

FLORATek 3X



User Manual

Version 1.3

For Serial Numbers
xxxxxx-0523000 and above

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Thank you for your purchase of a FLORATek 3X system!

Your FLORATek 3X represents the next generation of the FLORATek line of control systems. Standing on the shoulders of its predecessor, the 3X is more powerful, more capable, more reliable, and easier to use.

This user manual covers the features, setup, and use of your system. Please take the time to read this manual before using your system, and keep this manual for reference in the future.

While your FLORATek system is designed to make it easier to successfully grow plants with hydroponics, there are still many important factors that contribute to the health and growth of your plants. FLORATek helps you to monitor and control your hydroponic water; it does not grow your plants for you. This manual assumes that you, the user, has a basic understanding of hydroponics, including:

- Hydroponic growing systems (especially the system you are utilizing)
- Grow lighting
- Hydroponic water chemistry
- Macro and micro nutrients
- Seed germination
- Plant life cycles
- Plant pruning
- Cultivation

When combined with a basic understanding of these topics and the skills needed to grow with hydroponics, your FLORATek system will help your plants grow bigger and faster than ever before.

FLORATek 3X Features

- Continuous pH, nutrient level, and temperature monitoring
 - Proportional Smart Feed control for pH solutions and nutrients
 - Can be used standalone or with 3, 6, or 9 dosing pumps
 - Compatible with hydroponic systems ranging from 4 to 100 gallons when paired with standard pumps, or 75 to 500 gallons when paired with Pro pumps.
 - Online access for remote monitoring, setup, and data logging.
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What is included:

With the FLORATek 3X Control:

- FLORATek 3X control
- HM Digital pH probe
- HM Digital EC probe
- 4.0 and 7.0 pH calibration solution
- EC calibration solution
- 9-volt power adapter

With the FLORATek 3X Standard and Pro Dosing Pumps:

- FLORATek 3X Dosing Pump Set
- Mounting lock to secure your dosing pumps to your FLORATek 3X control
- Data cable for connecting your control to your pumps
- 15 feet of nutrient tubing
- 12-volt power adapter

USB and the FLORATek 3X

The FLORATek 3X system uses standard USB 3.0 type A male-to-male cables as data cables. However, the control and pumps do not use the USB standard. The control and pumps communicate using a proprietary communication standard and **are not compatible with any other USB device.**

DO NOT PLUG ANY USB DEVICE OR CABLE INTO THE USB CONNECTIONS ON THE FLORATEK 3X CONTROL OR PUMPS. DOING SO MAY DESTROY THE CONTROL, PUMPS, OR OTHER DEVICES.

FLORATek 3X Setup

This section will guide you through the setup process for your FLORATek 3X system.

What you will need:

- FLORATek 3X system with all included accessories
- Your hydroponic system, assembled and ready for water
- Water reservoir with lid
- pH up and pH down solution if used
- Nutrient solutions with feedchart

Some important notes before starting:

- Your FLORATek system must be properly setup, configured, and calibrated before use.
- The ends of the nutrient feed tubes should always be kept **above** the surface of the water. If the feed tubes become submerged, nutrients will be siphoned out of the tubes, causing unbalanced water and possibly damaging plants.
- When using the FLORATek 3 system, the water level in your reservoir should be closely monitored. If the water level drops below the probes, FLORATek will not be able to monitor or treat your water, your probes may be damaged, and your plants may be damaged or die. If the water level rises too high, solution may be siphoned from the feed tubes.

WARNING

WARNING! pH correction solutions (pH up and down) should never be directly mixed together! Dangerous chemicals and gases can be created. When switching between pH solutions, ensure the pH pump(s) and tubing are thoroughly flushed with water. See Pump Priming section on page 17 for more information.

