

User maintenance and troubleshooting

Symptom	Possible cause	Remedy
Drift	Junction blocked	Clean junction
	Sensor tip not clean	Clean sensor tip
	Reading stable in ORP standard but not in sample	Stirring or flow may be needed for stable results
	Temperature changes	Stabilise temperature
Noisy	Non-reversible ORP reaction	See introduction
	Poor connection	Check connection on meter and electrode
	Junction not immersed fully	Lower electrode into solution below junction
ORP reading in standard greater than $\pm 20\text{mV}$ from expected value	Contaminated ORP standard	Replace standard
	Sensor tip not clean	Clean sensor tip
	Electrode polarised	Isolate electrode
	Junction potential error	Soak in 3M KCl overnight
Slow ORP Response	Non-reversible ORP reaction	See introduction
	Internal short	Replace electrode



Warranty

Ionode electrodes have an expected lifetime of several years in ideal samples at room temperature.
Refer to <https://ionode.com/en/support/warranty> for full warranty details.



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Parameter	Operating Range
mV range	-2000 to + 2000 mV
Sensor material	Pt wire or Pt disc. Au on request.
Temperature range	0 – 60°C
Body material	Polypropylene
Reference type	Sealed Gel Ag/AgCl, Dbl Junction
Cable length	1m standard, longer on request.
Connector	BNC standard, others on request.



Operators Manual



Sealed Gel ORP Electrodes



Introduction

The IH-Series ORP electrode is a double junction sealed gel Ag/AgCl Redox/ORP electrode where the sensing element consists of a pure Platinum wire or disc. The potential is compared to the silver/chloride reference half-cell and completion of the circuit is made by the wick.

Preparation

The electrodes are shipped pre-filled with electrolyte and are ready for use after removal of the wetting bottle. Remove the wetting bottle by gently easing it off the electrode and retain the wetting cap as it can be useful during long-term storage.

ORP Electrode Verification

Unlike pH electrodes, ORP electrodes do not require asymmetry potential and slope correction. An offset can develop if the sensor tip or the reference junction becomes contaminated. To assure proper operation, check ORP electrodes with an ORP standard as described below:

1. Consult the meter instruction manual for meter setup. Connect the electrode and rinse it with distilled water.
2. Place the electrode in a stirred ORP standard. After allowing time to stabilise, observe the reading.
3. If the reading is not within $\pm 20\text{mV}$ of the correct value, clean the electrode and repeat procedure.

ORP Standards

Ionode recommends the use of either Zobell's (229mV @25°C) or EasyCal 700mV standard for checking ORP electrodes.

ORP Standards.	Value mV @25°C	
EasyCal	+ 700 mV	
Zobells	+ 229mV	
Quinhydrone	pH 4	+264
	pH 6.86	+98
	pH 9.18	-41

Helpful Hints

1. ORP samples are generally unstable and should not be stored or preserved.
2. Clean the sensing tip regularly. Unclean sensor tips are a very common source of error in ORP measurements.
3. Allow adequate time for stabilisation.

Maintenance

When not in use, keep the electrode immersed on 3M KCl solution. The wetting cap can be used for this.

Cleaning

Cleanliness of the sensor and junction is critical for accurate measurement. Drift and slow response are often due to an unclean sensor/junction. Clean the electrode periodically. Do not use abrasive materials.

To remove inorganic deposits and scale:

Soak sensor tip in 0.1M HCl or nitric acid until clean. Wash well with water and condition in 3M KCl solution for at least 15 mins before use.

To remove solids and organics:

Wipe the sensor tip with cotton or tissue soaked in mild non-alkaline detergent. Wash well with water and condition in 3M KCl solution for at least 15 mins before use.

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Notes:
