

Your key growing parameters - at a glance,  
anywhere, any time.



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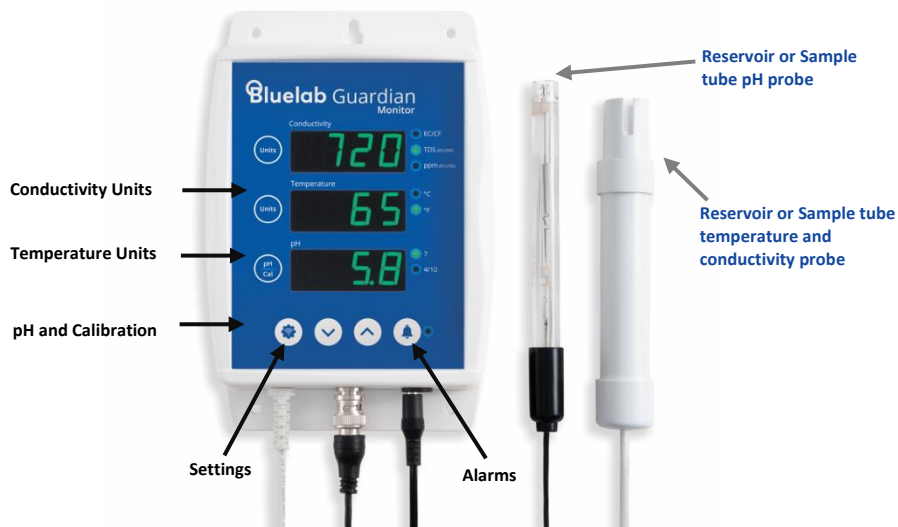
## Features

|                                                          |                                                                    |
|----------------------------------------------------------|--------------------------------------------------------------------|
| Connected mode via Wi-Fi with Bluelab Edenic software    | Easy connection onboarding using Bluetooth from your mobile device |
| Measure pH                                               | Measure conductivity and temperature                               |
| 2 metre / 6.6 foot standard cables                       | 110 - 240 VAC (Mains powered)                                      |
| 4 interchangeable plug types (USA, Euro, UK, NZ/AUS)     | Replaceable Bluelab pH Probe (BNC connection)                      |
| Includes screws for wall or rack mounting                | Non-volatile memory - keep settings through power loss             |
| Plant-safe green LEDs with adjustable display brightness | Flashing high and low alarms                                       |



What is Plant Safe? Green LED's are safe for continued growth during a plant's fruiting stage when hours of darkness are required.

## Guardian Monitor Wi-Fi



## Guardian Monitor Inline Wi-Fi



## 2.0 IMPORTANT - Bluelab pH Probe care

pH probes DO NOT last forever. They age through normal use and will eventually fail. The life time of a pH probe depends on the environment it is used in and the way that it is treated. To receive a long life from your pH probe, ensure you follow the guide below.

pH probes contain glass and are FRAGILE. With good care, they will give a long service life.

### Bluelab pH Probe



**DO NOT** let the pH probe tip dry.

**DO NOT** bend the probe; this will break its internal glass tube.

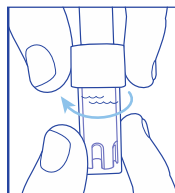
**DO NOT** knock the probe; this will break its internal glass tube or external glass bulb.

**DO NOT** plunge a cold pH probe into a hot 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.

### Always remove pH probe storage cap before use

1. Grip the top of the cap and gently twist the base one rotation clockwise to loosen slightly.
2. Next slowly slide the cap off the pH probe. **DO NOT** completely remove the base of the cap from the top of the cap.

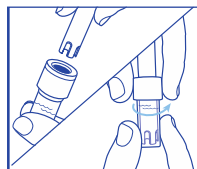


Removing pH probe storage cap

### Storing the pH probe

**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.



Ensure probe tip is covered by the KCl storage solution

### If the pH probe has been accidentally allowed to dry out;

The pH probe must be 'hydrated' for 24 hours in KCl storage solution.