Important Notes about Probe Care

The FLORATek system uses laboratory-grade pH and EC probes to monitor the condition of your water. These probes are extremely accurate and reliable, but must be properly cared for to prevent them from being damaged. Probe calibration is covered on [page 14](#)

- Protect your probes from impact. Take care not to drop them.
 - When not being actively used, store your probes properly in a safe spot.
 - Never use your probes to stir a solution.
 - The pH probe hydration cap should be kept on the pH probe whenever the probe is not in use. If the tip of the pH probe dries out, the probe may be permanently damaged. Keep your hydration cap stored somewhere safe. For short-term storage, such as during long water changes, use a small amount of pH 4.01 Calibration Solution in the cap. For long-term storage, pH probe storage solution should be used.
 - Pure distilled water (DW) and reverse osmosis (RO) water can damage the pH probe over time. If using distilled water or RO water, you may want to stabilize your water with regular tap water. The use of distilled water and RO water is covered in the Electrical Conductivity section on [page 13](#).
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Hydroponics System Setup

Before setting up the FLORATek 3X system, you should first prepare, plumb, and test your hydroponic reservoir and system.

- When configuring your reservoir, do not place air stones directly under the probes. Bubbles and aerated water can interfere with accurate probe readings.
- Heaters and pumps should be installed at least 6 inches from the probes.
- Completely fill your reservoir and hydroponic system with water before installing your FLORATek system. You will need the water at the correct stable level in your reservoir before installing your probes and tubing. As you add water to your system for the first time, try to track the amount added as closely as possible- you'll need to know the approximate water capacity of your entire hydroponic system.
- Water should continuously circulate throughout the reservoir to ensure accurate monitoring and effective nutrient mixing. In some cases, a recirculation tee or a second small water pump may need to be used for effective mixing of the water in the reservoir.

Mounting your FLORATek 3X Control and Pumps

Your FLORATek 3X control should be mounted securely on a vertical surface near your reservoir. Your probes and nutrient tubing will need to reach into your reservoir, and your power cords will need to reach a 120v power source.

The FLORATek 3X dosing pumps are designed to be connected beneath your control, with the mounting locks used for increased security. You can mount your pumps separately, though you may need to use a longer data transmission cable to connect your control to your dosing pumps. The FLORATek 3X system uses standard USB 3.0 type A male-to-male cables for communication between the control and pumps. They can be identified from older USB cables due to them having blue connectors inside the tip of each side. We do not recommend using USB cables longer than 10 feet between the control and pumps, and not longer than 3 feet between each pump box.

Pump Configuration

Your FLORATek 3X control can be used alone, or with 3, 6, or 9 FLORATek 3X dosing pumps. The control is attached to the first set of pumps, which connects to the second set of pumps, which finally connects to the third set of pumps. This forms a daisy chain of pump boxes.

The FLORATek 3X control system is only compatible with FLORATek 3X dosing pumps, and the FLORATek 3X dosing pumps are only compatible with the FLORATek 3X control. They communicate through the daisy chain with a proprietary data signal that cannot be sent or interpreted by any other device. Do not plug your FLORATek 3X control or pumps into anything other than other FLORATek 3X devices.

The FLORATek 3X Dosing Pumps come in 2 sizes:

- Standard – 23 ml/min max output – compatible with systems 4-100 gallons
- Pro – 76 mL/min max output – compatible with systems 75-500 gallons

You cannot mix standard and pro dosing pumps in a single FLORATek 3X system- they must all be either standard or pro.

Below is a chart of the various pump configurations you can use with your FLORATek 3X system:

| Configuration | Pump 1 | Pump 2 | Pump 3 | Pump 4 | Pump 5 | Pump 6 | Pump 7 | Pump 8 | Pump 9 |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 3 A | pH Up | A | B | | | | | | |
| 3 B | pH Dn | A | B | | | | | | |
| 3 C | pH Up | pH Dn | A | | | | | | |
| 6 A | pH Up | pH Dn | A | B | C | D | | | |
| 6 B | A | B | C | D | E | F | | | |
| 9 A | pH Up | pH Dn | A | B | C | D | E | F | G |

Pumps are numbered from the first pump box, then the second, then the third. As an example, pump 4 is the first pump on the second pump box. Pump 7 is the first pump on the third box.

Probes and Tubing Setup

It is important to properly install your pH probe, EC probe, and nutrient tubing. There are many ways this can be accomplished, and the best way depends on your particular hydroponics system and reservoir.

