

# Quick Start Guide

## Aqua TROLL® 600 Multiparameter Sonde

### Box Contents



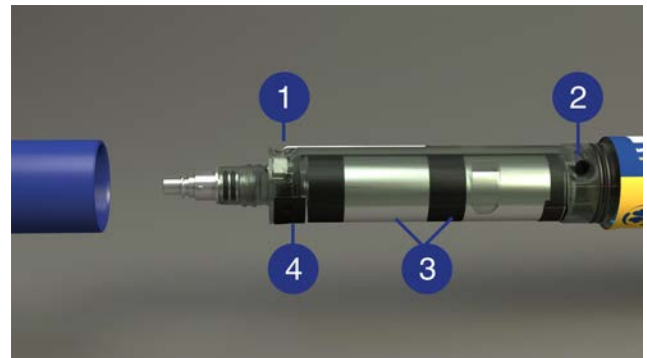
1	Documentation and software
2	Wiper motor and brush or wiper port plug
3	Aqua TROLL® 600 Sonde
4	Water quality sensors (2 of 4)
5	Calibration cup
6	Water quality sensors (2 of 4)
7	RDO sensor cap
8	Accessory supplies*
9	pH/ORP sensor maintenance supplies
10	Extra sensors (0 to 2)
11	D-cell alkaline batteries (2)
12	Instrument tools†

\* Accessory supplies include wiper screws (2), wiper brush (2), silicone lubricant for O-rings (2), battery compartment desiccant, replacement battery compartment hex screw driver, lens cloth, and micro SD card adapter.

† Instrument tools include a 0.050 in./1.3 mm hex screwdriver for sensor screws, a flathead screwdriver for the pH reference junction, and a Phillips head screwdriver for bail screws.

### Install the Batteries

1. Twist open the battery compartment, remove the disposable desiccant pack in the battery compartment, and install the batteries.



1	Allen wrench (backup)
2	Replaceable desiccant
3	D-cell alkaline batteries
4	Micro SD card

✓ Install two alkaline D-cell batteries. Use only alkaline batteries. Do not use batteries of different ages.

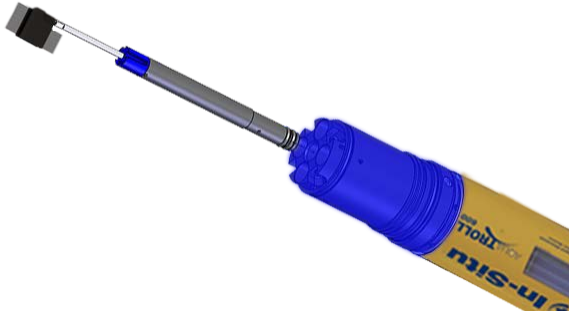
2. On the opposite side of the batteries is a back-up Allen wrench that can be used for sensor installation and removal.
3. Check to see that the replaceable desiccant capsule is blue indicating it is fresh. Replace the desiccant if it is pink.
4. Close the battery compartment. If the batteries are installed correctly the LCD screen will turn on.

### Install the Wiper Motor and Sensors

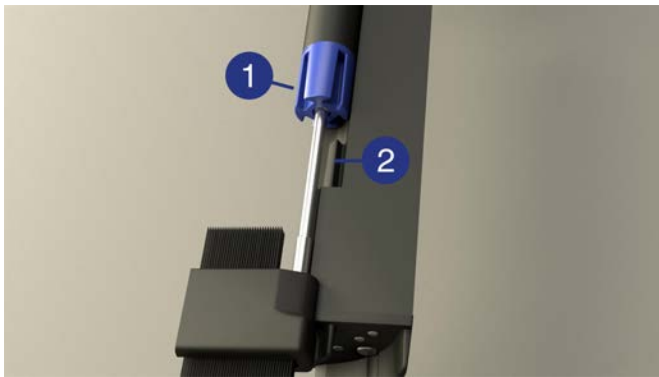
1. Remove the restrictor.
2. Remove the protective sticker from the end of the sonde to expose the sensor ports.

✓ Rubber bumpers are included on the ends of the sonde to help prevent the sonde from rolling off working surfaces. You can deploy the sonde with or without these safeguards.

3. Locate the cylindrical wiper motor (or motor port plug) and remove the dust cap. Apply a small amount of lubricant from the maintenance supplies to the O-rings. Align the pins and push the motor (or plug) firmly into the center port.



✓ Notice the blue sensor interlock grooves on the wiper motor. You must install the sensors so that they slide into the grooves.



