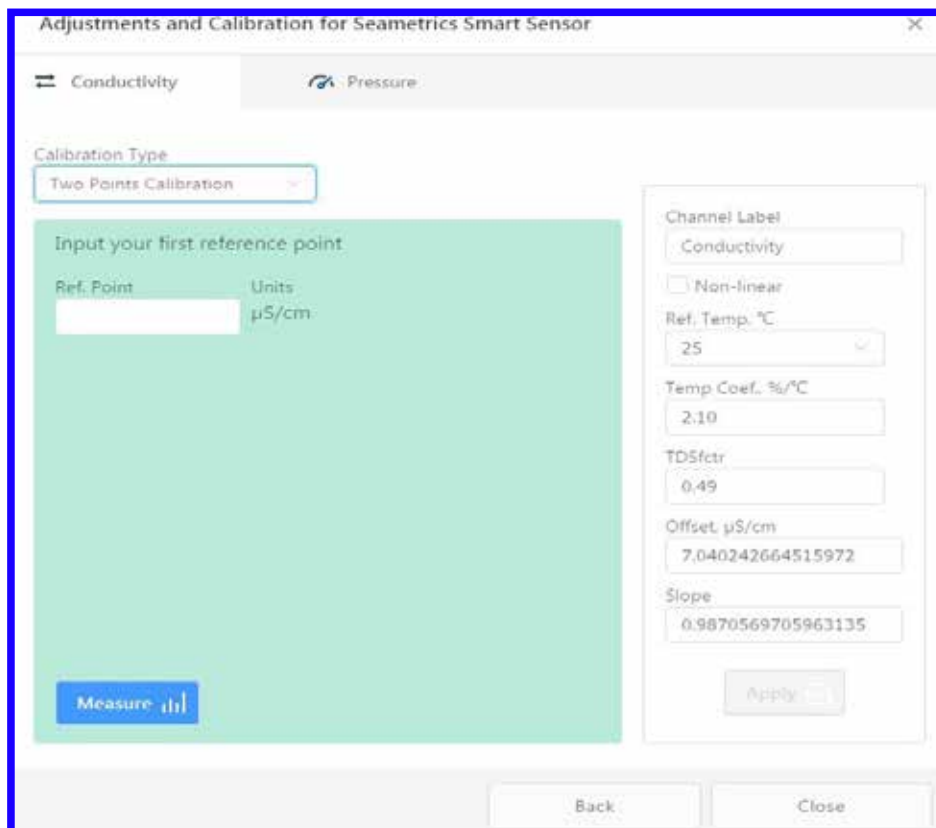
Conductivity Calibration

To perform a Conductivity Calibration first connect to your CT2X and ensure all data has been uploaded and erased from the sensor.

Prepare your calibration standard(s) and place the sensor in your first point calibration standard, allow a few minutes for the temperatures to equalize. Check for stable temperature readings under Real-time Data and note the current temperature value. Next select the calibration button.



To calibrate Conductivity select Depth/Submergence, confirm your measurement units, then click Continue.



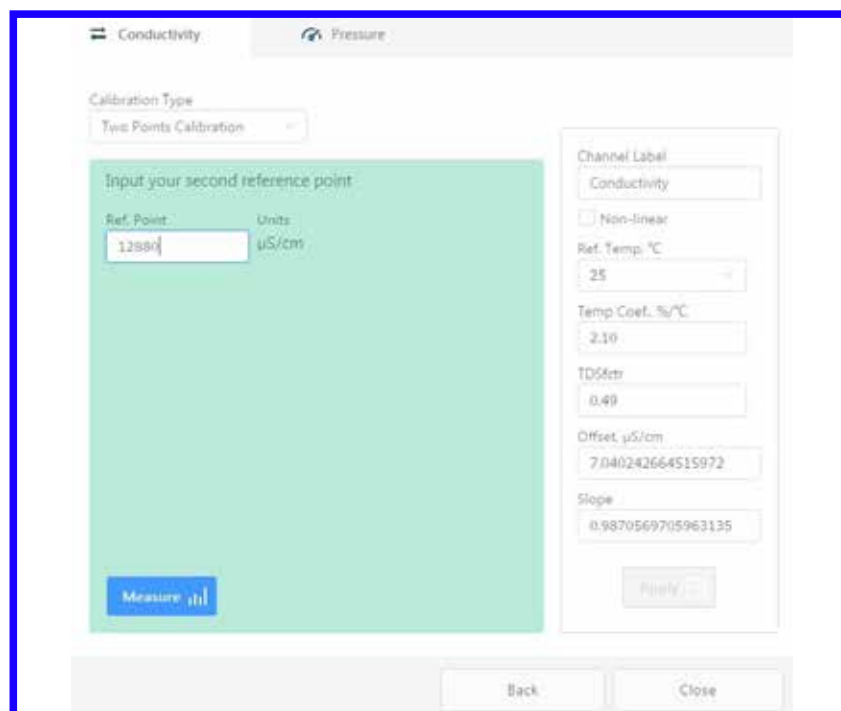
The calibration screen will default to the conductivity channel, you may also switch to the Pressure channel if you need to perform a pressure calibration setup.

Make sure the Non-linear box is NOT checked during calibration. If you plan to record data after calibration using the Non-linear temperature compensation option come back after calibration is complete and select the Non-linear box.

Select one or two point calibration from the Calibration Type drop down box. Seametrics recommends performing a two point calibration that brackets your expected conductivity range in the field for best accuracy.

Enter the RAW conductivity value of your standard at the temperature noted above (consult conductivity standards temperature reference chart) and enter it in the Ref. Point box. Next click Measure.