No matter what method you use to mount your probes and tubing, always follow these principles:

1. It is most convenient to calibrate your probes before installing them in your reservoir.
2. The tips of your probes must always be submerged about 2-4 inches below the surface of the water. If your probe tips are too shallow, your FLORATek control will not be able to accurately measure the pH, EC, and temperature of your water and may incorrectly pump unwanted pH and nutrient solutions into your water.
3. Your pH and EC probes should NEVER be allowed to dry out. See the section on probe maintenance for more information.
4. Your pH and EC probes should not be completely submerged underwater.
5. Unlike the probes, make sure the ends of the tubing never submerge in the water. The pH and nutrient solutions should drip out of the tubing and into the water. Because of the low surface tension of pH and nutrient solutions, water can travel up the tubing and pull solutions out of the tubing without them being pumped. This will lead to undesired and inaccurate dosing, and will make your FLORATek control struggle to maintain your water.
6. Make sure the water in your reservoir is being circulated thoroughly and constantly. Because the FLORATek 3X control is always on and running, it will struggle to maintain your water if it is not being circulated continuously. You may want to add a small auxiliary water pump in your reservoir (or tee off of your main pump) to make sure water is being thoroughly mixed.

Accessories for mounting your probes and tubing can be found at www.tetraponics.com

Before you continue

Now that your hydroponic system is set up with your FLORATek 3X control and pumps, it is time to configure your control.

Before beginning the control configuration process, double check your setup. Ensure that your pH probe, EC probe, and (if applicable) pump boxes are plugged in to the control box. Also ensure all tubing runs correctly from their containers, to the pumps, then to the reservoir. There should be no kinks or sharp turns in the tubing. Finally, make sure that your hydroponic system is filled to the correct level and your circulation pump is running.

Take note of the water level in your reservoir. You should add water when the level drops to within 1 inch of the probe tips. All hydroponic systems lose water due to evaporation, and the rate at which you will need to add water varies depending on the size of your system, the plants you are growing, and the geometry of your reservoir.

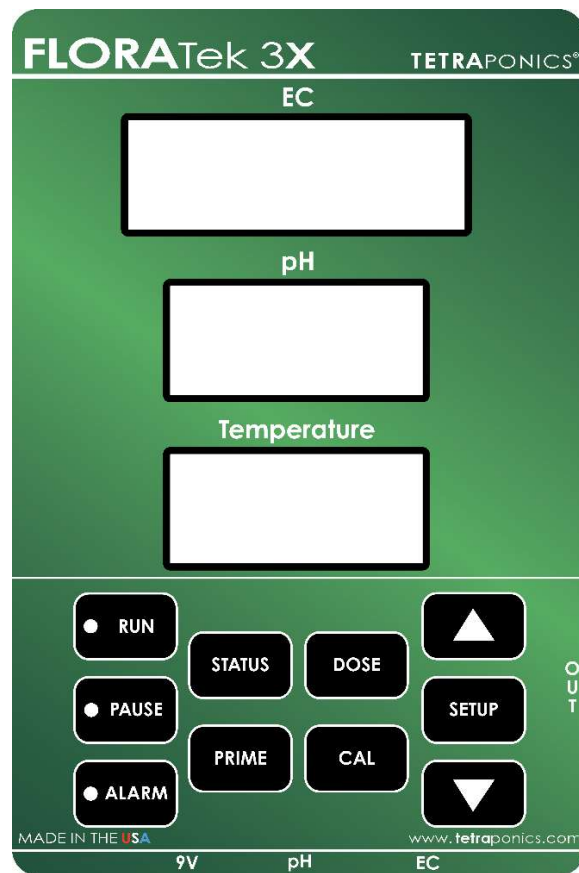
Using the supplied power adapters, plug your control box and pump boxes into a power outlet.

Make sure to use the 9-volt supply with the control, and the 12-volt supply with the pump(s). The adapters are marked for your convenience.

At power-up, your FLORATek control always starts up in the paused mode so it will not begin pumping nutrients or pH solution. **Do not press RUN until you have fully completed the configuration process.** Note that your pH and EC measurements will be incorrect due to the probes not yet being calibrated.

Take some time to familiarize yourself with the control's display and interface.

FLORATek 3X Configuration



Button Functions

Run: Enables the run mode. The control will take pH and EC measurements, calculate doses, and begin pumping nutrients and pH solution into the reservoir. A green light will indicate that the control is in the run mode.