- |   |                          |
|---|--------------------------|
| 1 | Sensor interlock grooves |
| 2 | Sensor interlock tab     |



The pH/ORP sensor is shipped with a storage cap taped on the sensor. Remove this cap before installation and save the cap for later storage.

✓ Salt crystals may form on pH/ORP sensors during storage. These crystals are normal and do not impact sensor performance.

When installing an RDO sensor, install the RDO Cap before installing the sensor body on to the sonde. Do not touch or rub the cap face. Make sure the RDO cap is seated firmly and the tab is locked in place.

4. Locate the conductivity sensor. Remove the dust cap and apply lubricant to the conductivity sensor O-rings. Install the sensor into port 1 making sure the sensor tongue slides into the blue motor interlock groove.

✓ Sensors can be installed in any port, however, installing the conductivity sensor in port 1 allows for the most efficient energy consumption.

5. Install the remaining sensors, applying lube to all O-rings. Sensors should be seated tightly together with no gaps between connecting edges or the instrument base.
6. When all sensors are installed, use the Allen wrench to tighten the screw at the base of each sensor. Do not overtighten the screws.
7. Place the metal restrictor over the sensors and twist into place. Ensure that the vent holes are located at the base of the instrument to allow sufficient flow to the sensors.



✓ Note: The restrictor can be inverted to act as a storage cup when the instrument is not in use.



### Removing Sensors

1. Loosen the sensor screw.
2. Insert the Allen wrench into the small hole at the base of the sensor.
3. Push the wrench body towards the sensor so the inserted tip of the wrench rotates towards the sonde body.



4. Pull the sensor out of the port.

### Connecting RuggedCable

#### Connect the Instrument to the RuggedCable

1. Remove the protective caps from the instrument and cable. Ensure that the O-ring on the instrument connector is clean. Apply a small amount of vacuum grease to the o-ring.
2. Position the instrument and cable flat edges so they will connect properly. Insert the instrument connector firmly into the cable connector.



3. Hold the textured section of the sleeve in one hand and the instrument in the other. Push and twist until you hear a click. The click ensures the cable and instrument are securely attached.



### Connect TROLL Com Communication Device to the RuggedCable System

1. If a desiccant is present, remove the desiccant from the cable. Twist the desiccant and cable sleeve in opposite directions to unlock the desiccant from the cable.
2. Position the TROLL Com and cable flat edges so they will connect properly. Push and twist until you hear a click.

### LCD Screen

The AquaTROLL 600 includes an LCD screen that allows you to view instrument status and access sonde settings.

#### Turn on the LCD Screen





1. Hold the sonde vertically so the sensor end faces up.
2. The LCD screen will illuminate after a few seconds briefly displaying the platform name and firmware version, followed by the RDO Sensor Cap expiration information (if applicable).
3. The LCD screen will then display port status, power status, log status, and connection status (when applicable).




Below is one example of how the LCD screen will appear when the instrument is ready to be deployed.









1	Port Status
2	Power Status
3	Log Status
4	Connected Status (shown only when connected)








### Status Icons

Possible Port Status	Possible Power Status
 Sensors are installed	 Battery level indicator
 Sensor Port Plugs are installed	 External power provided

Possible Port Status	Possible Power Status
 Sensor error	 Battery error or Battery below 10%
 Ports are open	

Possible Log Status	Possible Connected Status
 A log is running	 Connected to software via Bluetooth
 A log is scheduled	 Connected to software via cable
 A log is paused	
 No log is configured	

### Additional LCD Icons

	Instrument is working on a task.
	Three taps on the instrument body allows access to the menu. A single tap selects the highlighted menu item.
	Tilt the instrument to the left to scroll up through the menu items.
	Tilt the instrument to the right to scroll down through the menu items.
	Indicates the top of the menu has been reached.
	Indicates the bottom of the menu has been reached.
	Consult the manual.

### Full-Text Messages

The LCD will display text messages instead of status icons when certain conditions are met. Multiple messages will rotate and display for 3 seconds each.

Text Message	Cause and Remedy
Close battery cover	Battery cover is not fully closed. Ensure the battery cover is securely tightened.
Install wiper	Wiper sensor port is open. Install wiper or wiper port plug into center port.
Install sensors	Sensor ports are open. Install sensors or sensor port plugs.
Install temperature	No Temperature or Conductivity/Temperature sensor detected. Install a sensor with Temperature.
Install RDO Cap	RDO Cap not detected on RDO sensor. Install RDO cap.
RDO Cap expired	RDO cap is no longer valid. Install a new RDO Cap.
RDO Cap XXX days	Temporary text message update on the lifespan of the RDO Cap.

