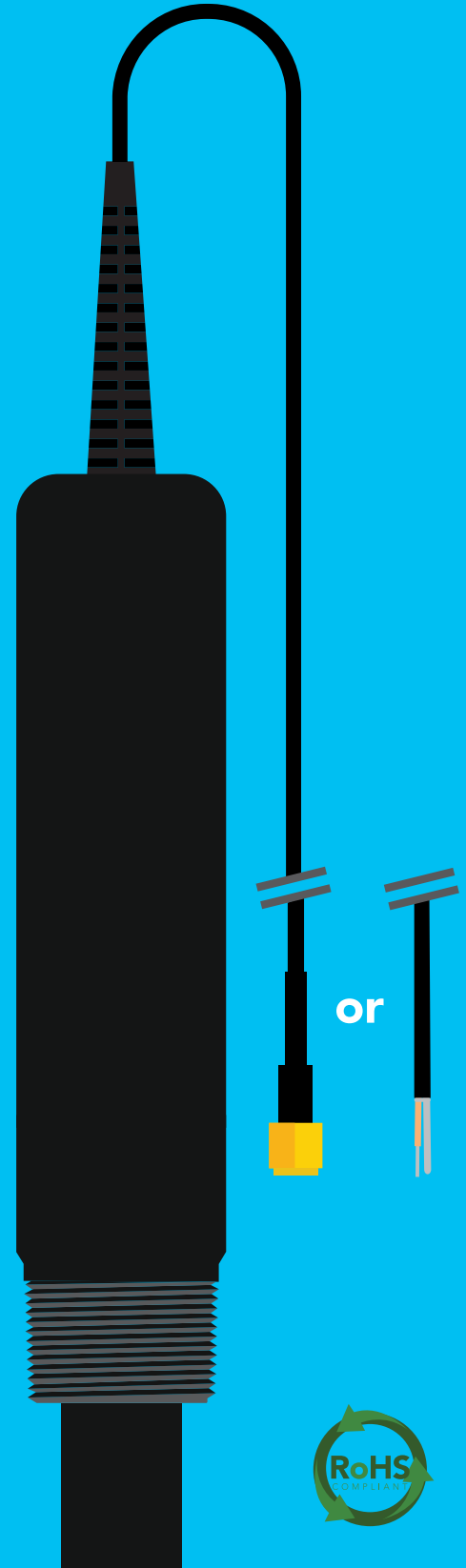


Gen 3

Industrial ORP Probe

Reads	ORP
Range	-2000mV – 2000mV
Accuracy	+/- 1mV
Response time	95% in 1s
Sensing element	Gold
Temperature range °C	1 – 99 °C
Max pressure	100 PSI
Max depth	70m (230')
Connector	SMA or Tinned leads
Cable length	3 meters (9.8')
Internal temperature sensor	No
Time before recalibration	~1 Year
Life expectancy	~4 Years +

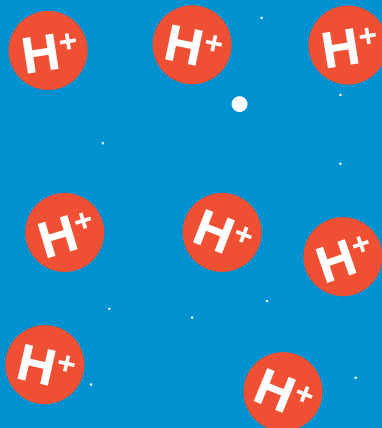


Operating principle

ORP stands for **oxidation/reduction potential**. Oxidation is the loss of electrons and reduction is the gain of electrons. The output of the probe is represented in millivolts and can be positive or negative.