Pause: Enables the pause mode. The control will stop pumping nutrients and pH solution. The FLORATek control always starts up in the pause mode. A green light will indicate that the control is in the pause mode.

Alarm: Displays the alarm menu, where active alarms are listed. A red light will indicate when an alarm is currently active.

Status: Displays the main screen on the FLORATek control. Your water's EC level, pH level, and temperature are displayed here in the units you have selected.

Dose: Displays the dose screen, where you can easily input your desired nutrient dose from your nutrient's feedchart.

Prime: Selects pumps to be manually primed.

Setup: Cycles through the various setup menus.

Cal: Cycles through the EC, pH, and temperature calibration screens.

Up/Down Arrows: Adjusts the selected variable.

Setup Menus

The FLORATek 3 Setup Menus are covered in a tutorial video at www.tetraponics.com/support

It is important to configure the FLORATek 3X control properly and completely prior to use. Some variables will be saved and rarely updated, such as the system capacity and blend time. Other variables, such as the pH setpoint and dose levels, will be changed more frequently. Pressing the SETUP key will cycle through the various setup variables.

EC Units (displayed as “EC Unt”)

Switches EC units between PPM (parts per million) and mS (millisiemens). The FLORATek 3X uses the x500 scale when using mS.

Temperature Units (displayed as “tnP Unt”)

Switches the displayed temperature units from F (Fahrenheit) to C (Celsius)

Pump Configuration (displayed as “PnP CnF”)

Switches between the 6 different pump configurations. See the Pump Configuration section for more information.

Pump Capacity (displayed as PnP CAP”)

Selects the appropriate pump capacity of your FLORATek 3X dosing pumps. This will be either 23 for standard pumps or 76 for pro pumps.

System Capacity (displayed as “SYS CAP”)

Used to enter the total water capacity of your hydroponic system, including the reservoir, plumbing, and all growing containers.

Blend Time (displayed as “bld tnE”)

Used to adjust the amount of time (in minutes) that the controller will wait between dosing cycles. See the System Setup section on [page 14](#) for more details.

pH Alarm Band (displayed as “PH AL”)

Sets the pH alarm band. If the pH level varies from the setpoint by more than this amount, the pH alarm will activate. If the pH alarm activates unexpectedly, a pH fault will be triggered.

EC Alarm Band (displayed as “EC AL”)

Sets the EC alarm band. If the EC level varies from the setpoint by more than this amount, the EC alarm will activate.

Temperature Low Alarm (displayed as “tnP LAL”)

Sets the low temperature alarm limit. If the water temperature goes below this level, the temp low alarm will activate.

Temperature High Alarm (displayed as “tnP HAL”)

Sets the high temperature alarm limit. If the water temperature goes above this level, the temp high alarm will activate.

Display Brightness (displayed as “dSP brt”)

Sets the brightness of the control displays.

pH Setpoint (displayed as “PH SET”)

Sets the desired pH level for your water.

pH Control (displayed as “PH Ctl”)

Sets the deadband of the pH control. If set to 0.0, your control will always continue to treat your water until the pH is exactly equal to your setpoint. If set to 0.5, for example, your control will disable pH control when the water is within 0.5 pH of the setpoint. OFF deactivates pH control entirely.

EC Base (displayed as “EC bAS”)

Sets the EC Base. See the “Electrical Conductivity” section on [page 10](#) for more details.

pH Up Concentration (displayed as “PHU con”)

Sets the gain of your pH up pump. See the “Solution Concentrations” section for more information.

pH Down Concentration (displayed as “PHd con”)

Sets the gain of your pH down pump. See the “Solution Concentrations” section for more information.

Nutrient Concentration (displayed as “nut con”)

Sets the gain of your pH up pump. See the “Solution Concentrations” section for more information.

pH Setup

Using your FLORATek 3X, measuring and adjusting your pH will be a straightforward and nearly completely automated process. However, there are some important things to know about pH control before you use your FLORATek 3X.

pH is a measure of how acidic or basic your water is, expressed on a scale of 0 to 14. A pH of 7 is neutral water that is neither acidic nor basic. Acids have a pH of less than 7, while bases have a pH of more than 7. Most hydroponics systems use slightly acidic water with a pH between 5.5 and 6.5. Depending on the exact chemical makeup of your untreated water, your starting pH will likely be about 7.0-7.5.