### 3.0 Mounting on a wall

|                                                                                                                                                                                                                                                                                        |                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 Select a suitable location that is less than 2 meters from your reservoir, and less than 1.5 meters from an electrical mains outlet. <i>NOTE: Avoid placing the Guardian Monitor where it can be damaged by direct sunlight, water or nutrient salts.</i></p>                     | <p>Option 1<br/>Mounting keyholes top and bottom</p>  |
| <p>2 Option 1</p> <p>a) Install two fasteners (top and bottom) to the wall 172mm / 6.¾" apart.</p> <p>b) Slide the Guardian Monitor onto the fasteners using the keyholes.</p> <p>Option 2</p> <p>a) Fix the four fasteners through each mounting hold in each corner of the case.</p> | <p>Option 2<br/>Mounting holes top and bottom</p>     |

### 3.1 Mounting on a support or bar

|                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 Select a suitable location that is less than 2 meters from your reservoir, and less than 1.5 meters from an electrical mains outlet. <i>NOTE: Avoid placing the Guardian Monitor where it can be damaged by direct sunlight, water or nutrient salts.</i></p> |
| <p>2 Fix each of the cable ties provided through the small mounting holes in the top of the case and wrap around the support or bar and secure.</p>                                                                                                                |

### 4.0 Install plug adaptor

|                                                                      |                                                                                     |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <p>1 Select the appropriate mains plug adaptor for your country.</p> |  |
| <p>2 Connect the plug adaptor to the power supply.</p>               |                                                                                     |

### 5.0 Connect power adaptor and Bluelab pH Probe

|                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 Connect the power adaptor into the base of the Guardian Monitor where 'Power Input' is labelled. Plug the adaptor into mains power supply.</p>                                  |                                                                                                                                                                                                                                                      |
| <p>2 Connect the pH probe to the Guardian Monitor by lining up the lugs of the BNC fittings. Fasten securely by pushing the pH probe connector on and twisting one quarter turn.</p> | <div>    </div> <div> <p>Inserting</p> <p>Twisting</p> <p>Attached</p> </div> |

## 6.0 Select conductivity unit

Conductivity readings can be displayed in EC, CF, TDS or ppm 700. The selected unit is indicated by one of the 3 LEDs next to the conductivity window. When the EC/CF LED is on, the Guardian Monitor is displaying conductivity in units of EC or CF.

If there is a decimal point present in the conductivity display, the units are EC. If there is no decimal point the units are CF.

- 1 Press and hold the conductivity unit button and after 3 seconds it will change to the next unit indicated by the glowing LED.
- 2 Release.
- 3 Repeat steps 1 and 2 until the desired unit is selected.



## 7.0 Select temperature unit

Temperature readings can be displayed in either degrees celsius (°C) or degrees fahrenheit (°F). The selected unit is indicated by one of the two LEDs next to the temperature window.

- 1 Press and hold the temperature unit button and after 3 seconds it will change to the next unit indicated by the glowing LED.
- 2 Release.
- 3 Repeat steps 1 and 2 until the desired unit is selected.



## 8.0 Select brightness level of the LED displays

Brightness can be adjusted to best suit the light environment. There are 10 levels of brightness that can be selected.

- 1 Press the Settings button. Then press the pH/Cal button which corresponds to the [br] brightness menu.
- 2 Press the up and down arrows to select the required brightness. Brightness levels are shown in the pH window.
- 3 When happy with brightness, press the settings button to complete the change.



## 9.0 Connect Guardian Monitor to Wi-Fi for the first time

To connect the device to Wi-Fi, it is helpful to have the onboarding QR code available for scanning. This can be found on the back of the device or on the packaging.

Have the security code QR image handy.



Name:  
**Guardian-8a1a**  
Security code:  
**84d3**

When first powered on, the Guardian Monitor Wi-Fi automatically starts in Provisioning mode. This allows Wi-Fi settings to be configured from a mobile device. Once the Guardian Monitor has been connected to a Wi-Fi network it will no longer start in Provisioning mode. If you need to connect to a new network see section 10.



1. Ensure Bluetooth is enabled on your mobile device and the Edenic app is installed.
2. Open the Edenic app on your mobile device and log in.
3. Remove the power cable for a few seconds then reconnect.
4. In the Edenic app, click the add device button in the bottom right.
5. Select scan a QR code.
6. Scan the QR code provided on the back of your Guardian / packaging.
7. Enter a device name to help you recognise this Guardian Monitor.
8. Wi-Fi details – Click the view Wi-Fi networks to see available networks.
9. Select the Wi-Fi network you want to connect to.
10. Enter the Wi-Fi network password.
11. Select continue, your device will now be ready and connected.



