

Instruction Sheet

Communication Device Kit

Part number 0081100

Kit Contents

- Communication device
- Software CD
- 9 V battery
- You can also purchase a calibration kit for the instrument, which includes a calibration chamber and a bottle of sodium sulfite solution.



Install and Open the Software

1. Place the CD in your computer and double-click Run ShelExec.exe.
2. Select the Comm Kit Software link. Follow the prompts to install the software.
3. Ensure that you select the option to install USB drivers.
4. Double-click the Comm Kit Software desktop icon, or open the software from Start/All Programs/In-Situ Inc.

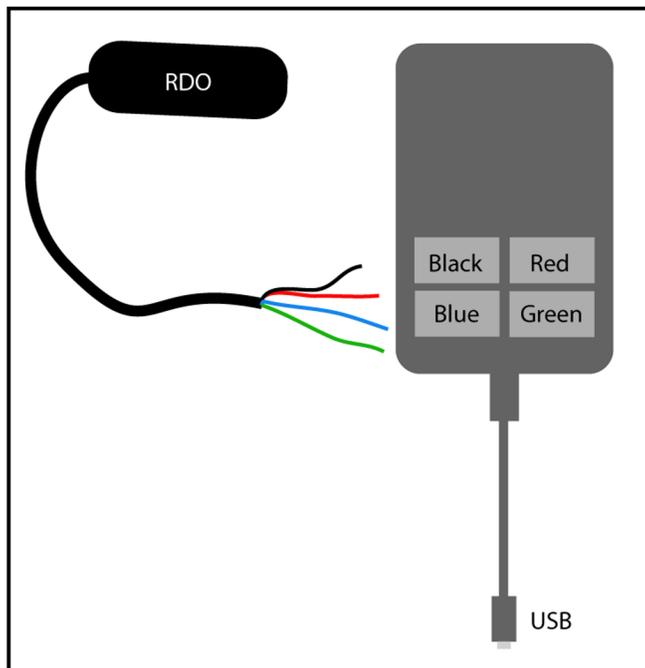
Connect the Instrument to a Computer

The Communication Device connects a stripped-and-tinned RDO PRO-X Probe, RDO Titan, or Aqua TROLL 400 Instrument to a computer via USB connection.

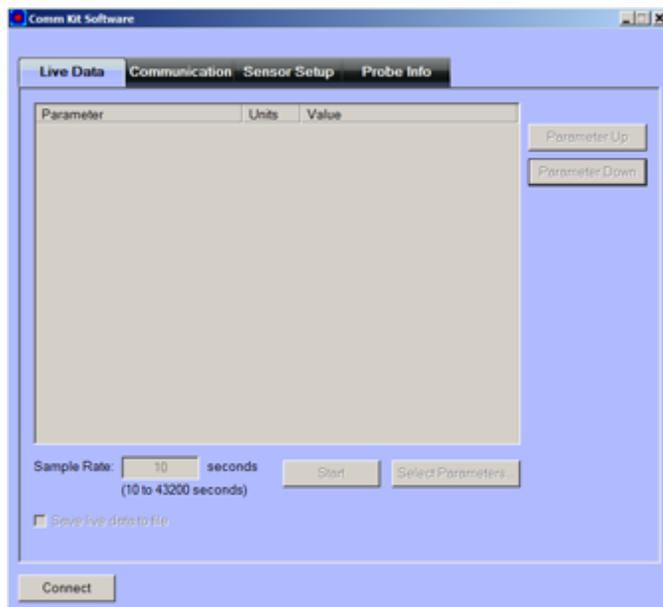
1. The communication device includes an electrical connection diagram label. To attach the sensor to the Communication Device, depress a lever and insert the

appropriate wire in the location specified by the diagram.

