pH2011 : pH Combination Electrode
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Working with Meters and Analysers to measure pH

- **Cost-effective pH Combination-Electrode for general applications: Lab, Field and light Industrial use, where the electrode is not submersed or under pressure**
- **Gel-filled robust Plastic Body**
- **Protected Glass bulb**

Specifications:

● Dimensions:	12 x 120 mm	● pH Range:	0...14
● Body:	Plastic	● Temperature Range:	0°C to 80°C
● Connector:	BNC	● Zero Potential at pH = 7:	$\pm$8 mV at 25°C
● Cable Length:	1 m Coaxial cable	● Actual Slope:	$\geqslant$ 98% of theoretical slope at 25°C
(other lengths available on request)		● Reference System:	Single junction, Ag/AgCl

Operating Instructions:

Preparation:

pH electrodes are shipped with wet glass-bulb and liquid junction. Prior to using the electrode for the first time, follow these three steps to condition the electrode:

1. Remove the protective cap and rinse the electrode with distilled water. Keep the protective cap upright for later use to store the electrode wet. Eventually refill the cap with storage solution (1:1 solution of pH 4 buffer and 4M KCl).
2. Place the electrode in a beaker containing one of the following liquids: ● 4.0 M KCl or ● pH 4 buffer or ● pH 7 buffer for conditioning the electrode. Soak for 20 minutes.
3. Rinse the electrode with distilled water and connect to the instrument. The electrode is ready.

Maintenance:

When using a pH electrode, rinse the electrode with distilled water before and after measuring a sample. Blot (not wipe - because of electrostatic effects) the end of the electrode with lint-free cloth / tissue to remove excess water. This is to avoid carry-over effects.

When storing the electrode, always keep your pH electrode moist. Store the electrode in a 1:1 solution of pH 4 buffer and 4M KCl. *Do not store* the electrode in distilled water, this will cause to leach out ions and damage the electrode. After storage, you may notice white KCl crystals deposited on your electrode. Such salt formation will not interfere with measurements, simply rinse the electrode with distilled water to remove the crystals and blot dry before use.

When an electrode ages, it may exhibit sluggish or noisy readings. You can attempt to improve performance with the following procedures:

Reference Problems:

A blocked liquid junction is the most common problem of pH measurements. Symptoms include a slow response, off-scale and noisy readings. The repair procedure is specific to the type of electrode reference system.

For Gel-filled (non-refillable) Electrodes: Soak the electrode in a beaker of warm water (60◦C) for 15 minutes to remove dried gel or salts from the junction. Then place the electrode in a beaker of warm (60◦C) 4M KCl solution. Set aside until it returns to room temperature. The gel in the junction should be moist and the junction-flow should be restored.

Glass-Bulb Problems:

A glass membrane will get dirty over time, we suggest the following procedures for cleaning:

• PROTEIN – Use a Protein Cleaning Solution or wash in a solution of liquid soap, (about 1⁄2 teaspoon per 200mL warm water), using a soft cloth to gently wipe the glass-bulb. Remember that the glass-bulb is very delicate and breaks easily.
• INORGANIC SALTS – Wash in 0.1M HCl or EDTA (DO NOT SOAK!). Rinse with distilled water.
• GREASY FILMS – Wash in acetone or methanol (DO NOT SOAK!). Wash with liquid soap then rinse with distilled water.

After cleaning, place the electrode in storage solution (1:1 solution of pH 4 buffer and 4M KCl) for 15 minutes before use.