bluelab®
combo meter

Care and use guide

Contents

CE FC

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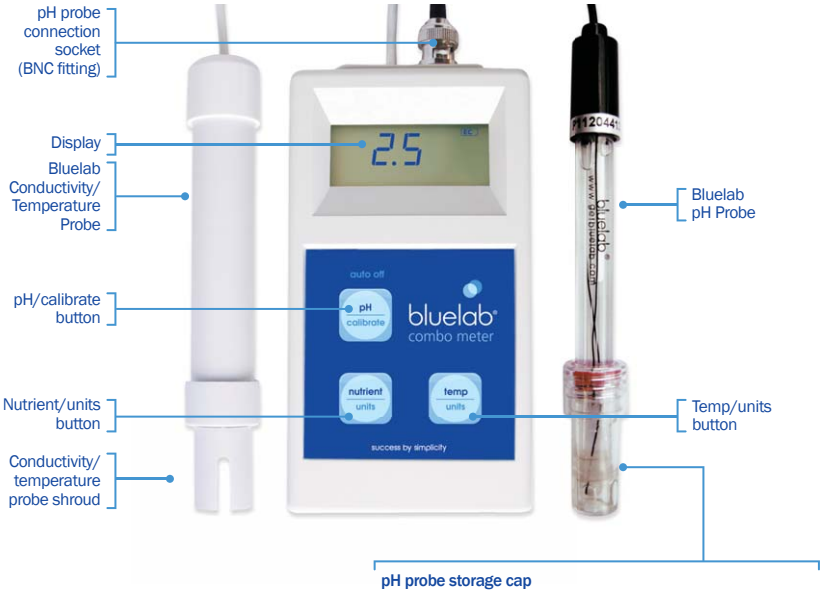
Features

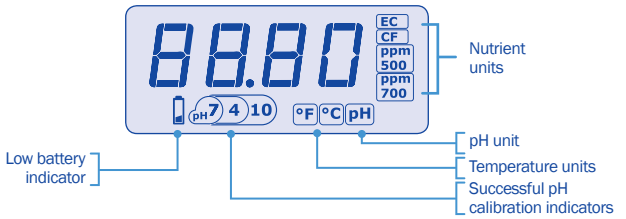
Measures pH, conductivity / nutrient (EC, CF, ppm 500 and ppm 700) and temperature (°C, °F)	
Lightweight and portable	Replaceable double junction pH probe
Large easy to read display	Over range and under range indicators
Simple push button pH calibration	Low battery indicator
Successful pH calibration indicator	2 x AAA alkaline batteries included
No calibration required for conductivity and temperature	Auto off function

Bluelab Combo Meter



pH probe storage cap

The pH probe tip must not be allowed to dry out. Always place the storage cap back onto the pH probe after each use. Ensure the cap contains enough Bluelab pH Probe KCl Storage Solution to cover the probe tip.



ATTENTION
If it dries, it dies!

Keep your pH probe tip wet
at all times to avoid permanent damage

1.0 Introduction

The Bluelab Combo Meter has three press buttons; 'pH / calibrate', 'nutrient / units' and 'temp / units'. The buttons have a short press and long press function. A short press means a button is released in about one second. The long press is a button being held for at least three seconds and released when the display starts flashing.

Turning the Combo Meter on

1. A short press of any button turns the Combo Meter on. The Combo Meter automatically turns off after four minutes if no buttons are pressed. If the Combo Meter turns off before the reading is taken, a short press of any button will turn the Combo Meter on again.

2.0 Preparing for use

The following tasks must be performed before the Bluelab Combo Meter is used for the first time.

1. **Insert batteries.**
   See section 6.0.

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

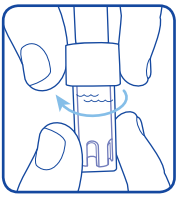
Inserting Twisting Attached

Attaching the Bluelab pH Probe to the Meter

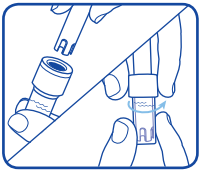
3. **Remove the storage cap**
   a) Remove the pH probe storage cap by gripping the top of the cap and gently twisting the base one rotation clockwise to loosen slightly. Next slowly slide the cap off the pH probe.
   DO NOT completely remove the base of the cap from the top of the cap.

