AtlasScientific™
Environmental Robotics

V 1.2

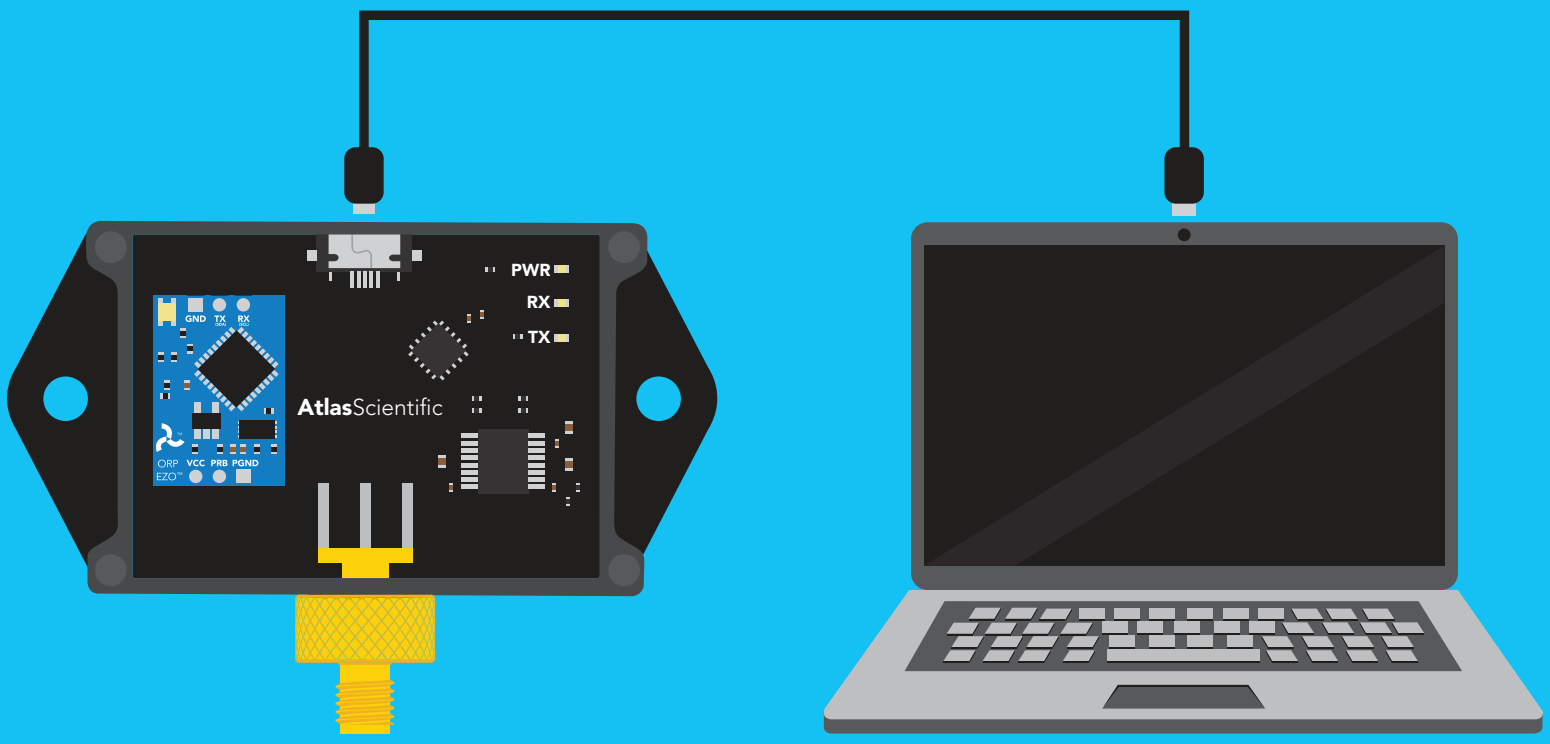
Revised 11/24

EZO Complete-ORP™

USB ORP meter

Users Guide

ISO 11271 Compliant
(determination of redox potential)



Reads	**ORP**	ORP reading time	**1 reading /sec**
Range	**-1020mV to 1020mV**	Supported probes	**Any type & brand**
Accuracy	**+/–1mV**	Calibration	**Single point**
		Recalibration frequecy	**~8 – 12 months**