Just like a pH probe measures hydrogen ion activity in a liquid; an ORP probe measures electron activity in a liquid. The ORP readings represents how strongly electrons are transferred to or from substances in a liquid. Keeping in mind that the readings do not indicate the amount of electrons available for transfer.

pH Probe



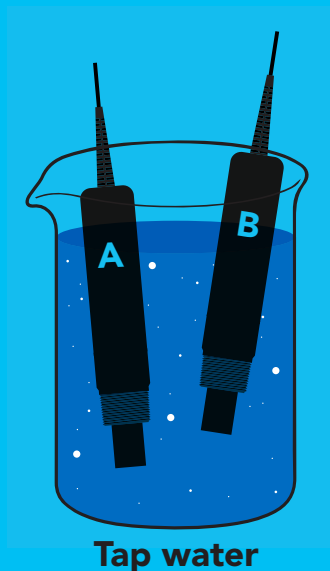
ORP Probe



When reading the ORP of a liquid that has very few electrons available for transfer, ORP readings can appear to be inconsistent.

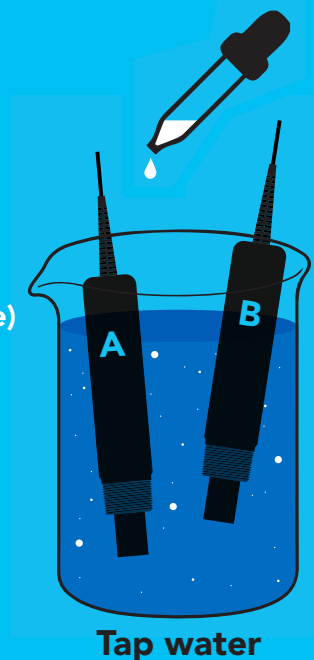
The water is unreactive and has only trace amounts of electron movement. *These readings are equivalent to the readings you see with an unconnected multimeter.*

-234.6
Reading A



24.2
Reading B

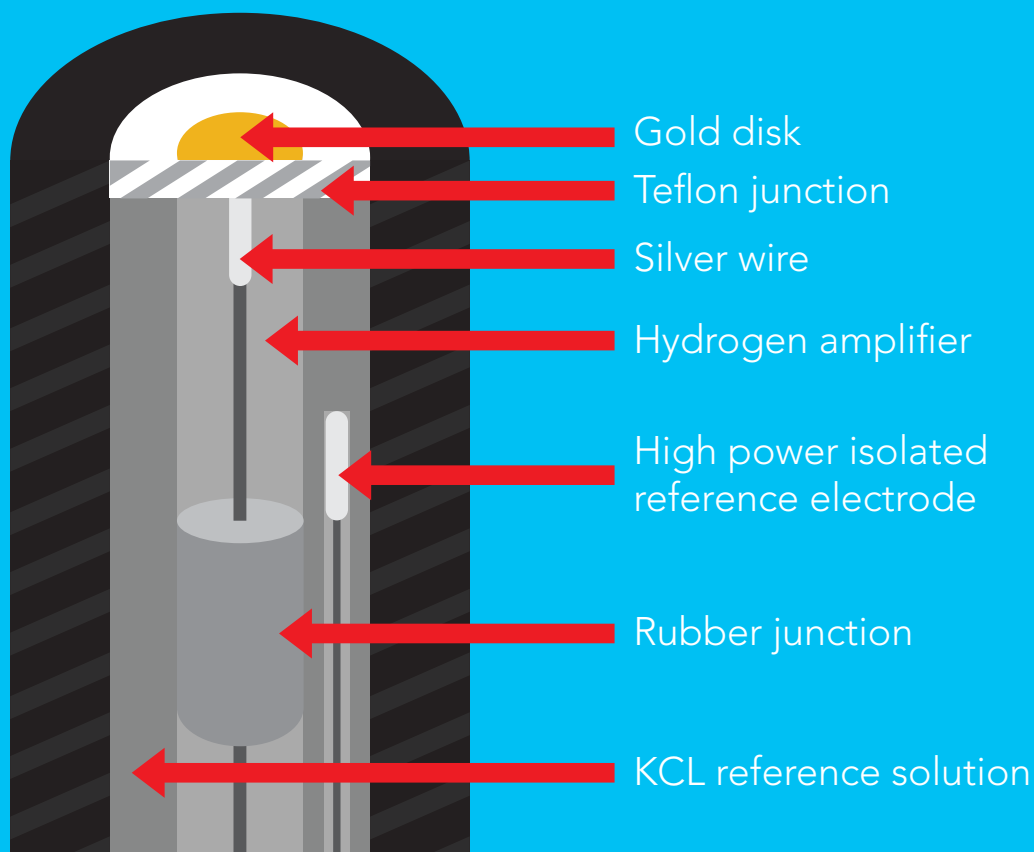
606.9
Reading A
(Theoretical value)



