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OPERATING INSTRUCTIONS

Model H120
pH Meter with Silicon Chip Sensor

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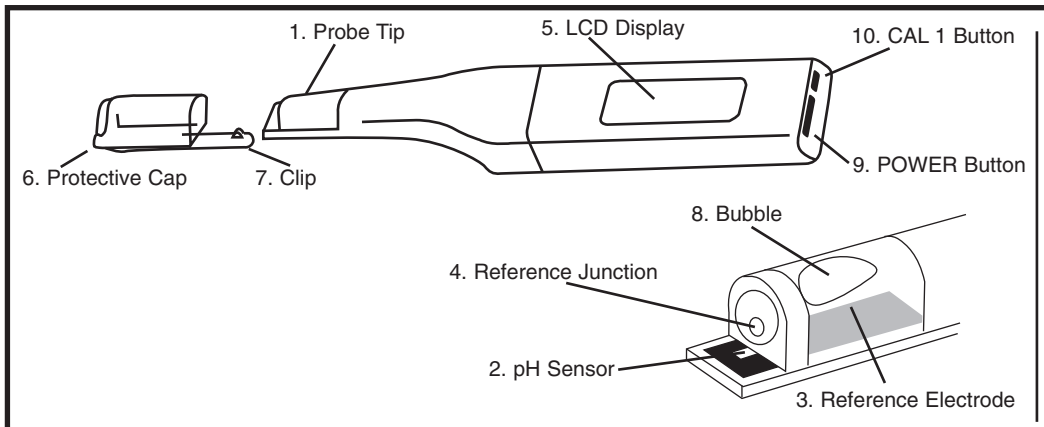
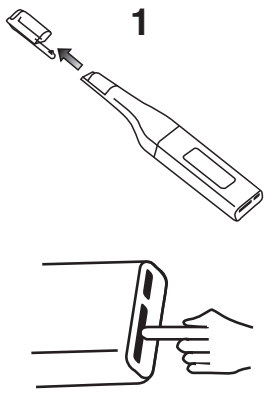
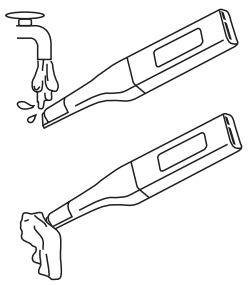
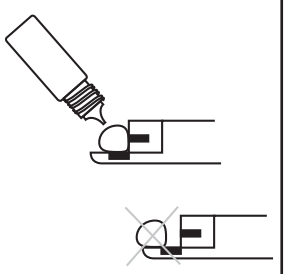
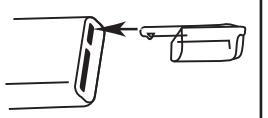
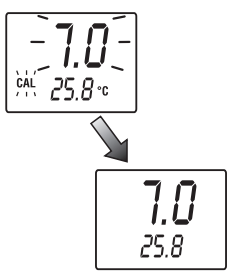
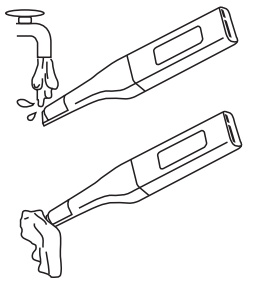
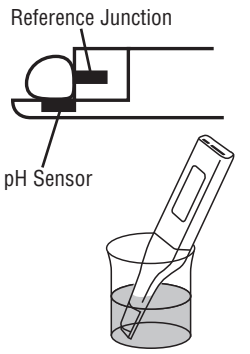
Parts



1.	**Probe Tip**	pH sensor and reference electrode.
2.	**pH Sensor**	Fast response silicon chip pH sensor with built-in temperature sensor.
3.	**Reference Electrode**	Replaceable saturated KCl Ag/AgCl electrode.
4.	**Reference Junction**	Measurement is made when the reference junction and the pH sensor are immersed in the solution.
5.	**LCD Display**	**CAL** (blinking): Calibration in process. Measurement cannot be made. **CAL** (off): Measurement can be made. **BAT**: Low battery indicator. Replace batteries.
6.	**Protective Cap**	Always replace the cap after use.
7.	**Clip**	Use the tip of the clip to depress the CAL button.
8.	**Bubble**	The reference solution bubble indicates the life of the reference electrode.
9.	**POWER Button**	Press to turn the meter on or off.
10.	**CAL 1 Button**	Button for pH 7.0 calibration.