RoHS COMPLIANT

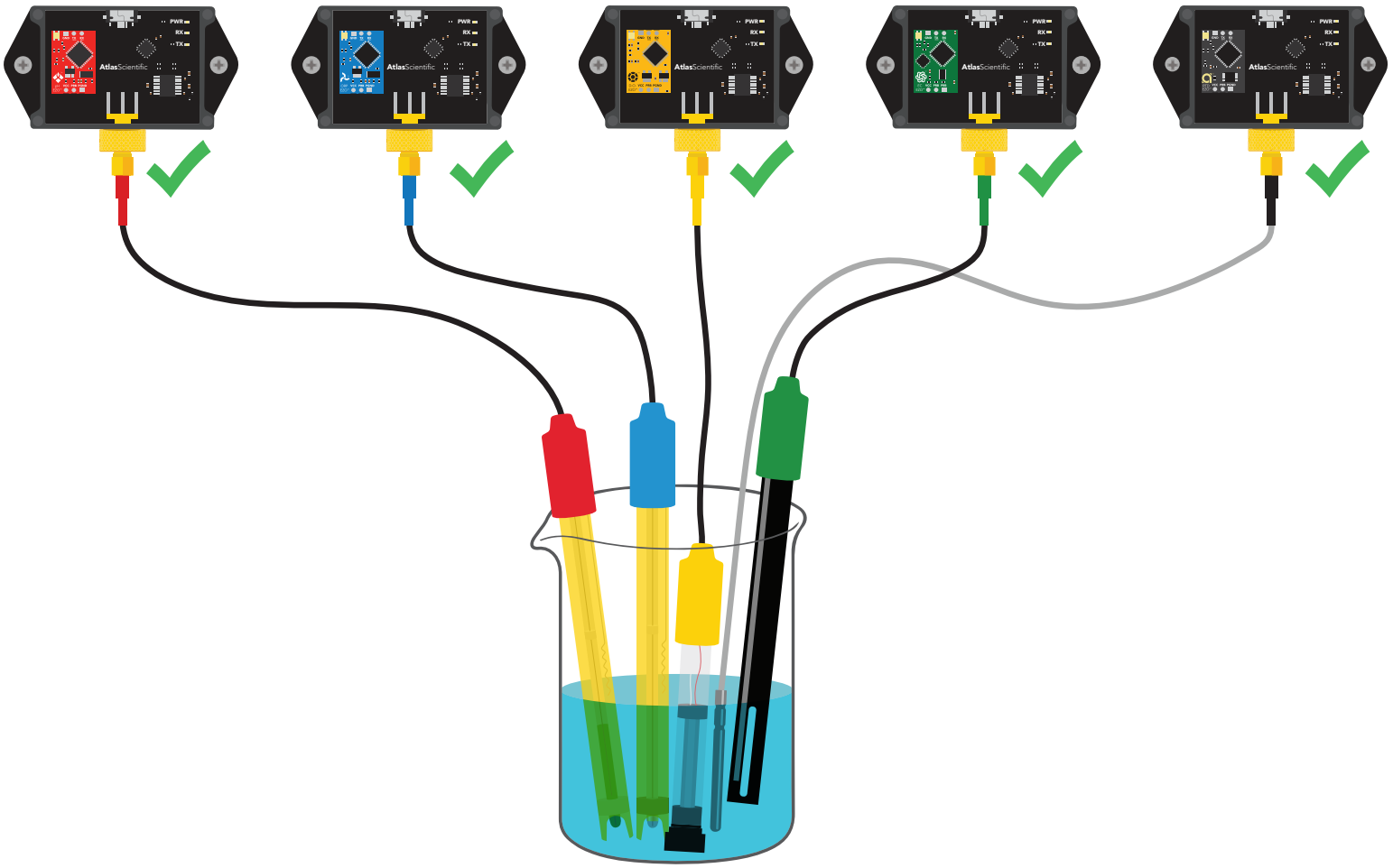
Written by Jordan Press
Designed by Noah Press

PATENT PROTECTED

This is an evolving document, check back for updates.