The alkalinity of your water is a measure of your water's resistance to a change in pH. The alkalinity of your water may be higher if using mainly tap water, or it may be very low if using distilled or reverse osmosis water. It is not necessary to know your water's alkalinity to use your FLORATek system.

When the FLORATek system adds nutrients to your water, the pH will usually drop. For many hydroponics systems, the pH will be lowered somewhat, but additional pH DOWN solution will be needed to reach the desired setpoint. However, if you are using water with very low alkalinity such as distilled or reverse osmosis water, the added nutrients may push the pH down far below the setpoint. In this case, you will need to use pH UP solution with your FLORATek to reach the setpoint.

While we understand the desire to use pure distilled or reverse osmosis water in your hydroponics system, the resulting low alkalinity may cause your pH to be difficult to control. When using DW or RO water, we recommend adding 10-20% tap water to help stabilize your pH.

Finally, it is important to remember that the chemistry and alkalinity of the water in your hydroponics system changes over time. As an example, you may need to use pH down for the first few days following a water change, but then the pH may drift down past the setpoint on its own. If your pH is slowly drifting beyond the setpoint, simply flush the pH pump tubing, install the required pH correction solution, and change the pH control type setting in the pH setup menu.

Still not sure which pH control to use? Don't worry!

The first time you use your FLORATek, complete the normal setup and configuration process but do not install a pH control solution and select the OFF option for pH control in the pH setup menu. Leave your control in RUN mode until your EC reaches its setpoint. Following this, if your pH is above the pH setpoint, install pH down. If the pH is below setpoint, install pH up. Just remember to prime the tubing and select the correct pH control in the pH setup menu.

Dual pH Control

Do you want to have full control over your pH? Dual pH control enables you to automate dosing of both pH up and pH down, along with your nutrients.

Electrical Conductivity

The FLORATek 3X monitors the electrical conductivity (EC) of your water to determine the level of nutrients in the water. Measuring nutrient levels with EC is accurate and reliable, but does have some considerations that are important to understand.

The water that you use in your hydroponic system contains some amount of minerals and impurities which contribute to the EC reading. Your EC probe will detect these minerals, which may be 100ppm or less for systems using mostly reverse osmosis (RO) water or could be 400ppm or higher if using hard tap water. EC probes cannot differentiate between these minerals and the hydroponic nutrients you intend to add, so before adding nutrients we measure these minerals and subtract them from the displayed EC. We call this your **EC Base**.

When you input this reading as the EC base on the EC Setup page, the FLORATek will subtract it from the measured EC reading before displaying your EC:

$$\text{Displayed EC} = \text{Measured EC} - \text{EC Base}$$

For this reason, your displayed EC may be negative if your EC base is larger than your measured EC. In this case, you should lower your EC base. With fresh water and no added nutrients, you should input an EC base that is as close as possible to your measured EC without being over.

It is important to understand that the FLORATek control also uses the Displayed EC when calculating doses.

Let's say you wish to have 1000ppm of nutrients in your water, but your untreated water has a measured EC of 250ppm due to the impurities in your tap water. By inputting 250ppm as your EC base, the FLORATek control knows it needs to add 1000ppm of nutrients instead of just 750ppm.

Your EC Base may change between water changes. Following a water change, you should adjust your EC base if the displayed EC is negative or is more than 20ppm.

Probe Care

The EC and pH probes included with your FLORATek 3X system will last for many grows if properly cared for. However, these probes can give false readings and/or completely fail if neglected or misused.

The tips of your probes should be cleaned every month, or when you suspect they may be giving incorrect readings. To clean the tips of your probes:

1. Place your control in Pause mode
2. Using a very soft brush, gently clean the tip of each probe. Clean the pH probe only with water. A mild dish soap can be used on the tip of the EC probe if necessary.
3. Always recalibrate your probes following cleaning.

When not in use, store your pH probe using the storage cap it comes with. Always check to make sure the sponge inside the storage cap is soft and wet, and the cap is filled about half way with 4.00 calibration solution before using it. The EC probe should be cleaned and dried before storage.