   CAUTION: When the pH probe is not in use, add enough Bluelab pH Probe KCl Storage Solution to the storage cap so the probe tip is covered. Then replace the cap and store in a secure place.

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



Removing pH probe storage cap



Ensure probe tip is covered by the KCl storage solution in cap

4. **Calibrate the pH**
   Calibrate the combo meter by following the instructions in section 3.0 of this manual.
   This must be done before the Combo Meter is used for the first time.

See section 3.0 for calibration steps

3.0 Calibration

pH calibration is required before first use to ensure that the first reading is accurate.

- *The Bluelab Conductivity/Temperature Probe DOES NOT require calibration.*
- *The pH of the Bluelab Combo Meter DOES require calibration.*

For accurate pH readings the pH probe is cleaned and recalibrated when:

- The reading is different to what you were expecting.
- The batteries have been removed or changed.
- The pH probe is replaced with a new one or is disconnected from the Combo Meter.
- The pH calibration indicators have disappeared.

When calibrating the pH after first use the pH probe needs to be cleaned. See pH probe cleaning in section 8.0.

For best pH calibration

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

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

NOTE: The conductivity/temperature probe does not need to be calibrated, but must be cleaned to remove any build up of nutrient salts. See Section 7.0.

The pH calibration involves cleaning the pH probe tip and then calibrating in TWO SOLUTIONS.

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.
Follow the steps on the following page for Combo Meter pH calibration.

Storage and use of calibration solutions

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

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

3.0 Calibration cont.

To calibrate the pH

1 Clean pH probe tip.

See Section 8.0 (the pH probe does not require cleaning before the first use).

2 pH 7.0 calibration

a) Turn pH meter on. Rinse pH probe tip in fresh water, shake off excess water and place in a pH 7.0 calibration solution. Wait for at least one minute or longer if required for reading to stablize to a constant value.

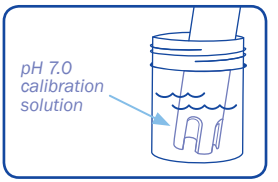
b) Long press the 'calibrate' button. When the display shows CAL release button.

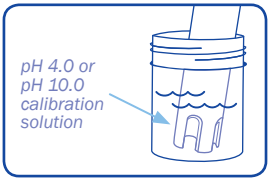
pH 7 indicator is displayed indicating a successful pH 7 calibration.

The pH 4 indicator will now flash indicating pH 4.0 or pH 10.0 calibration is now required.

c) If Err appears during the calibration process see Section 11.0.

d) The combo meter must be calibrated to two points. If after an hour the combo meter has not been calibrated with a second calibration point the calibration indicators disappear and the combo meter reverts to an uncalibrated state. Calibration is required.





3 pH 4.0 / 10.0 calibration

a) Rinse the pH probe tip in fresh water, shake off excess water and place the pH probe tip in either pH 4.0 or pH 10.0 calibration solution.

b) Wait for at least one minute for reading to stabilize to a constant value.

c) Long press the 'calibrate' button. When the display shows CAL release button.

pH 7 / pH 4 is displayed

or pH 7 / pH 10 is displayed

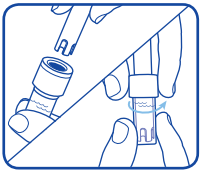
d) The pH meter is now calibrated and ready for use.

e) After 30 days, the calibration indicators disappear to let you know calibration is required.

Successful pH 7 and pH 4 calibration

4 Store the pH probe

Add enough Bluelab pH Probe KCl Storage Solution into the probe storage cap to fully submerge the pH probe tip. Place storage cap on probe.



Ensure probe tip is covered by the KCl storage solution in cap

4.0 Changing nutrient and temperature display units

Nutrient and temperature can be displayed in different units. The units available are shown in the tables below.

Changing nutrient units displayed

1 To select unit

a) Press and hold the 'nutrient/units' button until the display starts flashing.

Release, then short button press the same button to scroll through the available units.

Release when the required unit is displayed.

b) The display flashes four times after the last button press then returns back to a normal display, showing the selected unit.

