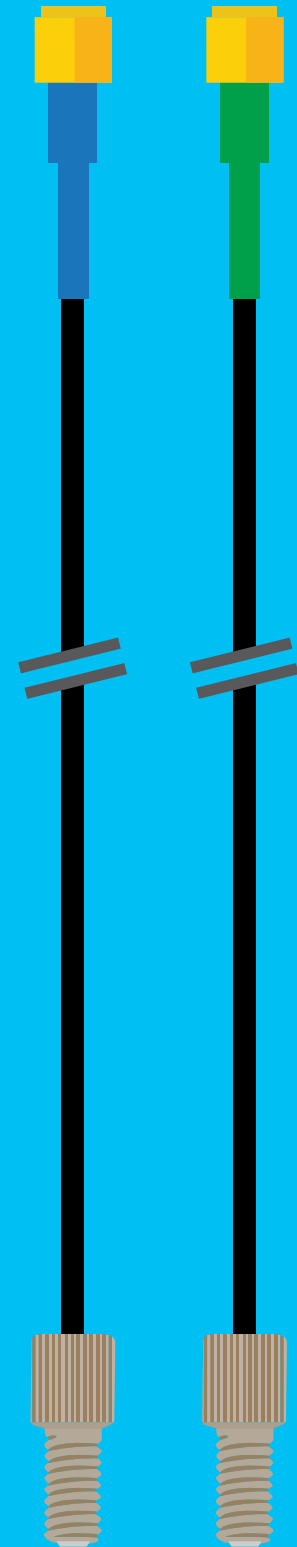


Gen 2

# Micro ORP Probe

Half-cell

Reads	ORP
Range	<b>-2000mV – 2000mV</b>
Accuracy	<b>+/- 1mV</b>
Response time	<b>95% in 1s</b>
Temperature range °C	<b>-5 – 90 °C</b>
Max pressure	<b>150 PSI</b>
Max depth	<b>60m (197 ft)</b>
Connector	<b>Male SMA</b>
Cable length	<b>61cm (2')</b>
Internal temperature sensor	<b>No</b>
Time before recalibration	<b>~1 month</b>
Life expectancy	<b>~6 – 12 months</b>



# Measurements

Storage Life ~5 Years

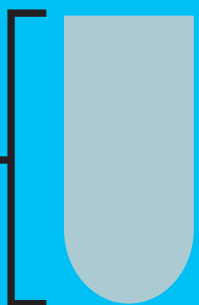
Working Life ~6 – 12 months

Cable Length  
61cm (2')

— Ø 2.6mm

— Ø 8mm

21.5mm  
(0.8")



Soaker cap

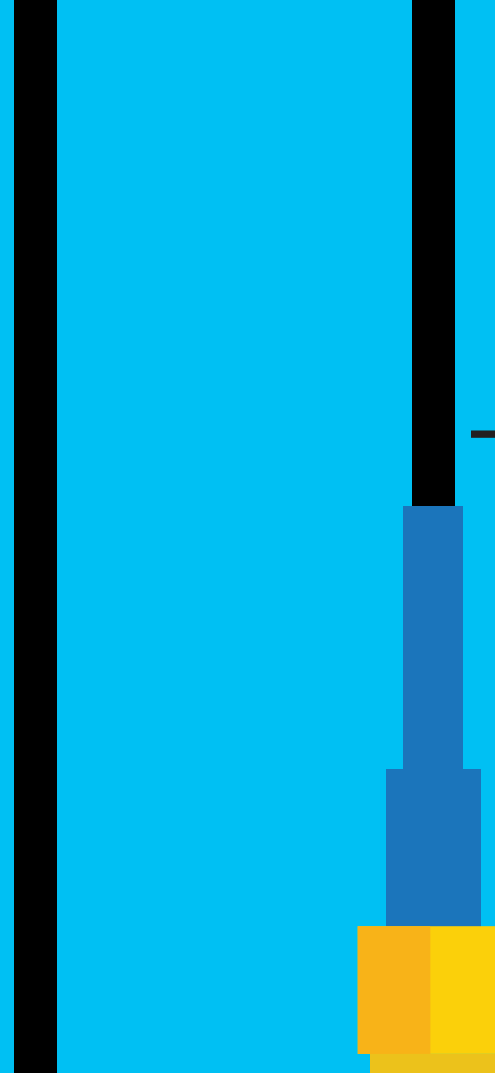
9.8mm  
(0.3")  
Ø 9.1mm

Thread size  
1/4 28 UNF  
14.3mm  
(0.5")

24.1mm  
(0.9")

4mm

6.2mm (0.2")