## 9.1 Connect to a different Wi-Fi network

On your Guardian device, enter provisioning mode:

1. Press the settings button.
2. Press the Temperature unit button which corresponds with the Prov (Provisioning) menu.
3. The device is now ready to accept new Wi-Fi settings from your mobile device.



On your mobile device (while Prov and the security code is displayed on your Guardian):

4. Ensure Bluetooth is enabled on your mobile device and the Edenic app is installed.
5. Open the Edenic app on your mobile device and log in.
6. In the Edenic app, click the add device button in the bottom right.
7. Select search Bluetooth and pick the Guardian from available devices listed.
8. Enter a device name to help you recognise this Guardian Monitor.
9. Enter the 4-digit security code, the code can be found in the following three ways:
  - I. Shown in the Temperature window of the Guardian (while in PROV mode).
  - II. On the QR code sticker on the back of your Guardian
  - III. On the QR code on the packaging.
10. Select the Wi-Fi network you want to connect to.
11. Enter the Wi-Fi network password.
12. Select continue, your device will now be ready and connected.

## 9.2 Enable / Disable Wi-Fi and data

By default, Wi-Fi is enabled. If you want to disable Wi-Fi follow these instructions.

1. Press the settings button.
2. Press the Conductivity units button.
3. Use up and down arrows to toggle Wi-Fi on/off.
4. If turned on, the connection status is shown in the third window.
  - a. conn - Wi-Fi is connected
  - a. Err1 - Wi-Fi not connected
  - b. Err2 - No internet available
  - c. Err3 - Edenic service not reachable
  - d. Err4 - Time sync, please wait
5. Once On or Off is selected, press the settings button to complete.





## 10.0 pH 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 Guardian Monitor Wi-Fi 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 Guardian Monitor Wi-Fi is reset to factory default.
- The pH probe is replaced with a new one.
- It has been a month since the last successful calibration and the calibration indicator lights are flashing.

When calibrating the pH after first use the pH probe needs to be cleaned. See pH probe cleaning in section 16.0.

**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 15.0.

**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 Guardian Monitor 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.
- 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.

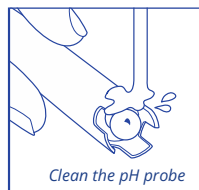
pH reading accuracy is dependant on the accuracy and age of the calibration solutions used, and cleanliness of the pH probe tip.

## 10.1 pH calibration continued

### To calibrate the pH probe

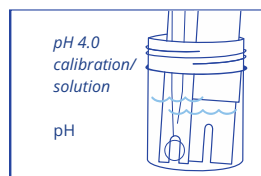
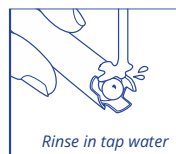
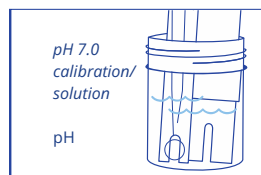
#### 1 Clean EC and pH probe tips.

See section 15.0 (the pH probe does not require cleaning before the first use).



#### 2 pH 7.0 calibration

- Prepare a small amount of pH 7.0 calibration solution in a container.
- Ensure the Guardian Monitor Wi-Fi is plugged in and in operation mode.
- Rinse EC and pH probe tips in fresh water, shake off excess water and place them in pH 7.0 calibration solution. Wait at least one minute for reading to stabilize.
- Press and hold the pH cal button for a few seconds until 'PH' and 'CAL' appear in the windows, then release the pH cal button. The '7' LED will glow green. All three windows will return to monitoring mode with all current values being displayed.
- If 'Err' is displayed see the troubleshooting guide on section 18.0.



#### 3 pH 4.0/10.0 calibration

- Prepare a small amount of pH 4.0 or pH 10.0 calibration solution in a container.
- Rinse EC and pH probe tips in fresh water, shake off excess water and place them in either pH 4.0 or pH 10.0 calibration solution. Wait at least one minute for reading to stabilise.
- Press and hold the pH cal button for a few seconds until 'PH' and 'CAL' appear in the windows, then release the pH cal button. The 4/10 LED will glow green. All three windows will return to monitoring mode with all current values being displayed.
- If 'Err' is displayed see the troubleshooting guide on section 18.0.
- The Guardian Monitor Wi-Fi is now ready for use.