Display	Conductivity/nutrient units
EC	Electrical conductivity
CF	Conductivity factor
ppm 500	Parts per million (TDS) EC x 500
ppm 700	Parts per million EC x 700

Changing temperature units displayed

1 To select unit

a) Press and hold the 'temp/units' button until the display starts flashing.

Release, then short button press the same button to scroll through the available units.

Release when the required unit is displayed.

b) The display flashes four times after the last button press then returns back to a normal display, showing the selected unit.

Display	Temperature units
°C	°C (degrees Celsius)
°F	°F (degrees Fahrenheit)

5.0 Measuring hydroponic elements

The values measured in a hydroponic solution by the Bluelab Combo Meter include nutrient (conductivity), temperature and pH levels.

Taking a conductivity/nutrient reading

1. Short press the 'nutrient/units' button to select conductivity.
2. Insert the conductivity/temperature probe into solution where there is strong movement of the solution, or stir the solution with the conductivity/temperature probe.
3. Wait 1-2 minutes or longer for the conductivity/temperature probe to reach solution temperature. The conductivity reading will stabilize to a constant value.
4. If the solution you are measuring is outside the measurement range of the Combo Meter, an 'Or' (over range) will be displayed.

NOTE: The conductivity/temperature probe tip should be cleaned at least once a month to remove salt build-up ensuring accurate readings. If oily additives are being used the conductivity/temperature probe tip should be cleaned after each use. See Section 7.0.

Taking a temperature reading

1. Short press the 'temp/units' button to select temperature.
2. Insert conductivity/temperature probe into the solution.
3. Wait 1-2 minutes or longer for conductivity/temperature probe to reach solution temperature. The temperature reading will stabilize to a constant value.
4. If the solution you are measuring is outside the measurement range of the Combo Meter, a 'Ur' (under range) or 'Or' (over range) will be displayed

NOTE: For very cold or very hot temperatures it will take 4-5 minutes for the conductivity/temperature probe to reach solution temperature. To help decrease time taken to reach the solution temperature, place the conductivity/temperature probe in an area where there is strong movement of solution, or stir solution with the conductivity/temperature probe.

Taking a pH reading

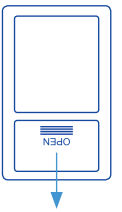
1. Short press the 'pH/calibrate' button to select pH.
2. Remove the storage cap from the pH probe and place the pH probe into the solution.
3. Wait 1-2 minutes or longer for reading to stabilize to a constant value. The pH reading is displayed.
4. If the solution you are measuring is outside the measurement range of the Combo Meter, a 'Ur' (under range) or 'Or' (over range) will be displayed.

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

6.0 Battery replacement

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

1. Open battery compartment by sliding the back cover down and insert 2 x AAA batteries as shown on the battery holder. Slide cover back on.
   NOTE: Alkaline batteries are recommended.
2. **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.



7.0 Cleaning the conductivity/temperature probe

Cleaning the Bluelab Conductivity/Temperature Probe

Cleaning the conductivity/temperature probe periodically ensures accurate readings.

The conductivity/temperature probe is cleaned using the Bluelab Conductivity Probe Cleaner, or "Jif" a trade name for a liquid scourer cream used in home bathrooms and kitchens. Similar products are called "Liquid Vim", "Soft Scrub", "Cif cream", or "Viss". Never use scented varieties as they contain oils that contaminate the conductivity/temperature probe.

Follow the steps below to clean the conductivity/temperature probe.

1. **Remove shroud.**

   Warm the shroud in your hand for a few seconds to help with removal. Hold the body and pull the shroud off.

2. **Clean the conductivity probe face.**

   Place one or two drops of Bluelab Conductivity Probe Cleaner onto the probe face and rub with the Bluelab Chamois or your finger firmly and vigorously.

3. **Rinse the conductivity probe face.**

   Rinse off all traces of cleaner under running tap water while scrubbing the probe face with the other side of the Bluelab Chamois or the same finger.