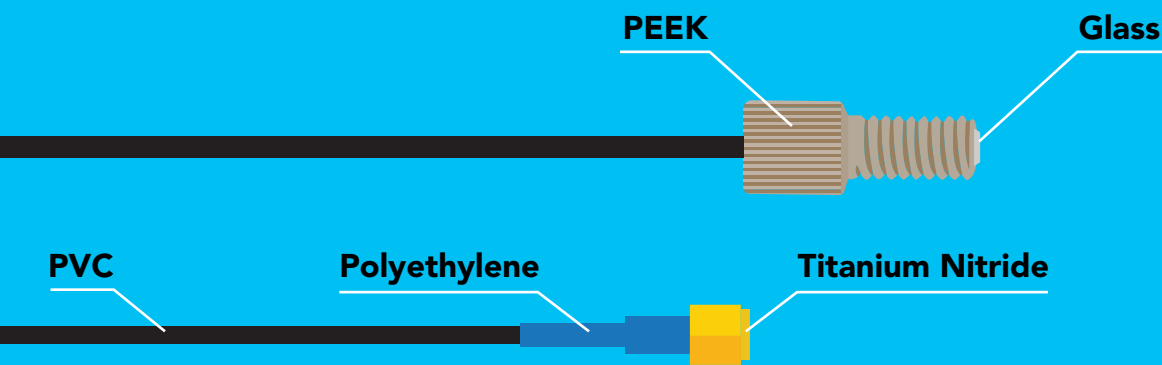


# Specifications

Max depth	60m (197 ft)
Cable length	61cm (2')
Weight	29 grams
Speed of response	95% in 1 second
Dimensions	6.2mm x 24.1mm (0.2" x 0.9")
SMA connector	Male
Sterilization	Chemical only
Food Safe	Yes