## Sensor Calibration

### Preparing the Aqua TROLL 600 for Calibration

1. Remove the rubber bumper and blue top cap from the restrictor.
2. Remove the rubber gasket from the calibration cup and slide it on to the middle of the restrictor.



3. Screw the cal cup on the bottom of the restrictor.
4. Pour the calibration solution into the cal cup.
5. Fully seat the rubber gasket on the top of the cal cup.
6. Gently tap the cup and sonde at an angle to remove all bubbles from the sensor faces.

Always remove bubbles from sensor faces to improve calibration accuracy.

7. If performing an RDO calibration, ensure the gasket notch is lined up with the vent hole of the cal cup.

Sensor calibration procedures vary based on the software you are using to program the instrument. If you are using the VuSitu Mobile App, [See "About Calibration and Settings" on page 6.](#) If you are using Win-Situ 5 Software, [See "Calibrate Sensors" on page 6.](#)

### Calibration Recommendations

In-Situ sensors are factory calibrated across the entire range of each sensor, and thus achieve a very high degree of accuracy and stability for extended periods of time without user calibration. In-Situ recommends

inserting the instrument into a known calibration standard to check the accuracy of a sensor prior to performing any user calibration if you suspect drift, unless a user calibration is required by a standard operating procedure.

### Factory Calibration

Factory calibration of In-Situ instruments should be performed every 12 months, or when the unit data appears to drift significantly. Factory calibration includes a thorough cleaning, full functionality check, and sensor adjustments to all applicable sensors over the entire calibrated temperature range.

### Software

The Aqua TROLL 600 can be programmed using the VuSitu Mobile App for Android, or using Win-Situ 5 Software.

### VuSitu Overview

#### Connecting with Bluetooth

The Aqua TROLL 600 can connect to a Bluetooth-enabled device for wireless communication with the VuSitu Mobile App or Win-Situ 5.

1. Turn on the Aqua TROLL 600 LCD screen by holding the sonde vertical with the sensor end facing up.
2. On the Bluetooth-enabled device, navigate to the Bluetooth menu and scan for available devices.
3. The Aqua TROLL 600 will be listed as "Serial Number - AT600". For example, 424690 - AT600. Tap the device name to pair the Aqua TROLL 600 and the Bluetooth-enabled device.

#### Connecting to VuSitu

1. Open the VuSitu Mobile App. If you have correctly paired your Aqua TROLL 600 with your wireless device, and the instrument is available, the software will connect and display readings.

✓ If the Searching screen continues to show, tap Choose another device and select the device you are trying to connect to.

#### Connecting to Win-Situ 5

1. Open Win-Situ 5 Software.
2. When prompted, "Connect to device now?" click **No**.
3. Click **Preferences**, then click **Comm Settings**.
4. Select the correct Com port used by Bluetooth, then select the following settings:
  - Baud: 19200
  - Data Bits: 8
  - Parity Bits: None
  - Stop Bits: 1
  - Device Address: 1
  - Mode: Modbus-ASCII
5. Click the checkmark, then click the Connect button in the lower right hand corner.

### About VuSitu

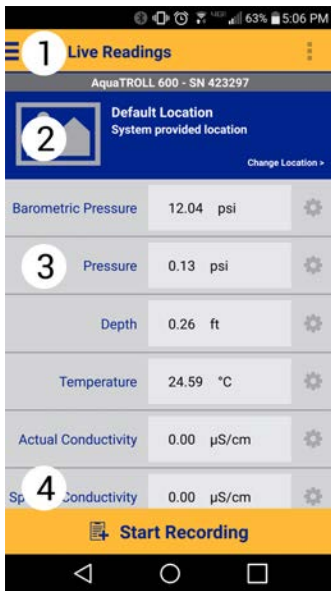
The VuSitu Mobile App is the user interface and control application for In-Situ water quality instruments. You can use VuSitu on mobile devices that use Android operating system 4.4, *Bluetooth* 2.0, and newer.

VuSitu allows you to accomplish the following tasks.

- View live readings that update every 10 seconds.
- Change parameters and units.
- Set up a data log.
- Record data.
- Email data in spreadsheet format.
- Download data to mobile device.
- Transfer data from mobile device to a computer.
- Organize data by Location.
- Calibrate Sensors and View Reports

### Live Readings Screen

The live readings screen displays instrument readings when the app is connected to the communication device and/or to the instrument via Bluetooth.



