

Technical Bulletin

Compensating Seametrics Absolute Sensor Readings on Cableless Sensors



Note: Starting with Aqua4Plus 1.9.10 and Aqua4Plus Lite 2.1.4, you can now enter a depth to water reference as part of the Barometric Compensation Utility and the program will automatically adjust for your depth-to-water reference. The updated software is available on the seametrics.com web site. This technical bulletin applies only to earlier software!

Introduction

Aqua4Plus and Aqua4Plus Lite provide a Barometric Compensation Utility to take LevelSCOUT or PT2X data files from absolute sensors/loggers and automatically apply the barometric data from a BaroSCOUT or PT2X-BV data file. Often times, you will want to report your data as depth-to-water from a specific datum, such as the top of the well. For a vented (gauge) sensor/logger, Aqua4Plus and Aqua4Plus Lite provide several ways to set this up using the Settings and Calibration function.

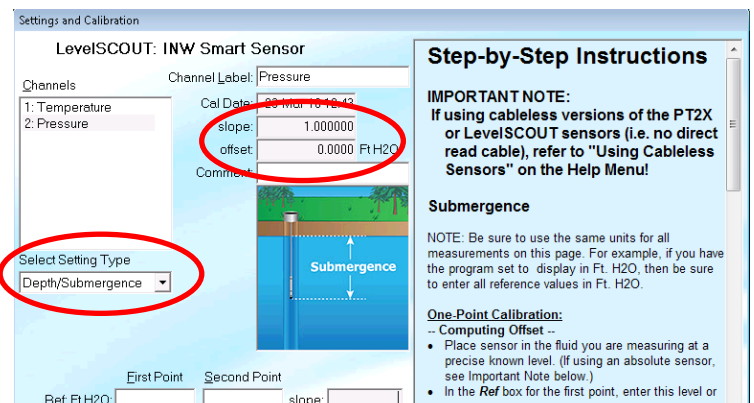
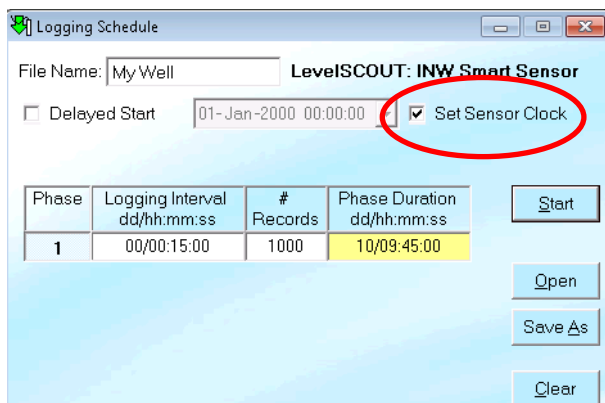
However, if you are using a cableless version of an absolute sensor, i.e. without a direct read cable, you cannot use the built-in Settings and Calibration functionality. If you want report your data as depth-to-water from a specific point, such as the top of the well, this can be done using Excel after exporting the barometrically compensated file. This technical bulletin gives step-by-step instructions for doing this.

Tips:

- When starting the logging, be sure to check-mark the box *Set Sensor Clock*. This will ensure that both 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

1. Barometric Unit (BaroSCOUT or PT2X-BV):
 - Set the logging interval on the barometric unit.
 - **Remember to check-mark *Set Sensor Clock*!**
2. Sensor (LevelSCOUT or PT2X):
 - Open the Settings and Calibration window for the sensor.
 - Under *Select Setting Type*, select *Depth/Submergence*.
 - Under the Cal Date, enter **1** in the *slope* box and **0** in the *offset* box.
 - Click *OK*.
 - Set the logging interval on the sensor.
 - **Remember to check-mark *Set Sensor Clock*!**



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3. Deploy the sensor. Note: It is very important to deploy the sensor before proceeding to the next step as the sensor's displacement will affect the depth-to-water, especially in small diameter wells.
4. Using an alternate water level measuring device, such as a dip meter, 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. Remove the sensor from the well and retrieve your data.
2. Retrieve your data from the barometric unit.
3. After data retrieval, run the Barometric Compensation Utility. (Aqua4Plus: Utility Menu. Aqua4Plus Lite: Configure Menu>Program Configuration.)
4. Export the compensated file to Excel and open it.
5. Create a new cell and record the manual water level measurement you did when deploying the sensor.
6. Calculate the adjustment offset by adding the manual measurement to the recorded measurement closest in time to the time you took the manual measurement. In this example the formula = G35+C40.
7. Add a new column to the right of the *Barometric Date/Time* column. Label it *Depth-to-Water* or whatever terminology best fits your application. This column will contain your adjusted data.
8. Adjust the data by subtracting each Pressure measurement in column "C" from the adjustment offset. In this example the formula = \$G\$36-C40.

	A	B	C	D	E	F	G
32	Statistical Data		Pressure(Ft H2O)	Temperature(degF)			
33		Sensor Range	30 psia				
34		Minimum	0	69.05			
35		Maximum	0	69.12		Manual Measurement	53
36		Mean	0	69.08		Adjustment Offset	86.038
37		Variance	0	0			
38		Std Deviation	0	0.021			
39	Rec #	Date/Time	Pressure(Ft H2O)	Temperature(degF)	SensorPressure(Ft H2O)	Barometric Date/Time	Depth-to-Water
40	1	2/26/2016 5:28:22.0	33.038	69.05	66.948	2/26/2016 5:28:22.00	53.000
41	2	2/26/2016 5:28:23.0	33.036	69.05	66.946	2/26/2016 5:28:23.00	53.002
42	3	2/26/2016 5:28:24.0	33.036	69.05	66.946	2/26/2016 5:28:24.00	53.002
43	4	2/26/2016 5:28:25.0	33.033	69.05	66.943	2/26/2016 5:28:25.00	53.005
44	5	2/26/2016 5:28:26.0	33.033	69.05	66.943	2/26/2016 5:28:26.00	53.005
45	6	2/26/2016 5:28:27.0	33.033	69.06	66.943	2/26/2016 5:28:27.00	53.005
46	7	2/26/2016 5:28:28.0	33.033	69.06	66.943	2/26/2016 5:28:28.00	53.005
47	8	2/26/2016 5:28:29.0	33.031	69.06	66.941	2/26/2016 5:28:29.00	53.007
48	9	2/26/2016 5:28:30.0	33.031	69.06	66.941	2/26/2016 5:28:30.00	53.007
49	10	2/26/2016 5:28:31.0	33.031	69.06	66.941	2/26/2016 5:28:31.00	53.007
50	11	2/26/2016 5:28:32.0	33.031	69.07	66.941	2/26/2016 5:28:32.00	53.007
51	12	2/26/2016 5:28:33.0	33.031	69.07	66.941	2/26/2016 5:28:33.00	53.007
52	13	2/26/2016 5:28:34.0	33.031	69.07	66.941	2/26/2016 5:28:34.00	53.007
53	14	2/26/2016 5:28:35.0	33.031	69.07	66.941	2/26/2016 5:28:35.00	53.007