# Materials



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

# Typical applications

- Microfluidics

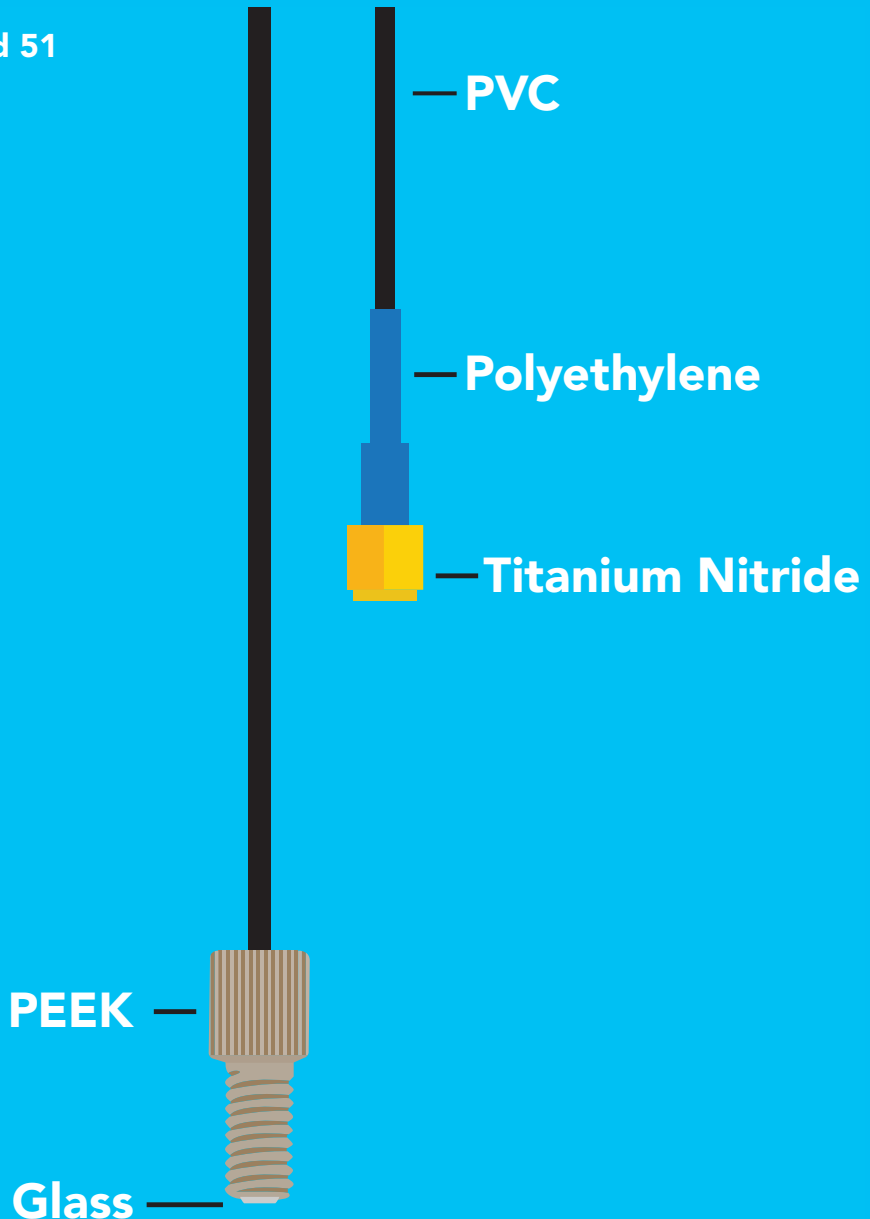
# NSF/ANSI 51 Compliant

## Food Safe

Atlas Scientific LLC, hereby certifies that,

**Micro ORP Probe**  
**Part # ENV-10-ORP**

Complies with NSF/ANSI Standard 51



✓ **PVC**  
NSF/ANSI 51 Compliant

✓ **Glass**  