Successful pH 7 and pH 4 calibration

## 10.3 pH calibration continued

The LEDs next to the pH window will let you know the status of calibration. See the table below.

NOTE: The pH probe and hence calibration will eventually fail due to;



- Contamination and age of pH probe.
- pH probe used to measure solutions at temperatures above 50 °C (122 °F) or below 0 °C (32 °F).
- pH probe exposed to aggressive chemicals.
- Internal damage to the pH probe from rough treatment.
- Damage to the cable of the pH probe from rough treatment.
- pH probe repeatedly drying out.
- Moisture getting inside the BNC connector on the pH probe cable.

### pH LEDs

|              |                                                                                                                                                  |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <b>Using factory default calibration values. Both LEDs off. Readings may be unreliable.</b>                                                      |
|              | <p>pH 7 calibrated OK. Using factory default for pH 4/10. pH 7 calibrated OK. Using factory default for pH 4/10. Readings may be unreliable.</p> |
|              | <p>pH 7 and pH 4 or pH 10 calibrated OK.</p>                                                                                                     |
| <br>Flashing | <p>30 days passed since last full calibration - calibration due.</p>                                                                             |
| <br>Flashing | <p>If 7 is flashing and 4/10 is off, calibration is also required as 4/10 was never calibrated.</p>                                              |

## 11.0 Installing probes – in reservoir

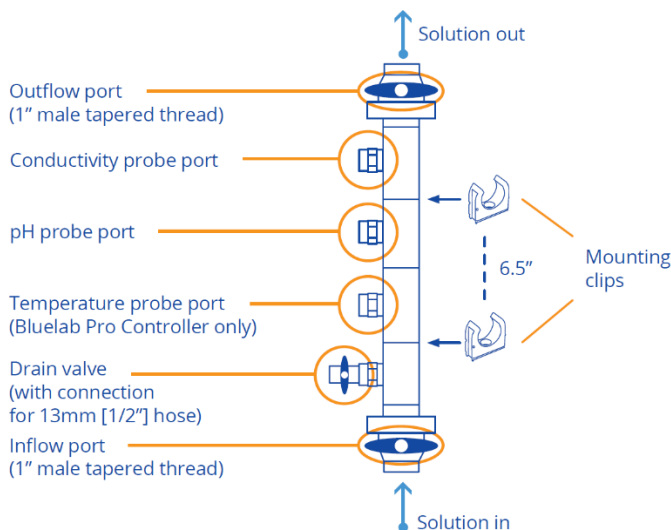
Both the Bluelab pH Probe and Bluelab Conductivity/Temperature Probe require submersion in the liquid for a measurement to occur.

- Do not pour concentrated nutrient solution or pH adjuster directly onto probes when in the reservoir, as very strong acid may damage the probes or your alarms (if set) may trigger.

- Fit the (optional) pH probe holder to the stem of the pH probe using a gentle twisting motion.
- Place the pH probe into the reservoir and push the suction cup onto the side of the reservoir but far enough down so the pH probe tip is in the solution. The holder prevents damage to the pH probe from banging onto the side of the reservoir with movement of the solution.
- Place the conductivity/temperature probe into the reservoir selected.

### 11.1 Installing probes – Using the Bluelab Sample Tube (sold separate)

Bluelab offers a Sample tube that fits standard pH and Conductivity probes. This device is designed to hold probes that measure reservoir parameters without the need to open your reservoir and manually take samples or have the probes in the reservoir.



For full instructions refer to the guide with the Sample Tube.

**ATTENTION.** 

The Bluelab Sample Tube is not intended for use in a high pressure system. Do not exceed 15 psi (1 Bar).

