



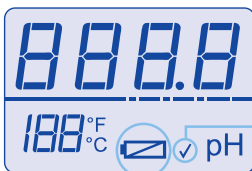
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## Features

Direct pH and temperature measurements from soils/media	Selectable units for temperature
	Automatic Temperature Compensation (ATC)
Backlit LCD display	Low battery indicator
Hold reading function	Fully waterproof
Integrated storage cap/dipper	Auto off function
Successful pH calibration indicator	Fully guaranteed for 1 year

## Quick guide



**Check mark/tick to indicate successful pH calibration**

Disappears 30 days after last successful calibration as a reminder calibration is due.

### Low battery warning

Appears when batteries are low.

### Power button / hold

Short press to turn on. Short press to hold and unhold reading. Long press to turn off.

### Calibrate button

See calibration section.

### Units button

Press and hold until units flash then short press to change units. Screen will change back to main display when no buttons have been pressed for 4 seconds.

### Storage cap/dipper

Create a pathway in the soil/media before taking a measurement with the pH probe. Use to store the pH probe tip, to keep it wet at all times.

## ATTENTION:

### Always loosen the cap!

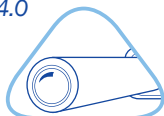
**Check for the gap.** Always loosen the cap before removing or placing on the pH probe tip. Refer to section 2.0

### FRAGILE Glassware

**The pH probe contains a glass tube and a glass bulb.** DO NOT drop, knock or bend. Refer to section 4.0

### If it dries, it dies!

**Keep your probe tip wet** at all times to avoid permanent damage. Refer to section 4.0





## 1.0 Before first use begins

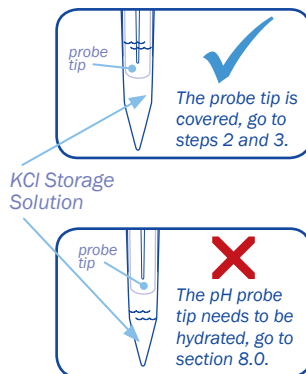
**ATTENTION:** Salt-crust forming on the pH probe is normal. A small amount of KCl solution from the storage cap/dipper may leak out leaving a salt-crust. This does not affect the probe and is normal.

The following tasks must be performed before the **Bluelab Soil pH Pen** is used for the first time.

### 1 Check the soil pH probe tip is covered with KCl storage solution

pH probes need to be kept wet at all times. Before you remove the storage cap/dipper, check how much Bluelab pH Probe KCl Storage Solution is in the cap.

- a) Stand the soil pH pen upright. There should be enough KCl storage solution to cover the pH probe tip. If the probe tip is covered, go to steps 2 & 3.
- b) If the probe tip is NOT submerged in KCl storage solution, you will need to hydrate the soil pH probe before use. Remove the storage cap (see section 2.0), then go to section 3.0 for hydration steps.



### 2 Removing and replacing the storage cap/dipper

**IMPORTANT:** Pulling the cap off, or placing the cap on, without loosening first will break the probe. See section 2.0 for more details.

### 3 Calibrate the Soil pH Pen before the first use to ensure accurate readings.

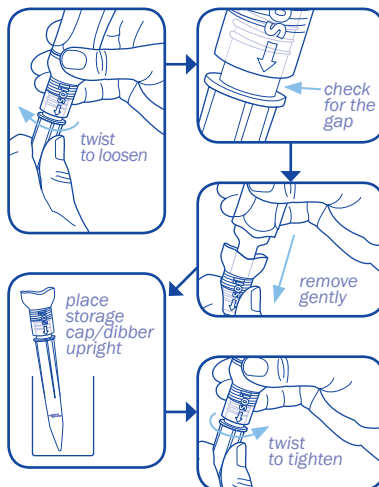
Go to section 11.0 for calibration steps.

## 2.0 Removing and replacing the storage cap/dipper

**IMPORTANT:** Always loosen the storage cap/dipper before removing or replacing from the probe.

### 1 To remove the storage cap/dipper

- a) Grip the top and twist the dipper a few times to the left to loosen. You'll know the cap is loose when you can see a gap between the cap and the dipper.
- b) Slide the storage cap/dipper off.
- c) Place cap upright, in a cup or similar container so that the KCl storage solution doesn't spill out.