1	Main Menu
2	Selected Location (Tap to change Location.)
3	Live Readings (scrollable) Tap the settings wheel next to each to change parameters and units.
4	Tap to record readings (Readings refresh every 10 seconds.)

### VuSitu Locations

#### About VuSitu Locations

A Location represents the physical location at which an instrument collects data. For example, you can create a Location to represent a lake, gauging station, well, tank, number, or nearby landmark. If you do not set up a Location, your data will be associated with Default Location. The Location name is displayed on the Live Readings screen. You can access Locations through the Main Menu or by tapping the Location displayed in the lower portion of the Live Readings screen.

### VuSitu Data

#### About Data

Recorded data from the Live Readings screen is stored in the VuSitu Data section of the app. Data is organized by the Location that was active when the data was recorded. You can view data on the device, delete the data, send the data through email, or save the data to the VuSitu Folder so that it can be downloaded to your computer via USB connection.

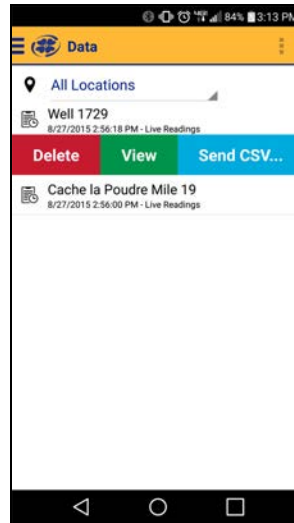
#### View, Send, Delete Data

1. From the Main Menu, select Data.



✓ It is optional to filter results by Location. Tap the drop-down list and select a Location.

2. Tap the desired data.



- Tap Delete to remove the data from the data list.
- Tap View to see the data on the mobile device.
- Tap Send CSV to send an Excel-compatible file to email or the VuSitu Folder. (When you send the report to the VuSitu Folder, you can later download the data to a computer via USB cable.)

## VuSitu Calibration & Settings

### About Calibration and Settings

You can perform sensor calibrations, view a calibration report, or restore factory calibration defaults when the instrument is connected to VuSitu.

1. Tap the VuSitu menu icon, and select Connected Instrument from the list.
2. Tap Calibrations.
3. The available calibrations and sensor settings appear.



4. Tap the calibration you want to perform.

✓ You can also access the full Calibration Report from this menu.

## Win-Situ 5 Software

### Verify the Win-Situ Software Version



To avoid potential compatibility issues, it is important to use the most recent version of Win-Situ Software. Find version information and the most recent software download on the In-Situ website [www.in-situ.com](http://www.in-situ.com).

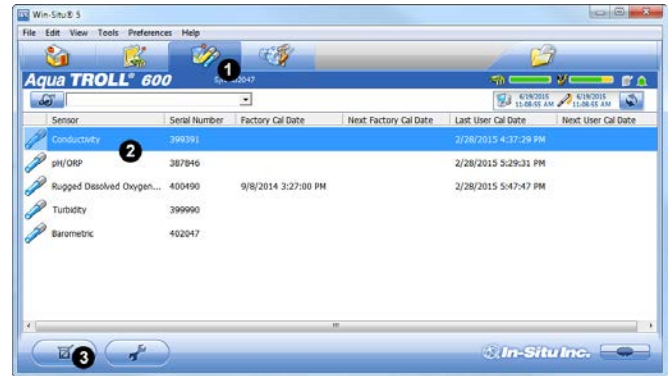
### Connecting an Instrument to the Software

When you open Win-Situ 5 Software, you are asked if you want to connect to your device. Click **Yes**. Synchronize the instrument clock to the PC clock.

The software displays an error message if a connection cannot be established.

### Calibrate Sensors

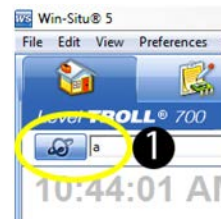
1. Ensure that the instrument is connected to the software, and select the **Sensors** tab.



2. Select the sensor you want to calibrate to activate the **Calibration** button.
3. Click the **Calibration** button.
4. Perform the steps in the calibration wizard.

### Set Up a Data Site

1. Click the **Site** button.



2. Select either **Default Site** or click the **New** button to set up a custom site.
3. Enter a **Site Name**. Entering coordinates and uploading a picture are optional.
4. Click the **check mark** to save the data site.