## 11.2 Installing probes – Using Inline Probes

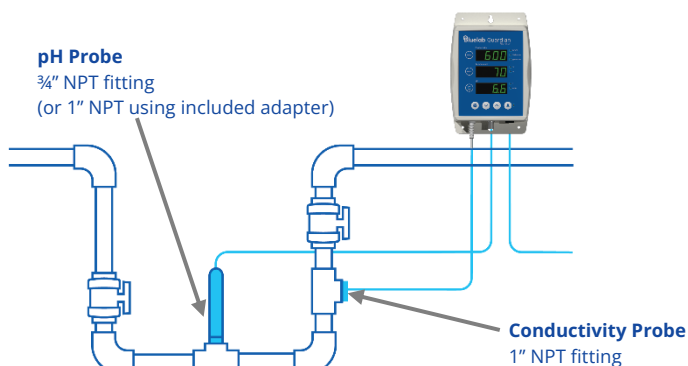
Only applicable for the Inline version of the Guardian Monitor (BGUNLN02).

- A minimum flow rate of 2 ft/s (0.6 m/s) will help prevent sediment build up on the probe.
- Use thread tape and securely tighten probes to protect PVC threads and prevent leaking.

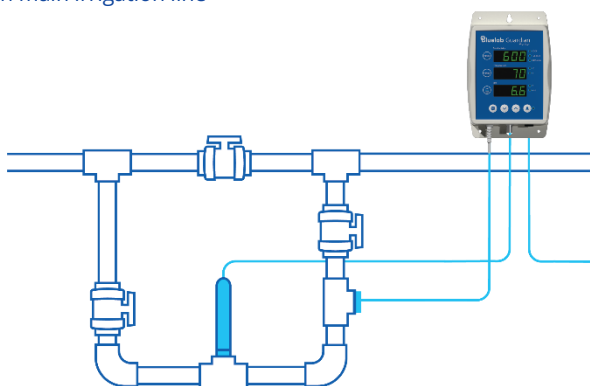
**Inline pH Probe** - Install vertically downwards at the bottom of a loop. This helps keep the probe tip above sediment, and the air bubble within the probe itself, away from the tip. The probe tip should NOT be allowed to dry out, installing at the bottom of a loop will ensure solution in the pipe will keep the probe hydrated.

**Inline Conductivity Probe** - Install horizontally. This helps keep the probe tip clear of sediment and prevents air bubbles gathering in the probe shroud. The Probe shroud is required to limit the electric field, creating a consistent and accurate reading.

Installing on separate mixing / sensing line (Bluelab recommended)



Installing on main irrigation line



**ATTENTION.** 

The Bluelab Inline Probes are rated to a maximum pressure of 100 psi (7 Bar).



## 12.0 Set alarms (optional)

The alarm alerts you when the solution measures above or below the levels you have chosen for each parameter.

When an alarm condition is present, the display of the affected measurement will flash.

If the measurement changes back within the limits you have chosen, the flashing will stop.

Even though the resolution of the Guardian is 10 ppm / TDS, the alarms will set only in 50 ppm and 70 ppm increments.

There are two ways to set the alarm, 'quick-set' or 'detailed-set'.

### Alarm 'quick-set'

This allows you to quickly set the 'alarm HIGH' and 'alarm LOW' values for all of the three measurements. The table below shows the values that are pre-set when 'quick-set' is used.

NOTE: Before you use the quick-set function, the solution in the tank/reservoir must be adjusted to the desired/actual levels for all three parameters and the levels displayed in each of the windows. If this is not done you should use the alarm 'detailed-set'.

|                     | Alarm low                                             | Alarm high                                            |
|---------------------|-------------------------------------------------------|-------------------------------------------------------|
| <i>Conductivity</i> | actual value –<br>2 CF / 0.2 EC<br>100 TDS<br>140 ppm | actual value +<br>2 CF / 0.2 EC<br>100 TDS<br>140 ppm |
| <i>Temperature</i>  | actual value –<br>3 °C / 5 °F                         | actual value +<br>3 °C / 5 °F                         |
| <i>pH</i>           | actual value –<br>0.5 pH                              | actual value +<br>0.5 pH                              |

### To activate the 'quick-set' alarm;

- 1 Press and hold the alarm button until 'AL H' is displayed in all three windows.  
Release the alarm button.
- 2 Press the Settings button once.
- 3 All three windows will display Auto for 1 second and then SAVE will be displayed in the conductivity window. The alarms are now auto set and the alarm mode will be turned on. The alarm LED will glow.



## 12.1 Set alarms continued

### Turn alarm ON/OFF

Press the alarm button to change between alarm ON and alarm OFF.  
When the alarm is ON the alarm LED will glow.