605.3
Reading B

Add just a drop of bleach
(which is an oxidizing agent)

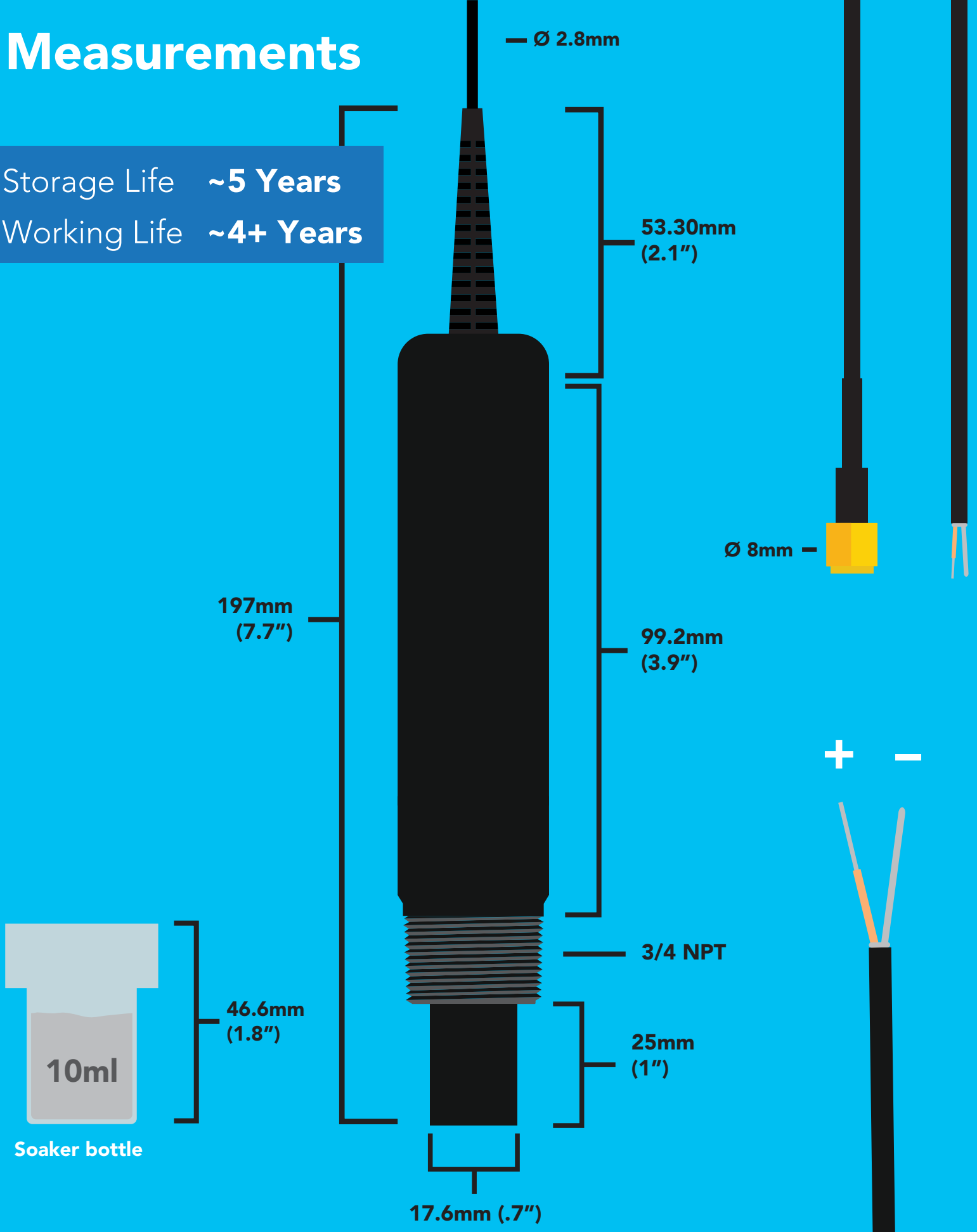
An ORP probe has a gold tip that is connected to a silver wire, surrounded by silver chloride. That silver wire is then connected to a KCL reference solution. Because gold is an unreactive metal it can "silently observe" the electron activity of the liquid without becoming apart of whatever reaction is occurring in the liquid.



