Bluelab pH Meter™
Instruction Manual

bluelab®
simple solutions

pH meter™

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1.0 Introduction to Bluelab pH Meter

The battery operated pH Meter measures pH levels by use of one probe connected to the electronic meter. The meter has a liquid crystal display (LCD) digital readout.

1.1 Basic Operation

1. The battery operated pH meter consists of a case and probe. The meter case has a liquid crystal display (LCD) reading display and buttons for ON/OFF 7.0pH calibration and 4/10pH calibration. There is also a standard BNC socket for probe connection.

   Figure 1. shows the Bluelab pH Meter.

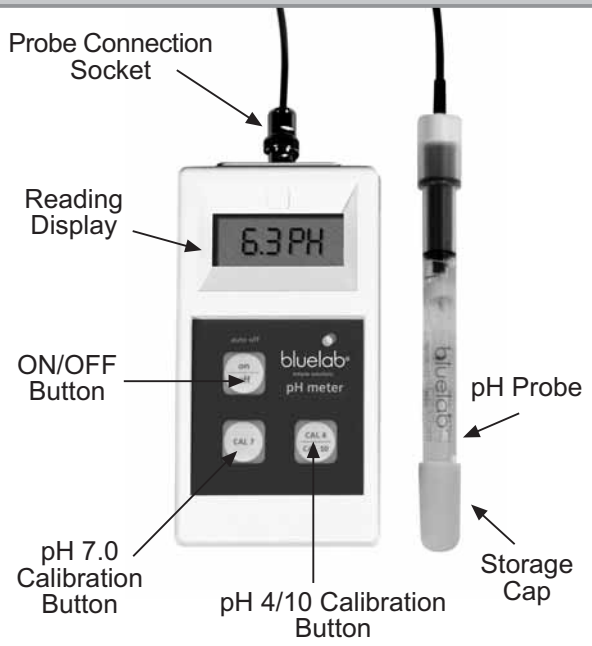

Figure 1. pH Meter

1.2 Meter Calibration

1. The Bluelab pH Meter is calibrated before each use to ensure reading accuracy. Solutions used for calibration are carefully stored and replaced occasionally because pH reading accuracy is relative to calibration solution used.

   If measuring a pH below 7.0 is normal, the meter is calibrated using pH7.0 and pH4.0 calibrations solutions. If measuring a pH above 7.0 is normal, pH7.0 and pH10.0 solutions are used for calibration.

1.3 Storage of Meter

1. The meter is kept out of direct sunlight to prevent irreparable damage to the LCD screen; this includes storing in a cool, dry and clean place when not in use.

   The meter automatically turns off after four minutes if no buttons are pressed. If the meter turns off before the reading is taken, a short press of the ON/OFF button will turn the meter on again.

   The meter unit is not waterproof but will withstand occasional water splashes. If the meter does get splashed, it is wiped dry as soon as possible.

   Storing the meter without use for longer than two to three weeks requires removal of the pH probe. Place fresh water in the probe storage cap, replace the probe cap and store the probe in a secure place. The pH probe is never stored in de-ionized or distilled water as this will permanently damage it.

   Batteries are removed if the unit is to be stored for a prolonged period.

2.0 Preparing the pH Meter for Use

Preparing the Bluelab pH Meter for use involves hydrating the pH probe, inserting 2 x AAA batteries, connecting the pH probe and calibrating the pH. These tasks are performed before the meter is used for the first time.

1 Hydrate pH Probe

Carefully remove pH probe tip protective cap ensuring the body is not bent which will break the glass tube inside the body. Soak tip in fresh water for at least one hour. Soaking tip for 24 hours will improve the probe's activity and is recommended if the probe tip has been allowed to dry.

CAUTION: Do not use de-ionized or distilled water. When probe is not in use, put some fresh water into the protective cap and place back onto probe.

2 Insert Batteries

Open battery compartment by sliding back cover down and insert 2 x AAA batteries.

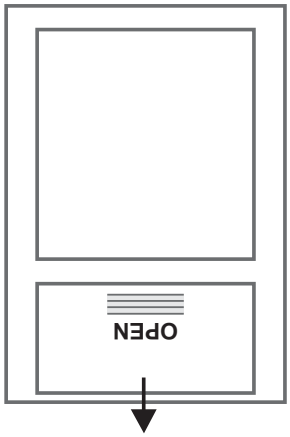

Figure 2. Battery Cover

3 Replace Cover

Slide cover back on.