Probe Calibration

Probe Calibration is covered in a tutorial video at www.tetraponics.com/support

Proper probe calibration is necessary before using your control for the first time. You should also recalibrate your probes every month they are in use, before starting a new grow, after a probe has been stored for longer than a month, or when you replace a probe. **Failure to calibrate your probes before use will cause imbalanced water and damage to plants.**

Calibration tips:

- The EC probe also features a temperature sensor. Both probes and the calibration solutions should be at room temperature before calibration.
- Do not calibrate your probe directly in the container of calibration solution, as this will change the chemistry and reliability of the solution. Instead, pour just enough solution into a small container, such as a shot glass or small water glass.
- Always dispose of used calibration solutions.

What you'll need:

- A glass of room-temperature tap water for rinsing probes
- 1000ppm EC probe calibration solution
- 4.01 and 7.00 pH calibration solution
- Small containers for the calibration solutions (a 1oz container such as a shot glass or medicine cup is ideal)

pH Probe Calibration

The pH probe has a fragile glass bulb protruding from the tip.

1. Fill a glass with tap water, let it come to room temperature, then place both probes into it. Ensure the pH probe and the EC probe are connected to the FLORATek control box.
2. Make sure your pH solution is at room temperature and not expired.
3. Open the calibration menu by holding down the CAL button. "PH4 CAL" should appear in the bottom displays, with the current pH in the top display.
4. Gently rinse the tip of the probe with room-temperature tap water, then shake off excess water.
5. Place the pH probe into the 4.00pH calibration solution. The solution should cover the entire tip of the probe.
6. Wait about 30 seconds until the pH reading has stabilized.
7. Press and **hold the up arrow for 10 seconds** to calibrate the probe.
8. Gently rinse the tip of the probe with room-temperature tap water, then shake off excess water.
9. Place the probe into the 7.00pH calibration solution. The solution should cover the entire tip of the probe.
10. Press the CAL button to navigate to the 7.0 calibration screen. The screens should read "PH7 CAL".
11. Wait about 30 seconds until the pH reading has stabilized.
12. Press and **hold the up arrow for 10 seconds** to calibrate the probe.
13. Place the pH probe back into the glass with tap water.
14. Press STATUS to return to the main screen, or press CAL to continue to EC probe calibration.

EC Probe Calibration

The EC probe tip has 2 metal electrodes protruding from the tip.

1. Fill a glass with tap water, let it come to room temperature, then place both probes into it. Ensure the pH probe and the EC probe are connected to the FLORATek control box.
2. Make sure your EC calibration solution is at room temperature and not expired.
3. Ensure your EC Base is set to 0 in the Setup menu
4. Open the calibration menu by holding down the CAL button (if needed)
5. Press CAL to navigate to the EC calibration screen.
6. Gently rinse the tip of the probe with room-temperature tap water, then shake off excess water.
7. Place the probe tip into the EC calibration solution. The solution should cover the entire tip of the probe.
8. Wait 1 minute for the reading to stabilize.
9. Press and **hold the up arrow for 10 seconds** to calibrate the probe.
10. Place the EC probe back into the glass with tap water.
11. Press STATUS to return to the main screen.

Temperature Calibration

The temperature sensor on the EC probe is factory calibrated and rarely requires recalibration. If you confirm that your probe is inaccurately reading the temperature of a solution, the temperature sensor can be calibrated in the calibration menu. Press the up or down arrow to calibrate the sensor to the temperature of the known solution.

System Setup & Blend Time

The FLORATek control uses the system capacity setting to calculate doses. It is important to input the full water capacity of your entire hydroponics system, not just the capacity of your reservoir.

After the FloraTEK control calculates and adds a dose, the added nutrients and pH solutions need time to thoroughly blend with the water in your system. If the blend time is set too low, the control will quickly overshoot the setpoints. If this number is too high, the control will take an excessively long amount of time to reach the setpoints. **Always start with a blend time higher than you believe is appropriate!** It is much safer for your plants if the control slowly reaches the setpoints compared to if the control overshoots the setpoints. The blend time can be reduced as you learn how "fast" or "slow" your hydroponic system is.