Interference free

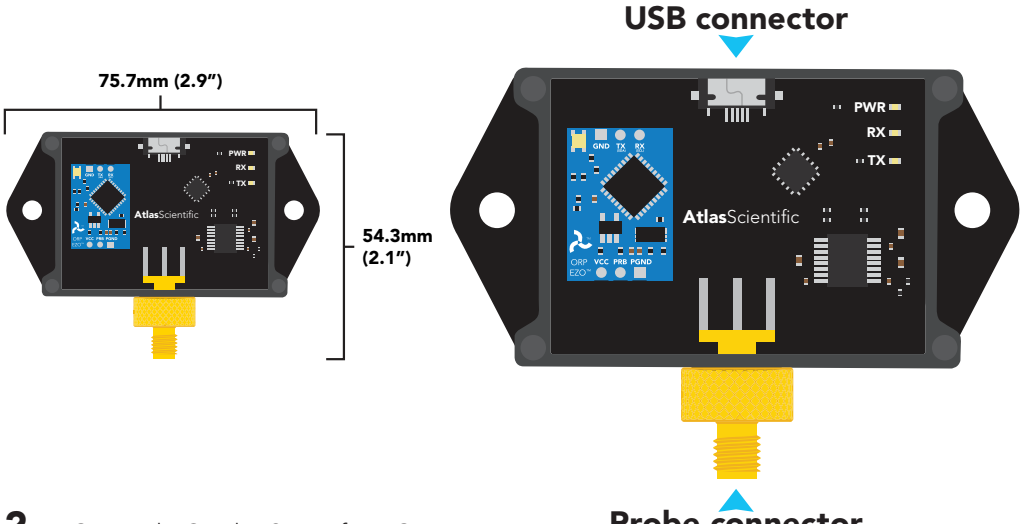
The EZO complete readings are unaffected by other sensors in the same water.



Ingress protection – IP62

The EZO Complete-ORP™ is dust proof and resistant to splashing water.

Two areas of concern are the *USB connector* and the *probe connector*.



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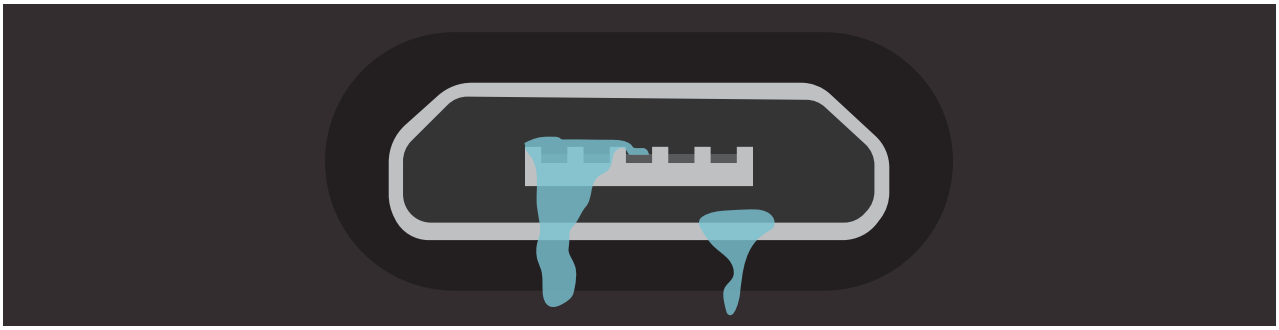
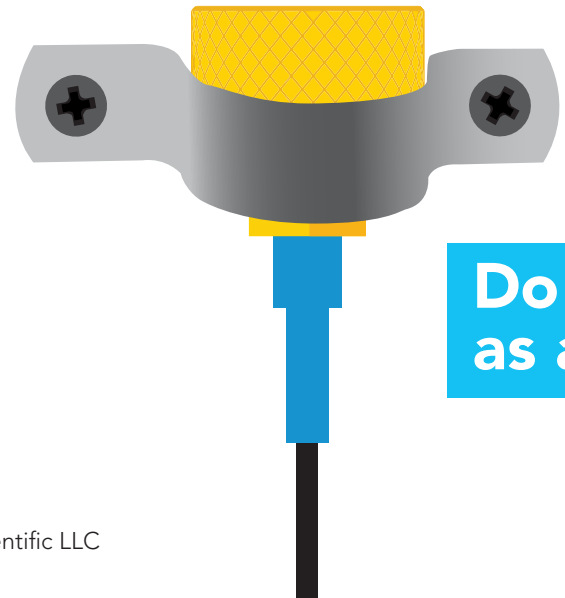
Ingress protection – IP62

An electrical short can occur if water enters the USB connector. A USB short could permanently damage the EZO-Complete. A USB short is not covered under warranty.



A connector short can occur if water enters the SMA connector. A connector short will cause the ORP readings to pin to -1020, +1020, or the probe will respond slowly to changes in ORP. A connector short is reversible and will not damage the EZO-Complete. However, frequent shorts will eventually damage the ORP probe.

The SMA connector is part of your probe; Nothing should be in contact with this part.



Do not use this as a mounting point!