NOTE: If you press and hold the alarm button you will enter the alarm setting mode.

### Alarm 'detailed-set'

To set the detailed 'alarm HIGH' and 'alarm LOW' values;

- 1 Press and hold the alarm button until 'AL H' is displayed in all three windows.
- 2 Release the button and the current 'alarm HIGH' values are displayed in each window.
- 3 To set conductivity alarm high value, press the conductivity unit button then the up and down buttons to change its value.
- 4 To set temperature alarm high value, press the temperature unit button then the up and down buttons to change its value.
- 5 To set pH alarm high value, press the pH unit button then the up and down buttons to change its value.
- 6 Press the alarm button to now select the low alarm values.
- 7 Set the low alarm values the same way as you did the high alarms.
- 8 Press the alarm button. SAVE is briefly displayed in the conductivity window and the Guardian Monitor will return to its normal monitoring mode.

**NOTES:** To review current alarm settings without changing the values, repeatedly press the alarm button to step through the high and low alarms.

If you want to exit the alarm settings mode without keeping any changes you have made DO NOT press any keys. The Guardian Monitor will 'timeout' and return to its normal monitoring mode without saving any changes after 1 minute.

## 13.0 Cleaning the conductivity/temperature probe

### Cleaning the BlueLab Conductivity/Temperature Probe

Periodically cleaning ensures accurate readings. The conductivity/temperature probe is cleaned using the BlueLab Conductivity Probe Cleaner, or “JiP” a trade name for a liquid scourer cream used in home bathrooms and kitchens. Never use scented varieties as they contain oils that contaminate the conductivity/temperature probe.

**1** Remove shroud.

Warm the shroud in your hand for a few seconds to help with removal.

**2** Clean the conductivity probe face.

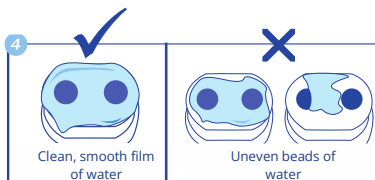
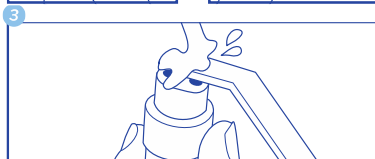
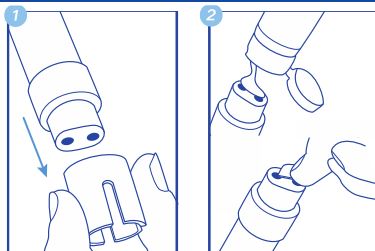
Place one or two drops of BlueLab Conductivity Probe Cleaner onto the probe face and rub with the BlueLab Chamois or your finger firmly and vigorously.

**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.

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

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

## 13.1 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.

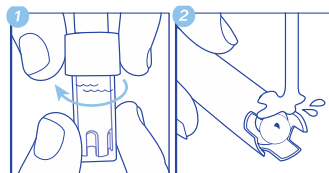
The storage cap must always be put back on after cleaning. Always ensure it contains enough Bluelab pH Probe KCl Storage Solution to cover the probe tip.

- 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.

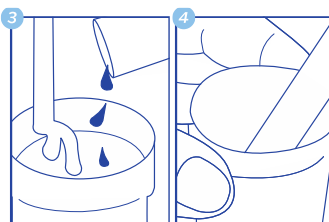
Never use RO (Reverse Osmosis), Distilled or De-ionized water.



- 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.

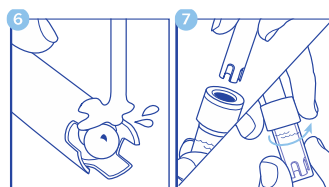


- 5 **If the probe tip requires removal of heavy contamination:** Gently brush around the glassware with a few drops of Bluelab pH Probe Cleaner or mild detergent (dishwashing liquid) and a soft toothbrush.



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

- 7 **Calibrate pH probe after cleaning, see section 12.0.** After calibration, store pH probe in the storage cap, ensuring there is enough KCl Storage Solution to cover the probe tip.