Measurements

Storage Life ~5 Years

Working Life ~4+ Years



NSF/ANSI 51 Compliant

Food Safe

Atlas Scientific LLC, hereby certifies that,

Industrial Grade ORP Probe

Part # ENV-50-ORP

Complies with NSF/ANSI Standard 51

✓ **PVC**
NSF-51 Compliant

✓ **Gold**
NSF-51 Compliant

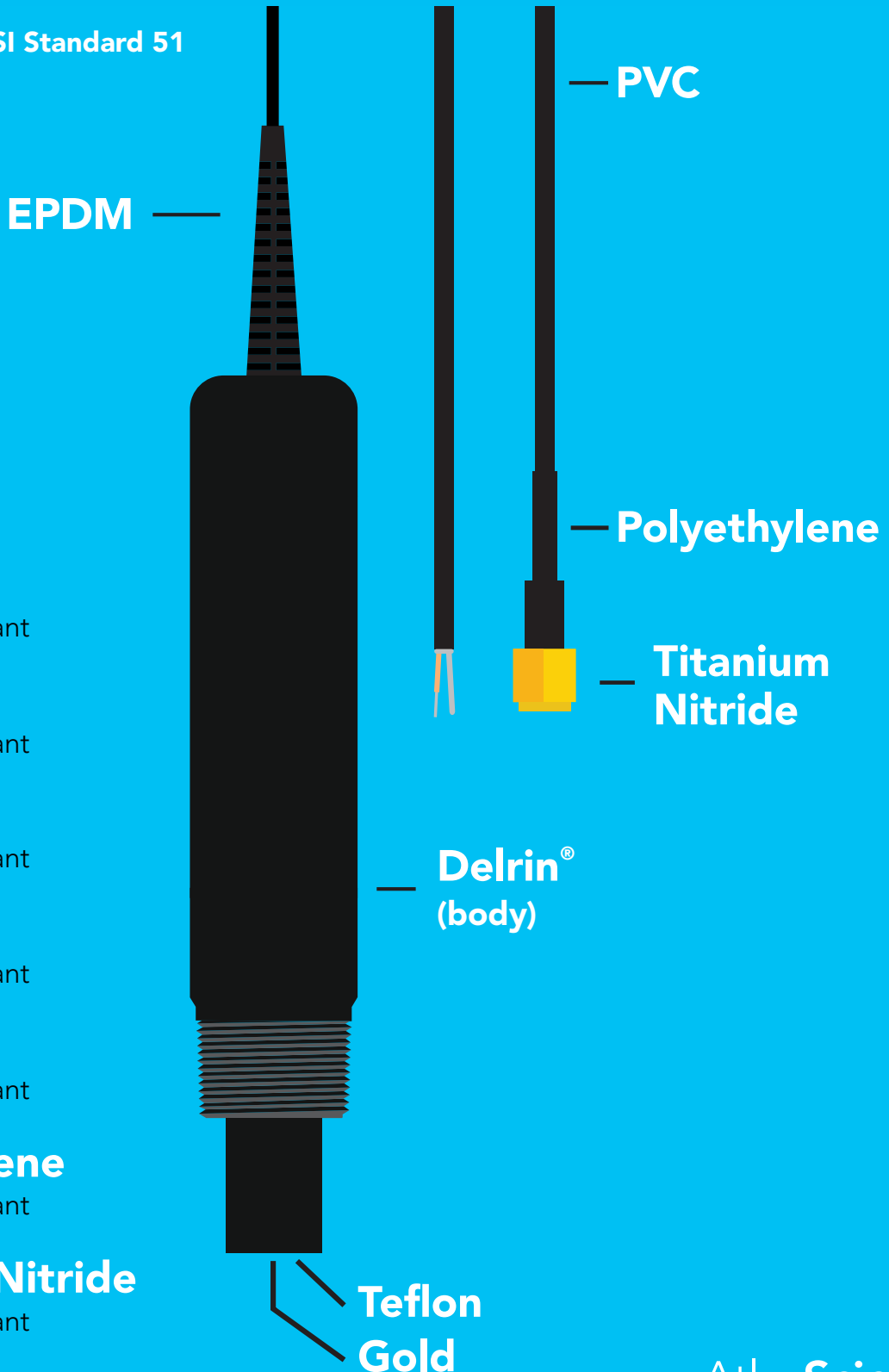
✓ **EPDM**
NSF-51 Compliant

✓ **Delrin[®]**
NSF-51 Compliant

✓ **Teflon**
NSF-51 Compliant

✓ **Polyethylene**
NSF-51 Compliant

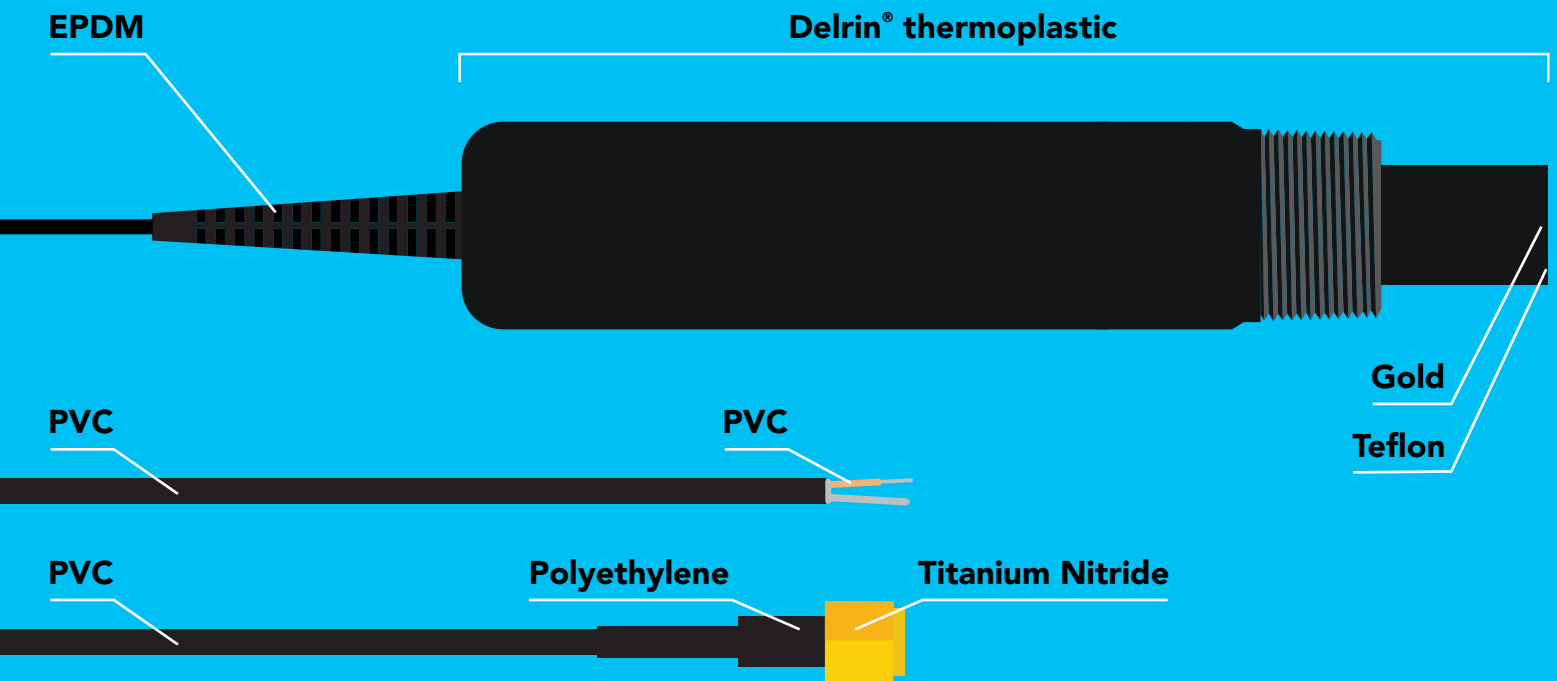
✓ **Titanium Nitride**
NSF-51 Compliant



Specifications

Body material	Delrin® thermoplastic
Max depth	70m (230 ft)
Cable length	3m (9.8 feet)