NSF/ANSI 51 Compliant

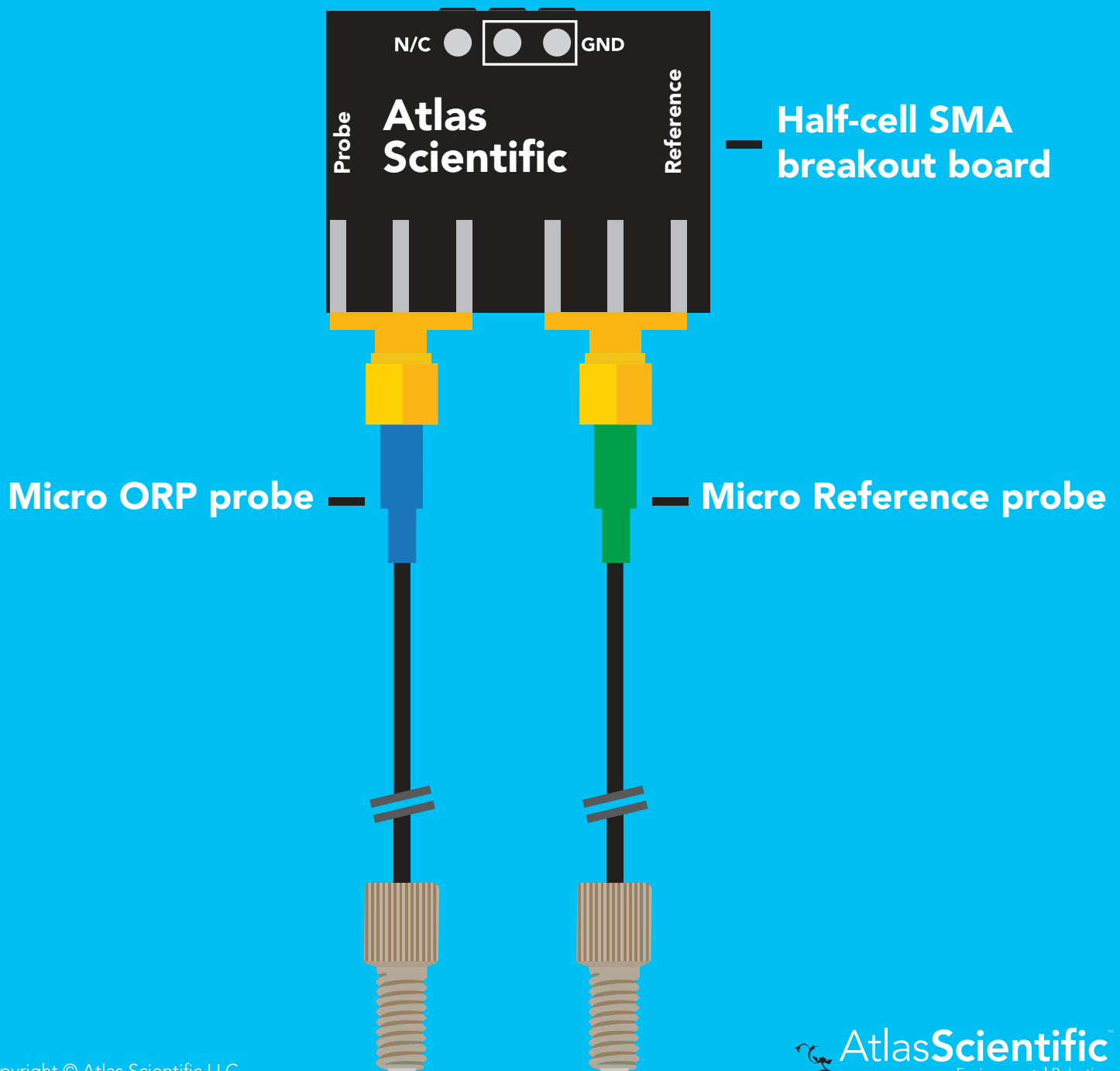
✓ **PEEK**  
NSF/ANSI 51 Compliant

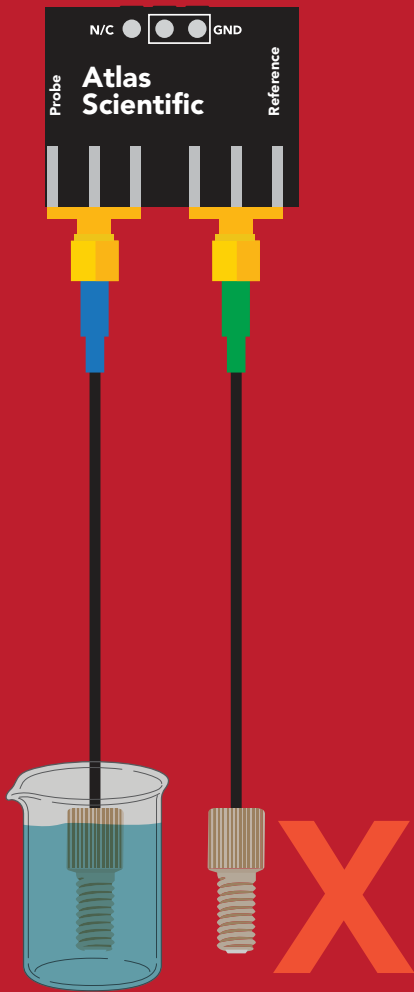
✓ **Polyethylene**  
NSF/ANSI 51 Compliant

✓ **Titanium Nitride**  
NSF/ANSI 51 Compliant

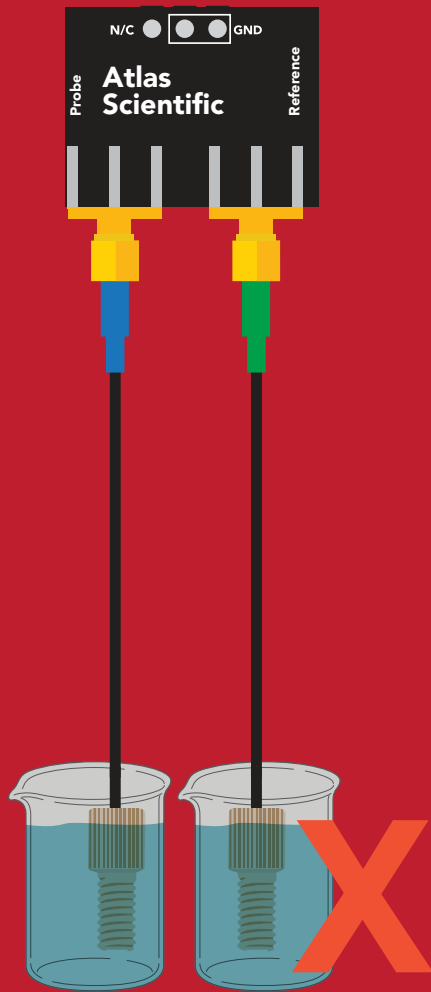
# Attention

This is a half-cell ORP probe. It **MUST** be connected to a reference probe before it will work.