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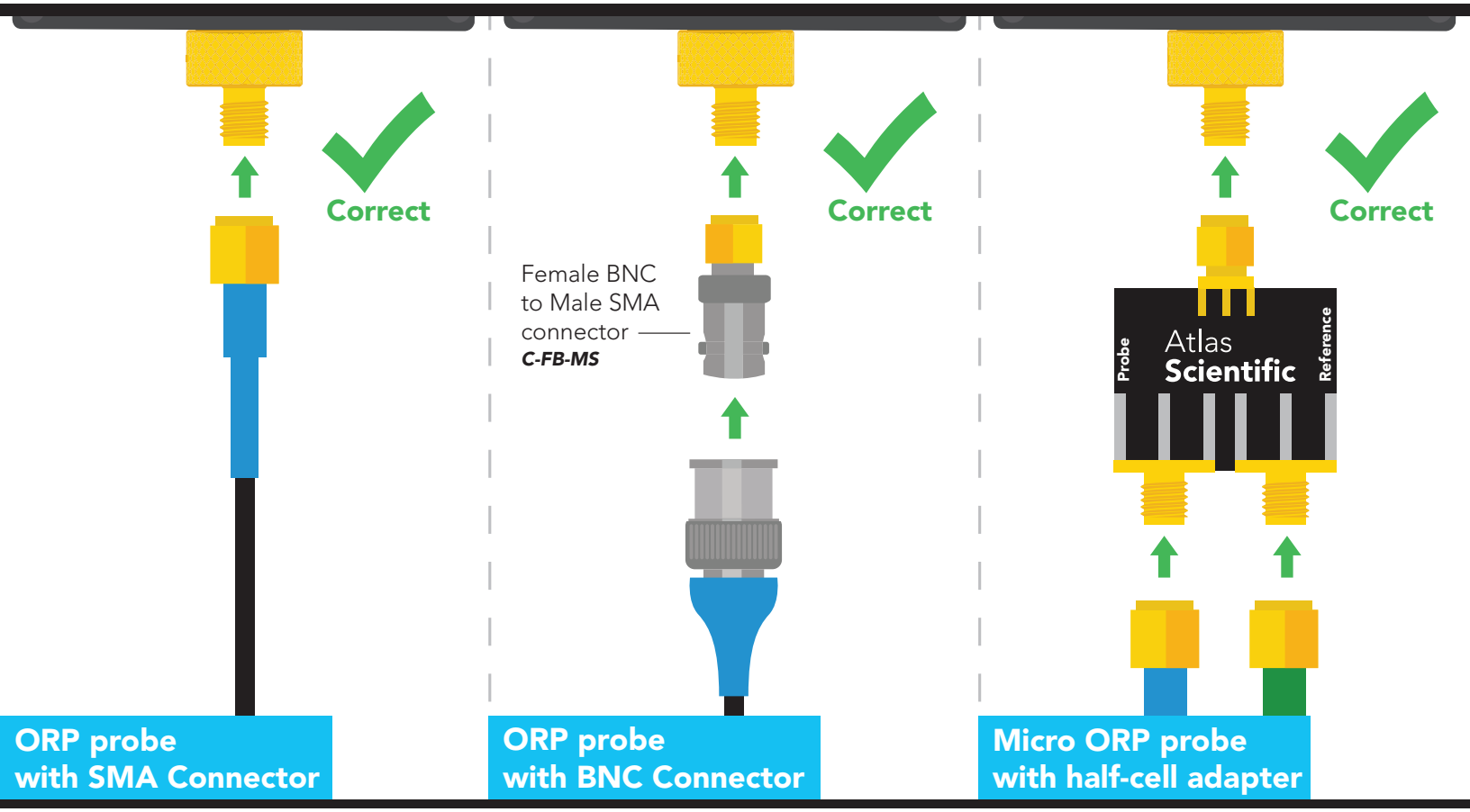
Setup



