Technical Bulletin

Seametrics Smart Sensors:
Entering Depth-to-Water Setting after Data Collection

If using a cableless sensor, i.e., without a direct read cable, you cannot use the automatic depth-to-water offset provided in Aqua4Plus/Aqua4Plus Lite. There may also be instances where you do have a direct read cable on an absolute sensor but want to enter a depth-to-water offset after data collection.

The Barometric Compensation Utility is specifically for the PT2X and LevelSCOUT sensors. It uses barometric data to compensate the data readings from an absolute sensor in order to give a true pressure or level measurement and also has the option to enter a depth-to-water offset after the data has been collected.

Tips

- When starting the logging, be sure to checkmark the box *Set Sensor Clock*. This will ensure that sensors are set to the same time.

- For best results in most situations, there should be at least one barometric reading within 60 minutes of each sensor reading. In areas where the barometric pressure changes rapidly, set the same recording frequency on both the barometric and level sensor.

- Refer to the Aqua4Plus or Aqua4Plus Lite software instructions for details in using the software.

Setup

(Cabled sensors can be deployed any time before Step 5. Cableless sensors should be deployed at Step 4.)

If you want to use a depth-to-water offset, start with Step 1 below; otherwise start with Step 2.

1. Preparing for depth-to-water offset on pressure/level sensor (for **Cableless** sensors or **cabled** sensors where you want to **manually** enter a depth-to-water after data collection)

   - Open the Settings and Calibration Window

   - Under Select Setting Type, select Depth/Submergence.

   - Verify that the slope is NOT negative. If it is, that means someone has entered a depth-to-water offset. You will need to manually set the Slope to 1 and the Offset to 0.

   - If the slope is not negative, but a calibration slope and/or offset had been entered, this is fine. The program will take these into consideration and no changes need to be made here.
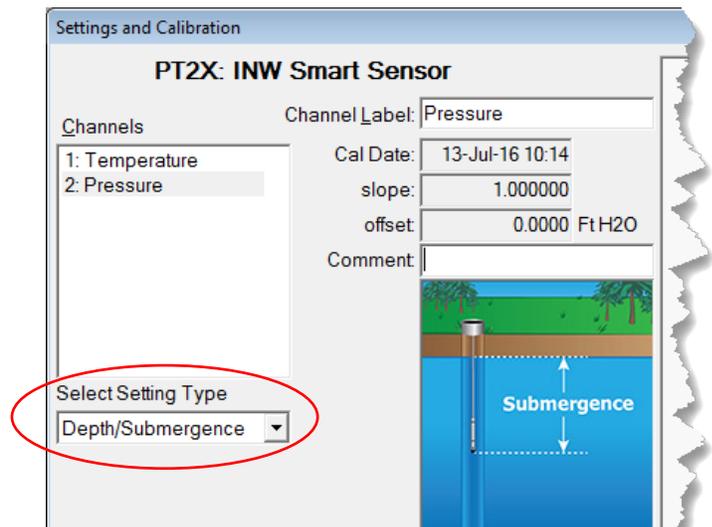
Use this option when entering DTW information after data collection

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2.   Set up Barometric Unit (BaroSCOUT or PT2X-BV):

  •   Set the Logging Schedule on the barometric unit.

  •   **Remember to checkmark *Set Sensor Clock on the Logging Schedule Screen*!**

3.   Set up Pressure/Level Sensor (LevelSCOUT or PT2X):

  •   Set the Logging Schedule on the sensor.

