



Conductivity Assistant

For HOBOnware® Pro Software

User's Guide

License Agreement

This software is furnished in accordance with a separate license agreement included with the software, and subject to any restrictions set forth therein. For more information about Onset's licensing terms and policies, contact Onset Customer Service at 1-800-LOGGERS, or visit <http://www.onsetcomp.com/legal>.

About Data Assistants

Data assistants are plug-in utilities for HOBOWare Pro. They let you create new data series by combining data recorded by the logger with additional data that you enter before you display the plot.

If your logger or datafile contains data that supports a data assistant, you will see a Data Assistants section at the bottom of the Plot Setup dialog. Select an assistant and click **Process** to continue. Some Data Assistants are also available when launching the logger.

For information about installing and managing data assistants, refer to the following page at the Onset web site:

<http://www.onsetcomp.com/dataAssistants>

© 2012 Onset Computer Corporation. All rights reserved.

Doc #: 15019-C

Onset, HOBOWare Pro, and FlexSmart are trademarks or registered trademarks of Onset Computer Corporation. All other trademarks are the property of their respective companies.

Conductivity Assistant

The Conductivity Assistant converts raw conductivity data from a U24 logger to Specific Conductance and/or Salinity. It also allows using field calibration measurements recorded at the beginning and end of a deployment for calibration and to compensate for drift and sensor fouling effects.

1. Read out a U24 series logger or open a datafile from a U24 logger.
 2. From the Plot Setup window, select the Conductivity Assistant and click the **Process** button.
 3. In the Conductivity Assistant dialog, select the conductivity series that corresponds to the range of your data. **Note:** If you only selected one range at launch time, only one series will be listed.
- For the U24-001 logger, select either Conductivity Low Range when the data is always less than 1000 $\mu\text{S}/\text{cm}$ or select Conductivity Full Range (default) when the data goes above 1000 $\mu\text{S}/\text{cm}$ as shown below.

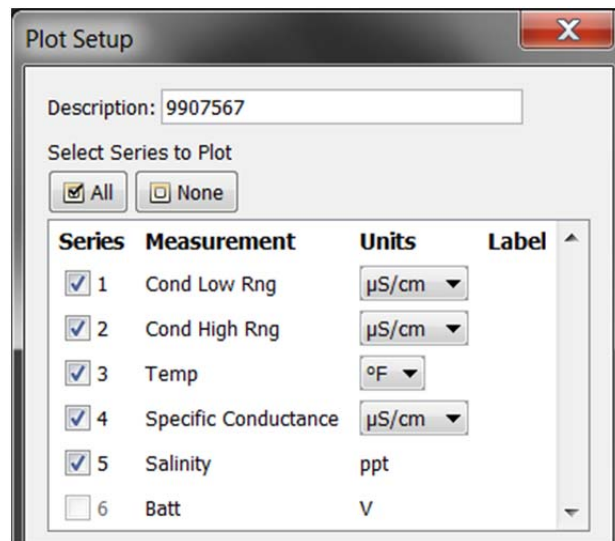
The screenshot shows the 'Conductivity Assistant' dialog box. Under 'Select Data Series', 'Conductivity Series' is set to '2) Conductivity Full Range'. In the 'Temperature Compensation' section, 'Non-linear, Natural Water Compensation per EN27888' is selected. Under 'Calibration', 'Use factory calibration only' is selected. The 'Starting calibration point' is set to 0.00 $\mu\text{S}/\text{cm}$ (Conductivity) and 0.00 $^{\circ}\text{C}$ (Temperature). The 'Ending calibration point' is also set to 0.00 $\mu\text{S}/\text{cm}$ (Conductivity) and 0.00 $^{\circ}\text{C}$ (Temperature). The 'Measurement time' for the starting point is 01/31/10 03:49:13 PM GMT-05:00 [-1.2 $\mu\text{S}/\text{cm}$, 17.0 $^{\circ}\text{C}$]. The 'Measurement time' for the ending point is 01/31/10 03:51:58 PM GMT-05:00 [-1.2 $\mu\text{S}/\text{cm}$, 18.9 $^{\circ}\text{C}$]. The 'Series Name' is 'Specific Conductance' and 'Salinity (PSS-78)' is 'Salinity'. The 'User Notes' field is empty. Buttons for 'Help', 'Cancel', and 'Create New Series' are at the bottom.

- For the U24-002 logger, select either Conductivity Low Range when the data is always less than 10,000 $\mu\text{S}/\text{cm}$ or select Conductivity High Range (default) when the data goes above 10,000 $\mu\text{S}/\text{cm}$ as shown below.

