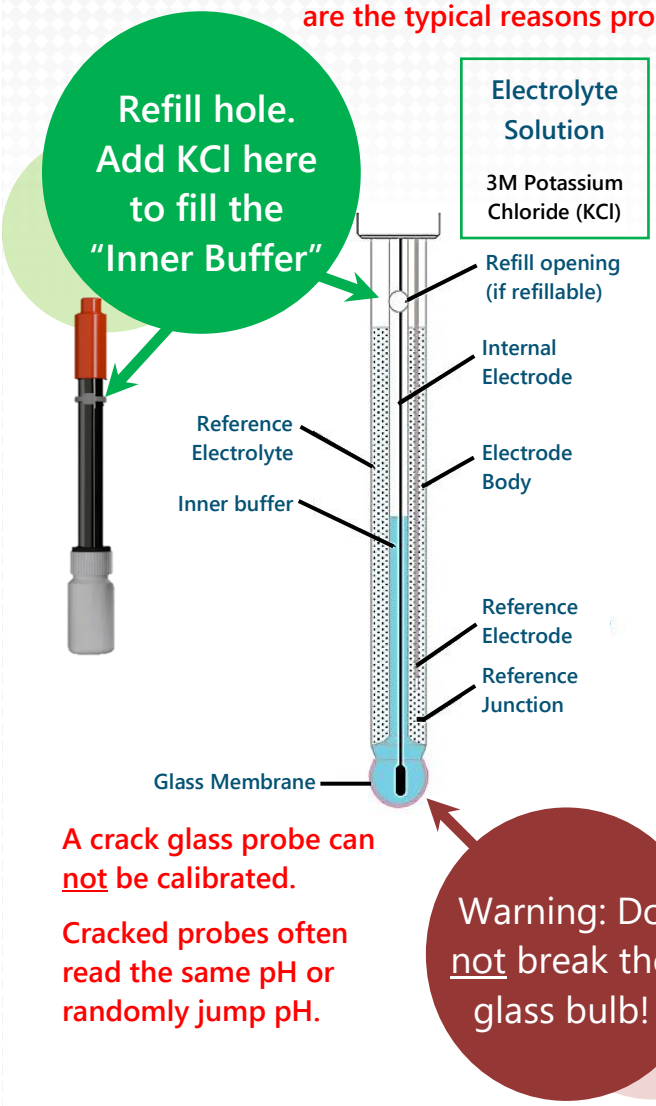
pH care & maintenance

Organic/Scale/Salts/Algae or other things sticking to the pH probe are the typical reasons probes do not read correctly.



Cleaning Option 1 – recommended cleaning

Always disconnection the probe and resin the probe between steps.

1) Place the pH probe into dilute acid ~3% (like "vinegar") to remove scale/salts for 3 minutes with gentle stirring.

Warning: Do not use Phosphoric Acid! This will react with calcium scales to form another solid blocking the membrane pores.

2) Place into mild non-ionic detergent water (like "low foam" or "sugar soap") to remove sticky organics and bio-algae slimes for 3 minutes with gentle stirring.
3) Place into dilute chlorine (like diluted bleach) to kill/remove algae for 3 minutes with gentle stirring.

Important Note: Follow the above steps in order!

Wash the probe in tap water for 1 minute and then leave it in tap water for a ~5 minutes before use.

Cleaning Option 2 – quick clean

Place the probe in dilute acid as per above option 1, step 1 and wash before use.

Cleaning Option 3 – physical cleaning

Use a soft bristle brush like a soft tooth brush to gently physical brush the glass membrane. This can be useful when algae or particles are stuck on the glass membrane.

If you physically clean, also do the 'quick clean' above.

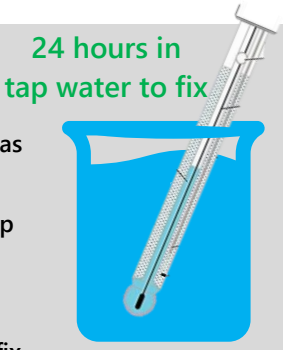
Dry pH probe

Sometimes pH probes come out of their storage solution by accident. This dries the probe and the glass membrane pores end up clogged with KCl crystals. This will stop the probe from functioning, as there needs to be flow through the membrane pores to work.

Not normally a problem, as the clogged pores can be reopened by placing the probe into normal tap water for 24 hours. Stirring and replacing the water 2 or 3 times also helps.