### 2 To replace the storage cap/dipper

Place the loosened storage cap/dipper gently on the probe, sliding until it stops moving up.

Grip the top and twist the cap to the right until secure.



### 3.0 Hydration

Hydrate the soil pH pen 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

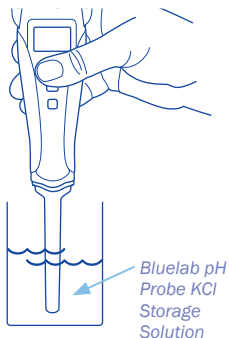
Never use RO, Deionized or Distilled water. Pure water changes the chemistry in the reference, causing the probe to die.

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

**2 Clean the pH probe tip.**  
Ensure the probe tip is cleaned before hydrating. See section 9.0 for instructions.  
*Cleaning before the first use is not required.*

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

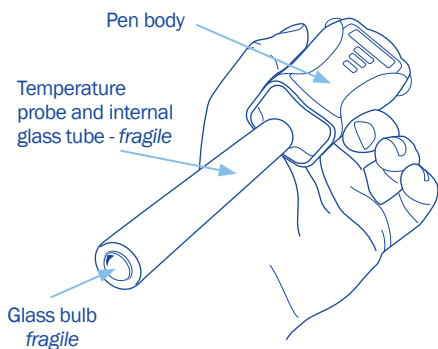
**4 Leave to soak for at least 24 hours.**  
After hydration, always calibrate the soil pH pen to ensure accuracy, see section 11.0.



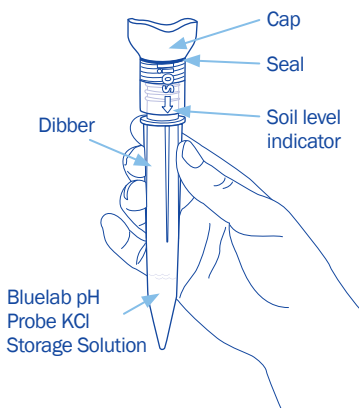
### 4.0 IMPORTANT - Soil pH Pen probe care

To ensure you receive a long life from your Soil pH Pen, please ensure you follow the guide below.

#### Soil pH Pen body & probe



#### Storage cap/dibber



#### The Soil pH Pen probe is fragile

- DO NOT drop, knock or exert a sideways force on the probe.
- Avoid sudden temperature changes.

Note: this section continues on next page...



## 4.0 IMPORTANT - Soil pH Pen probe care cont.

### The soil pH probe does not last forever

- Probes do not last forever. They age through normal use and will eventually fail. The lifetime of a probe depends on the environment it is used in and the way it is treated.
- Always loosen the cap before removing or replacing the storage cap/dibber.
- This probe is suitable to use in temperatures between 0 - 50 °C / 32 - 122 °F only.
- Chemically aggressive, abrasive or oily samples will reduce the life of the probe.

### The Soil pH Pen probe requires cleaning at least once a month and prior to calibrating

Cleaning the glassware is critical to obtaining accurate measurements.

The calibration check mark will disappear from the soil pH pen screen 30 days after the last successful calibration to remind you it is time to clean and calibrate again.

### Storing the Soil pH Pen

*The probe tip must be kept wet - if it dries, it dies!*

To prepare the probe for storage, place enough Bluelab pH Probe KCl Storage Solution, to cover the probe tip, into the storage cap/dibber. Never use RO, distilled or deionized water. Place the loosened cap over the probe tip and tighten (see section 2.0).

### Long term storage

For long term storage, sit the Soil pH Pen upright, ensuring the storage cap/dibber contains enough Bluelab pH Probe KCl Storage Solution to cover the probe tip . Check each month to ensure the liquid has not evaporated.

### If the probe has been accidentally allowed to dry out:

The probe must be 'hydrated' by soaking for 24 hours in KCl storage solution, refer to section 3.0 for details. Following this; carry out a calibration to check if the probe has already suffered permanent damage, see section 11.0.

**DO NOT** let the probe tip dry. IF IT DRIES IT DIES!

**DO NOT** exert sideways force, drop or knock the pen. This will break its external glass bulb or internal glass tube.

**DO NOT** touch the glass bulb with your fingers as this will contaminate the glass.

**DO NOT** plunge a cold probe into a hot liquid (or vice versa). Sudden temperature changes can crack the glass and permanently damage the pen.