Connector	SMA or Tinned Leads
Weight	155 grams
Threading	(3/4") NPT
Sterilization	Chemical only
Food safe	Yes

Materials

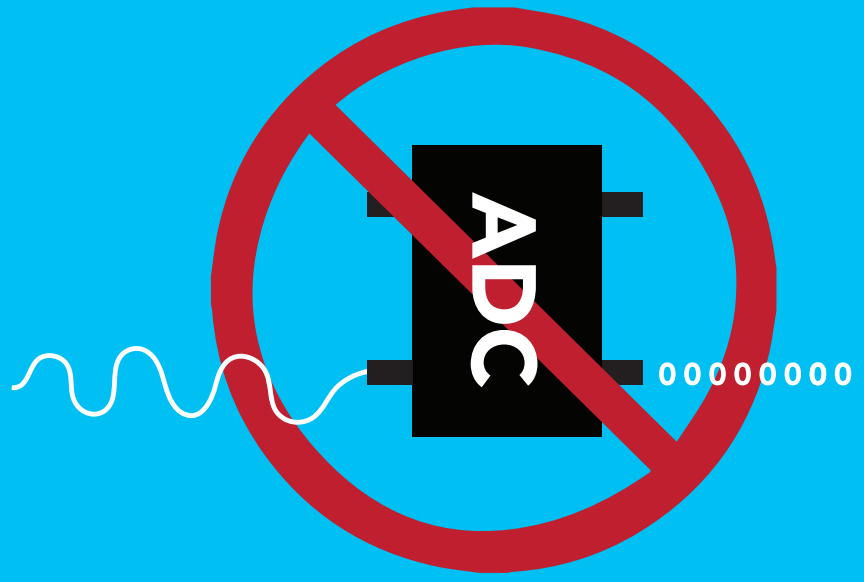


This ORP probe can be **fully submerged** in fresh or salt water, up to the SMA connector or tinned leads **indefinitely**.

An ORP probe is a passive device that detects a current generated from the oxidation or reduction chemical substances in water. This current (which can be positive or negative) is very weak and cannot be detected with a multimeter, or an analog to digital converter.



Result will **Often** read zero.



Result will **Often** read zero.

How often do you need to recalibrate an ORP probe?

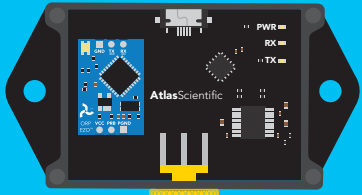
Because every use case is different, there is no set schedule for recalibration.

If you are using your probe in a fish tank, a hydroponic system or any environment that has generally weak levels of chemical reactions you will only need to recalibrate your probe once per year for the first 2 years. After that every ~6 months.

If you are using the ORP probe in batch chemical manufacturing, industrial process, or in a solution that is known to have strong chemical reactions, then calibration should be done monthly or in extreme cases after each batch.