Warning: Physical cleaning does NOT fix a dry probe with clogged pores!

If a probe completely dries (on the outside and the inside 'Inner Buffer'), then it may take weeks to fix.



Electrolyte Solution Types

Gel & Electrode Filling Solutions (Electrolyte) are all 3M Potassium Chloride (KCl).

3M KCl solution is made by dissolving 22.37 grams of potassium chloride into 100 mL of deionise (DI) or distilled water.

pH storage solution is also recommended to be a 3M KCl solution.

pH Storage

Do NOT store the electrode in deionized water.

Use 3M KCl electrode solution for pH storage.

But when should you clean & calibrate for good automated pH control?

Cleaning once a week for poor water & for really good clean water, once every 4 weeks. Calibrate once a month would be typical for automated pH.

Calibrating

See next page.

In the “ADVANCED” section is the pH sensor calibration

pH current reading & saved settings, click ‘Refresh Reading’ to update

pH calibration for 7.0pH = 0mV

Place the pH probe into 7.0 buffer for **2 minutes**, then Click ‘Calibrate off-set’

pH slope calibration

Place the pH probe into 4 or 9 buffer for **2 minutes**, then Click ‘Calibrate Slope’

Recheck after <u>each</u> calibration with ‘Refresh Reading’

If the ‘pH reading’ is different to the buffer, click the calibration button again & recheck again

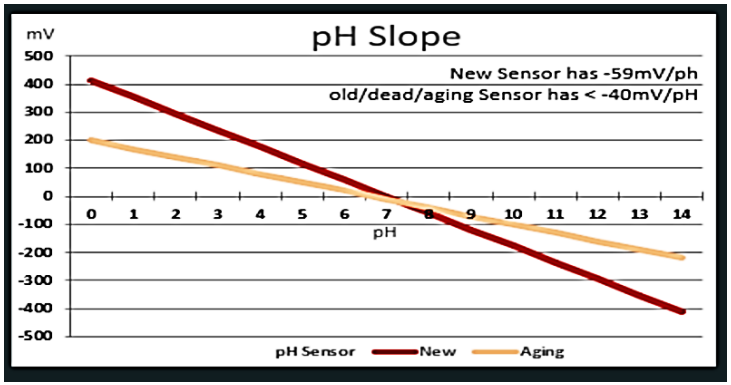
Manual Override for **<u>new</u>** probe

Off-Set = 0.00pH

Slope = -59.20mV/pH

LazyGrow is a fully flexible system

(Any BNC glass pH probe sensor can be installed)



Note: Be aware there are many influences on pH measurement.

Probe age, water temperature/conductivity /buffering capacity... so different pH instruments will read close but not the same.

EC care & maintenance

Organic/Scale/Salts/Algae or other things sticking to the EC probe are the typical reasons probes do not read correctly.

Stainless steel industrial EC/temperature sensor

EC probes are almost indestructible.

The reason they fail is due to physical damage to the sensor pads.

Warning: Do not damage the sensor pads!

Cleaning Option 1 – recommended cleaning

Place the probe only in mild non-ionic detergent water (like "low foam" or "sugar soap") 'sugar soap' as per below option 2, step 2 and wash before use.

Cleaning Option 2 – full clean

Resin the probe between steps.

1) Place the EC probe into dilute acid ~3% (like "vinegar") to remove scale/salts for 3 minutes with gentle stirring.

Warning: Do not use Phosphoric Acid! This will react with calcium scales to form another solid.

2) Place into mild non-ionic detergent water (like "low foam" or "sugar soap") to remove sticky organics and bio-algae slimes for 3 minutes with gentle stirring.
3) Place into dilute chlorine (like diluted bleach) to kill/remove algae for 3 minutes with gentle stirring.

Important Note: Follow the above steps in order!

Wash the probe in tap water before use.

Cleaning Option 3 – physical cleaning

Use a soft bristle brush like a small soft cloth or soft bottle brush to gently physical clean the inside. This can be useful when algae or particles are stuck on the sensor.

If you physically clean, also do the 'recommended cleaning' above.

EC never calibrating, it's simply metal. Don't waste you time calibrating EC sensors

Simply do a "check test" to confirm the EC is reading close to the EC standard.

Why is it not reading correctly?

The main reason EC probes do not read correctly is an algae slime coats the sensor pads, so a quick 'sugar soap' clean is all they require. *Cleaning once a week for poor water & for really good clean water, once every 4 weeks.*

Check the temperature is reading close to the room temperature and adjust, if needed.