**DO NOT** immerse in oils, proteins or suspended solids that will leave a coating on the glass bulb.

**DO NOT** remove or place the storage cap/dibber back onto the probe without first loosening the cap, as you could reduce the life of the probe.

**DO NOT** store, soak or rinse the pH probe in RO (Reverse Osmosis), Distilled or Deionized water. Pure water changes the chemistry in the reference, causing the probe to die.



## 5.0 To operate

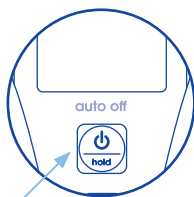
### 1 Turn Soil pH Pen on

Press power button. The last measurement is recalled for 3 seconds.

### To turn Soil pH Pen off

Press and hold the power button until OFF is displayed.

**NOTE:** The Soil pH Pen will automatically turn off after 4 minutes to conserve battery power.

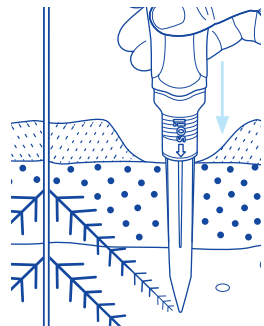


Power button

### 2 Measure pH

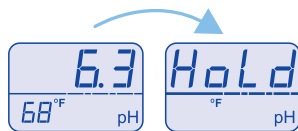
- With the storage cap/dibber on the pen, press the Soil pH Pen into the sample area until it reaches the word 'soil' at the top of the dibber. Remove gently from soil or substrate, leaving a small hole.
- Remove storage cap/dibber (refer to section 2.0 for instructions). Turn the Soil pH Pen on, then place pH probe into the newly made hole in the soil or substrate. Do not exert sideways pressure. Wait for the reading to reach a constant value.

**NOTE:** Never make a hole in the soil or substrate with the pH probe. **Always** use the storage cap/dibber.

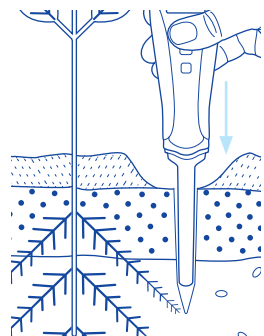


### 3 To hold reading

If you want to "hold" the reading on the screen, short press the power button. To exit the hold function, short press the power button again.



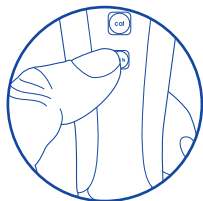
1 second alternating displays



### 4 To change temperature units

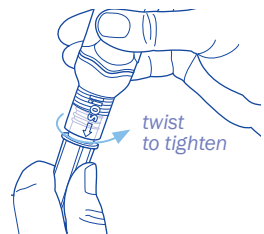
Hold down the units button for 3 seconds until the temperature units start flashing. Release. Short press the units button again to cycle between °F and °C. To exit this mode don't press anything for 3 seconds.

**NOTE:** You can change units while in hold mode.



### 5 Rinse and place on the storage cap/dibber

To ensure accurate pH readings always rinse the probe in clean fresh tap water before placing on the storage cap/dibber. Ensure there is enough BlueLab pH Probe Storage Solution in the storage cap/dibber to cover the probe tip. To place the storage cap/dibber back on, see section 2.0.





## 6.0 Information about measuring the pH of soils/media

pH is the measurement of the hydrogen ion concentration ( $H^+$ ) - acidity and its opposite, alkalinity. Neutral pH is 7.0 pH. Acidity measures below seven pH (7.0 pH) with alkalinity measuring above it (7.0 pH). See chart below.

### In soils or growing media, pH strongly influences the availability of nutrients and the presence of microorganisms in the soil.

Certain plants require a particular pH range to enable the required nutrients to be consistently available to the plant. If the solution is too acidic or too alkaline it can cause “lock up” – a situation which restricts certain elements essential for growth from being absorbed by the root structure. This in turn reduces plant health and performance. Deficiencies in the required elements become apparent in plant growth and can lead to crop failure.

Low soil pH causes aluminium and manganese toxicity in plants and reduces the availability of soil phosphorus. High soil pH also reduces soil phosphorus availability and reduces micro nutrients such as zinc and boron to plants.

The chart below shows how nutrient pH levels influence the uptake of certain elements.

