

Aqua TROLL 500 & Aqua TROLL 600 pH/ORP Sensor

Part Number 0063470

Description

The pH/ORP sensor is a combination, single-junction electrode that contains a platinum ORP sensor, a glass pH sensing bulb, a replaceable junction, and refillable reference electrolyte solution. The sensor is designed and manufactured for long-lasting, accurate results in a variety of environmental waters.

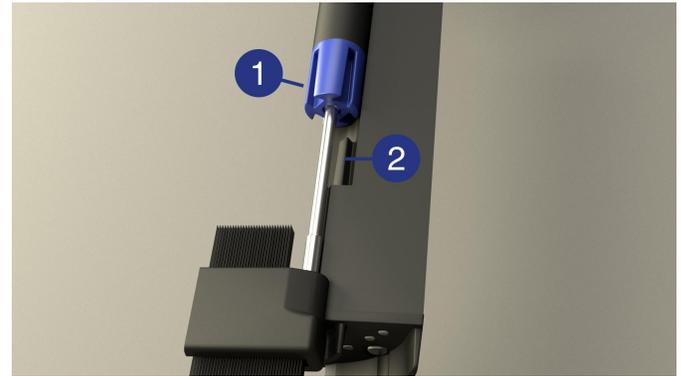
Installation

1. Remove the restrictor or cal cup from the front end of the instrument. This allows access to the sensor block.
2. Remove the black storage cap from the sensor and save it for future sensor storage.

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

3. Rinse the sensor with clean water.
4. Remove any moisture or dirt from the instrument and remove the port plug or other sensor from the sensor port. Retain the plug for future storage.
5. Remove the dust cap from the sensor connector. Check lubrication of the O-rings. If the O-rings appear dry, apply a small amount of silicone lubricant, provided in the sensor box, before installation.
6. Insert the sensor into the sonde and push until it is fully installed and flush.

✓ 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 |

7. Use the Allen wrench to tighten the screw at the base of the sensor. Do not overtighten the screws.

Calibration

The pH/ORP sensor requires separate calibrations for pH and ORP.

ORP

A 1-point calibration in a solution with known potential at a given temperature is sufficient to calibrate ORP. Use Quick Cal or ZoBell's solution for a 1-point calibration that calculates the sensor offset, or use default coefficients in the software to reset the factory defaults.

pH

Although pH may be calibrated with Quick Cal (1 point at pH 7), In-Situ recommends a 2- or 3-point calibration. Use calibration solutions closest to the pH range you expect to measure. The Default Coefficients option resets factory defaults to the sensor. No solutions are required.

Sensor Calibration Procedure

For proper calibration procedures for all sensors, please consult the instrument manual.

Resetting Default Coefficients

Sensor calibration may be reset to factory defaults at any time. This option is most effective when the sensor is new. This is also a good option for the ORP sensor if the results of a recent calibration are suspect because the calibration solution has deteriorated. Results for each parameter must be set separately.

Cleaning and Storing the pH/ORP Sensor

Routine Maintenance

If the ORP platinum electrode is dull or dirty, it can be cleaned with a swab and methanol or isopropyl alcohol. Rub the electrode gently until it is shiny.

The pH sensor must be kept moist for the life of the sensor.

The sensor fill solution has a shelf life of 2 years. Replace the fill solution every 5 to 6 months or when:

- The sensor fails to calibrate within the acceptable slope and offset range.
- Sensor readings vary.
- Readings during calibration at pH 7 are greater than +30 mV or less than -30 mV.
- Sensor is slow to respond.

✓ If the sensor fails to calibrate after you replace the fill solution, replace the reference junction.

Replacing the Filling Solution

1. Remove the sensor from the port.
 - Aqua TROLL 500/600—Loosen the screw at the bottom of the sensor. Insert the tool into the small hole and lever the sensor out of the sonde.
2. Install the dust cap on the connector end or wrap the connector end in a paper towel to prevent solution from entering the connector.
3. Unscrew the reference junction.
4. Hold the sensor at an angle and empty the old filling solution into a paper towel or trash can.
5. Lightly shake the bottle of reference filling solution to mix. Turn the bottle upside down until fluid begins to drip from the fill tube. This will eliminate air bubbles in the solution.
6. Insert the fill tube into the bottom of the empty reservoir. Squeeze a steady stream of solution into the reservoir while slowly pulling the tube out. Overfill slightly, then reinsert the tube and pull back out to ensure no air bubbles are trapped.

7. Attach the reference junction cap to the sensor and tighten until it touches the sensor body. Turn the cap 90° more (one quarter of a turn). Some filling solution will overflow. Wipe the excess off the sensor body.
8. Soak the sensor in tap water for at least 15 minutes.
9. Calibrate the sensor.

✓ If necessary, thoroughly clean the sensor connector to remove filling solution: Using a disposable pipette, fill the connector with isopropyl alcohol (70% to 100%), Shake to dry. Repeat 3 times. Dry overnight. When thoroughly dry, calibrate the sensor.

Replacing the Junction

Replace the junction when the sensor fails to calibrate with a reasonable slope and offset, even after you have replaced the filling solution.

1. Unscrew the reference junction and discard.
2. Replace the filling solution and screw in a new reference junction.
3. Soak for 15 minutes, then calibrate the sensor.

✓ Keep the junction damp at all times to avoid a lengthy rewetting process.

Cleaning

Begin with the most gentle cleaning method and continue to the other methods only if necessary. Do not directly wipe the glass bulb.

To clean the pH sensor, gently rinse with cold water. If further cleaning is required, consider the nature of the debris.

To remove crystalline deposits:

- Clean the sensor with warm water and mild soap.
- Soak the sensor in 5% HCl solution for 10 to 30 minutes.
- If deposits persist, alternate soaking in 5% HCl and 5% NaOH solutions.

To remove oily or greasy residue:

- Clean the sensor with warm water and mild soap.
- Methanol or isopropyl alcohol may be used for short soaking periods, up to 1 hour.
- Do not soak the sensor in strong solvents, such as chlorinated solvents, ethers, or ketones, such as acetone.

To remove protein-like material, or slimy film:

- Clean the sensor with warm water and mild soap.
- Soak the sensor in 0.1 M HCl solution for 10 minutes and then rinse with deionized water.

After performing any of these cleaning methods, rinse the sensor with water, then soak overnight in pH 4 buffer.

Short-term Storage

Up to 1 week: Soak the sponge included with the black storage cap with pH 4 buffer 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.

Replacement Parts

Reference Filling Solution	0056900
Zobell's ORP Solution (1 L)	0032100
pH Calibration Kit (1 L each pH 4, pH 7, pH 10, DI water)	0032080
Quick Cal (4 x 250 mL)	0033250
Reference Junction Kit (3 junctions, 60 mL reference filling solution)	0059620
pH Storage Solution (500 mL)	0065370

More solutions and sizes available at www.in-situ.com