

User Maintenance and Troubleshooting

Symptom	Possible cause	Remedy
Drift	Wick blocked	Clean wick
	Sensor tip not clean	Clean glass membrane
	Membrane aged/damaged	Allow longer measuring time or replace
	Temperature changes	Stabilise temperature
Noisy	Bubble in membrane	Flick electrode downward
	Poor connection	Check connections
	Wick not immersed fully	Lower electrode into solution below wick
Low Slope (<95%)	Contaminated buffers	Replace buffers
	Membrane not clean	Clean membrane
	Membrane aged	Allow more time for stabilisation, or replace
	Electrode polarised	Isolate sample electrically
Slow Response	Membrane not clean	Clean membrane
	Membrane aged	Allow more time for stabilisation, or replace
Incorrect Reading after Cal	Wick blocked or contaminated	Clean wick
Reads pH7 all Buffers	Electrical short	Check connector
	Internal short	Replace electrode
Reads pH4-5 all Buffers	Membrane or stem cracked	Replace electrode
	Wick blocked or contaminated	Clean wick
	Electrode polarised	Isolate sample electrically

Warranty

Ionode IH 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.



Contact Ionode or your preferred reseller for information on a range of quality lab supplies including meters, buffers & lab accessories.

All specifications and values are subject to change without notice.
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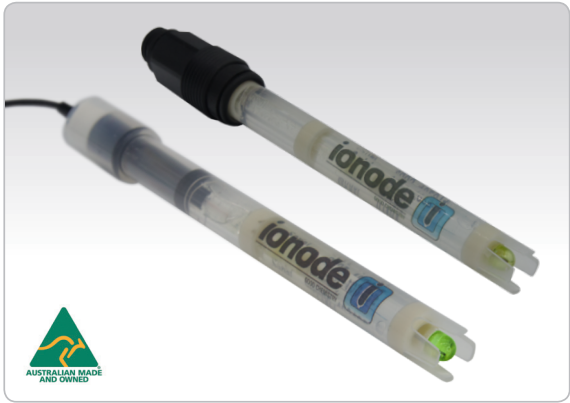


Parameter	Operating Range
pH range	0-14 pH
Zero Potential Point	pH 7.0 ± 0.3
Electrode slope	> 98% when new
Body type	Polypropylene
Temperature Range	0 – 60°C
Reference Type	Sealed Gel Ag/AgCl, Dbl Junction
Cable Length	1m standard, longer on request. Max length 20m
Connector	BNC standard, others on request.

Operators Manual



Sealed Gel pH Electrodes



Introduction

pH is a measure of acidity or alkalinity of a solution on a logarithmic scale of which 7 is neutral. Lower values are more acid and higher values more alkaline. For most aqueous solutions, the pH scale covers a range between 0 to 14.

The pH electrode consists of a pH sensitive glass membrane attached to a sealed insulating glass stem. This contains a solution of fixed pH in contact with a silver/silver chloride wire. The potential developed across the membrane is compared to a stable reference potential consisting of a silver/silver chloride gelled chloride half cell. Completion of the circuit is accomplished by solution contact between the reference half cell electrolyte and the sample via a porous 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. Retain the wetting bottle as it can be used for storage of the electrode when not in use.

pH Electrode Calibration

1. Consult the meter instruction manual for meter setup. Connect the electrode (and temperature sensor if applicable), rinse the electrode with distilled water and blot dry.
2. Immerse the electrode in pH7 buffer and wait for a stable reading.
3. Rinse the electrode with distilled or deionised water and carefully blot the membrane dry with a clean tissue. Then immerse the electrode in pH4 buffer and wait for stability. If the electrode is performing correctly, your meter should show a calculated slope of at least 95%. Repeat calibration if necessary.

Helpful Hints

- Use the same technique during calibration and sample measurements (including stirring rates).
- Try to ensure that the pH buffers and the samples are at the same temperature (within $\pm 5^\circ\text{C}$ or better).
- Calibrate regularly and always use fresh buffers.
- Keep all connections dry.
- Use a dedicated high impedance pH meter.
- Immerse the electrode so that the reference junction is below the surface.
- Do not use in fluoride solutions of low pH as this will damage the glass membrane.
- Minimise contact with sulphide vapours and change the sleeve electrolyte frequently in these conditions.



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Maintenance

When not in use, keep the electrode immersed in 3M KCl solution (the wetting bottle can be used for this). DO NOT store the electrode in deionised or distilled water.

Cleaning

Cleanliness of the sensor and junction is critical for accurate measurement. Drift, poor slope and slow response are often due to an unclean sensor or junction. DO NOT use abrasive materials.

To remove inorganic deposits and scale:

Soak membrane in 0.1M HCl for 15 mins. Wash well with water and condition in 3M KCl solution for one hour before use.

To remove solids and organics:

Wipe the membrane with cotton or tissue soaked in methylated spirit. Wash with water and condition in 3M KCl for one hour before use.

To remove strongly adsorbed and chemically bonded impurities:

Use methylated spirit undiluted on a soft cloth. Clean the pH membrane, rinse with water and condition in 3M KCl before use. In the case of protein contamination, use 5% Pepsin in 0.1M HCl solution.



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