2. Attach the USB connector to a USB port on the computer.



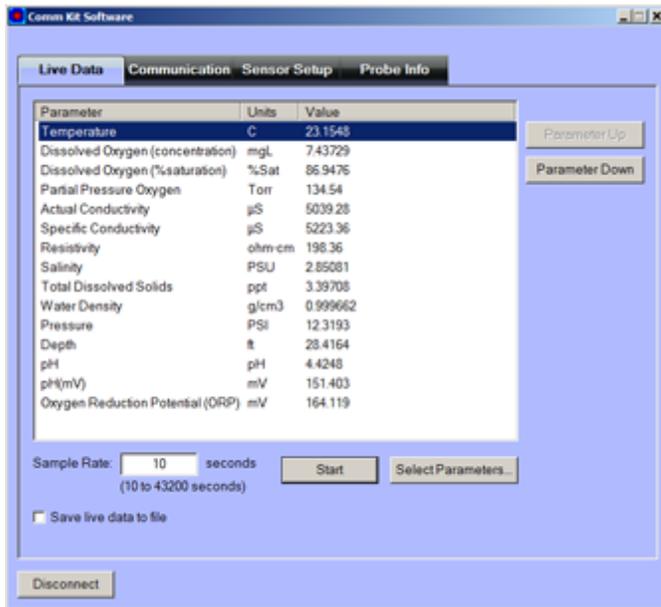
3. Wait a minute for the computer to recognize the USB device then click the Connect button.



4. If the software does not connect to the software, you can find the COM port that your computer has assigned in Windows[®] Device Manager/Ports.

View Live Readings

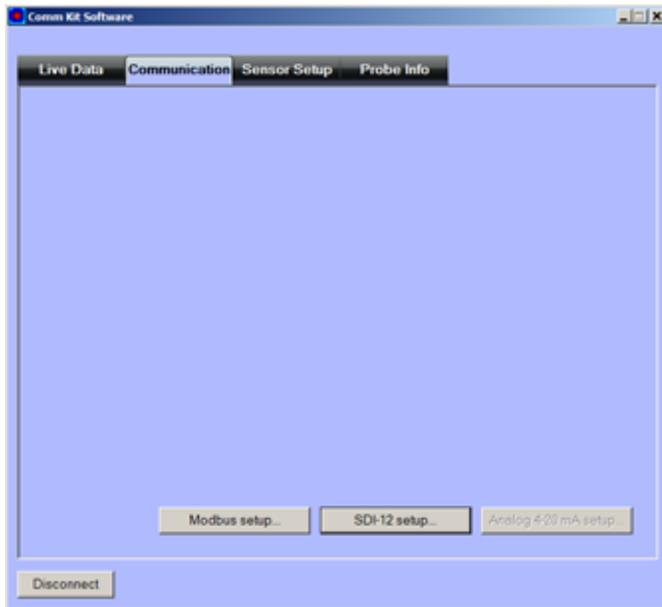
When the instrument is connected to the software, a snap shot of data appears on screen. If you want live readings to continue, click the Start button.



Screen Element	Purpose
Connect/Disconnect (button)	Establishes connection and disconnection between the instrument and the software.
Sample Rate (text field)	Allows you to enter the rate at which the instrument will report measurements.
Save live data to file (checkbox)	Saves data to a .csv file on your computer. Once the checkbox is selected, click Start to begin saving data to a location of your choice on your computer.
Start/Stop (button)	Starts and stops data polling.
Select Parameters (button)	Allows you to enable and disable parameters. Click the Select Parameters button and click the checkboxes to select or clear parameters.
Parameter Up (button)	Allows you to move a parameter higher in the list. Click the parameter and then click the Parameter Up button until the desired location is reached.
Parameter Down (button)	Allows you to move a parameter lower in the list. Click the parameter and then click the Parameter Down button until the desired location is reached.

