ORP Meter
User Manual

Contents

1.0 Introduction & Overview

1.1 Features

ORP and pH reading capabilities (probe dependent)	Easy switch between measurement modes
Single BNC connector for probe connection	Simple two-point calibration process for pH with 30-day calibration indicator
Backlight LCD display, low battery indicator	Auto-off function
Compact, handheld design for convenient use	KCl-filled probe cap to keep the probe hydrated

1.2 What's in the box?

1x Bluelab ORP/pH Meter
1x ORP probe with 2 m (6') cable
2x AAA batteries
1x KCL storage solution sachet

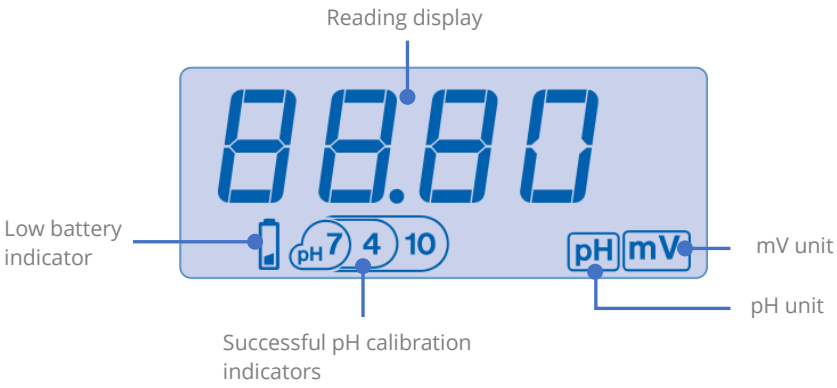
1.3 How it works

The Bluelab ORP Meter is designed to be able to measure either ORP (mV) or pH. What is being measured is determined by the probe attached and the user selecting the appropriate mode. The Bluelab ORP Meter has two press buttons; power and mode/calibrate.

2.0 Bluelab ORP Meter

2.1 Overview

2.2 Display



2.3 Preparing for use

Insert Batteries

Open the battery compartment by sliding the back cover down. Insert 2 x AAA batteries as shown on the battery holder. Slide the cover back on.
Note: Alkaline batteries are recommended.

> **Important**
> Check the batteries at least once every six months for signs of deterioration, rusting or swelling.
> If signs of deterioration are found, clean battery holder contacts and replace batteries.

Batteries should be replaced in the Bluelab ORP Meter when the low battery indicator appears on the screen. The low battery indicator remains on, and the Bluelab ORP Meter continues to operate until the batteries die or are replaced.

Turning the Bluelab ORP Meter on and off

A short press of the POWER button will turn the Bluelab ORP Meter on when the device is off.

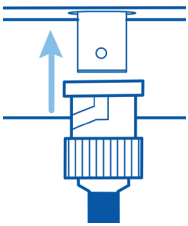
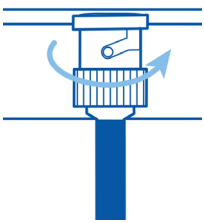
Holding the POWER button will turn the Bluelab ORP Meter off.

> **Note:** The Bluelab ORP Meter automatically turns off after approximately four minutes of inactivity.

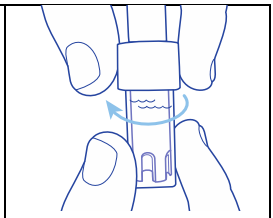
Connecting a probe

Both the ORP Probe and pH Probe connect to the meter in the same way.
Choose the probe you wish to use, then attach the probe to the Bluelab ORP Meter via the BNC fitting.

> **Note:** The Bluelab pH Probe is sold separately.

ORP probe / pH Probe Line up the lugs of the BNC probe connector with the receptacle on the Bluelab ORP Meter. Fasten securely by pushing the probe connector on and twisting one quarter turn.	 Push connector	 Twist & attach

Remove the storage cap

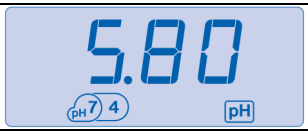
Remove the probe storage cap by gripping the top of the cap and gently twisting the base on rotation clockwise to loosen slightly. Next slowly slide the cap off the probe. **Do not** completely remove the base of the cap from the top of the cap.	