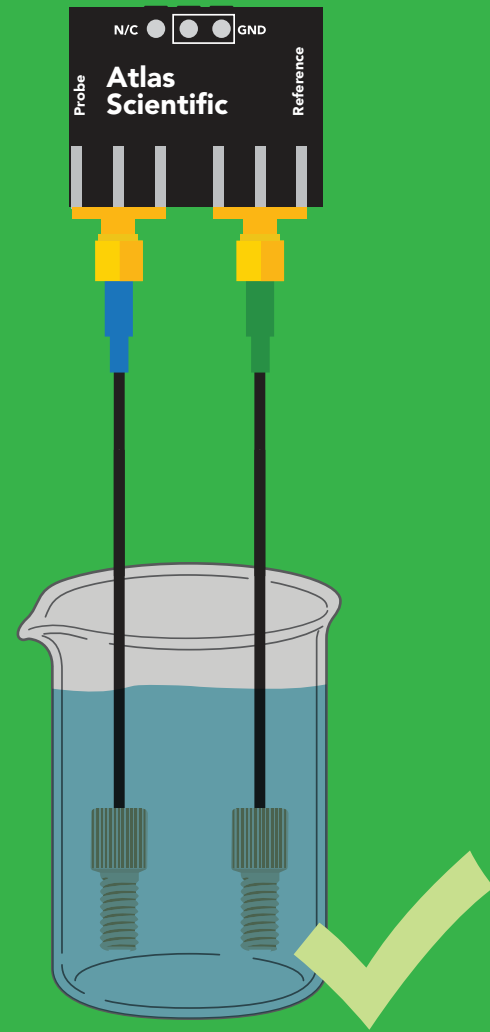




**Unpredictable results,  
not a valid reading**

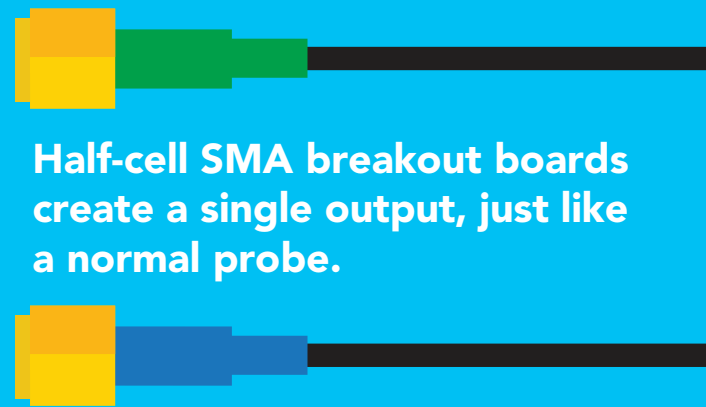
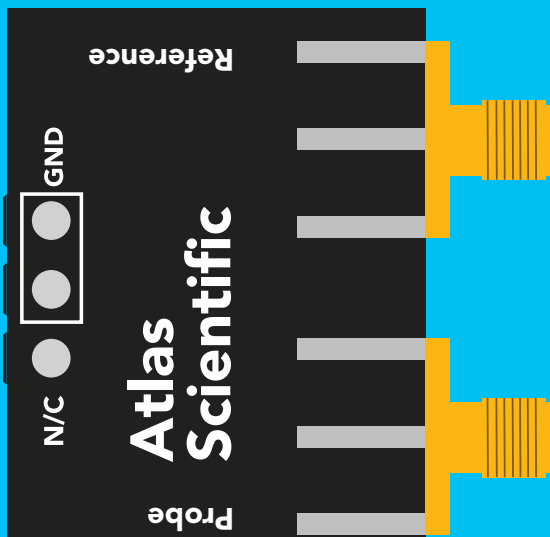


**Unpredictable results,  
not a valid reading**



**Correct**

In order to take accurate readings, both ORP and Reference micro probes must be placed within the same sample of liquid.



**Half-cell SMA breakout boards  
create a single output, just like  
a normal probe.**

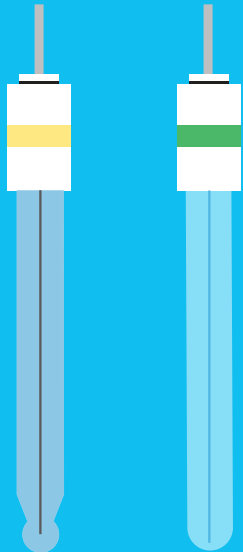
# Half-cell operating principle

Back in the day, ORP probes would come with a separate reference probe, which is crucial for accurate readings. Modern day ORP probes have the reference built in, creating an all in one package. In order for Atlas Scientific to get the size of our Micro ORP probe down to 6.2mm, we had to separate the reference into its own micro probe.

**Both ORP and reference micro probes are needed in order to take accurate readings.**

## 1940's ORP probes

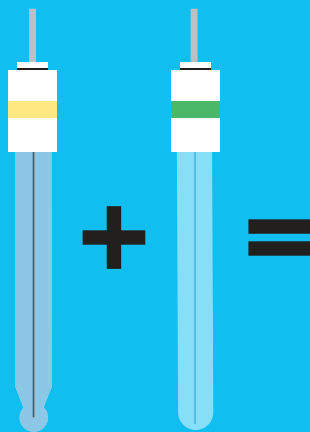
(Half-cell ORP & Reference)



ORP      Reference

## Modern probes

(Half-cell ORP & Reference merged into one)



