

TROUBLESHOOTING

SYMPTOM: Drift

Possible Causes:

1. Wick contaminated or blocked
 - replace electrode
2. Membrane not clean
 - clean glass membrane
3. Membrane aged
 - use cleaning tool or replace electrode

SYMPTOM: Noisy

Possible Causes:

1. Bubble in membrane
 - flick electrode downward
2. Poor connection to meter
 - check connection
3. Contact zone not immersed
 - lower electrode into solution below level of wick

SYMPTOM: Low Slope (<95%)

Possible Causes:

1. Buffers inaccurate
 - replace buffers
2. Membrane not clean
 - see cleaning
3. Membrane aged
 - replace electrode
4. Connector wet
 - use cloth to dry (Note Warranty)

SYMPTOM: Incorrect sample reading following successful calibration

Possible Causes:

1. Ground loop (Often occurs in process systems)
 - verify by removing the sample from its environment and measuring in a glass beaker. May require special circuitry
2. Wick blocked
 - see Drift

SYMPTOM: Displays pH 7 for all buffers

Possible Causes:

1. Electrical short
 - check connector & cable for damage
2. Connector wet
 - dry connector with cloth

TROUBLESHOOTING CONT...

SYMPTOM: Displays pH 4-5 for all buffers

Possible Causes:

1. Membrane or stem cracked
 - replace electrode

SYMPTOM: Large offset (>0.5 pH)

Possible Causes:

1. Wick contaminated
 - see drift

SYMPTOM: Non-linear over 3 buffers

Possible Causes:

1. Buffers inaccurate
 - replace buffers
2. Sodium error
 - replace electrode
3. Wick contaminated
 - see drift

WARRANTY

Our aim is to provide an electrode which meets or exceeds your expectations. Any product found to be faulty due to manufacture will be replaced. All IH electrodes have a serial number which identifies the date of manufacture. Electrode use should commence within two years of this date.

Normally, IH electrodes will have a life of 2-4 years in ideal samples, at room temperature. This will be reduced in chemically aggressive or abrasive samples and elevated temperatures. All IH series electrodes are given a pro-rata one year warranty. However, if in our opinion the electrode is not suitable for the application, we reserve the right to nullify the warranty. Electrodes with wet or corroded connectors will not be replaced because partial shorting can cause damage.

Usually stem breakage can be identified by holding the electrode up to the light. Electrodes with broken stems or membranes will not be replaced.

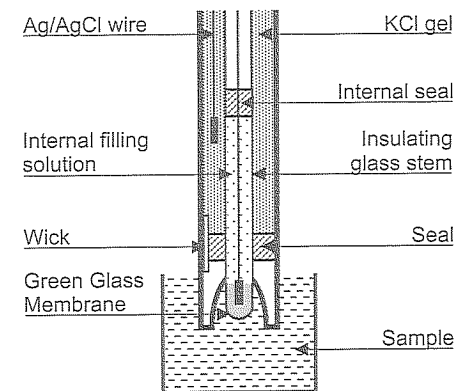
INSTRUCTIONS FOR IH ELECTRODE SERIES

DESCRIPTION:

pH is a measure of acidity and alkalinity and is defined as:

$$\text{pH} = -\log \text{hydrogen ion activity};$$

and for most aqueous solutions covers a scale from 0 (strong acid) to 14 (strong alkali). A pH of 7 is termed "neutral". The IH40 pH electrode consists of a pH sensitive green glass membrane attached to a sealed insulating glass stem. This contains a solution of fixed pH in contact with a Ag/AgCl/Cl ion half-cell. A potential developed across the membrane is compared to a stable reference potential consisting of a Ag/AgCl, gelled chloride half-cell. Completion of the circuit is accomplished by solution contact between the reference half-cell electrolyte and the sample through use of a porous wick. In the IH system, the electrode is pre-filled with electrolyte, which lasts the life of the electrode. This arrangement allows for the easy preparation and maintenance of the IH40/60. Furthermore, the special bullet-shape of the glass membrane allows easy cleaning of the glass membrane.



The condition of the contact zone is critical for accurate pH measurements and long term reliability. Contamination can produce measurement errors in samples of low ionic strength or low buffering capacity. These errors may be masked during the calibration with normal pH buffers.

The IH series should not be used in very low ionic strength samples or samples which contain significant amounts of oils, suspended solids or proteins. For these samples, use our IJ series.

