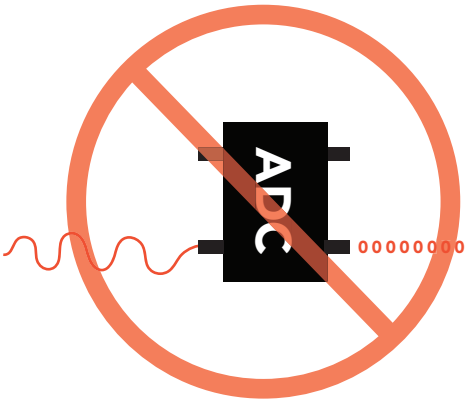
pH Probe Datasheet

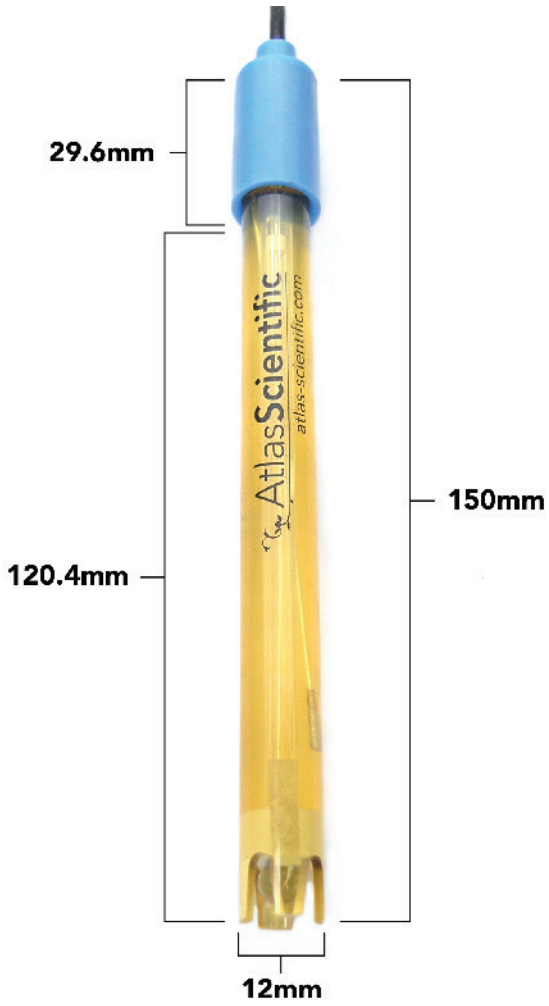
A pH electrode is a passive device that detects a current generated from hydrogen ion activity.

This current (which can be positive or negative) is very weak and cannot be detected with a multimeter, or an analog to digital converter. This weak electrical signal can easily be disrupted and care should be taken to only use proper connectors and cables.

Result will ***always*** read zero.



Result will ***always*** read zero.



The current that is generated from the hydrogen ion activity is the reciprocal of that activity and can be predicted using this simple equation:

$$E = E^0 + \frac{RT}{F}\ln(\alpha_{H+}) = E^0 - \frac{2.303RT}{F}pH$$

Where **R** is the ideal gas constant.
T is the temperature in Kelvin.
F is the Faraday constant.

Because a pH probe is a passive device it can pick up voltages that are transmitted through the solution being measured. This will result in incorrect readings and will slowly damage the pH probe over time.

Atlas**Scientific**™
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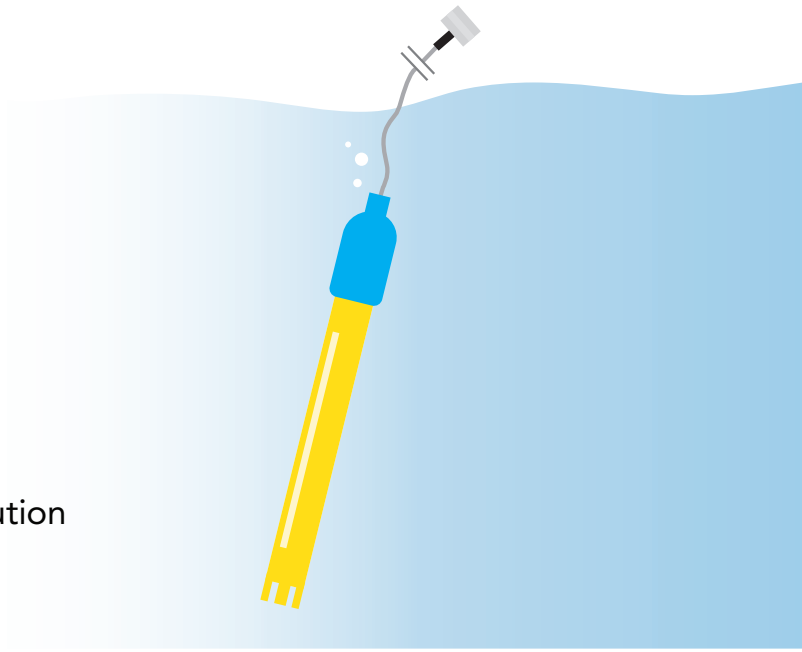
pH Probe



This pH Probe can be ***fully*** submerged up to the BNC connector indefinitely.

