pH Electrodes Instruction Sheet
Models 601100, 601500 and 60120B

Electrode Specifications

Model number	601100	60120B	601500
Description	Flat surface combination pH electrode with gelled reference solution	Mini combination pH electrode with sealed gelled reference filling solution and detachable bulb guard	General-purpose combination pH electrode with sealed gelled reference filling solution and detachable bulb guard
Dimensions	15 x 115 mm	10 x 126 mm	12.5 x 155 mm
Construction material	Polymer housing, flat glass bulb	Polymer housing, glass bulb	Polymer housing, glass bulb
Measuring range	0 to 14.0 pH units	0 to 14.0 pH units	0 to 14.0 pH units
Temp. range	0-80 °C	0-80 °C	0-80 °C
Reference junction	Teflon	Ceramic	Ceramic
Reference type	Ag/AgCl (silver silver chloride)	Ag/AgCl (silver silver chloride)	Ag/AgCl (silver silver chloride)
Isopotential point	~7.0 pH	~7.0 pH	~7.0 pH
Precision	0.02 pH units	0.02 pH units	0.02 pH units
Connector	BNC	BNC	BNC
Cable length	1 meter (39")	1 meter (39")	1 meter (39")
Storage container	Bottle	Cap	Bottle

General Electrode Procedure

1. To avoid damage to the electrode when removing it from or inserting it into the soaking bottle;
   a) Unscrew the bottle cap.
   b) Remove the electrode and cap from the bottle.
   c) Slide the cap off the electrode.
   d) Reverse this procedure when storing the electrode.
2. Rinse the electrode with deionized or distilled water.
3. Carefully shake electrode to ensure that any air bubbles in the bulb or lower stem of the electrode are dislodged upwards.
4. Blot electrode with tissue.
5. Connect electrode to pH meter and follow the pH meter manufacturer's instruction for calibration.

Before Measurement

1. Generally, the sample should be aqueous and fall within the range 0 – 14 pH
2. Always use fresh buffers for calibration. Choose buffers that are no more than 3 pH units apart.
3. To obtain the maximum precision, always buffer as close as possible to the expected measured value.
4. Between measurements, rinse electrodes with distilled water and then with the next solution to be measured.
5. Stir all buffers and samples.
6. Avoid rubbing or wiping electrode bulb in order to reduce the chance of error due to polarization.

pH Calibration and Measurement

Refer to the owner's guide from the manufacturer of the pH meter being used for detailed information regarding calibration and temperature compensation procedures.

Two-Buffer Calibration (for high precision measurements)

1. Set up the pH meter according to the manufacturer's instruction manual.
2. Ensure that all buffers are at the same temperature (+/- 2 °C.) If samples are at varying temperatures, temperature compensation is recommended. (See pH meter instruction manual.)
3. Select two buffers that bracket the expected pH value. The first should be near the electrode isopotential point (pH 7) and the second near the expected pH of the sample. (e.g., pH 4 or 10.)
4. Rinse the electrode first with distilled water and then with pH 7 buffer. Place the electrode in the pH 7 buffer.
5. Wait for a stable pH 7 reading. Set the pH meter to the pH value of the buffer at its measured temperature.
6. Rinse the electrode first with distilled water and then with the second buffer. Place the electrode in the second buffer.
7. Wait for a stable display. Set the pH meter to the pH value of the buffer at its measured temperature.
8. Calibration is complete. Proceed to pH measurement

Single-Buffer Calibration (for lower precision measurements)

1. Set up the pH meter according to the manufacturer's instruction manual.
2. Choose a buffer that has a value close to the expected pH of the sample.
3. Rinse the electrode first in distilled water and then in the buffer being used for calibration. Place the electrode in the buffer.
4. Wait for a stable display. Set the pH meter to the pH value of the buffer at its measured temperature.
5. Proceed to pH measurement

pH Measurement

1. Calibrate the electrode as described in previous section.
2. Rinse the electrode with distilled water and then with the sample solution.
3. Place the electrode in the sample.
4. Stir the sample.
5. When the reading is stable, record the pH value.

Electrode Storage and Maintenance

Electrode Storage

1. Electrodes 601100 and 601500
   Store in the soaking bottle. The soaking solution should be 22.4g KCl dissolved in 100ml pH4 buffer solution or 25g KCl dissolved in 100ml pure water.
2. Electrode 60120B
   Store with wetting cap kept damp with pH4 buffer or, alternativ sol