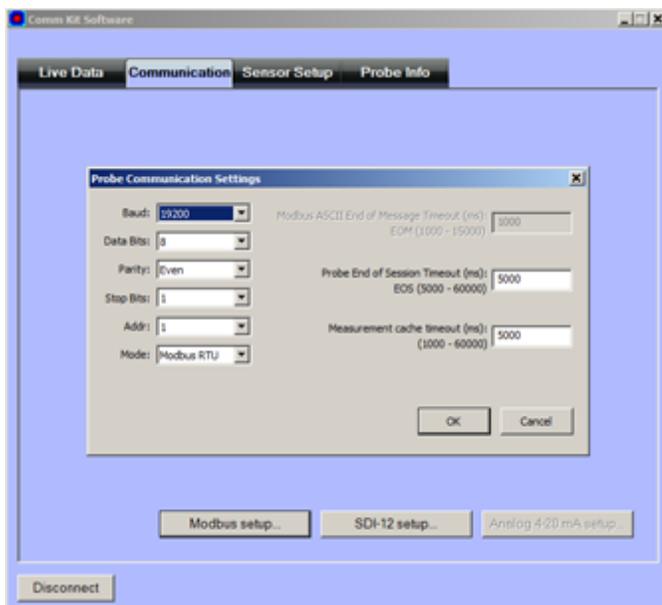
Adjust Communications Outputs

The Communication Tab allows you to configure your instrument to communicate via Modbus or SDI-12 protocols. The instrument can use only one of the protocols at a time.



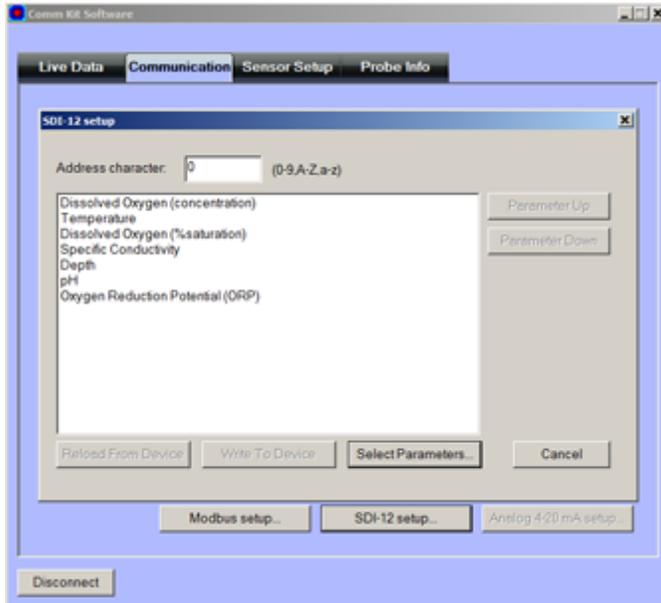
Modbus Setup

Click the Modbus setup button and assign instrument settings according to the requirements of your controller. For instrument Modbus registers, see the Aqua TROLL[®] 400 Modbus and SDI-12 Reference Guide.



SDI-12 Setup

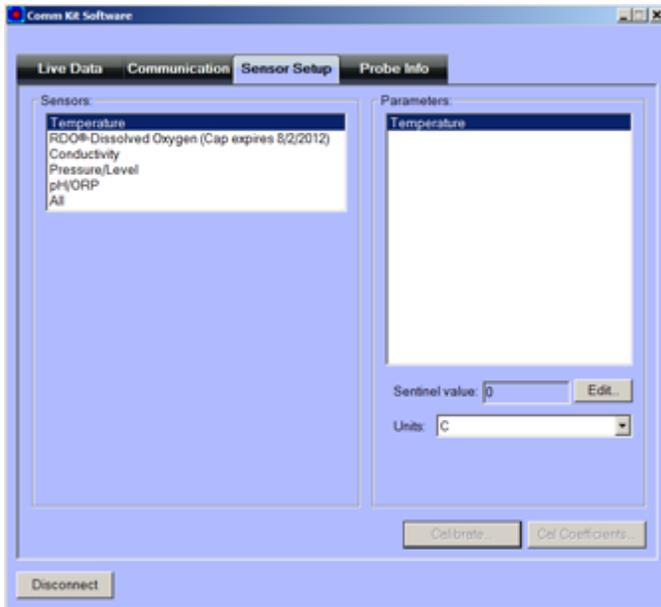
SDI-12 setup allows you to set the instrument address, select the parameters you intend to log, and select the order in which the parameters will appear in the log file.