IMPORTANT
Both ORP and pH Probes need to be stored in KCL solution when not in use, add enough Bluelab KCL Storage Solution to the storage cap so that the probe tip is covered. Then replace the cap and store in a secure place.

IMPORTANT
Do Not use RO (Reverse Osmosis), Distilled or De-ionized water. Pure water changes the chemistry in the reference, causing the probe to die.

Mode Selection

Select the measurement mode by a short press of the 'CAL' button while the meter is on.

mV Mode	pH Mode
	

Measuring Oxidation-Reduction Potential

1. Connect the ORP Probe to the meter
2. Ensure the Bluelab ORP Meter is in mV mode
3. Gently swirl the ORP Probe in the solution to be measured until the mV reading stabilizes.

Note: A minimum of 30 seconds is recommended, though it may take several minutes, depending on the solution for the measurement to stabilize.

Calibrate the pH

If measuring pH, calibrate the Bluelab ORP Meter by following the instructions in section 3.0 of this manual.

Note: ORP probes do not require calibration as the Meter is factory calibrated.

IMPORTANT
This must be done before the Bluelab ORP Meter is used for the first time to measure pH.

3.0 pH Calibration

pH calibration is required before first use and then at least monthly to ensure readings are accurate. Bluelab recommend more frequent calibration with high use.

The pH calibration involves cleaning **the pH probe tip and then calibrating in TWO or THREE** calibration solutions**.**

For accurate pH readings the pH probe should be cleaned, and calibration carried out when:

- The device is using factory defaults (the calibration indicators are not lit).
- 30 days since the last pH calibration (calibration indicators are flashing).
- The reading is different to what you were expecting.
- The pH probe is replaced with a new one or disconnected from the Bluelab ORP Meter.
- The batteries have been removed and changed.

If the pH probe has been in use, it should be cleaned before pH calibration. See section 4.2 for pH probe cleaning. New pH probes do not need to be cleaned.

If you are calibrating to TWO points, remember:

If a reading below pH 7.0 is expected, use pH 7.0 and pH 4.0 calibration solutions. If a reading above pH 7.0 is expected, use pH 7.0 and pH 10.0 calibration solutions.

You would require calibration in THREE solutions if:

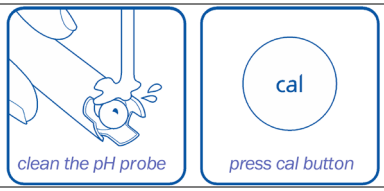
Readings above and below pH 7.0 are expected, use pH 7.0, pH 4.0 then pH 10.0 calibration solutions.

3.1 How to perform a pH calibration

To calibrate the pH

Clean pH probe tip.

See section 4.2 on how to clean the pH probe (the pH probe does not require cleaning before the first use).

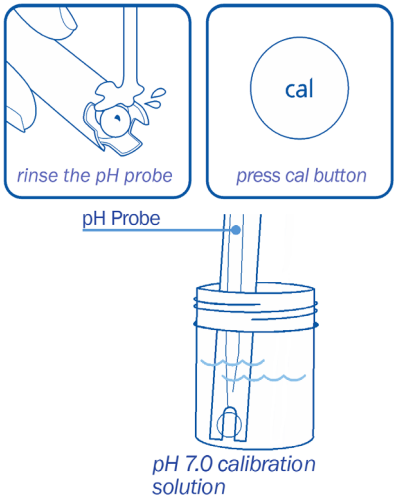


In several separate plastic containers, prepare a small amount of:

- fresh tap water
- pH 7.0
- pH 4.0 and/or pH 10.0 calibration solutions.