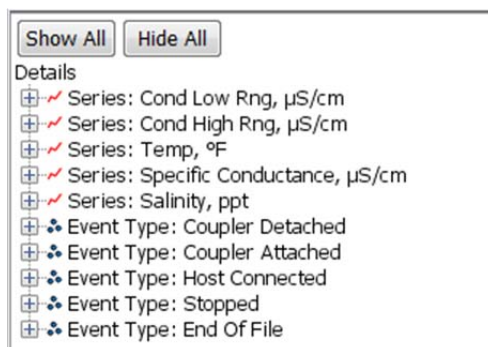
The screenshot shows the 'Conductivity Assistant' dialog box. Under 'Select Data Series', 'Conductivity Series' is set to '2) Conductivity High Range'. In the 'Temperature Compensation' section, 'Non-linear, Sea Water Compensation based on PSS-78' is selected. Under 'Calibration', 'Use measured points for calibration' is selected. The 'Starting calibration point' is set to 40600.00 $\mu\text{S}/\text{cm}$ (Conductivity) and 22.40 $^{\circ}\text{C}$ (Temperature). The 'Ending calibration point' is set to 38900.00 $\mu\text{S}/\text{cm}$ (Conductivity) and 22.30 $^{\circ}\text{C}$ (Temperature). The 'Measurement time' for the starting point is 09/13/11 08:44:58 AM GMT-04:00 [0.0 $\mu\text{S}/\text{cm}$, 23.5 $^{\circ}\text{C}$]. The 'Measurement time' for the ending point is 09/13/11 09:47:48 AM GMT-04:00 [0.0 $\mu\text{S}/\text{cm}$, 21.8 $^{\circ}\text{C}$]. The 'Series Name' is 'Specific Conductance' and 'Salinity (PSS-78)' is 'Salinity'. The 'User Notes' field is empty. Buttons for 'Help', 'Cancel', and 'Create New Series' are at the bottom.

4. Select your desired Temperature Compensation method.
 - Use "Non-linear, Natural Water Compensation per EN27888" for freshwater lakes and streams.
 - Use "Linear compensation default at 2.1 %/°C" or "Linear compensation at <your own value>" for NaCl solutions or other linear solutions.
 - Use "Non-linear, Sea Water Compensation based on PSS-78" for salt water or salt marshes.
5. Select a Calibration Method. By default, data is calibrated using the factory calibration. To enter your own calibration values, select "Use measured points for calibration" and then enter temperature and actual conductivity (not specific conductance) values from your calibration readings taken with a field meter. These field measurements will be used to provide calibrated conductivity and salinity data series by adjusting the data as a percentage of the reading. See *Calibration* below for more information.
 - Starting and Ending Value: This method calibrates your data and adjusts for sensor drift or fouling. This assumes there is a linear change in calibration adjustment required.
 - Starting value only: All readings are adjusted up or down by a fixed percentage of the reading based on this calibration point.
 - Ending Value Only: The factory calibration value is used as the starting point. This assumes there is a linear change in calibration adjustment required.

Note: You cannot use a zero-point calibration solution for starting and ending values. The first data point cannot be used as the ending value; consider using that as the starting value instead.
6. Select the Only Report Data Between the Selected Points checkbox if you want readings from before or after the calibration points to be removed from the resulting series.
7. In the Series Name field, keep the default name or type a new one.
8. Type any User Notes concerning the series you are creating (optional).
9. Click the Create New Series button.
10. The Plot Setup dialog lists a series called Specific Conductance (or the name you entered for Series Name). The default units are microSiemens/cm ($\mu\text{S}/\text{cm}$). You can change the units to milliSiemens/cm (mS/cm) if desired. The default units for salinity are ppt (parts per thousand) and this cannot be changed.



11. Click **Plot** to plot the data. The Details Pane will show the series selected in Plot Setup:



After the plot is displayed, you may apply minimum, maximum, and average filters to the scaled series as you would for any sensor data series in HOBOWare Pro.

12. Save this plot as a Project to preserve this processed data.

Calibration

It is important to take temperature and conductivity calibration readings with a portable conductivity meter at both the beginning (launchtime) and end of a deployment (readout) because these readings are necessary for data calibration and to compensate for any measurement drift during deployment. The conductivity calibration readings should be the actual conductivity values (not in specific conductance at 25°C), and should be recorded in a notebook with the time and location of the reading. See the logger manual for details on different methods to record these values.

1. Once the logger is deployed and logging, record in a notebook the temperature and actual conductivity meter readings along with the date and time which will be entered into the Conductivity Assistance to correct the field data.
2. Before you remove the logger and read out its data, take another temperature and conductivity reading with the meter and record the exact date and time.
3. Enter these values under the "Use measured points for calibration" option in the Conductivity Assistant.

Notes:

- Whenever a logger is removed for downloading data, clean the sensor window using a cotton swab with a mild detergent and rinse.
- If the water in the field is not accessible to the conductivity meter sensor, such as in a deep well, a bailer can be used to fetch a water sample for testing. See the logger manual for more details.