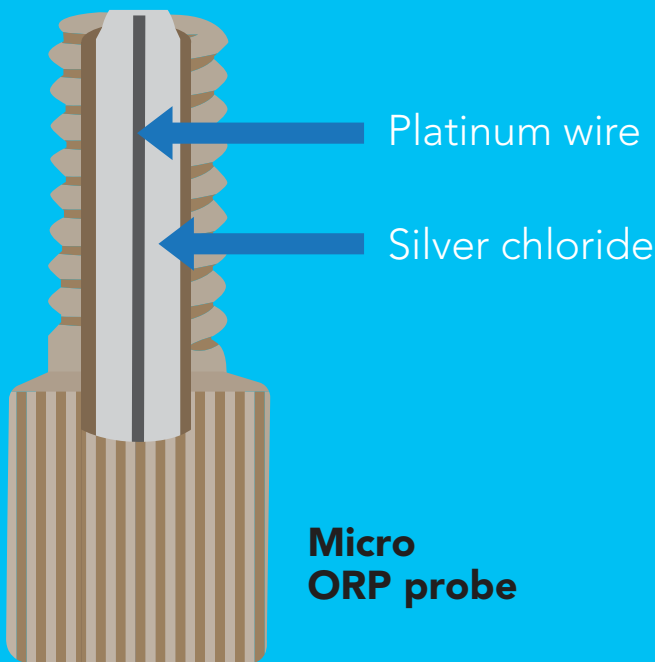
Combination probe

## New Micro probes

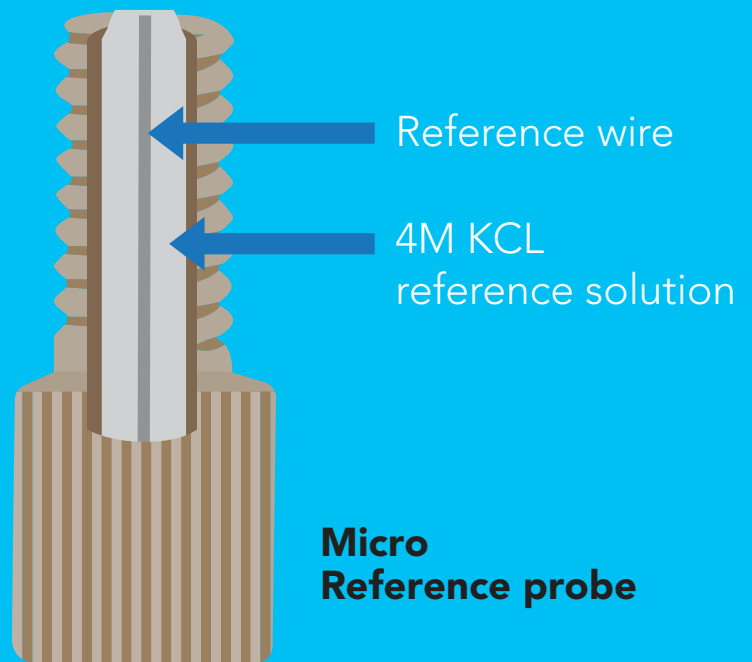
(Half-cell ORP & Reference)



These probes are too small to be a combination probe.



**Micro ORP probe**



**Micro Reference probe**

# Unique behavior

Atlas Scientific's microprobe technology has some unusual properties.

## Unaffected by drying

ORP probes need to be kept wet at all times. If an ORP probe is allowed to dry out, the probe could be permanently damaged.

Atlas Scientific's micro probes seem to be unaffected by drying. We have found that if a micro ORP or micro reference probe is allowed to dry, the probe still works normally when it's put back into water. We have seen that the probes can be stored dry for many months without any change in performance.

We believe this is related to the unusually small amount of glass used at the tip of the probe.