Recommended pH range  
for plants grown in:

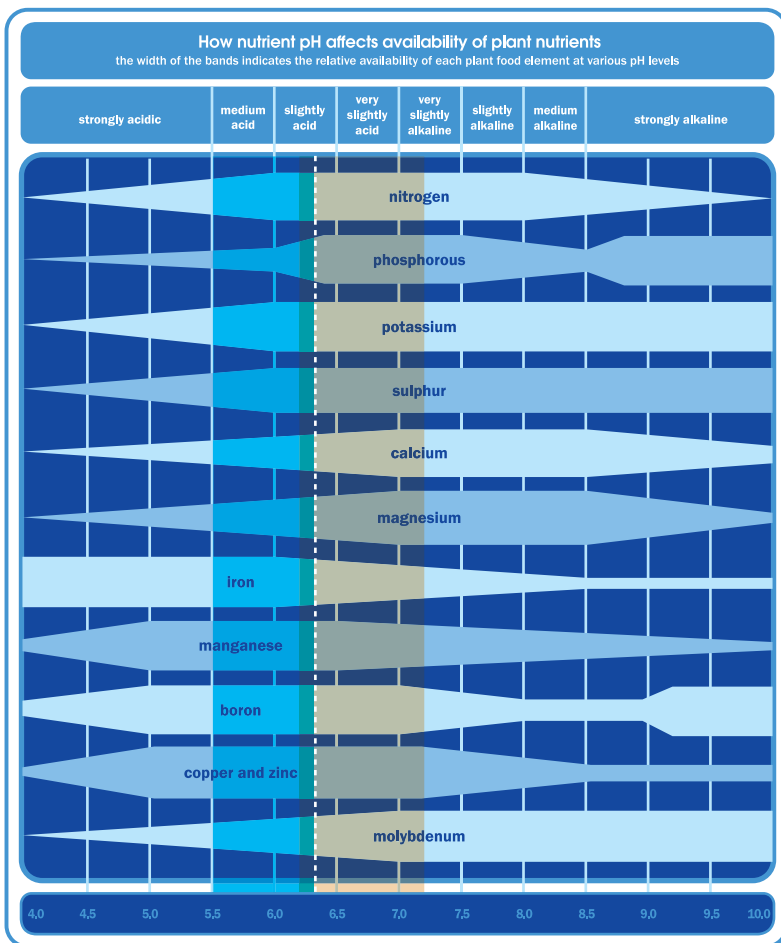
Solution

5.5 - 6.3

Soil

6.2 - 7.2

can be plant specific





## 6.0 Information about measuring the pH of soils/media cont.

*Taking pH measurements of soils with an electronic meter is indicative rather than absolute.*

*The following factors are outside the control of any soil pH meter, so to minimise their effect on the accuracy of the pH measurement you should consider the following precautions:*

### **Moisture level/raw water**

If the sample you are wishing to measure is dry, add RO water or distilled water to moisten. Ideally wait 24 hours before you take a measurement.

**NOTE:** If you add tap water, you will influence the soil pH reading based on the pH of the tap water.

### **Calibration of the Soil pH Pen and cleanliness of the soil probe tip**

Calibrating the Soil pH Pen at least monthly will ensure accurate readings. Cleaning the soil residue from the probe tip and storing the Soil pH Pen in a clean moist state will provide reliable readings as well as prolonging the pens life.

### **Sample selection**

For field testing, remove the top 5 - 10 cm / 2 - 4" of the top of the soil. Samples are taken approximately 15 - 20 cm / 6 - 8" down into the substrate and from various areas, then an average of the readings is used.

For container grown plants, it is recommended to check the pH level of the substrate prior to planting.

## **Factors affecting pH in the soil or media:**

### **Soil type**

Soils formed under high rainfall conditions (e.g. Eastern USA) are more acidic than those formed under dry conditions (e.g. Western USA).

### **Growth stage of the plant**

Uptake and requirements of particular elements change as the plant progresses through it's growing cycle. Recording pH level data to create a history is valuable.

### **Applications and types of fertilizers**

Applications and types of fertilizers can alter the pH level significantly. The time at which you take the reading is important. Evaluate the brand of fertilizer to see if it is altering the pH in the wrong direction.

### **Applications of sprays**

As sprays can soak into the soil/media, a change to the pH level could result.