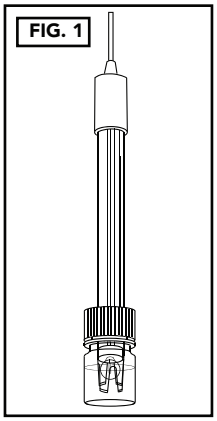
- pH range: 0-14 (Na+ error at >12.3 pH)
- Temperature range: 1˚C to 99˚C
- Max pressure: 690 kPa (100PSI)
- Dimensions: 12mm X 150mm (1/2" X 6")
- Resolution: This is an analog device so, its resolution is limited only by the device reading it.

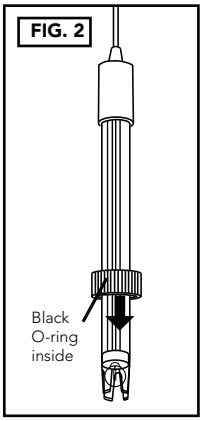
Helpful Operating Tips

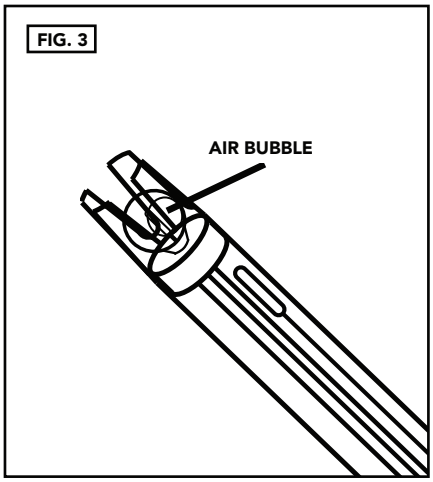
1. The pH Probe is shipped in a plastic bottle containing pH Probe Storage Solution. The probe should remain in the bottle until it is used. If the probe is used infrequently, the bottle and its solution should be saved and the probe stored in it (See Sensor Storage Section). Take out the probe by loosening the plastic top of the bottle counter clockwise and pulling the probe out. Slide the cap and O-ring off the probe. ***(SEE FIGS 1 & 2)***.

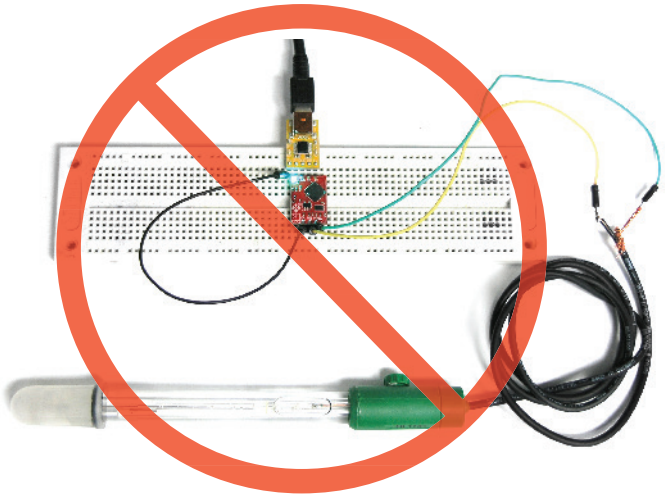
2. During shipment the air bubble in the probes stem may move into the bulb area. If bubbles are seen in the bulb area, hold the probe by its top cap and shake downward as done with a clinical thermometer ***(SEE FIG 3)***.

3. Vigorously stir the probe in the sample, calibration solution, or rinse solution. This action will bring solution to the probes surface quicker and improve the speed of response.





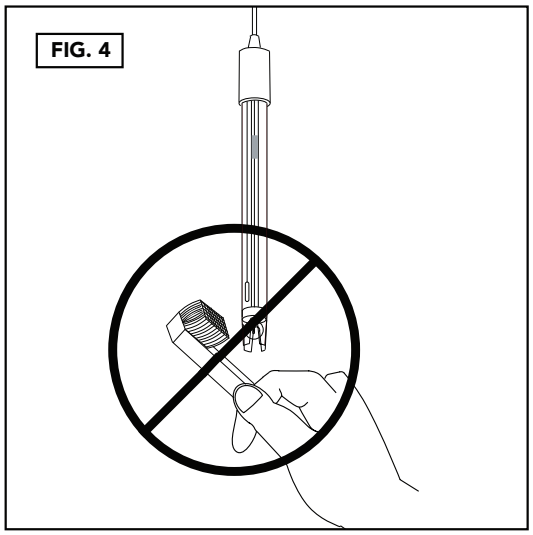




Cutting the BNC connector off and soldering wires to it will make accurate readings difficult or impossible, **NEVER DO THIS.**

Probe Cleaning

Coating of the pH bulb can lead to erroneous readings including shortened span (slope). The type of coating will determine the cleaning technique. Soft coatings can be removed by vigorous stirring or by the use of a squirt bottle. Organic chemical, or hard coatings, should be chemically removed. A 5-10% hydrochloric acid (HCl) soak for a few minutes, often removes many coatings. If cleaning does not restore performance, reconditioning may be tried. *Do not use brush or abrasives on the probe* ***(SEE FIG 4).***



Electrode Reconditioning

When reconditioning is required due to probe aging, we recommend you use The Atlas Scientific pH Probe Reconditioning Kit.