Calibration and Measurement Instructions

1	2	3	4	5	6	7
						
Remove cap from probe tip and turn on the meter.	Rinse the probe in tap water and blot dry.	Apply one drop of 7.00 buffer to the probe tip. Be sure to cover both the reference junction and the pH sensor.	Depress the CAL 1 button with the tip of the clip.	The CAL and 7.0 will flash until a stable reading is obtained. When the CAL disappears and 7.0 stops blinking, calibration is complete.	Rinse the probe in tap water and blot dry. To measure the pH of a sample, go to Step 7.	Now measure the sample pH by placing a single drop on the probe tip or dipping the probe tip into solution.

When finished, always rinse the probe and replace the protective cap.

Notes on calibration and measurement:
- Measurements cannot be made while CAL is displayed. Be sure to complete the calibration procedure before taking pH measurements.
- Always begin a measuring session with a calibration.
- Be sure to use pH 7.0, buffer as a calibration standard.
- The use of other solutions to calibrate may make measurements inaccurate.
- Rinse the sensor with distilled or deionized water when testing the pH of tap water, rainwater, or clean water.
- Although the pH meter has automatic temperature compensation, always keep the pH buffers and the samples at the same temperature.
- To measure solids such as soil, make a slurry of the sample in deionized or distilled water.
- Keep the sensor surface clean. See “Cleaning the Sensor”.
- A white powder or gel at the probe tip is KCl reference solution. Clean from sensor before use.
- To change C°or F° temperature unit, turn off meter. Press and hold CAL 1 button, then press the POWER button to turn meter back on.

Troubleshooting Guide

If an error message is displayed first check the following:

No pH buffer on the pH sensor.
If the meter is reading 0.0 or 14.0, the sensor is dry
Air bubbles are trapped on the sensor surface.
pH sensor is dirty. See “Cleaning the Sensor”.
pH sensor and reference is not in solution.

BAT Message Displayed
Batteries are too low for reliable measurement. See “Replace Batteries”
(Battery Icon) Displayed 
Approximately 10 hours of battery life remains. Replace batteries immediately.

Difficulty in Calibrating or in Obtaining a Stable Reading:
pH sensor is dirty. See “Cleaning the Sensor”.
The reference electrode has reached the end of its useful life. Replace reference electrode.
Interference from direct sunlight. Shade sensor from sunlight.
pH or temperature of sample is changing.
Sample has low ionic strength (tap water, distilled water).

Error Codes:

CODE	Description	Solution
E06	pH sensor slope error	Clean probe. If error persists, replace meter.
E07	pH sensor voltage error	Clean probe. Be sure sample liquid covers both sensor and reference junction.
E08	Too long to calibrate	Clean probe. If error persists, replace reference. If error still persists, replace meter.
E13	Temperature Sensor error	Replace meter

DO:

Soak the probe in pH 7.0 (neutral) pH buffer for 5 minutes if the probe is new or has not been in regular use.

Clean the probe regularly with soft cotton tipped swab.

STORE THE PROBE DRY with the protective cap covering the probe tip. No electrode storage solution is required.

For maximum accuracy always begin each measuring session with a calibration.

Calibrate at the same temperature as the sample solution. Although the meter has automatic temperature compensation, best results will be achieved if the calibration buffers and sample are the same temperature.

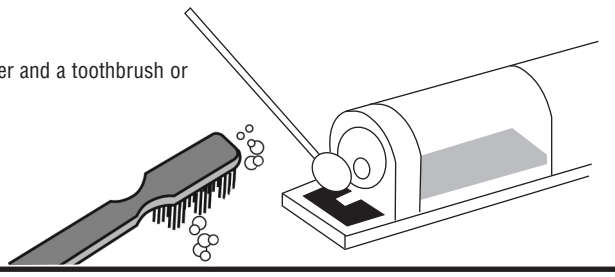
Be sure the surface of the sensor in the probe is free from any deposits or films. See the cleaning instructions in this manual.

Always place the protective cap over the sensor tip when finished measuring.

⚠ **DO NOT**
DO NOT store the sensor in solution or use for long term pH measuring applications.
DO NOT use below 5 °C or above 40 °C (40 - 105 °F).
DO NOT leave the sensor uncapped for long periods of time.
DO NOT allow oil, fat, food particles, starch, protein, or other materials to remain on the pH sensor after use.
DO NOT use a sharp metal object (needle, pin, etc.) to clean the pH sensor surface.
DO NOT take readings in direct sunlight. Direct sunlight may cause unstable readings or difficulty in calibration.
DO NOT use in an environment that will damage pH sensor or meter: Organic solvents (acetone, toluene, thinner, oils), strong acids (pH 0 - 2), strong alkalis (pH 12 - 14), abrasive samples, silicon etching compounds (hydrofluoric acid).
DO NOT press the POWER or CAL buttons with sharp objects.
DO NOT submerge the meter. The meter has water-resistant O-ring seals, it is not submersible.
DO NOT use in environments with static electricity. Electrostatic discharge may permanently damage the probe.