### **Soil/media temperature**

High temperature soils may have a high concentration of CO<sub>2</sub>. The higher the concentration of carbon dioxide pressure results in more carbonic acid which lowers pH.

### **pH range for soil crops**

The recommended pH range for soil crops is 6.2 - 7.2, but this is plant specific.





## 7.0 Measuring soil pH value

Follow the steps below to take pH measurements of soil and media.

1 Remove the top layer of soil/media from the surface of the sample area.

2 Insert the storage cap/dibber into the sample up to the 'soil' indicator as shown on the storage cap/dibber, then remove.

**TIP:** The dibber creates a safe pathway for the soil probe, reducing the likelihood of probe breakage. It should be used at all times.

3 Remove the storage cap/dibber from the pen and turn the Soil pH Pen on.

**TIP:** to keep the solution or tap water in the storage cap/dibber while taking measurements with the Soil pH Pen, simply place the storage cap/dibber upright into the soil.

4 Insert the probe into the hole made by the dibber, ensuring the probe end makes gentle contact with the soil.

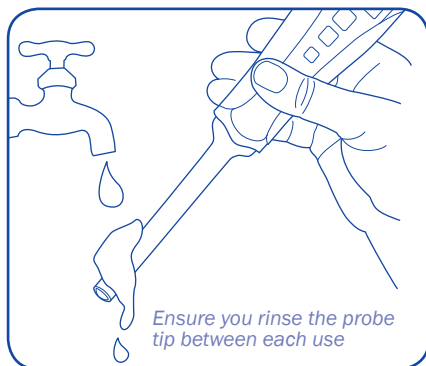
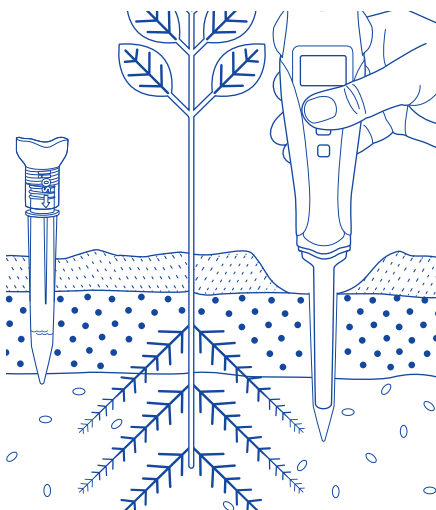
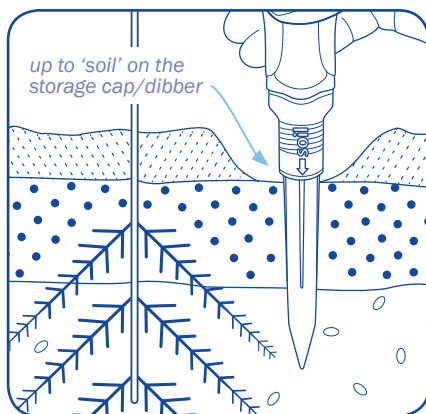
5 Wait for the reading displayed to stabilize to a constant value. Record the reading.

**TIP:** If the Soil pH Pen turns off while taking a measurement, simply press the power button to turn the Soil pH Pen back on and continue with your measurement.

6 Remove the probe gently from the soil/media and rinse the probe tip under fresh running water (not RO or distilled) to remove any soil residue.

**IMPORTANT:** Always rinse the probe tip in between each measurement and shake to remove excess water.

7 For field testing, repeat the procedure in different locations and take the average of the measured data as the pH level is representative of the sample area.





## 8.0 Measuring the pH value of a soil solution

*The greatest source of error in soil analysis comes during sample collection. An effort should be made to ensure each sample properly represents the area being sampled.*

### Collection of sample

- 1 Sample in a zig-zag pattern across the required area.
- 2 Take samples of soil at approximately 20 cm / 8" deep.
- 3 Mix all collected samples together thoroughly.
- 4 Ideally, allow to dry in the air or in an oven at 40 °C / 104 °F.
- 5 Weigh out 20 g / 0.7 oz of the collected soil into a 150 ml / 5 fl oz plastic sample jar.