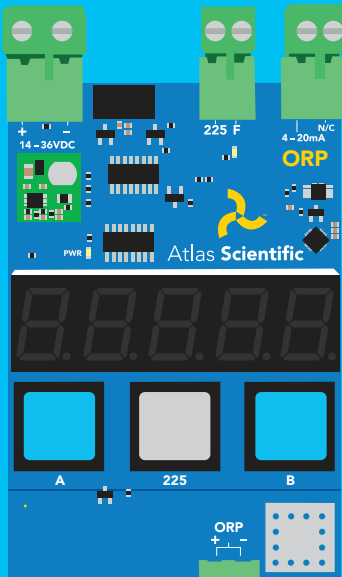
How to connect the industrial ORP probe

The Atlas Scientific™ Industrial ORP probe can be connected in several different ways. The following show two examples:



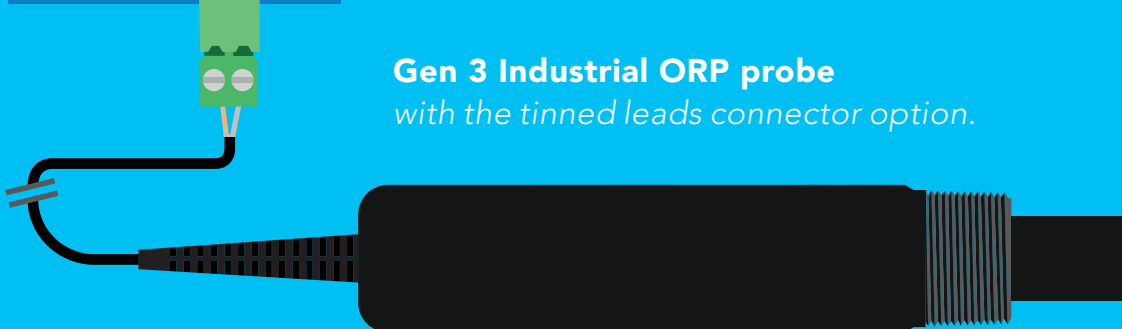
Using our **EZO Complete-ORP™** you can easily connect the Gen 3 Industrial ORP probe, via the probes SMA connector.

Gen 3 Industrial ORP probe
with the SMA connector option.



For industrial purposes, the Gen 3 Industrial ORP probe, can be easily connected to our **Industrial ORP Transmitter** via the probes tinned leads.

Gen 3 Industrial ORP probe
with the tinned leads connector option.



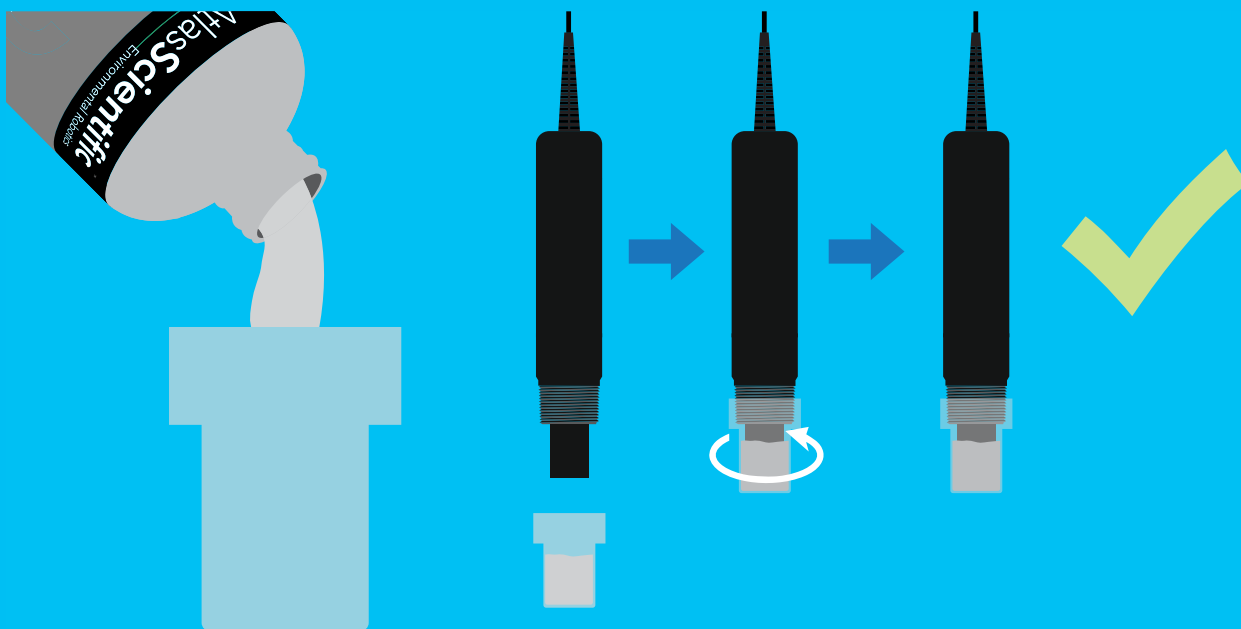
Once installed into your machine, the ORP probe must stay wet and cannot be allowed to dry out, this is why every Industrial ORP probe is shipped with a plastic cap containing ORP probe storage solution. The cap should remain on the probe until it is used.