4 Connect pH Probe

Connect pH probe to meter by lining up the meter lugs and probe connector. Fasten securely by pushing probe connector on and twisting one quarter turn.

Inserting Twisting Attached

Figure 3. Probe Attachments

5 Clean Probe and Calibrate

Cleaning of the probe is described in section 4.0 of this document. Calibrating the pH is described in Section 5.0 of this document.

3.0 Measure pH Value

Once the pH meter has been set up and calibrated, using it to measure pH value involves the probe, a solution and button functions.

To decrease time taken to reach solution temperature, place the probe in an area where there is strong movement of the solution or stir the solution with the probe.

For very cold or very hot temperatures, it may take four to five minutes for the probe to reach the same temperature as the solution.

The meter automatically turns off after four minutes. Pressing the ON/OFF button sets the probe to obtain another reading.

1. **Turn Meter On**
   Press the ON/OFF button to turn the meter on.

2. **Insert Probe into Solution**
   Place the probe into the solution to be measured.

   Wait one to two minutes for reading to stabilize if the solution is stirred or agitated. Wait longer if there is no movement in the solution.

   Read value shown on LCD display.

   NOTE: If taking readings of more than one solution, rinse probe thoroughly in fresh water between solutions to avoid cross contamination.

3. **Turn Meter Off**
   Press ON/OFF button or allow instrument to turn off automatically.

4. **Store Probe Between Measurements**
   Place storage cap back on probe tip with a small amount of fresh water or pH 4.0 solution in it or store probe tip in a container of fresh water between uses.

   CAUTION: The pH probe is never stored in de-ionized or distilled water as this will permanently damage it.

4.0 Cleaning and Maintenance

Cleaning the Bluelab pH Meter probe often, ensures accurate readings. Cleaning includes using 'Jif', a trade name for a liquid scourer cream used in home bathrooms and kitchens. Similar products are called 'Liquid Vim' and 'Soft Scrub'.

Scented varieties are never used as they affect the probe functions. Maintenance also involves the batteries.

4.1 Clean pH Probe

Follow these steps to clean the pH probe.

1. **Clean pH Probe Glassware**
   Rinse probe tip in fresh water and place 1-2 drops of 'Jif' cleaner onto probe glassware, or into the cavity end of the white cleaning tool provided.

   CAUTION: Do not use scented cleaning products as they affect the probe performance.

2. **Scrub Glassware**
   Using a clean soft toothbrush, scrub the cleaner over the glassware, or place the cavity end of the cleaning tool over the glass bulb of the probe tip and GENTLY twist back and forth to clean.

3. **Rinse Glassware**
   Place probe tip under running water and using the toothbrush completely remove all traces of cleaner.

   CAUTION: Do not touch probe glassware with fingers as this will contaminate the probe and affect performance. Do not use excessive force on glassware or probe body as they are easily damaged.

4.2 Battery Replacement

1. Batteries are replaced in the unit when the message 'LO BAT' appears in top left-hand corner of LCD display. Section 2.2 in this document explains battery replacement.

   NOTE: Batteries are checked at least once every six months for signs of deterioration, rusting or swelling. If signs of deterioration are found, battery holder contacts are cleaned and batteries replaced.

5.0 Calibrating Meter

For accurate meter readings the pH probe is cleaned and recalibrated frequently.
The pH calibration involves cleaning the pH probe and then calibrating in TWO SOLUTIONS.
If a pH below 7.0 is being measured, use pH7.0 and pH4.0 calibration solutions.
If a pH above 7.0 is being measured, use pH7.0 and pH10.0 calibration solutions.
If a message appears during the calibration process, such as 'e2:pH' the calibration was unreliable. Description of errors and causes are described in section 6.0 of this document, titled 'Error Messages'. Follow these steps for meter pH calibration.

1 Clean pH Probe
Clean probe following the steps in Section 4.0 of this document.

2 pH 7.0 Calibration
Turn meter on.

Rinse probe thoroughly in fresh water, shake off excess water and place probe in a pH7.0 calibration solution for one minute or more.

Once meter reading is stable, press and hold the CAL 7.0 button. Once the display starts flashing release the button. If calibration is accepted it will display 7.0pH, otherwise refer to error message on page 7.