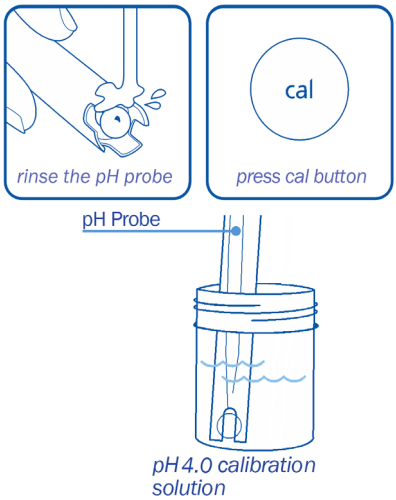
pH 7.0 calibration

1. Place ORP Meter into pH mode.
2. Rinse and place the clean pH probe tip in the pH 7.0 calibration solution.
3. Wait a few minutes for the probe to come to the same temperature as the solution.
4. Press and hold 'CAL' button until CAL appears on the screen and release.
5. A series of flashing '□'s will appear. Once calibration is successful, "PH7" will be displayed.
6. The pH 7 icon will become solid and the 4 icon will start flashing, indicating a second point is required.
7. The ORP Meter must be calibrated to two points. If after an hour the meter has not been calibrated with a second calibration point the calibration indicators disappear and the ORP Meter reverts to an uncalibrated state. Calibration is required.
8. Now you can calibrate to pH 4.0 and/or pH 10.0.



pH 4.0 or pH 10.0 calibration

1. Rinse and place clean pH probe tip in the pH 4.0 or pH 10.0 calibration solution.
2. Wait a few minutes for the probe to come to the same temperature as the solution.
3. Press and hold 'CAL' button until CAL appears on the screen and release.
4. A series of flashing '□'s will appear. Once calibration is successful, "PH4" or "PH10" will be displayed.
5. The successful calibration indicator 'pH 7 4' or 'pH 7 10' will appear on the screen.
6. Rinse the pH probe tip in fresh water.
7. The ORP Meter is now calibrated and ready to measure pH.
8. Probes require cleaning and calibrating at least every 30 days, more frequent with high use.



3.2 pH Calibration Tips

For best pH calibration

pH reading accuracy is dependent on the accuracy and age of the calibration solutions used and the use and cleanliness of the pH probe tip.

- Ensure the pH probe has been cleaned and rinse with clean water between calibration solutions to reduce contamination of the pH solutions.
- Only fresh uncontaminated solutions should be used.
- ALWAYS calibrate the pH probe with pH 7.0 then to pH 4.0 and/or pH 10.0.
- Allow for the pH probe to reach the same temperature as the solution.

Storage and use of calibration solutions

- Always place the lid back onto the bottle after use or evaporation will occur rendering the solutions useless.
- DO NOT measure directly into the bottle. Tip a small amount into a clean container and discard after use.
- Never add water to solutions.
- Store in a cool place.

4.0 Probe Care

4.1 Bluelab ORP probe and pH Probe care

ORP probes and pH probes DO NOT last forever. They age through normal use and will eventually fail. The lifetime of ORP and pH probes depends on the environment it is used in and the way that it is treated. To receive a long life from your Bluelab ORP or pH Probe, please ensure you follow the guide below.
pH and ORP probes contain glass and are therefore FRAGILE. With good care, they will give a long service life.

Bluelab ORP probe

DO NOT let the probe tip dry. IF IT DRIES IT DIES!
DO NOT plunge a cold probe into a hot liquid, or a hot probe into cold liquid.
Sudden temperature changes can crack the glass and permanently damage the probe.
DO NOT immerse in oils, proteins or suspended solids that will leave a coating on the glass bulb.
DO NOT 'kink' or bend the lead sharply.
DO NOT attempt to lengthen the lead on the probe.
DO NOT wet the BNC connector at the end of the lead.

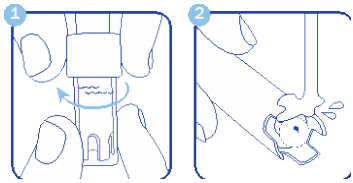
4.2 Cleaning Bluelab ORP Probes and pH Probes

To ensure accurate readings the pH probe tip needs to be rinsed in water and cleaned prior to calibration using the following instructions.
After cleaning, use the probe straight away, or place the storage cap on the probe tip. Always ensure the cap contains enough Bluelab pH Probe KCl Storage Solution to cover the probe tip.

Remove storage cap from ORP/pH probe.

Hold the top of the storage cap, twist the cap to loosen then remove.

