

## Getting Started Guide & Unisense standard specifications for **pH Electrodes**

This electrode has been successfully tested prior to shipping, however some electrodes suffer from rough transportation. Therefore, it is important that you test the electrode upon arrival!

### Replacement of Defective Electrodes

Unisense will replace the electrode if it does not meet the specifications below, provided that:

1. A test is performed upon receipt without breaking the seal. (Note! No seal on MR-sensors for testing purposes)
2. The complaint is given to Unisense *within two weeks* from receipt of the equipment.

### Guaranteed Lifetime

Unisense guarantees the pH electrode a minimum lifetime of 3 months on condition of correct storage and use according to the manual.



### Individual Sensor Calibration is required

Our electrodes are handmade and as the sensor signal relies on the exact geometry of the sensor tip (micrometer scale), some variation must be expected.

### Signal Amplification

Unisense pH electrodes should be connected to a Unisense amplifier such as a UniAmp series instrument or the Field Microsensor Multimeter.

### Standard pH Electrodes are functioning correctly if (at room temperature):

- The 90 % response time to pH changes is less than 20 seconds (longer response time may occur in the high pH range (from 8-10)).
- Change in millivolt per pH unit is between 50-61 mV in the pH-range 4-10.

# Getting started with pH Electrodes

## 1. Unpacking

- Remove the grey shock-absorbing plastic net and inspect the microelectrode visually. Leave the microelectrode in the protection tube for testing, and do not break the seal.
- Remove the lower piece of tape and the stopper to remove the storage liquid (pure water).
- Remove the tape covering the hole on the side of the protection tube just below the nut.

NOTE: pH and reference microelectrodes must be stored wet. Do not allow these electrodes to be exposed to air for more than 10 min.

## 2. Connect the pH electrode to the amplifier

- Connect the reference electrode to the connector on the pH electrode cable.
- If using a micro reference electrode, remove the plastic net, the 2 pieces of tape and the stopper as described in 1-3 above. Storage liquid is 2 M KCl and it may be reused.

## 3. Calibrate the pH electrode

- Mount the calibration caps from the Calibration Kit on the protection tubes of the pH and reference electrode. Connect the two caps using the Y-piece and the tubing.
- If using a Robust Reference electrode, mount the calibration cap on the 10 cm plastic tube and place the reference electrode in that.
- Inject one of the pH buffers and allow the electrode to stabilize.
- Record the calibration point.
- Rinse the calibration caps and the syringe with pure water.
- Inject the second pH buffer and allow the electrode to stabilize.
- Record the second calibration point.
- For alternative calibration method, see the pH Microelectrode manual.

NOTE: For pH microelectrodes with built in reference electrode: Do not connect an external reference electrode, only connect a Calibration Cap to the protection tube. Otherwise perform the calibration as described above.

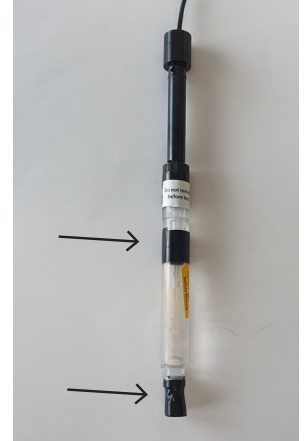
IMPORTANT: For any calibration method and measurements, there must always be liquid continuity between the tips of the pH and reference electrodes.

## 4. Approve the electrode

- Compare the electrode response to the specifications given on the previous page. If necessary, see Troubleshooting in the pH Microelectrode manual or contact support.

## 5. Storage

- When not in use, store the microelectrode in the protection tube at 10 - 30°C. Store pH-10 and pH-25 in the fridge (2 - 5°C) for longer shelf life. The stopper must be on the protection tube and the tip of the microelectrode must be immersed in water. pH microelectrodes with built in reference electrode must be store in a 2 M KCl solution.



*Remove the tape covering the hole on the side of the protection tube and around the stopper.*



*Injecting pH buffer into the protection tubes using the calibration caps from the calibration kit.*

## Useful tools



pH Microelectrode Manual



uSense Solutions Manual



Calkit-pH Manual



Contact information for support

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