ORP probe with SMA Connector

ORP probe with BNC Connector

Micro ORP probe with half-cell adapter

Click here to download

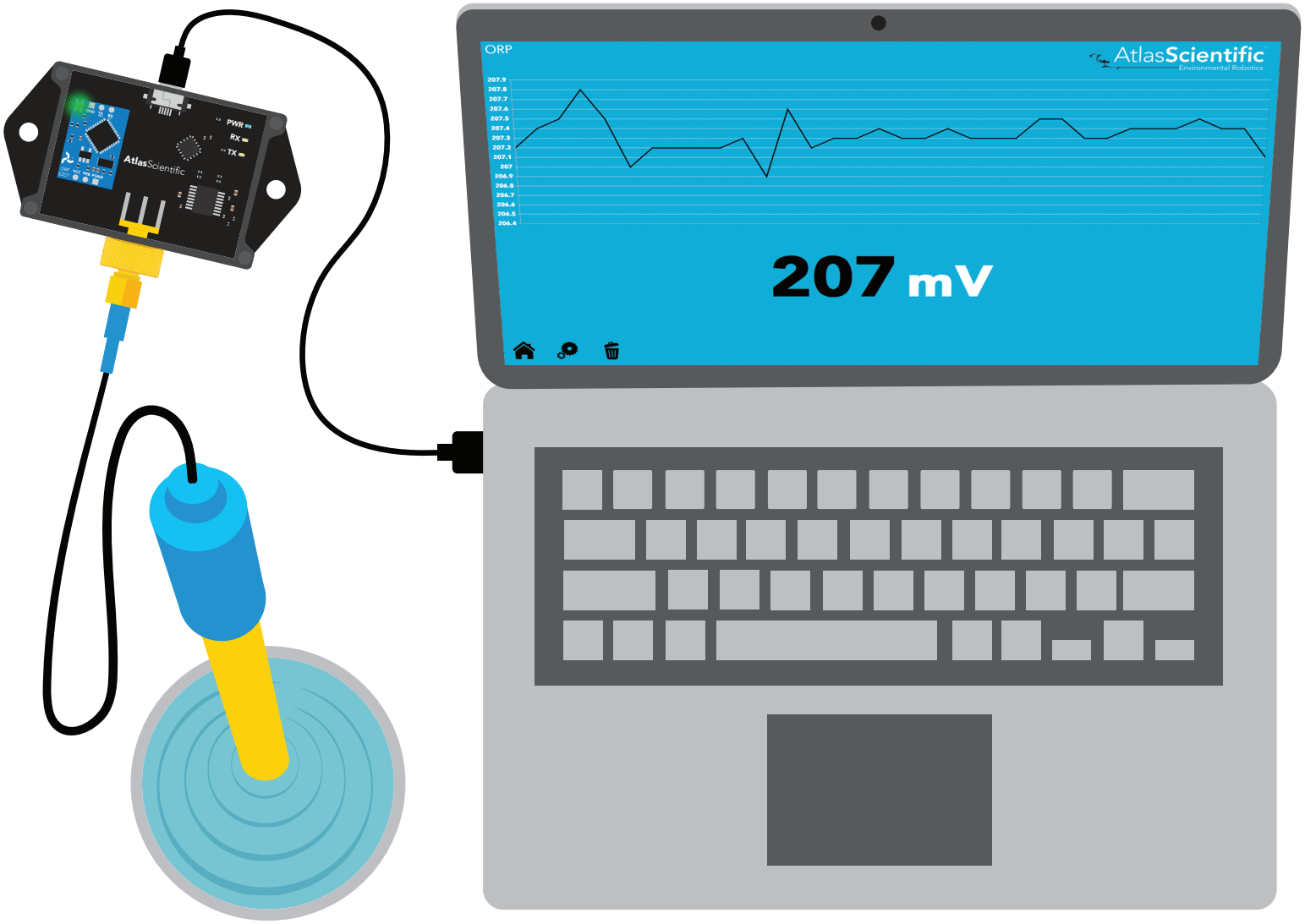
AtlasDesktop™ 2.0

Monitoring Software

AtlasScientific™ Environmental Robotics

Setup

Once you have installed the AtlasDesktop monitoring software, you can begin monitoring and logging your readings.