If care is taken, the probe will last 5+ years.

But when should you calibrate an EC probe?

- When the sensor pads are damaged either:
  - Physically or
  - Chemically
- Or general degradation over time

Typically, expected to calibrate the EC once year.

And expect to adjust the temperature once a year.

EC Storage

Dry the probe.

Store in a dry place.

Calibrating

See next page.

In the “ADVANCED” section
is the EC sensor calibration section

EC current reading & saved settings,
click ‘Refresh Reading’ to update

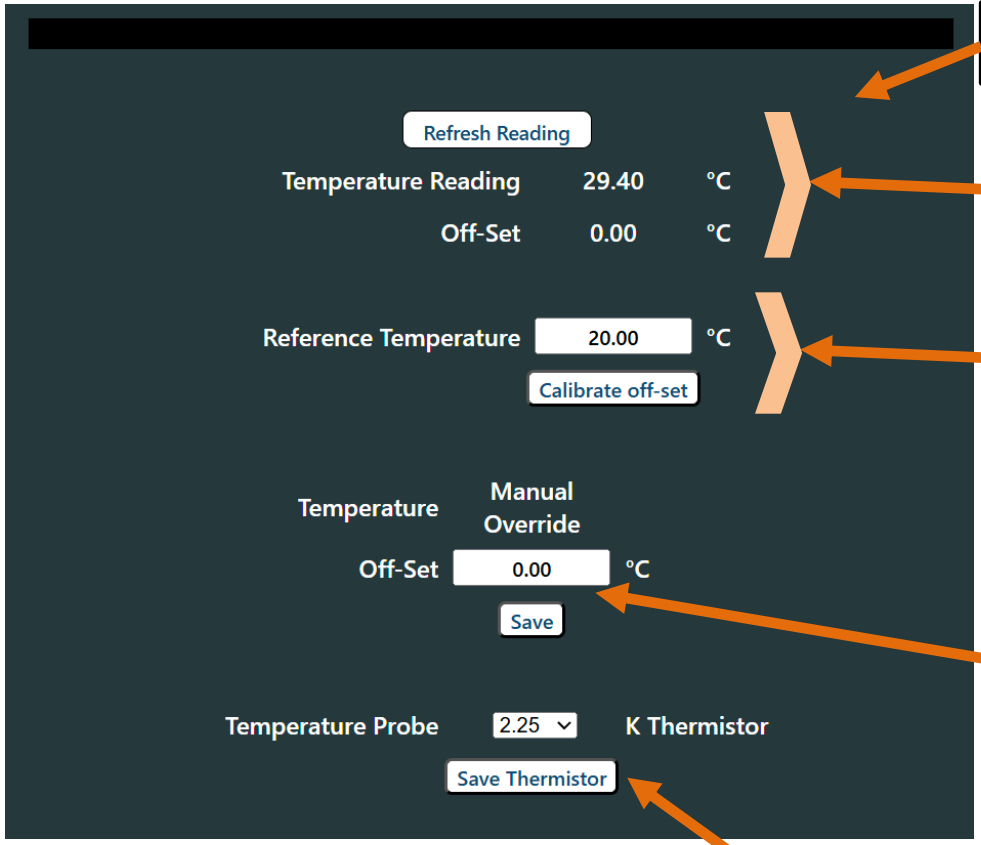
‘k’ = 1.0 for standard EC probes

EC calibration standard
Enter your calibration standard,
1.423 EC or 2.77 EC or custom EC
and Click ‘Calibrate’

Recheck after calibrations with ‘Refresh Reading’

Manual Override
(Just-in-case you need to Slope reset=1.0)

Note: EC probes last for many years (5+ years) and are very stable. Calibration is not normally required.
If the EC probe is damaged by aggressive cleaning physically/chemical, then it may need calibration.



This is the Temperature sensor calibration section

Temperature current reading & saved off-set settings, click 'Refresh Reading' to update

External Reference Temperature probe measuring the room or water where the probe is,

click 'Calibrate off-set' to calibrate

Recheck after calibrations with 'Refresh Reading'

Manual Override
(Just-in-case you want to manually change the off-set)

LazyGrow is a fully flexible system

Accommodating users with flexibility to adjust/modify and even replace with similar parts.

(Like installing your own industrial sensor)

LazyGrow's temperature probe is built into the industrial EC probe using a 2.25K thermistor

(Industrial EC/Temperature probe)