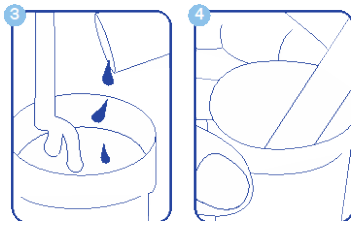
Rinse probe tip under fresh tap water.



Fill a small plastic container with clean tap water. Add a small amount of Bluelab pH Probe Cleaner or mild detergent (dishwashing liquid).

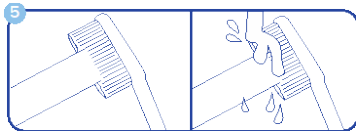
Gently stir the probe tip in the mixture. Ensure that you do not 'knock' the probe on the side of the container as this may cause damage to the probe.

Rinse well under fresh running water to remove all traces of the detergent mixture.



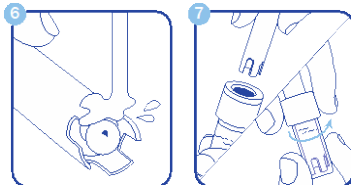
If the probe tip requires removal of heavy contamination:

Gently brush around the glassware with a few drops of Bluelab pH Probe Cleaner or mild detergent (dishwashing liquid) and a soft toothbrush.



Rinse well under fresh running tap water to remove all traces of the detergent mixture.

Calibrate pH probe after cleaning, see section 3.1. After cleaning/calibration use straight away or store the probe in the storage cap, ensuring there is enough KCl Storage Solution to cover the probe tip.



4.3 Hydrating the ORP probes and pH probes

Hydrate the probe in Bluelab pH Probe KCl Storage Solution when:

- the probe tip has not always been stored in KCl storage solution, to improve the reading response speed.
- the probe tip has been accidentally allowed to dry out.
- Never store the pH probe in RO (Reverse Osmosis), De-ionized or Distilled water. Pure water changes the chemistry in the reference, causing the probe to die.

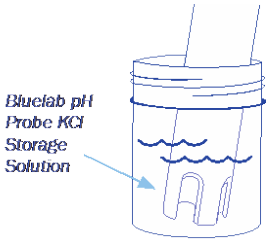
Clean the probe tip. Ensure the probe tip is cleaned before hydrating. See section 6.2 for instructions.

Add enough Bluelab pH Probe KCl Storage Solution to a plastic container to submerge the probe tip.

Loosen, then remove the storage cap (if required). Place the probe upright in a the KCl solution.

Leave to soak for up to 24 hours.

If rehydrating a pH Probe, always calibrate the pH probe to ensure accuracy, see section 5.1.



5.0 Storing the Bluelab ORP Meter

Store the Bluelab ORP Meter in a cool, dry and clean place when not in use.
Keep out of direct sunlight.
Keep Bluelab ORP Meter out of direct sunlight to prevent irreparable damage to the LCD reading display.
The Bluelab ORP Meter is not waterproof but will withstand occasional water splashes. If the meter is splashed, wipe dry as soon as possible.
Remove batteries if the meter is to be stored for a prolonged period.
Remove probe if storing the ORP Meter without use for longer than two to three weeks and check regularly that the ORP probe tip has not dried out.
When storing either the Bluelab ORP Probe or Bluelab pH Probe, the probe tip must be kept submerged in KCl solution in the storage cap.
DO NOT use RO (Reverse Osmosis), Distilled or Deionized water. Pure water changes the chemistry in the reference, causing the probe to die.