Screen Element	Purpose
Address character (text field)	Allows you to assign a unique SDI-12 address to the instrument. Use 0-9, A-Z, or a-z.
Reload from Device (button)	Restores the settings that were last written to the instrument.
Write to Device (button)	Writes the parameters and the address to the instrument.
Select Parameters (button)	Allows you to enable and disable parameters. Click the Select Parameters button and click the checkboxes to select or clear parameters.
Parameter Up (button)	Allows you to move a parameter higher in the list. Click the parameter and then click the Parameter Up button until the desired location is reached.
Parameter Down (button)	Allows you to move a parameter lower in the list. Click the parameter and then click the Parameter Down button until the desired location is reached.
Cancel	Returns you to the Communications tab without saving.

Sensor Setup Tab

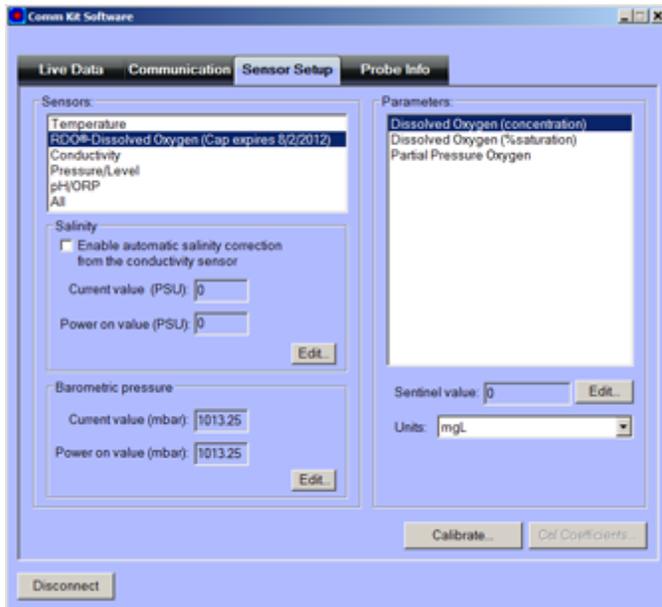
The Sensor Setup Tab allows you to configure and calibrate sensors, assign the sentinel value, and set units for parameters. When a sensor is selected, configuration options specific to that sensor appear on screen.



Temperature Sensor

Screen Element	Purpose
Sentinel value (text field)	Displays the current sentinel value. The sentinel value is the number that will display when there is a communication problem with the sensor. It is important to set the sentinel value to a number that would be an unlikely reading for the parameter under regular operating conditions.
Edit (button)	Allows you to edit the sentinel value for the selected parameter.
Units (list)	Allows you to assign the unit for the selected parameter.

RDO Sensor



Screen Element	Purpose
Enable automatic salinity correction from the conductivity sensor (checkbox)	Select the checkbox to use the reading from the integrated conductivity sensor. Clear the checkbox if you want to enter a fixed PSU value, and then click Edit.
Current value (PSU) (text field)	Displays the value that is currently used for salinity correction.
Default (PSU) text field	Displays the value that will be used for salinity correction by default when you apply power to the instrument.
Edit (button)	Allows you to change the Default (PSU) text field.
Current value (mbar) (text field)	Displays the value that is currently used for barometric pressure correction. Note: If your controller reads barometric pressure, it can be read into the current value.
Default (baro)	Displays the value that will be used for barometric correction by default when you apply power to the instrument.
Edit (button)	Allows you to change the Default (mbar) text field.