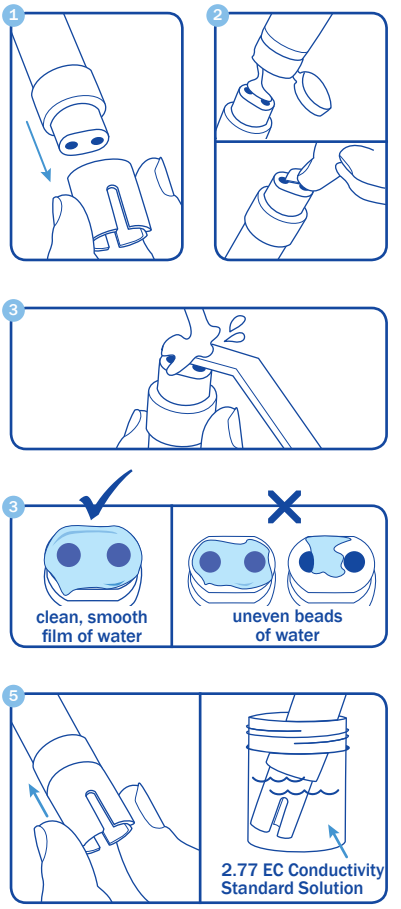
4. **Check that the water forms a smooth film on the probe face. Ensure you have a clean, smooth film without any beads of water.**

   If you have beads of water, repeat steps 2 and 3.

5. **Refit the shroud and test in 2.77 EC Conductivity Standard Solution to ensure adequate cleaning.**

   Place the probe tip into the solution, wait for the reading to stabilize to a constant value. This can take a few minutes while the probe adjusts to the temperature of the solution.

   Repeat the cleaning process if the reading given is not within 0.1 EC, 1 CF, 50 ppm or 70 ppm of the values in the table below.



Testing the Bluelab Conductivity/Temperature Probe

The conductivity/temperature probe is tested in either 2.77EC/27.7CF/1385 ppm or 1940 ppm solution depending on the unit of conductivity chosen.

Use the standard solutions in the table to the right. Bluelab solutions are recommended.

Unit chosen	EC	CF	ppm 500	ppm 700
Solution required	2.77	27.7	1385	1940

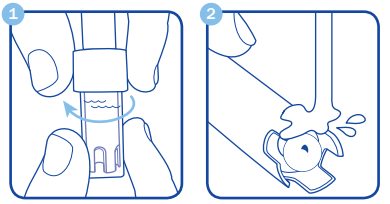
NOTE: The shroud **MUST** be left on the probe when taking readings.

8.0 Cleaning the Bluelab pH Probe

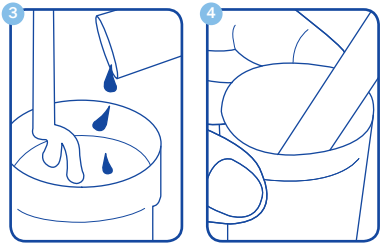
To ensure accurate readings the pH probe tip needs to be rinsed in water after each use and cleaned prior to calibration using the following instructions.

The storage cap must always be put back on after cleaning. Always ensure it contains enough Bluelab pH Probe KCl Storage Solution to cover the probe tip.

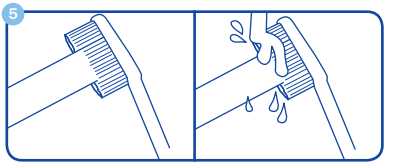
1. **Remove storage cap from pH probe.**
   Hold the top of the storage cap, twist the cap to loosen then remove.
2. **Rinse pH probe tip under fresh tap water.**
   Never use RO (Reverse Osmosis), Distilled or De-ionized water.



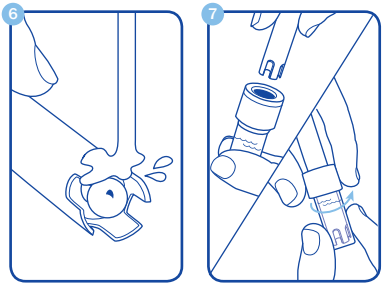
3. **Fill a small plastic container with clean tap water.**
   Add a small amount of Bluelab pH Probe Cleaner or mild detergent (dishwashing liquid).
4. **Gently stir the probe tip in the mixture.**
   Ensure that you do not 'knock' the soil pH probe on the side of the container as this may cause damage to the probe.
   Rinse well under fresh running water to remove all traces of the detergent mixture.