Cleaning the Sensor:

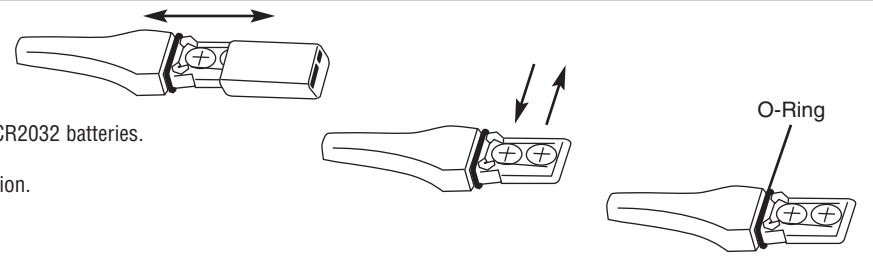
1. Clean the sensor with soapy water and a toothbrush or cotton tipped swab.
2. Rinse the sensor with water.
3. Recalibrate.



⚠ **CAUTIONS:**
Do not scratch the pH sensor.
Do not press the reference electrode junction.
White powder or gel on the pH sensor is KCl reference solution. Clean before using.
Do not clean the sensor with organic solvents such as acetone, methanol, or thinner.

Replacing the Batteries:

1. Wipe the pH meter dry.
2. Pull the meter case apart as shown to the right.
3. Gently pry out the batteries and replace with two 3v lithium CR2032 batteries. The (+) side of the batteries should face up.
4. Be sure the O-ring is not damaged and is in the correct position.
5. Reassemble the meter.
6. Recalibrate.



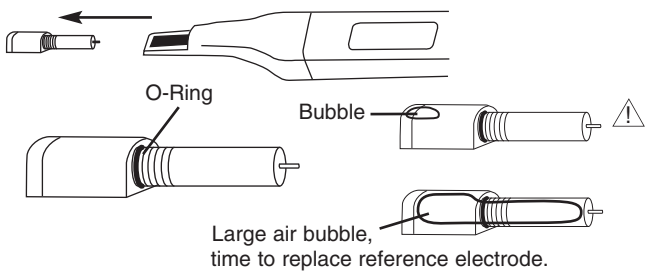
⚠ **CAUTIONS:**
Do not open the meter case if the pH meter is wet.
Always replace both batteries at the same time.
Dispose of batteries properly.

Replace the Reference When…

- Liquid in the reference electrode is depleted. Shown to the right.
- Response time slows
- There is difficulty in obtaining a stable reading.

Replacing the Reference.

1. Wipe the pH meter dry.
2. Pull the reference electrode out of the pH meter as shown to the right.
3. Check to be sure that the watertight O-ring is clean and properly seated on the new reference.
4. Insert the new reference into the pH meter. Part No. RF01-01.
5. Recalibrate the pH meter.



NOTE:
The service life of the reference electrode will vary according to the frequency of measurement, temperature, and other measurement conditions.

⚠ **CAUTIONS:**
Do not remove the reference electrode if the meter is wet. Be sure that the O-ring seals properly. If the O-ring does not seal properly to the meter, liquid may enter and cause permanent damage.

SPECIFICATIONS miniLab H120

Catalog Number	H120	Resolution:	0.1 pH
Model	miniLab H120	Accuracy	±0.1 pH
Meter	Pocket-sized waterproof pH meter	Operating Temp. Range	5 to 40 °C (40 °F to 105 °F)
Sensor	Silicon chip pH sensor	Display	LCD digital display
Calibration	1	Power	Auto Shut Off. Two 3v lithium batteries CR2032
Buffer Recognition	Automatic pH 7.0	Battery Life	150 hours continuous. 10 hour low battery warning.
Temp. Compensation	Automatic	Dimensions	152.4 x 28.57 x 16.38mm (6.0” x 1.125” x .645”) 53.94 g (1.03 oz)
Reference	Replaceable KCl gel filled. Part No. RF01-01	Shipping Weight	1.0 lb. (.45 kg)
pH Range:	pH 2.0 to pH 12.0		