Screen Element	Purpose
Sentinel value (text field)	Displays the current sentinel value. The sentinel value is the number that will display when there is a communication problem with the sensor. It is important to set the sentinel value to a number that would be an unlikely reading for the sensor under regular operating conditions.
Edit (button)	Allows you to edit the sentinel value for the selected parameter.
Units (list)	Allows you to assign the unit for the selected parameter.
Calibrate (button)	Starts the Calibration Wizard.
Cal Coefficients (button)	Allows you to view the most recent calibration coefficients stored on the instrument.

RDO Sensor Calibration

Calibrate 100% Oxygen Saturation

1. Place the calibration cap, with the vent hole, on the top of the calibration chamber.



2. Place the sponge wafer in the bottom of the calibration cup and saturate the sponge wafer with approximately 10 mL clean water.
3. Gently dry the probe and sensing material with a paper towel. Ensure that the probe and the sensing surface are free of water and fouling.
4. Place the instrument into the calibration chamber.



5. Wait 5 to 10 minutes for temperature stabilization prior to calibration.



Note: Do not leave the instrument in the calibration cup for more than 30 minutes. This can cause condensation to form on the sensing material, providing false low readings after calibration.

6. In the Comm Kit Software, select the Sensor Setup tab.
7. Select the RDO Dissolved Oxygen parameter.
8. Click Calibrate.
9. By default, 100% saturation is selected for the first point of the calibration. If you intend to perform a 2-point calibration, also select 0% saturation from the drop-down list. Otherwise, leave as “None.”

DO Calibration - Select Method

Restore factory calibration

Select Calibration Standards:

DO value for calibration point 1: 100% saturation

DO value for calibration point 2: 0% saturation

Current Readings:

Temperature (C): 23.5104

DO (mg/L): 7.19390

DO (% saturation): 84.6810

Current Barometric Setting (mbar): 1013.25

Cancel < Back Next > OK

10. Click Next.

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11. Enter the barometric pressure or elevation at which the instrument will be deployed, if necessary.
 12. Click Next.
 13. Click OK to start the calibration.
 14. When the screen indicates that the calibration has reached stability, click Accept to complete the calibration, or click to Cancel to return to the previous calibration values.

Calibrate 0% Oxygen Saturation

1. If you selected to perform a 2-point calibration, you are prompted to set up the solution for the second point of the calibration.
2. Remove the wet sponge from the cup.
3. Fill the calibration cup to the fill line with approximately 130 mL of fresh sodium sulfite solution.



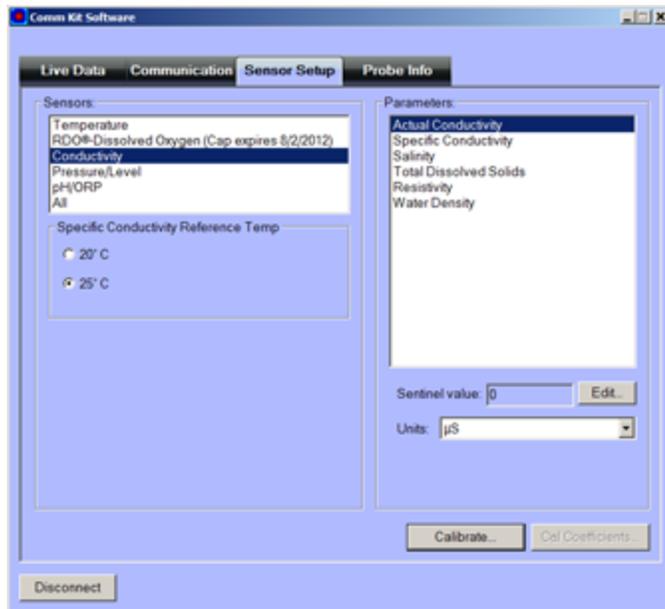
4. Completely submerge the RDO Sensor into the solution.
5. Click OK to start the calibration.
6. When the screen indicates that the calibration has reached stability, click Accept to complete the calibration, or click Cancel to return to the previous calibration.
7. You can save or print the calibration report.
8. Click OK to complete the calibration.
9. Once calibration is complete, remove the instrument from the calibration cup and rinse both thoroughly with clean water.