## 14.0 Hydrating the pH probe

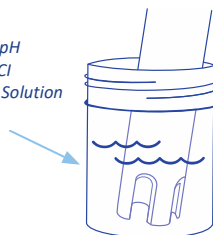
Hydrate the pH probe in BlueLab pH Probe KCl Storage Solution when:

- 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 | <b>Loosen, then remove the storage cap.</b> Place the pH probe upright in a plastic container.                                   |
| 2 | <b>Clean the pH probe tip.</b> Ensure the probe tip is cleaned before hydrating. See section 16.0 for instructions.              |
| 3 | <b>Add enough BlueLab pH Probe KCl Storage Solution</b> to a plastic container to submerge the pH probe tip.                     |
| 4 | <b>Leave to soak for at least 24 hours.</b> After hydration, always calibrate the pH probe to ensure accuracy, see section 12.0. |

*BlueLab pH  
Probe KCl  
Storage Solution*





## 15.0 Troubleshooting guide

| Trouble                                                            | Reason                                                                                                                                      | Correction                                                                                                                                                                                                     |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Nutrient reading low</i>                                        | Contaminated conductivity/temperature probe.                                                                                                | Clean conductivity/temperature probe (see section 15.0).                                                                                                                                                       |
|                                                                    | Temperature of conductivity/temperature probe and solution different.                                                                       | Wait 5-10 minutes for conductivity/temperature probe to reach solution temperature.                                                                                                                            |
| <i>Temperature reading inaccurate</i>                              | Temperature of conductivity/temperature probe different to solution temperature.                                                            | Wait 5-10 minutes for conductivity/temperature probe to reach solution temperature.                                                                                                                            |
| <i>pH reading inaccurate</i>                                       | Contaminated pH probe / glassware not clean.                                                                                                | Clean pH probe (see Section 16.0); then calibrate (see Section 12.0).                                                                                                                                          |
|                                                                    | Calibration old.                                                                                                                            | Calibrate pH probe (see section 12.0). Replace pH Probe if unable to calibrate.                                                                                                                                |
|                                                                    | Broken glass bulb, tube or connector.                                                                                                       | Replace pH Probe if damaged.                                                                                                                                                                                   |
| <i>Display shows 'Err' during calibration</i>                      | An attempt was made to calibrate with pH 4.0 or pH 10.0 calibration solution more than one hour after calibration with the pH7.0 solution.  | Calibrate to pH 7.0 again then do pH 4.0 / pH 10.0 calibration within one hour.                                                                                                                                |
|                                                                    | Old or contaminated solutions used for calibration.                                                                                         | Use fresh calibration solutions.                                                                                                                                                                               |
|                                                                    | Dirty or contaminated pH probe.                                                                                                             | Clean pH probe (see section 16.0).                                                                                                                                                                             |
|                                                                    | pH probe tip been allowed to dry.                                                                                                           | Hydrate pH probe (see section 17.0).                                                                                                                                                                           |
|                                                                    | pH probe damaged or old.                                                                                                                    | Replace pH probe.                                                                                                                                                                                              |
| <i>No display</i>                                                  | Mains not switched on.                                                                                                                      | Switch mains power on.                                                                                                                                                                                         |
|                                                                    | Power adaptor not plugged into the Guardian Monitor Wi-Fi.                                                                                  | Plug power adaptor into the base of the Guardian Monitor Wi-Fi labelled 'Power Input'.                                                                                                                         |
| <i>pH displays 'or'<br/>pH displays 'ur'</i>                       | Over range pH.<br>Under range pH.                                                                                                           | Solution > 14.0 pH.<br>Solution < 0.0 pH.<br>Check pH probe connection. pH probe could be faulty. Guardian Monitor Wi-Fi could be wet inside.                                                                  |
| <i>temp displays 'or'<br/>temp displays 'ur'</i>                   | Over range temperature.<br>Under range temperature.                                                                                         | Solution >51 °C / 122 °F.<br>Solution <0 °C / 32 °F.<br>Conductivity/temperature probe or Guardian                                                                                                             |
| <i>conductivity displays 'or'</i>                                  | Over range conductivity/nutrient.                                                                                                           | Over range conductivity >9.9 EC, 99 CF, 1990 ppm.<br>Conductivity/temperature probe or Guardian Monitor Wi-Fi faulty.                                                                                          |
| <i>A display shows _ _ _ _</i>                                     | EC and pH cannot be determined as temperature range is over/under.<br>(see technical specification range section 17.0).                     | Test pH probe in calibration solutions and conductivity/temperature probe in a known conductivity standard solution to eliminate these as a cause of this problem. Check solution tank/reservoir for problems. |
| <i>Alarm alerts, but display shows value is still within range</i> | Due to the resolution of the unit this can happen if you are displaying in TD5 or ppm 700. If the alarm is at 1300, it might alert at 1270. | If this value isn't a problem for your grow, recommendation is to move the alarm limit to 1350.                                                                                                                |
| <i>Device doesn't add to Edenic app</i>                            | Device security code incorrect                                                                                                              | Enter correct 4-digit security code on QR code found of rear of Product                                                                                                                                        |
| <i>Device doesn't add to Edenic app</i>                            | Device not in Provisioning mode, mobile Bluetooth off.                                                                                      | Ensure Device turned on, in Provisioning mode, mobile Bluetooth is turned on and within range of Device                                                                                                        |
| <i>Device doesn't reconnect when I move it to its location</i>     | Device outside of Wi-Fi range                                                                                                               | Either relocate Wi-Fi router within range or connect to Wi-Fi network at Device's location                                                                                                                     |