The IH60 redox electrode with inert platinum sensing tip measures the oxidising or reducing power of a solution in millivolts. It will only give a stable reading in the presence of a reversible redox couple with a well defined concentration of both species of the couple.

PREPARATION

IH electrodes are shipped pre-filled with electrolyte and are ready for use after the removal of the wetting cap. Do not discard the cap as it is needed for the long term storage of the electrode. To remove the wetting cap, grasp the electrode near the wetting cap and ease the cap off gently.

MEASUREMENT

IH40 pH Electrode

1. Consult the meter instruction manual for meter setup. Switch on the meter, connect the electrode and rinse electrode with distilled water. Blot dry.
2. Immerse the IH40 pH electrode in pH 7.00 buffer. Both the membrane and wick must be fully immersed. Stir for several seconds, then cease stirring and allow reading to stabilise. Note excessive drift. Calibrate the electrode according to the meter manual.
3. Remove the electrode from the buffer and wash both the membrane and wick with distilled water. Blot dry with a tissue. Do not wipe.
4. Immerse the electrode into a second buffer which has a value several pH units from 7.00, e.g. buffer pH 4.00 for acid samples or pH 10.00 for alkaline samples. Repeat measurement step 2.

5. Repeat step 3 and immerse the electrode in the sample. Stir, then cease stirring and take the reading.
6. Recalibrate periodically depending on the stability of the system and the desired accuracy.

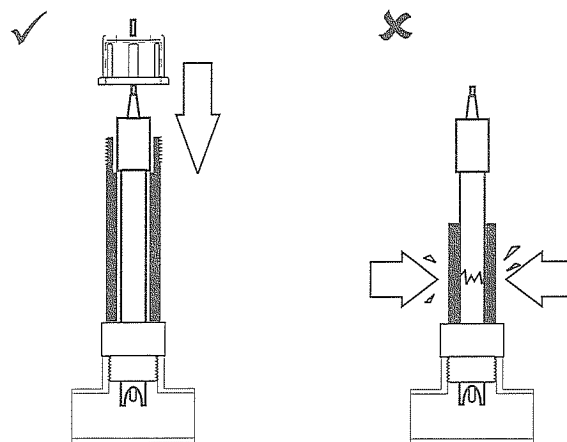
IH60 Redox Electrode

A single redox calibration solution such as Zobell or Light's standard is sufficient for calibration.

MAINTENANCE & CARE

Note: Do not exert a sideways force on the electrode. This may fracture the stem.

In-line Mounting: It is preferable to use our MK01 in-line mounting kit. This exerts a downwards force on top of the cap and protects the electrode from sideways forces.

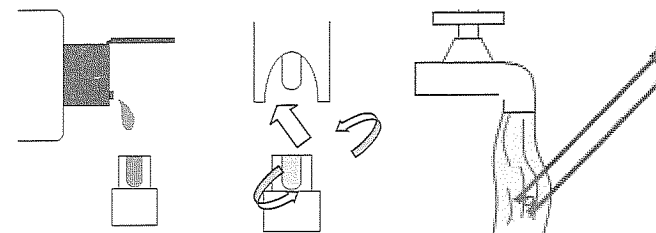


Short term storage: After measurements, rinse the electrode with distilled water and store in a beaker or bottle containing 2M potassium chloride.

Long term storage: After measurements, wash the membrane and wick thoroughly; place a small amount of 2M potassium chloride in the wetting cap and fit on the electrode.

CLEANING

Being a surface based measurement, the cleanliness of the membrane or platinum is of critical importance. Periodically inspect the sensing-tip for discolouration or dullness. To clean the green glass membrane, squeeze a small amount of Jif™ detergent into the porous cleaning tool and gently rotate the tool around the membrane. Wash well under a tap and rinse with distilled water. The platinum sensor may be cleaned with acids or Jif™ on a cotton bud.



SPECIFICATIONS

Material:	Polypropylene
Temp. Range:	0 – 60 °C
Max. Pressure:	Submersible in water to 10 m; 98.1 kPa; 14.2 psi
Electrode Length:	142.5 mm
Barrel Diameter:	12 mm
Cable Length:	1 m Standard (20 m max.)
pH Range:	0-12 pH (A Glass)
Reference:	Double Junction Ag/AgCl, Sat. KCl Gel
Slope:	> 97%
Precision:	IH40: ± 0.01 pH in Buffers; IH60: ± 1 mV in Standards
Offset:	IH40: ± 0.5 pH; IH60: ± 30 mV