Conductivity Sensor Calibration

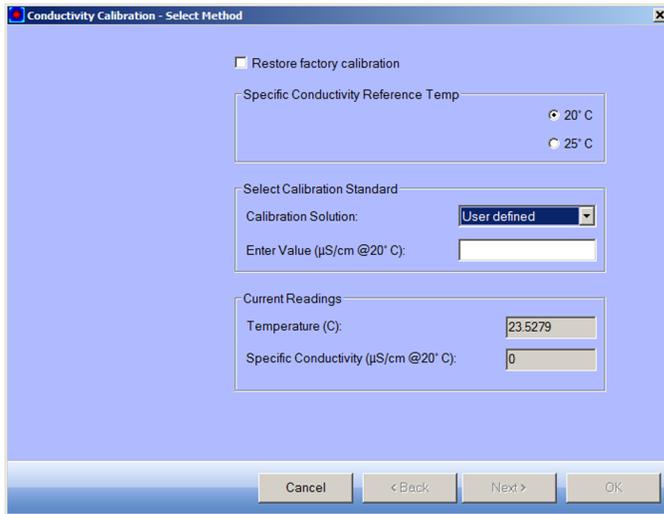
The conductivity sensor is calibrated with NIST[®]-traceable standards at the factory, which provides a high degree of linearity across the entire operating range of 5 to 100,000 $\mu\text{S}/\text{cm}$. This sensor is capable of meeting its published specifications without requiring additional calibration by the user. Most commercially available standards can introduce a larger potential measurement error than the sensor's initial factory

calibration. User calibration is recommended only if you must conform to a standard operating procedure or if the conductivity cell has undergone physical change (e.g., deposits on conductivity cell walls that cannot be removed or physical damage to the conductivity cell walls).

1. Fill the calibration cup to the fill line with approximately 130 mL of the desired calibration solution.
2. Place the calibration cap on the instrument slightly above the restrictor, and carefully place the instrument in the solution taking care to not force the solution out the top of the calibration cup.
3. In the Comm Kit Software, select the Sensor Setup tab.



4. Select the Conductivity parameter.
5. Select either 20° C or 25° C as the reference temperature, as indicated by the reference solution.
6. Click Calibrate.



7. Select the appropriate calibration standard from the drop-down list. If you select “User Defined,” enter the value of the solution.



Note: If you select 20° C as the reference temperature, you must also select “User defined” and enter the value of the your calibration standard.

8. Click Next.
9. Place the instrument into the calibration cup and allow time for the temperature to stabilize.
10. Gently tap the sides of the calibration cup against the palm of your hand to remove any bubbles in the conductivity cell. Visually inspect to ensure that all bubbles are removed.
11. Click OK to start the calibration.
12. When the screen indicates that the calibration has reached stability, click Accept to complete the calibration, or click Cancel to return to the previous calibration.
13. You can save or print the calibration report.
14. Click OK to complete the calibration.
15. Once calibration is complete, remove the instrument from the calibration cup and rinse both thoroughly with clean water.