For customer support visit our Support Centre at [www.bluelab.com](http://www.bluelab.com)

## 16.0 Technical specifications

| Specifications                     | <i>pH</i>                                                                                                                              | <i>Conductivity</i>                                                          | <i>Temperature</i>                   |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------|
| Measurement Range                  | 0.0 – 14.0 pH                                                                                                                          | 0 – 5.0 EC,<br>0 – 50 CF,<br>0 – 2500 TDS (ECx500),<br>0 – 3500 ppm (ECx700) | 0 – 50 °C<br>32 – 122 °F             |
| Resolution                         | 0.1 pH                                                                                                                                 | 0.1 EC,<br>1 CF,<br>10 TDS,<br>10 ppm                                        | 1 °C<br>1 °F                         |
| Accuracy at 25 °C / 77 °F          | ±0.1 pH                                                                                                                                | ±0.1 EC, ±1 CF<br>±50 TDS, ±70 ppm                                           | ±1 °C<br>±2 °F                       |
| Calibration                        | Two point<br>(pH 7.0 and<br>pH 4.0 or<br>pH 10.0)                                                                                      | Not required<br>(factory calibrated)                                         | Not required<br>(factory calibrated) |
| Automatic Temperature Compensation | Yes<br>(if conductivity/temperature probe is in same solution as pH probe)                                                             | Yes                                                                          | -                                    |
| Operating Environment              | 0 - 50°C / 32 - 122°F                                                                                                                  |                                                                              |                                      |
| Inline Probe (Conductivity and pH) | Rated for a maximum pressure of 100 psi (7 bar)<br>pH – ¾" NPT fitting with a 1" adapter included<br>Conductivity – 1" NPT fitting.    |                                                                              |                                      |
| Power Source                       | Input: 100-240 VAC, 50-60 Hz, 5 VA,<br>4 interchangeable plug types (USA, Euro, UK, NZ/AUS)<br>Output: 5 VDC 1 A                       |                                                                              |                                      |
| Signal Range                       | Indoor / Urban: 66 feet / 20 meters<br>Outdoor / RF line-of-sight: 164 feet / 50 meters                                                |                                                                              |                                      |
| Frequency Band                     | 2.4 GHz ISM                                                                                                                            |                                                                              |                                      |
| System Requirements                | Android (8.0 or later) or iOS (12 or later) Mobile phone for Edenic Software.<br>Internet connection for remote access & data-logging. |                                                                              |                                      |
| Certs                              | CE, FCC, IC. Contains Wi-Fi/Bluetooth Module<br>IC: 21098-ESPS3WROOM1. FCC ID: 2ACZ7-ESPS3WROOM1                                       |                                                                              |                                      |
| User Manual Languages              | English                                                                                                                                |                                                                              |                                      |
| Radio                              | Wi-Fi: 2.4 GHz (802.11 b/g/n)                                                                                                          |                                                                              |                                      |
| Bluetooth                          | 5 (Low energy)                                                                                                                         |                                                                              |                                      |