Remove the Industrial ORP probe cap by turning it clockwise, and pulling the probe out.



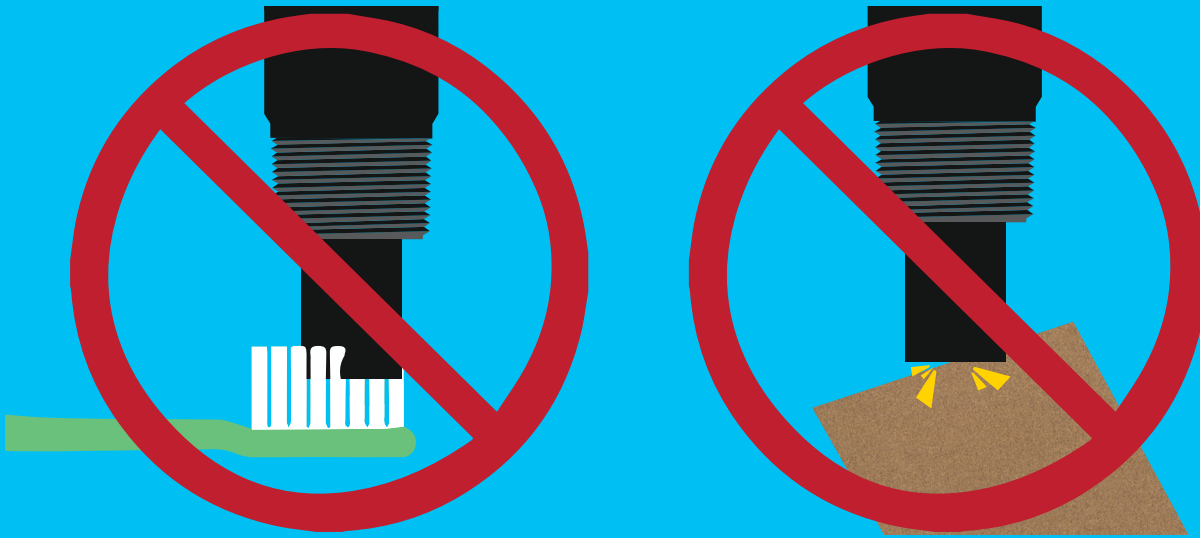
Long term storage

When you are finished using the Industrial ORP probe, you can prepare the probe to be used again for a later date. First, make sure the probe cap still has ORP probe storage solution within it. If not, just add some from the ORP probe storage solution bottle. Tighten the cap back onto the probe by turning it counterclockwise.



Probe cleaning

Coating of the gold tip 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 light bleach solution or even a 5 – 10% hydrochloric acid (HCl) soak for a few minutes, often removes many coatings. **Do not use abrasive materials on the ORP probe.**



1980's — Today



Despite appearances
THE KCl CREEP
is really quite harmless.

The white crystals
you may find on your electrode
are formed by potassium chloride (KCl)
from the electrode filling solution.
Rinse the KCl from the electrode
with distilled water and proceed as usual.



Dried KCl residue
from pH storage
solution

Decades later...

KCl continues to behave the same way.

If you encounter the "KCl CREEP" or, if your probe dried out during shipping; Simply rinse off your probe with water, and carry on.

Your probe is not damaged.