### Set up a Data Log

1. Click the **Logging** tab.



2. Click the **New** button.



3. Select your site, and name the new log.
4. Select the parameters you intend to monitor. You can rearrange their order and select different units.
5. Select a logging method appropriate for your deployment.
6. Configure the logging method.
7. Select a start condition.



✓ When an instrument is deployed on a wire, rather than a cable, you will not be able to communicate with it after installation. Select a Scheduled start if you are deploying an instrument on a wire.



8. Select a level reference type.
9. Configure the level reference. Select "Set First Logged Reading To" if you are using a scheduled start, or "Remind Me to Set Reference Later" if you are using a manual start and are NOT deploying the instrument on a wire.

✓ **IMPORTANT:** Your instrument **MUST** be installed in its final location to set the level reference correctly. If you are setting up a data log before installing your instrument in its final location, you will need to select either "Set First Logged Reading To" or "Remind Me to Set Reference Later."

10. Enter a specific gravity value for the deployment.
11. The software displays a summary. Review your selections carefully before clicking the check mark.
12. Start the log. A Scheduled Start log will start automatically at its programmed time. To start a Manual log, go to the Logging tab, highlight the log name, and tap the **Start** button.

### Downloading Data to a PC

This procedure copies the data log from the instrument to a PC. It does not remove the data log from the instrument. After a log is downloaded, it can be exported to a CSV file format that can be used by spreadsheet programs. The time shown in the log name is the time the log was downloaded.

1. With an instrument connected, select the **Logging** tab .
2. Select the log you intend to download.
3. Choose a Running, Suspended, Stopped, or Deleted log.
4. Click the **Download**  button.
5. In the next screen, select one of the three download options.
  - All data
  - New data (data logged since the last download)
  - Time interval to download

✓ New data is downloaded by default to a new log file. To append new data to the last download of this log, be sure the option "Append logs on download" is selected in the **General Settings** dialog (**Preferences > General Settings**).

2. The log is copied to the connected PC into your Win-Situ working directory folder. View or change the working directory using **File > Settings**.
3. At the end of the download, Win-Situ gives you the option of viewing the data.
  - Select **Yes** and the log is displayed in the **Data** screen.
  - Select **No** and the **Logging** screen appears. You can view the data at any time by selecting it in the **Data** tab.

### Field Deployment

#### Program the Instrument

In order to set up a log or download data, you must connect the instrument to a device running In-Situ Software.

#### Position the Instrument

Place the instrument at the desired depth. Position the instrument below the lowest anticipated water level, but not so low that the pressure sensor range might be exceeded at the highest anticipated water level.

#### Verify Instrument Depth

After you have installed the instrument, it is possible to connect the instrument to a computer. Open the software, and take a reading to verify the installation position. If the reading confirms that the instrument is in the correct position, you can secure it as described below.

During log setup there was an option to "Remind Me Later" for setting a level reference. If you set the log to remind you later, ensure that the instrument is submerged and set the level reference when prompted.

#### Secure the Cable

The RuggedCable System includes a Kellems grip near the up-hole end. You can compress the wire mesh and slide the grip to the desired location on the cable. Pull on the grip to tighten it on the cable.

Use the loop on the Kellems grip to anchor the cable to a convenient stationary object such as the In-Situ well dock installation ring. To install the Kellems grip to the installation ring, insert the loop into the locking clip on the well dock and position the assembly at the top of a well casing.

#### Install the Desiccant

⚠ Vented cable must be protected with a desiccant pack that is properly sized for site conditions. A non-vented instrument and cable does not need to be installed with a desiccant.

### pH/ORP Storage

#### Short-term Storage

Up to 1 week: Soak the sponge included with the black storage cap with pH 4 buffer, pH 7 buffer, or Quick Cal solution, and install the cap on to the sensor. Use electrical tape to seal the cap onto the sensor to prevent leaks or the sponge drying out.



#### Long-term Storage

Greater than 1 week: Soak the sponge included with the black storage cap with storage solution (0065370) and install the cap on to the sensor. Use electrical tape to seal the cap onto the sensor to prevent leaks or the sponge drying out.

#### Storage Recommendations

Prior to using the pH sensor after long-term storage, rinse the sensor with DI water and then soak it in pH 4 buffer for 1 or 2 hours. This will saturate the glass bulb with hydrogen ions and prepare it for use.



Do not store the pH sensor in DI water because it will deplete the reference solution and drastically reduce the life of the sensor.