### Sample preparation

- 1 Add 100 ml / 3 fl oz of distilled or deionized water, screw lid on tightly.
- 2 Shake continuously for 5 minutes. Leave overnight and shake again the next morning.
- 3 Allow to settle for 15 minutes after shaking and strain sample into clean measuring cup.

### Take pH readings as follows:

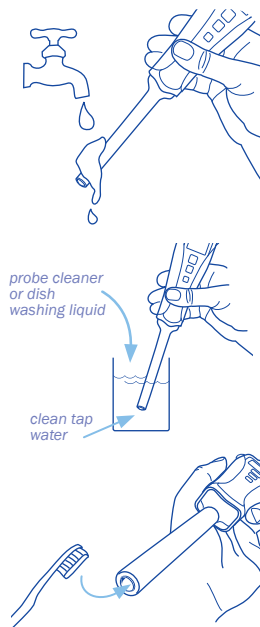
- 1 Remove the storage cap/dibber and insert the probe tip into the soil solution sample.
- 2 Turn the Soil pH Pen on.
- 3 Wait for the reading displayed to stabilize to a constant value. Record the reading.  
  
If the Soil pH Pen turns off while taking a measurement, simply press the power button to turn the Soil pH Pen back on and continue with your measurement.
- 4 Remove the probe from the soil solution and rinse the probe tip under fresh running water (not RO or distilled) to remove soil residue.
- 5 Place the storage cap/dibber back onto the probe after use, ensuring it contains BlueLab pH Probe Storage Solution or plenty of tap water.  
**"IF IT DRIES - IT DIES!"**. See section 4.0 - Soil pH Probe Care.



## 9.0 Cleaning

*To ensure accurate readings the probe tip needs to be kept clean at all times. Cleaning prior to calibration is necessary for successful calibration.*

- 1 **Remove storage cap/dibber.**  
Rinse probe tip under fresh tap water.
- 2 **Fill small plastic container with clean water.**  
Add a small amount of BlueLab pH Probe Cleaner or mild detergent (dishwashing liquid).
- 3 **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.
- 4 **If the probe 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.
- 5 **Rinse well under fresh running water to remove all traces of the detergent mixture.**
- 6 **Calibration of the probe is required after every clean.**  
See the pH calibration in section 11.0. Place storage cap/dibber back onto the probe tip.



## 10.0 Battery replacement

*The pH pen is powered with 1 x AAA alkaline battery. Do not use rechargeable batteries. A low battery warning is indicated by a battery symbol appearing on the screen. Only remove the battery cap when the batteries require changing. Battery life is expected to be approx. 350 hours.*

- 1 **To remove old battery**  
Undo battery cap fasteners. Remove battery cap and tip out the old battery.
- 2 **Fit new battery**  
Insert the new battery positive (+) end down into the body.
- 3 **Ensure waterproof battery cap seal is clean, and free from any debris.**  
Seal will fail if any dirt or debris is present.
- 4 **Replace battery cap**  
*Tighten fasteners on battery cap. Do not over tighten.*  
Ensure silicone seal on battery cap is fully enclosed in pen body. This ensures the unit remains 100% waterproof.





## 11.0 Calibration

*pH calibration is required before first use to ensure that the first reading is accurate. Calibration is also required when:*

- The check mark/tick has disappeared from the LCD screen (30 days after last successful calibration)
- The reading is different from what you expected
- After cleaning
- After changing the battery

*pH 7.0 and pH 4.0 solutions are required for calibration and should be decanted into small, clean plastic containers. You may also calibrate using pH 7.0 and pH 10.0 solutions if your readings will normally be higher than 7.0 pH.*

**1 Excluding first use, YOU MUST CLEAN the probe tip before calibrating.**

See section 9.0 Cleaning.

**2 Remove storage cap/dipper.**

Refer to section 2.0, step 1.

**3 Rinse probe tip in fresh water and place in pH 7.0 solution.**

Wait for reading to stabilize to a constant value.

**4 Press the cal button until CAL is displayed.**

Release button. When CAL 7 is displayed, 1 point calibration is achieved.

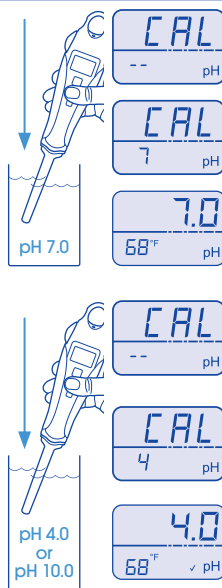
**5 Rinse probe in fresh water and place it in either pH 4.0 or pH 10.0 solution (use pH 10.0 solution if you expect to measure above 7.0 pH).**

Wait for reading to stabilize to a constant value.