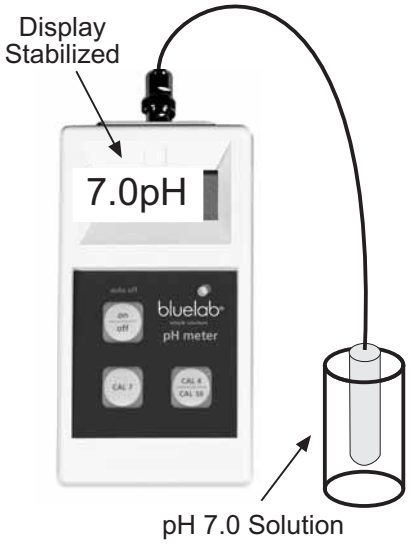

Figure 4. Reading Stabilized

3 Rinse Probe
Rinse completely in fresh water and shake off excess.

4 pH 4.0/pH10.0 Calibration
Wait for a period of at least one minute for reading to stabalize.

Press and hold CAL 4/10 button. Once the display starts flashing release the button. It will display 4.0pH or 10.0pH if calibration is accepted, otherwise refer to error message on page 7.

The meter is now calibrated and ready for use.

6.0 Error Messages

Error messages can only appear during the calibration process. The following table describes error messages, the reason and cause for an error message.

To clear a calibration error message press any button once. The meter will reset to the factory set calibration and will need to be recalibrated successfully before use.

Error display	Indicates	Possible causes
E1: PH	Not enough difference between pH7.0 and pH4.0 readings.	pH4.0 calibration solution contaminated or wrong solution used. Probe contaminated, not properly attached, worn out or damaged.
E2 : PH	Not enough difference between pH7.0 and pH10.0 readings.	pH10.0 calibration solution contaminated or wrong solution used. Probe contaminated, not properly attached, worn out or damaged.
E3 : PH	Not enough difference between the readings.	Calibrate to pH7.0 **FIRST**, then to pH4.0/10.0.
E4 : PH	pH7.0 calibration unreliable.	pH7.0 calibration solution contaminated or wrong solution used. Probe contaminated, not properly attached, worn out or damaged.

7.0 Troubleshooting Guide

The following table describes problems that can occur with the pH Meter, the possible reasons and explains possible solutions.

Trouble	Possible reason	Possible solution
pH readings inaccurate	Contaminated probe. Incorrect calibration. Broken glass bulb, stem or connector.	Clean pH probe as described in Section 4.0 of this document. Ensure calibration solutions are accurate. Replace if in doubt. Wait longer for readings to stabilize before calibrating. Check pH probe for damage.
Display shows LO BAT in top left hand corner	Insufficient power to take a reliable reading.	Replace the batteries. DO NOT use rechargeable batteries.
Meter will not turn on	Batteries dead or inserted incorrectly.	Check batteries are inserted correctly. Replace if necessary.
Display shows E2 : PH or similar	Problem with pH calibration or the meter is damaged.	See error message descriptions Section 6.0 of this document.
orPH **urPH**	Over range pH Under range pH	Solution > 14.0pH Solution < 0.0pH Check pH probe connection. pH probe could be faulty. Meter could be wet inside.

8.0 Technical Specifications

	Bluelab pH Meter
Range	0 - 14 pH
Resolution	0.1 pH
Accuracy (at 25°C)	± 0.1 pH
Temperature Compensation	Not applicable
Operating Temperature Range	0 - 45°C 32 - 113°F
Power Source	2 x AAA Alkaline Batteries
Calibration	Manual Calibration
Other Features	Auto turn off function

Contact Details

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The instrument is only as accurate as the probe is clean!

Bluelab cleaning kits

Probe cleaning is one of the most important parts of owning and operating any Bluelab Truncheon®, meter, monitor or controller. If the probe is contaminated (dirty), it affects the accuracy of the reading displayed.

The probe surface is where the instrument takes the reading of the solution. The information is sent back from the probe to the electronic brain of the instrument. A calculation is then done in the instruments brain or micro computer and a reading is then displayed. If the information sent back from the probe is inaccurate due to probe surface contamination then the reading will be inaccurate.

Cleaning the probes is a very easy task and prolongs the life of the probes.

The Bluelab cleaning kits have it all there for you:

pH cleaning and calibration kit:

- full colour instructions
- calibration solutions
- decanter vessels
- Bluelab probe cleaner
- Bluelab pH probe cleaning tool
- toothbrush

conductivity probe cleaning kit

- full colour instructions
- conductivity standard solution
- decanter vessel
- Bluelab probe cleaner
- Bluelab chamois (probe cleaning instrument)