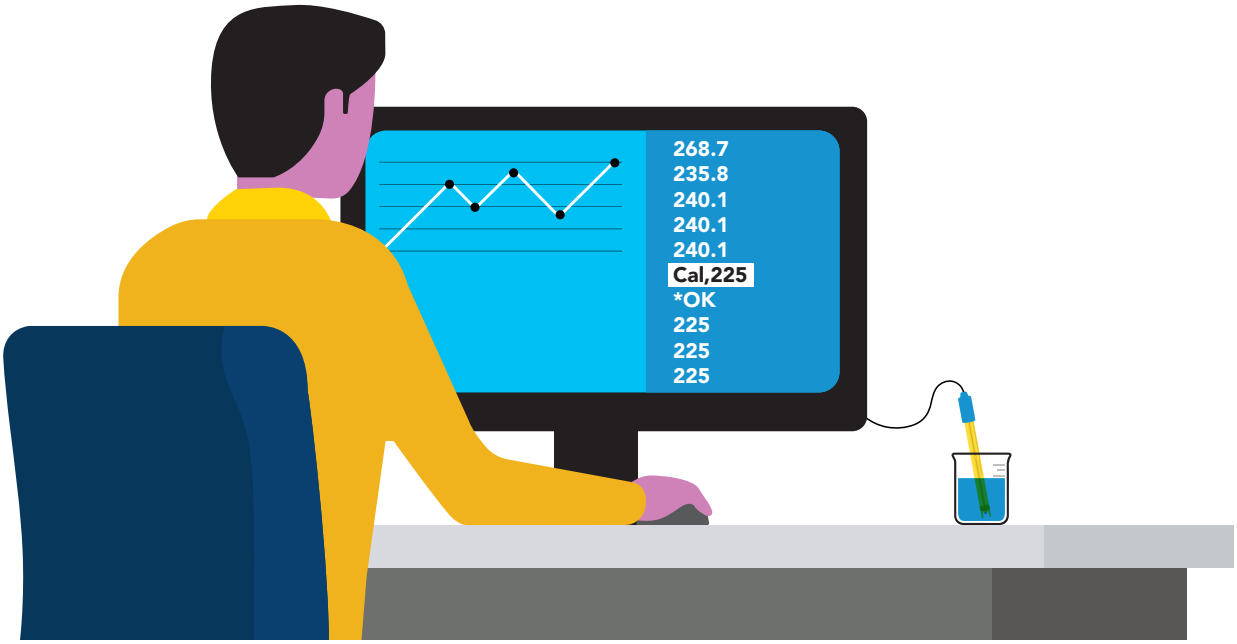
Calibration theory

The Atlas Scientific EZO Complete-ORP™ circuit has a flexible calibration protocol, allowing singlepoint calibration to ***any off the shelf calibration solution.***

If this is your first time calibrating the EZO Complete-ORP™, Atlas Scientific recommends using the 225mv calibration solution.

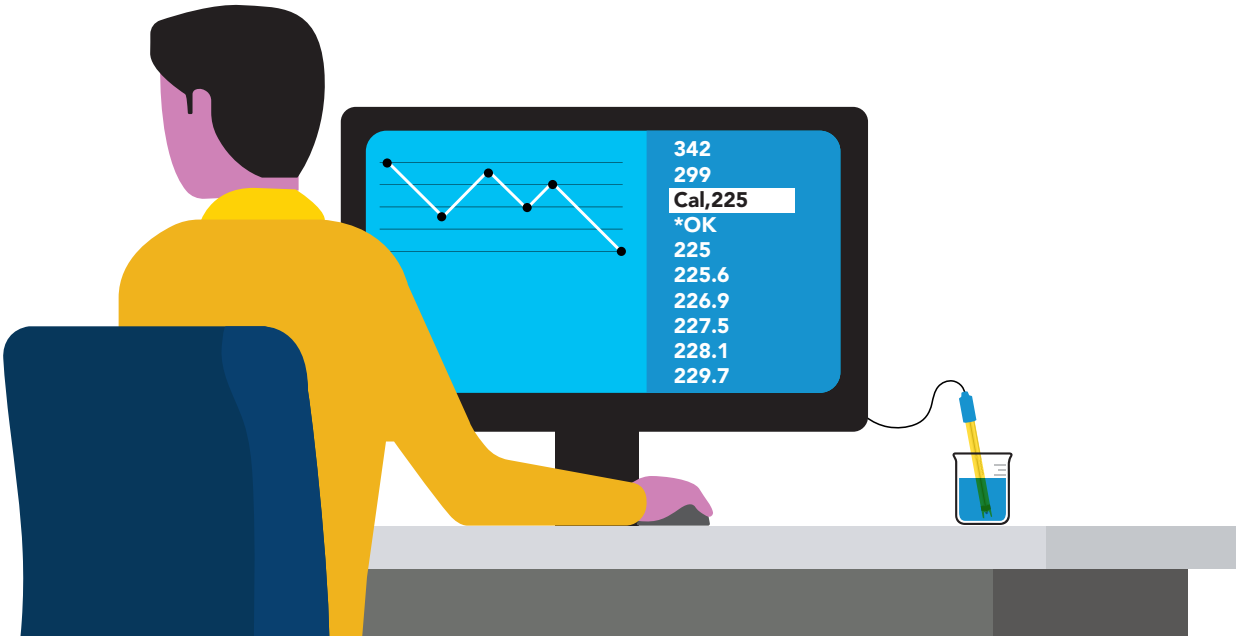
Best practices for calibration

Always watch the readings throughout the calibration process.
Issue calibration commands once the readings have stabilized.