**\*Atlas Scientific does not recommend storing the probes dry.**

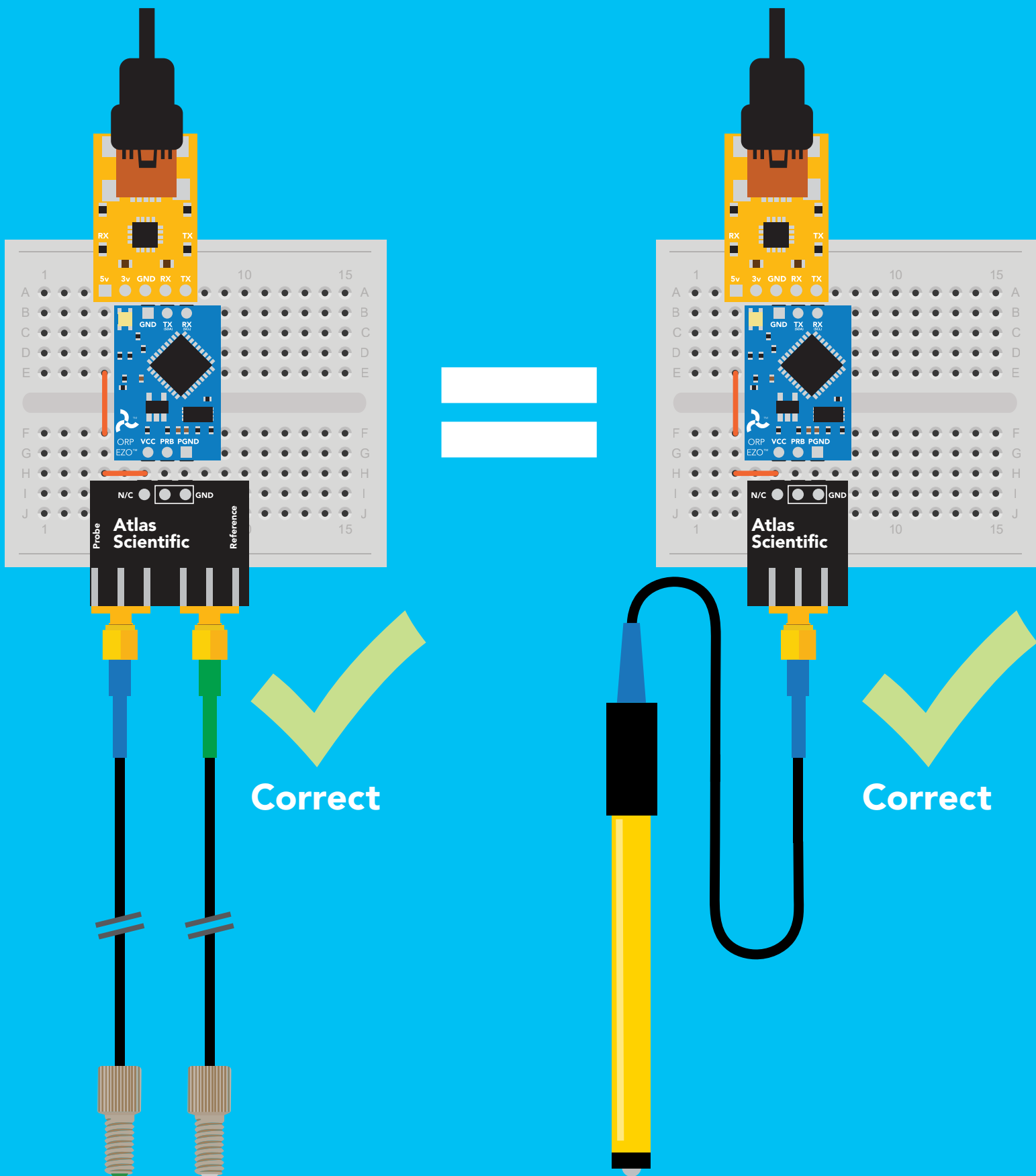
## Reactivation of a dried probe

If your Atlas Scientific micro ORP or reference probe have been allowed to dry out for an extended period of time, it can be reactivated by placing the probe in a small amount ORP storage solution. Let the micro probe sit for 1 hour.





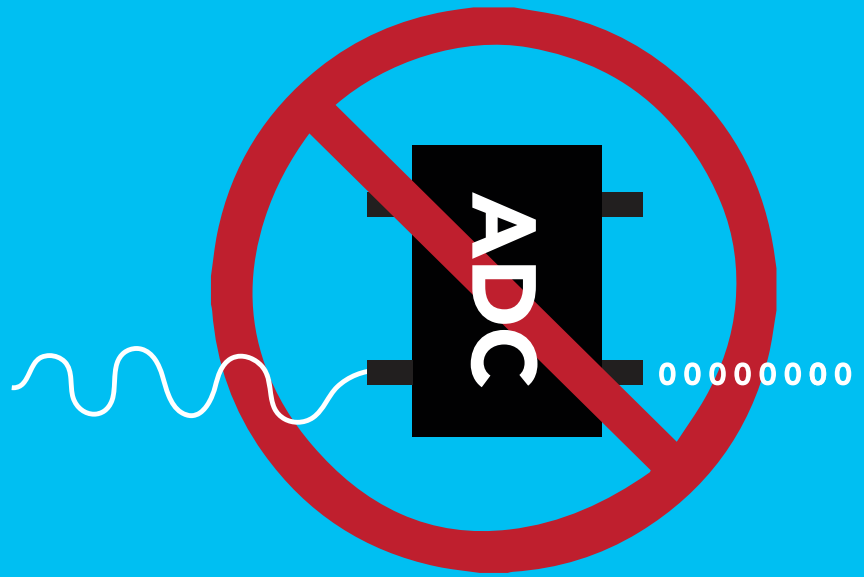
# Example setup



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.