  •   **Remember to checkmark *Set Sensor Clock on the Logging Schedule Screen*!**
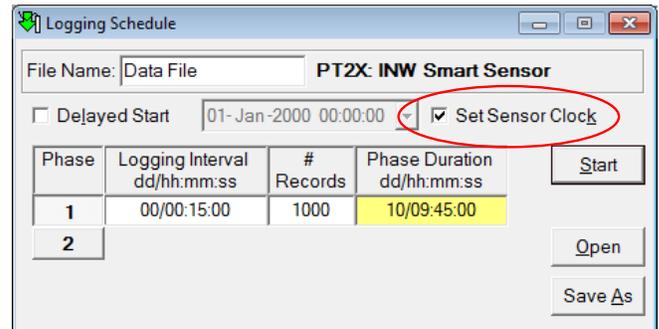
Setting the sensor clocks when starting the logging will help ensure that all data can be properly synchronized

4.   Deploy the sensor. **Note that the sensor displacement may change the depth-to-water, especially in small diameter wells. Take that into consideration when taking your depth-to-water reading. You may want to take the reading prior to deploying the sensor, depending on how fast or slow your well returns to equilibrium after deploying sensor.**

5.   If you are going to manually enter a depth-to-water measurement after data collection, then use an alternate water level measuring device, such as a dip meter, and carefully obtain the current depth-to-water from the top of the well or other specific location. **Record this value and the exact time in your field notes.** You will need this later when adjusting the data after export.

Data Retrieval and Compensation

1.   When done collecting data, retrieve the data from the pressure/level sensors and the barometric sensor.

2.   Open the Barometric Compensation Utility. (Aqua4Plus: on the Utility Menu. Aqua4aPlus Lite: on the Program Configuration Menu.) The following dialog box will open:
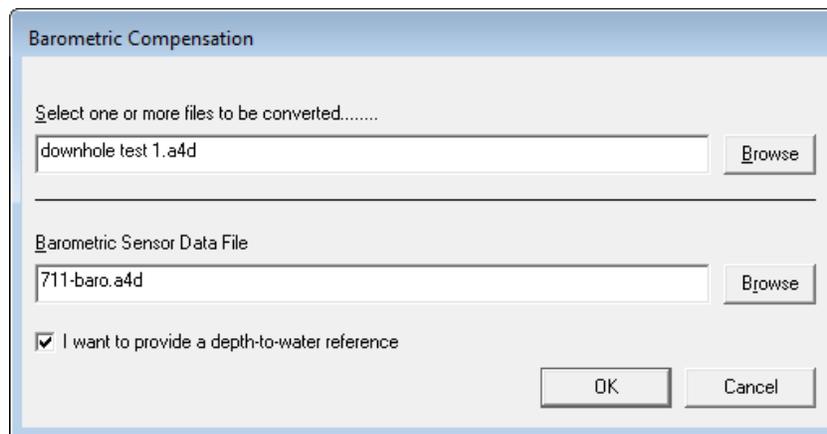
Barometric Compensation File Selection Box

3.   First, select one or more absolute data files to be converted. Click the top Browse button and navigate to the file(s) you want to convert. To select one file, simply double-click on the file name. To select two or more files, click on the first file, then hold down the Ctrl key and click on each of the other files you want to convert. Then click OK.

4.   Next, select the barometric file you wish to use for the compensation. Click on the lower Browse button and navigate to the file you want to use. Double-click on the file name.

5. If you do NOT want to enter a manual depth-to-water reading, skip to the next step, otherwise, checkmark the box "I want to provide a depth-to-water reference". One of the following boxes will display, depending on whether you are converting one or many data files.
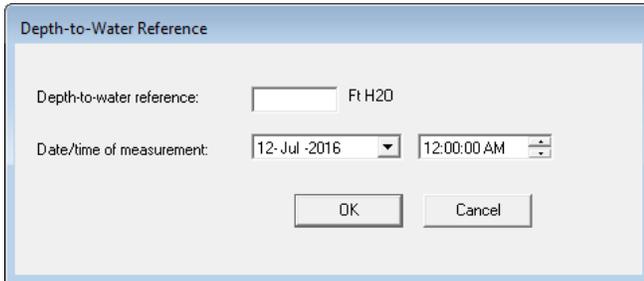
Depth-to-Water Reference for a Single Sensor
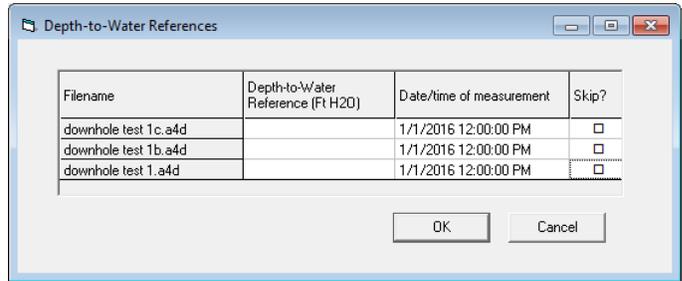
Depth-to-Water Reference for Multiple Sensors