5. **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.



6. **Rinse well under fresh running tap water to remove all traces of the detergent mixture.**
7. **Calibrate pH probe after cleaning, see section 3.0**
   After calibration, store pH probe in the storage cap, ensuring there is enough KCl Storage Solution to cover the probe tip.



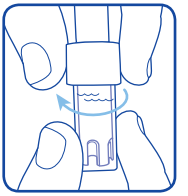
9.0 Hydrating the pH probe

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

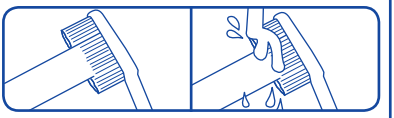
- *the probe tip has not always been stored in KCl storage solution, to improve the reading response speed.*
- *the probe tip has been accidentally allowed to dry out*

Never use RO (Reverse Osmosis), De-ionized or Distilled water.
Pure water changes the chemistry in the reference, causing the probe to die.

1. **Loosen, then remove the storage cap.**
   Place the pH probe upright in a plastic container.

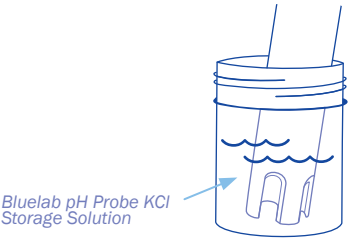


2. **Clean the pH probe tip.**
   Ensure the probe tip is cleaned before hydrating. See section 8.0 for instructions.



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

4. **Leave to soak for at least 24 hours.**
   After hydration, always calibrate the pH probe to ensure accuracy, see section 3.0.



10.0 Storing the Bluelab Combo Meter

1. **Store the Combo Meter in a cool, dry and clean place when not in use.**

2. **Keep out of direct sunlight.**
   Keep Combo Meter out of direct sunlight to prevent irreparable damage to the LCD reading display.

3. **The Combo Meter is not waterproof but will withstand occasional water splashes.**
   If the Combo Meter is splashed, wipe dry as soon as possible.

4. **Remove batteries if the Combo Meter is to be stored for a prolonged period.**

5. **Remove pH probe if storing the Combo Meter without use for longer than two to three weeks and check regularly that the pH probe tip has not dried out.**

   When storing the pH probe, the pH probe tip must be kept moist.

   To prepare the pH probe for storage, add enough Bluelab pH Probe KCl Storage Solution to the storage cap so the probe tip is covered. Then replace the cap and store in a secure place. DO NOT use RO (Reverse Osmosis), Distilled or De-ionized water. Pure water changes the chemistry in the reference, causing the probe to die.

11.0 Error messages

An error message will only appear following pH calibration failure.

'Err' will be displayed for a few seconds then the display will show the previous reading. Successful pH calibration indicators will disappear. The Bluelab Combo Meter is in an uncalibrated state, therefore recalibration is required. See causes of Error messages below.

Possible causes for an 'Err' message:

Calibration solutions contaminated
Wrong solutions used
pH probe contaminated
pH probe not properly attached
pH probe worn out or damaged
Calibrate to pH 7.0 FIRST then to pH 4.0/10.0

12.0 Technical specifications

	pH	Conductivity	Temperature
Measurement range	0.0 - 14.0 pH	0 - 9.9 EC 0 - 99 CF 0 - 4950 ppm 500 (TDS) 0 - 6930 ppm 700	0 - 50 °C 32 - 122 °F
Resolution	0.1 pH	0.1 EC 1 CF 10 ppm 500 (TDS) 10 ppm 700	1 °C 1 °F
Accuracy (at 25 °C/ 77 °F)	±0.1 pH	±0.1 EC ±1 CF ±50 ppm ±70 ppm	±1 °C ±2 °F
Calibration	Two point pH 7.0 and pH 4.0 or pH 10.0	Not required (factory calibrated)	Not required (factory calibrated)
Temperature compensation	Not applicable	Automatic temperature compensation	Not applicable
Operating environment	0 - 50 °C / 32 - 122 °F		
Power source	2 x AAA alkaline batteries		