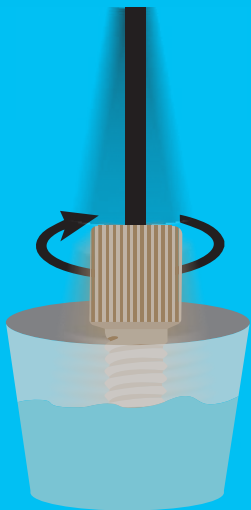
Result will **Often** read zero.



Result will **Often** read zero.

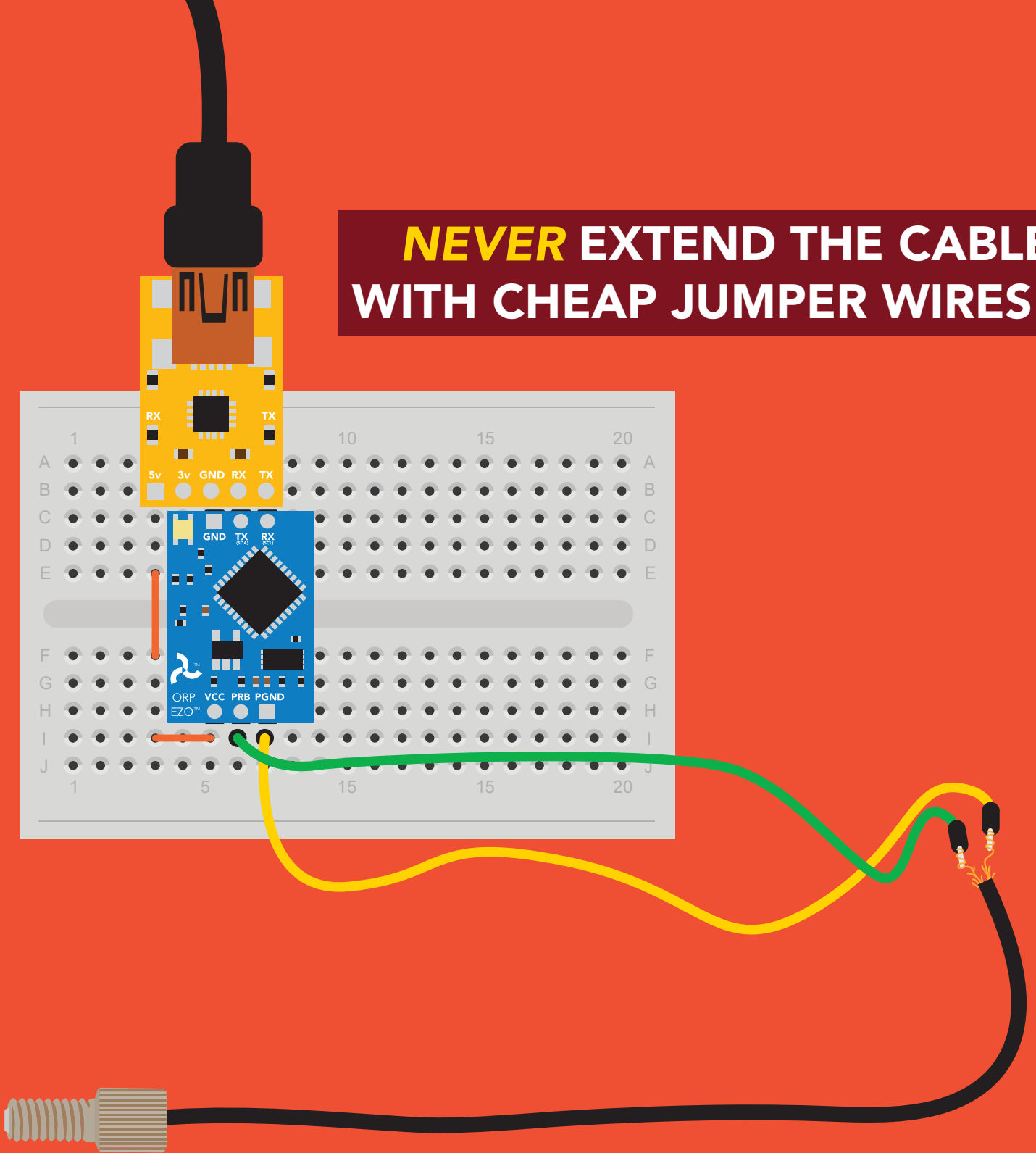
## Improve response time

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.



**Response time**

**NEVER** EXTEND THE CABLE  
WITH CHEAP JUMPER WIRES!



DO NOT CUT THE PROBE CABLE  
WITHOUT REFERRING TO **THIS DOCUMENT!**

# Probe cleaning

Coating of the ORP bulb can lead to erroneous readings including shortened span. 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.**