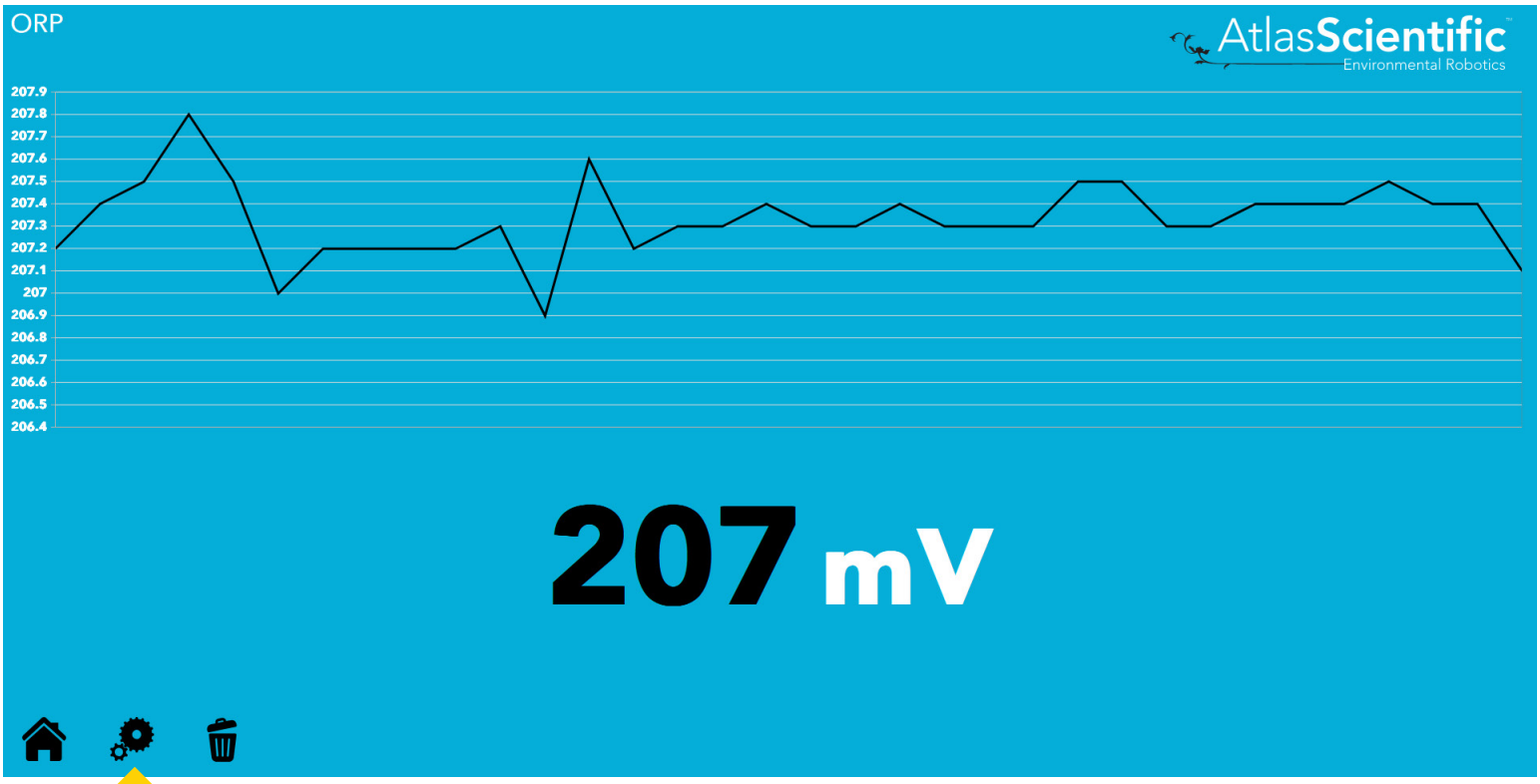


⚠ Never do a blind calibration! ⚠

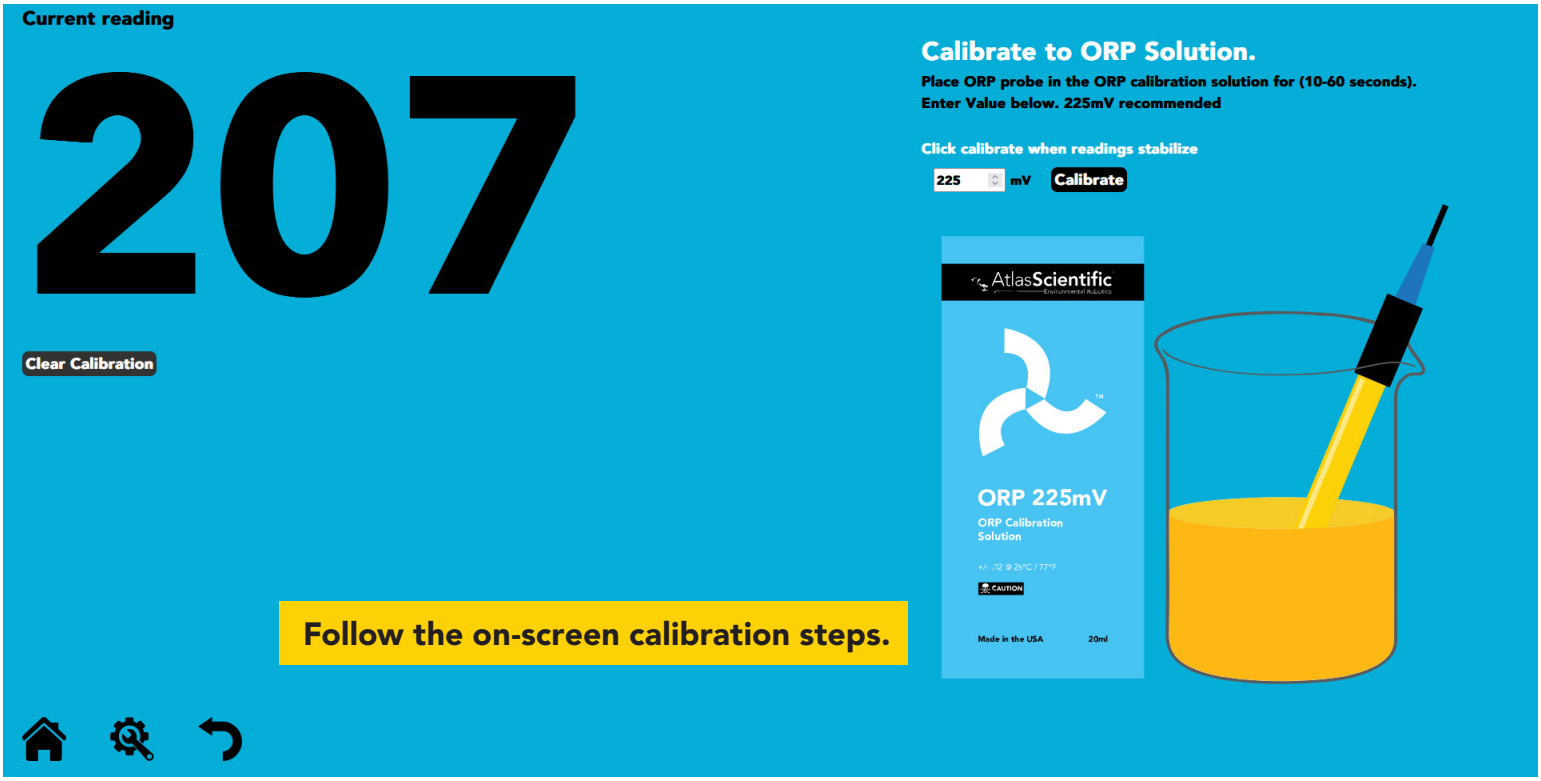
Issuing a calibration command before the readings stabilize will result in drifting readings.



Calibration procedure



Within the AtlasDesktop monitoring software, click on the "gear" icon.



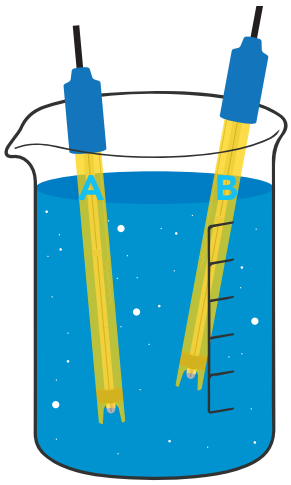
Follow the on-screen calibration steps.

ORP measurement insights

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



Tap water

24.2
Reading B

606.9
Reading A

Tap water

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

605.3
Reading B

An ORP probe has a platinum tip that is connected to a silver wire, surrounded by silver chloride. That silver wire is then connected to a KCL reference solution. Because platinum 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.