Pressure/Level

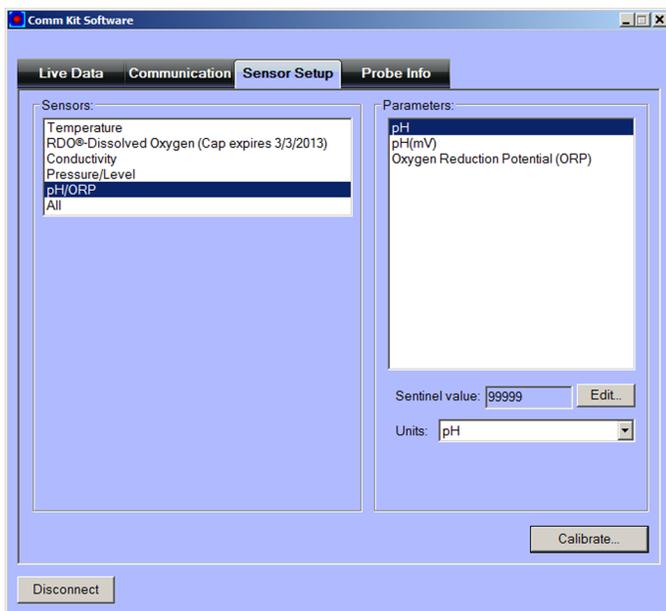
The pressure sensor has been factory calibrated with NIST standards to a greater degree of accuracy than can be achieved in nearly any alternative setting. Therefore, user calibration is not necessary for the pressure sensor.

pH/ORP Sensor Calibration

Fill the calibration cup to the fill line with approximately 130 mL of the desired pH or ORP calibration solution.

Place the calibration cap on the instrument slightly above the restrictor, and place the instrument in the solution taking care to not force the solution out the top of the calibration cup.

1. In the Comm Kit Software, select the Sensor Setup tab.
2. Select the pH/ORP parameter.
3. Click Calibrate.

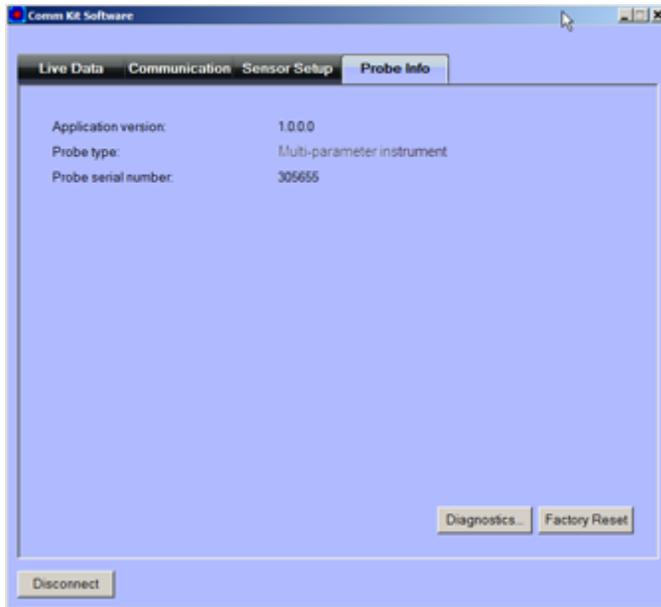


4. Select Calibrate pH, or Calibrate ORP.
5. Click Next.
6. Select a value for the first calibration point. If you intend to perform a 2-point or 3-point calibration, select the appropriate values as indicated on the label of the calibration standard.
7. Click Next.
8. Place the instrument into the calibration cup and allow time for the temperature to stabilize.
9. Click OK, to start the calibration.
10. When the screen indicates that the calibration has reached stability, click Accept to complete the calibration for that calibration point, or click Cancel to return to the previous calibration.
11. Follow the Wizard to continue through the remaining calibration points.
12. You can save or print the calibration report.
13. Click OK to complete the calibration.

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14. Once calibration is complete, remove the instrument from the calibration cup and rinse both thoroughly with clean water.
 15. Diagnostics and Factory Reset
 16. The Probe Info Tab displays the software application version, probe type, and probe serial number. This tab also allows contains access to Diagnostics and Factory Reset options.

Diagnostics and Factory Reset

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Screen Element	Purpose
Application version	Comm Kit Software version
Probe type	Instrument description
Probe serial number	Unique number engraved on the instrument at the factory
Diagnostics (button)	Allows you to view the sensor calibration coefficients and data regarding messages sent and received.
Factory Reset (button)	Enables you to reset the instrument to original factory settings.