**6 Press the cal button until CAL 4 or CAL 10 is displayed.**

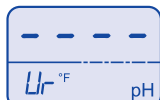
CAL 4 or CAL 10 should be displayed (depending on what solution you are calibrating in). The check mark/tick is displayed when a 2 point (or 3) calibration is completed.

**NOTE:** For a three point calibration repeat steps 2, 3 & 4 using pH 7.0, 4.0 then 10.0 solution.



## 12.0 Error messages

*The following error messages appear for the following reasons.*



Temperature  
under range



pH over range



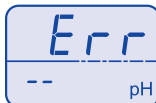
Temperature  
over range



pH under range



pH calibration  
failed



Hardware error



## 13.0 Troubleshooting guide

Trouble	Reason	Correction
<i>Drift - readings slowly varying</i>	Glassware not clean	Clean glassware and calibrate
	Wick contaminated, blocked or dry	Soak probe in BlueLab pH Probe Storage Solution or tap water only for 24 hours and retest. Do not measure proteins or oils with this unit. Replacement of unit may be required
	Glassware aged	Replace unit
<i>Displays similar pH reading in all buffers no matter what the buffer value is</i>	Glassware cracked or broken	Replace unit
<i>Unsuccessful pH calibration</i>	Buffers inaccurate	Replace buffers
	Glassware not clean	Clean glassware
	Glassware aged (glassware will not clean)	Replace unit
	Probe not hydrated	Soak probe in BlueLab pH Probe Storage Solution or tap water only for 24 hours and retest. Do not measure proteins or oils with this unit. Replacement of unit may be required
<i>Noisy - readings jumping</i>	Contact zone not immersed	Ensure soil/substrate is damp
	Probe not adequately hydrated	Soak probe in BlueLab pH Probe Storage Solution or tap water only for 24 hours and retest. Do not measure proteins or oils with this unit. Replacement of unit may be required
<i>Displays pH 7 for all buffers</i>	Glassware broken	Replace unit
<i>Incorrect sample reading following successful pH calibration</i>	Wick blocked	Soak probe in BlueLab pH Probe Storage Solution or tap water only for 24 hours and retest. Do not measure proteins or oils with this unit. Replacement of unit may be required



## 14.0 Technical specifications

Measurement range	0.0 - 14.0 pH, 0 - 50 °C, 32 - 122 °F
Resolution	0.1 pH, 1 °C / 1 °F
Accuracy at 25 °C / 77 °F	± 0.1 pH, ± 1 °C / ± 2 °F
Temperature compensation	Automatic
Operating temperature	0 - 50 °C, 32 - 122 °F
Calibration	Two point, pH 7.0 and pH 4.0 or pH 10.0
Units	pH, °F and °C
Power source	1 x AAA alkaline battery

### Bluelab Probe Care - pH

**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. Cleaning the pH probe is a very easy task and will prolong the life of the probe.



#### Bluelab Probe Care Kit - pH contents:

- › Cleaning instructions inside box lid
- › Plastic cups
- › 500ml pH4.0 and pH7.0 calibration solutions
- › Bluelab pH Probe Cleaner
- › Toothbrush (probe cleaning instrument)

### 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 Soil pH Pen product guarantee

Bluelab Corporation Limited guarantees this product for a period of 1 year (12 months) from the date of sale to the original purchaser. 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), broken glassware or drying of the pH probe glassware, 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 from incorrect positioning of the battery cap and waterproof seal.

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](http://www.getbluelab.com)

## Limitation of Liability

Under no circumstances shall Bluelab Corporation Limited be liable for any claims, losses, costs and damages of any nature whatsoever (including any consequential loss) that result from the use of, or the inability to use, these instructions.



To watch instruction videos, visit our online video library:  
[vimeo.com/bluelab/videos](http://vimeo.com/bluelab/videos)



If you need assistance or advice - we're here to help you.  
Phone: **+64 7 578 0849** Fax: **+64 7 578 0847**  
Email: [support@getbluelab.com](mailto:support@getbluelab.com)



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