For each sensor, enter the date/time and measurement you took previously. If you are converting several files, you have the option to enter depth-to-water offsets for each sensor or to checkmark the box in the Skip column, if not needed for a particular sensor. Click OK to continue.

6. To begin the conversion, click OK.

7. Aqua4Plus/Aqua4Plus Lite will take each record in the absolute data file, apply the depth-to-water offset (if applicable) and the barometric reading closest in time to that reading, and then create a new, converted file. The original data files will have an extension of .a4d. The compensated files will have the same file names but with an extension of .a4b. A compensated file will be created for each original data file.

Viewing the Compensated Data

1. To view your newly compensated files, click on the Open button . A File Open box will be displayed.
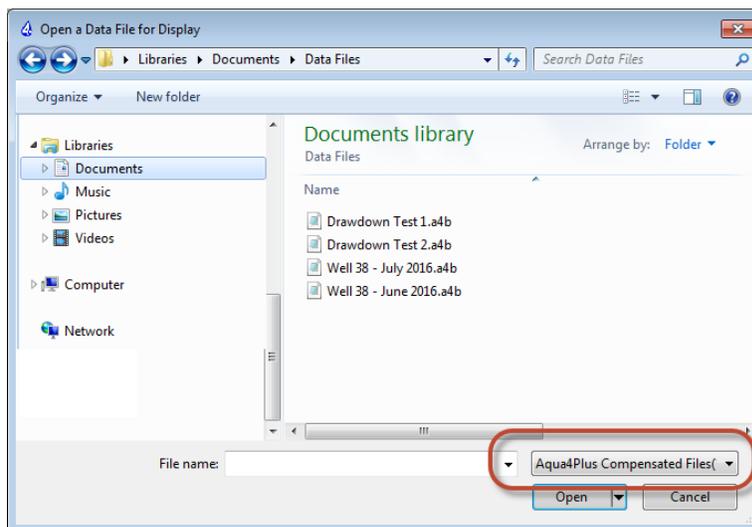
File Open Dialog Box

2. On the file type box, click the down arrow and select "Aqua4Plus Compensated Files." The box will then list your compensated files. (If you select "Aqua4Plus Data Files" instead, original data files will be listed.) Double-click on the file you want to open. Your data will display in the File Display window.

Columns represent the following:

Rec#: Record number in the original data file

Date/Time: Date and time of sample from original data file

Pressure: Barometrically compensated pressure

Temperature: Temperature

If the barometric file being used does not have a reading within one hour of the date/time for a record in the data file, that record(s) will be displayed in red.

3. To view your data as a graph, click the Graphing button. Graphs will show the compensated pressure values. (Refer to the graphing section of the software instruction manual for details on using graphing features.)

4. To export your data to a coma separated value file or an Excel file, click the Export button. Exports will show general file information and calibration values for both the original data file and the barometric file that was used to do the conversion. The data will be displayed in the following columns.

Data Display Window

Rec#: Record number in the original data file

Date/Time: Date and time of sample from original data file

Pressure: Barometrically compensated pressure

Temperature: Temperature

Sensor Pressure: Pressure from the original data file (absolute pressure)

Barometric Date/Time: The time of the reading in the barometric file that was used for each line in the data file.

Exported Data from the Compensated File

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