Note: If your conductivity values appear to drift slightly try stirring your standard with the sensor. If the standard has been sitting for a time the solution can begin to settle out affecting the readings.

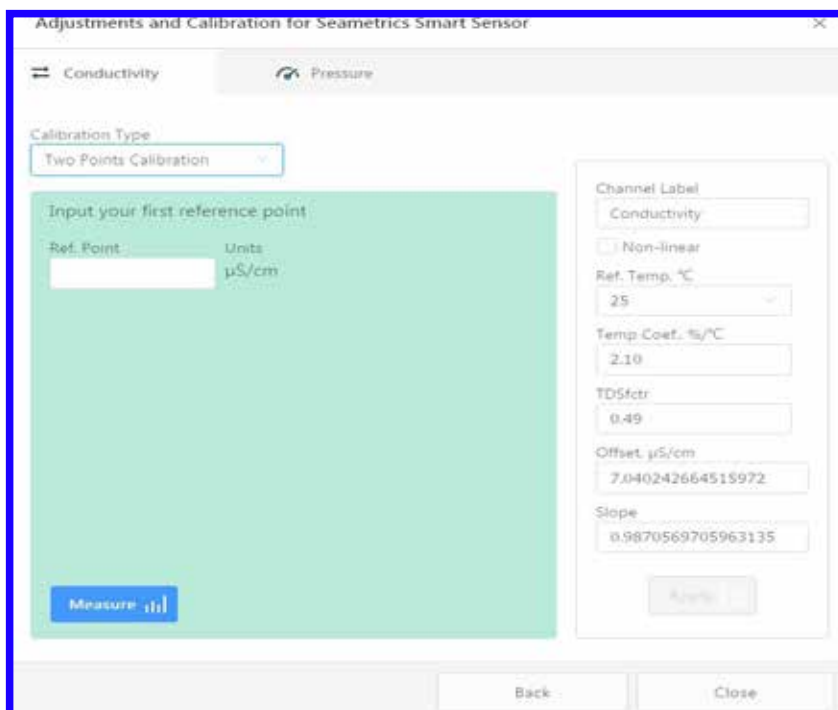


Aqua4Plus will take 10 readings and display the average. Watch for stability while Aqua4Plus is measuring to ensure an accurate calibration. To accept the first point reading click OK.

If you've selected one point calibration next click Apply to apply the new offset value, confirm other settings as needed, then close the calibration window.

If you've selected two point calibration place the sensor in your second point standard and enter the RAW conductivity value of the standard at the temperature noted above (consult conductivity standards temperature reference chart) and enter it in the Ref. Point box. Next click Measure.

Aqua4Plus will take 10 readings and display the average. Watch for stability while Aqua4Plus is measuring to ensure an accurate calibration. To accept the second point reading click OK. Your new offset and slope values will appear to the right, confirm other settings as needed and click Apply to confirm your new slope and offset values. Aqua4Plus will provide a real time reading to verify calibration was successful.



Before closing the calibration screen make sure your settings are correct for temperature compensation as desired. Use the non-linear box for low conductivity natural water applications. This will disable the Ref. Temp and Temp Coef settings and use the nLFn function to temperature compensate the conductivity channel. This method meets the DIN EN 27888 standards.

For linear temperature compensation set the temperature you'd like your conductivity corrected to in the Ref. Temp C box, and the appropriate temperature coefficient you'd like to use in the Temp Coef %/C box. Seametrics defaults the conductivity to a Ref Temp of 25 and 2.1 %/Deg C for the Temp Coef.

TDSfctr is the multiplier applied to the conductivity readings to provide TDS output. Seametrics defaults to 0.49, change as necessary to fit your TDS multiplier.

Confirm any changes by clicking Apply. Once calibration setup is complete click Close.

SOFTWARE LICENSE. The seller (Seametrics) grants the user a non-exclusive license to use Aqua4Plus (hereafter known as the software), according to the following limitations and conditions.

The user may install Aqua4Plus on one or more desktop or laptop computers. All title and intellectual rights to the software are owned by the seller. No copies may be made or distributed except as described above. The user may not modify or reverse engineer the software.

A. LIMITED WARRANTY. Seller warrants that the software will substantially perform the functions described in the accompanying written materials for a period of ninety (90) days from the date of receipt. If the software does not conform to the foregoing warranty, Seller shall, at Seller's sole and exclusive option, repair or replace the software or refund to the user a prorated portion of the license fee paid.

Seller warrants that any hardware accompanying the software will be free from defects in materials and workmanship under normal use and service for a period of one (1) year from the date of receipt. Seller's obligation under this warranty shall be limited to replacing or repairing the part or parts or, at Seller's option, the products which prove defective in material or workmanship within ONE (1) year from the date of delivery, provided that Buyer gives Seller prompt notice of any defect or failure and satisfactory proof thereof. Any defective part or parts must be returned to Seller's factory or to an authorized service center for inspection. Buyer will prepay all freight charges to return any products to Seller's factory, or any other repair facility designated by Seller. Seller will deliver replacements for defective products to Buyer (ground freight prepaid) to the destination provided in the original order. Products returned to Seller for which Seller provides replacement under this warranty shall become the property of Seller.

Seller's obligations under this warranty shall not apply to any product with (a) is normally consumed in operation, or (b) has a normal life inherently shorter than the warranty period stated herein.

In the event that equipment is altered or repaired by the Buyer without prior written approval by the Seller, all warranties are void. Equipment and accessories not manufactured by the Seller are warranted only to the extent of and by the original manufacturer's warranty.

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