13.0 Troubleshooting guide

Trouble	Reason	Correction
Nutrient reading low	Contaminated conductivity/ temperature probe.	Clean conductivity/temperature probe (see Section 7.0).
	Solution temperature low/ high.	Wait 5 to 10 minutes for reading to stabilize to a constant value.
Temperature reading inaccurate	Temperature of conductivity/temperature probe different to solution temperature.	Wait 5 to 10 minutes for conductivity/ temperature probe to reach solution temperature.
pH reading inaccurate	Contaminated pH probe / glassware not clean.	Clean pH probe (see Section 8.0); then calibrate (see Section 3.0).
	Wick contaminated, blocked or dry.	Hydrate probe in KCl storage solution for 24 hours, see Section 9.0. Do not measure proteins or oils with this unit. Replace unit.
	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.	Calibrate pH probe (see Section 3.0).
	pH probe damaged or old.	Replace pH probe.
pH reading does not change from solution to solution	Broken glass bulb, tube or connector.	Check pH probe for damage. Replace 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.
Display shows 'Err'	Problem with pH calibration.	See error message descriptions in Section 11.0 of this document.
Or Ur While in pH mode	Over range pH. Under range pH.	Solution > 14.0 pH. Solution < 0.0 pH. Check pH probe connection. pH probe could be faulty. Combo Meter could be wet inside.
Or Ur While in temp mode	Over range temperature. Under range temperature.	Solution >51 °C / 122 °F. Solution <0 °C / 32 °F. Conductivity/temperature probe or Combo Meter faulty.
Or While in conductivity/ nutrient mode	Over range conductivity/nutrient.	Over range conductivity >9.9 EC, 99 CF, 4950 ppm 500, 6930 ppm 700. Conductivity/temperature probe or Combo Meter faulty.

Bluelab pH Probe replacement

The Bluelab pH Probe is the only part of the Bluelab pH Meter that requires replacing.

pH probes do not last forever. They age through normal use and will eventually fail.

To ensure you receive a long life from your pH probe, please read the instructions provided with it.

When the time comes to replace your Bluelab pH Probe all you have to do is order a replacement from your supplier!

Bluelab 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.

pH

Conductivity

Bluelab Probe Care Kits - available in:

- Bluelab Probe Care Kit - pH
- Bluelab Probe Care Kit - Conductivity

Kits contain instructions and all the tools you need to clean Bluelab probes or pens.

Bluelab pH Probe KCl Storage Solution

The perfect solution to store and hydrate your Bluelab pH products.

Bluelab pH Probe KCl Storage Solution is designed to increase response time and maximize the life of Bluelab pH pens and pH probes.

For best results, use the KCl solution to store the pH pen/ probe after use and hydrate monthly.

Instructions are on the label of the bottle.

Use Bluelab pH Probe KCl Storage Solution with:

- Bluelab pH Pen
- Bluelab pH Probes
- Bluelab Soil pH Pen
- Bluelab Soil pH Probes

Bluelab Combo Meter product guarantee

Bluelab Corporation Limited guarantees this product for a period of **5 years (60 months)** from the date of sale to the original purchaser. (This guarantee does not cover the Bluelab pH Probe. The Bluelab pH Probe is covered by a separate 6 month guarantee.)

The product will be repaired or replaced should it be found faulty due to component failure, or faulty workmanship. The faulty product should be returned to the point of purchase.

The guarantee is null and void should any internal parts or fixed external parts be tampered with or altered in any way, or should the unit have been incorrectly operated, or in any way be maltreated. This guarantee does not cover reported faults which are shown to be caused by any or all of the following: Contaminated measuring tip (see instruction manual for cleaning instructions), flat or damaged batteries or batteries that have been incorrectly inserted, or damaged battery contacts or connections caused by incorrect battery replacement, or ingress of moisture into the meter case.

NO RESPONSIBILITY will be accepted by Bluelab or any of its agents or resellers should any damage or unfavourable conditions result from the use of this product, should it be faulty or incorrectly operated.

Register your guarantee online at www.getbluelab.com

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vimeopro.com/bluelab/videos

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

Looking for specifications or technical advice?
Visit us online at **www.getbluelab.com**

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