6.0 Troubleshooting & FAQ

6.1 Troubleshooting guide

Trouble	Reason	Correction
mV reading inaccurate	Contaminated Bluelab ORP Probe	Clean probe (see section 4.2).
	Probe not gently swirled during stabilization	Gently swirl the probe in the solution for a minimum of 30 seconds.
pH reading inaccurate	Contaminated Bluelab pH Probe / glassware not clean.	Clean probe (see section 4.2) then calibrate.
	Bridge contaminated blocked or dry.	Hydrate probe in KCl storage solution for 24 hours, (see section 4.3). Do not measure proteins or oils with this unit. Replace probe.
	Incorrect pH calibration.	Ensure calibration solutions are accurate. Replace if in doubt. Wait longer for readings to stabilize before calibrating to a constant value.
	pH calibration unreliable	Re-calibrate pH Probe (see section 3.0).
	pH probe damaged or old.	Replace pH probe.
	Calibration temperature different to measuring temperature.	Re-calibrate pH probe with calibration solutions at the same temperature readings will be taken in.
pH reading does not change from solution to solution	Broken glass bulb, tube or connector.	Check pH probe for damage. Replace pH probe.
Displays low battery indicator	Insufficient power to take a reliable reading.	Replace the batteries. DO NOT use rechargeable batteries.
No display	Batteries dead or inserted incorrectly.	Check batteries are inserted correctly. Replace if necessary.
Displays shows 'Err"	pH Calibration has failed: • Calibration solutions contaminated • Wrong solutions used • pH probe contaminated • pH probe not correctly attached • pH probe old or damaged • Calibrate to pH 7.0 FIRST then to pH 4.0/10.0	Check pH probe for damage, clean if necessary and calibrate in fresh solutions. Replace probe.
Displays shows 'Ur" or "Or"	Reading is outside of the operating range for the connected probe	Dilute solution. Check attached probe for damage.

6.2 Frequently asked questions

Question	Answer
There are white crystals on the end of my probe, is it broken or previously used?	No, these are Potassium Chloride KCl crystals which can form if the hydration solution has evaporated. Wash these off under tap water, then refill the storage cap with KCl storage solution to rehydrate the probe overnight before use.
How do I reset pH calibration to "Defaults"?	The pH probe can be calibrated at anytime. Follow the calibration steps in section 3.1. Hold <CAL> button down till "pH Calibration Reset to Default" is displayed then press '↵' to reset.
Can ORP be calibrated?	The ORP probe does not require calibration, ensure the probe is clean and hydrated following instructions in this manual to maintain reliable readings.
What ORP should I be aiming for?	This will vary for different growers and applications. Generally the higher the mV number the higher the sanitizing power of the solution however too high can have adverse effects too such as causing root burn. It's recommended to contact your chemical supplier to find out what's appropriate for your application.
The readings aren't in the range I was expecting.	Ensure you're in the correct mode with the sensor you have connected. ORP sensor should display mV on the LCD whereas if you're using a pH sensor then pH should be displayed.

7.0 Specifications

7.1 Technical specifications

	mV	pH*
Resolution	1mV*	0.1 pH
Accuracy at 25°C/77°F	±5mV	±0.1 pH
Calibration	--	Two-point or Three-point (pH 7.0 and pH 4.0, and/or pH 10.0)
Range	±1000mV	0.0-14.0
Operating environment	0 - 50°C / 32 - 122°F (Do not use or store outside of this temperature range)	
Power source	2 x AAA Alkaline batteries	
User Manual languages	English	

*10mV in negative range -1000 - 0mV

Note Bluelab pH Probe sold separately.

8.0 Accessories & Warranty

8.1 ORP Probe and pH Probe replacement

ORP probes and pH probes do not last forever.
They age through normal use and will eventually fail.
To get the most life out of your probes, please read the instructions provided with it.

8.2 Probe Care Kits

The instrument is only as accurate as the probe is clean!
Probe cleaning is one of the most important parts of owning and operating any Bluelab meter, monitor or controller.
If the probe is contaminated (dirty) it affects the accuracy of the reading displayed.

Bluelab Probe Care Kit – pH contains:	
› Probe care instructions	**› Bluelab pH Probe Cleaner**
› 3 x plastic cups	**› Toothbrush (pH probe cleaning instrument)**
› 20ml single-use Bluelab Solution Sachets, 2 each of: pH 7.0 & pH 4.0, KCl	

8.3 ORP/pH Probe KCl Storage Solution

The best solution to store and hydrate your Bluelab ORP and pH products. Bluelab pH Probe KCl Storage Solution increases response time and maximizes the life of Bluelab pH probes. Use the KCl solution monthly to hydrate the pH probe after use.

8.4 Bluelab limited warranty

Comes with a 5-year limited warranty; 6-months for the Bluelab ORP Probe. Details available at bluelab.com/product-warranty

9.0 Get in touch

If you need assistance or advice - we're here to help you.
Email: support@Bluelab.com

Looking for specifications or technical advice?
Visit us online at Bluelab.com or facebook.com/Bluelabofficial

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