A good starting point for Blend Time is 3 times the turnover time:
$$(\text{System Capacity} / \text{GPM}) \times 3 = \text{Blend Time}$$

Note that your actual pump rate may be much slower than the rate listed by the pump manufacturer, especially if smaller tubing and large pumping heights are used.

Solution Concentrations

The FLORATek control is designed to work with a wide variety of pH control and nutrient solutions. However, some commercially available solutions can be more or less concentrated than the FLORATek's control algorithm is expecting. After using your control for a few cycles, if you notice that the pH or EC is consistently overshooting the setpoint, you probably are using more concentrated solutions. In the Gains setup menu, decrease the affected solutions gain to reduce the amount of solution the control will add. Conversely, if you notice the control takes an exceedingly long time to reach the setpoint, you can try increasing the gain of the affected solution to increase the amount of solution the control will add.

The default gain is 5. By lowering the nutrient gain to 2 for example, the control will only add 40% of the calculated dose. By increasing the nutrient gain to 10, the control will add 200% (or double) of the calculated dose.

We strongly recommend keeping your gains set to 5 unless you are repeatedly experiencing dosing overshoots or undershoots and have confirmed all other settings are correct.

Priming the Pumps

Pump Priming is covered in a tutorial video at www.tetraponics.com/support

Before using your FLORATek to add nutrients and pH solution to your water, you must first prime the 3 pumps. This ensures that as soon as the pumps are turned on, the nutrients and solution drip into the reservoir.

To prime the pumps:

1. Make sure your pH solution and nutrients are properly installed, with tubing going from the container to the input (left) side of the pump, then from the output (right) side of the pump to the probe mount above the surface of the water
2. Press the PRIME button to enter the Pump Prime menu
3. Position yourself so that you can easily see the open end of the tubing while you are pressing the UP ARROW
4. Press and hold the UP ARROW to prime Pump 1. Release the key just before the solution drips into the reservoir
5. Press PRIME again to select the next pump.
6. Use the UP ARROW and PRIME buttons to prime the rest of the pumps in the same way.

Important: When switching between pH up and pH down solutions, it is important to flush the tubing with water to prevent the pH solutions from coming into contact with each other:

1. Remove the suction end of the pH solution tube from the solution container
2. Remove the end of the pH solution tube from the probe bracket and place into the pH solution container. This will pump the solution out of the tubing back into the container
3. Use the pump prime function to drain the pH tube
4. Once the tubing is drained, place both ends of the tubing into a glass of water
5. Use the pump prime function again to flush the tubing for about 1 minute
6. Remove the suction end from the water and continue priming to pump all water from the tube
7. Once the tube is empty, install the new pH solution and prime the pump

Dose Setup

Once your FLORATek setup menus are configured, it is time to input information on your desired nutrient dosing. Your control will use this information to calculate how much of each nutrient to add. You can find this information on the desired stage/week of your nutrient's feedchart.

The DOSE settings are dynamic and change depending on your selected pump configuration.

1. Press the DOSE button to cycle through the various dose settings.
 - EC Setpoint (displayed as "EC Set") set in your selected EC units
 - Nutrient A (displayed as "ntA Set") set in mL/gal
 - (other nutrients will be displayed depending on your pump configuration)

2. Using the up and down keys, adjust the EC Setpoint to the desired level
3. Press select, then the up and down keys to adjust the amount of each nutrient to be used to reach your EC setpoint.

Remember to update the desired EC setpoint and nutrient levels with every new stage/week of your nutrient's feedchart.

| Example Nutrient Feedchart | | | | | | | | | | |
|----------------------------|---------|----------|-----------|-----------|-----------|-----------|-----------|----------|----------|---------|
| Week #: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| PPM Range: | 400-500 | 900-1100 | 1100-1200 | 1100-1500 | 1100-1600 | 1100-1600 | 1100-1600 | 900-1300 | 900-1200 | 600-800 |
| Nutrient A | 5ml | 10 | 15 | 10 | 7.5 | 7.5 | 7.5 | 5 | 5 | 2.5 |
| Nutrient B | 2.5ml | 5 | 5 | 10 | 15 | 15 | 15 | 15 | 15 | 7.5 |

Using the FLORATek 3X

FLORATek 3X Use is covered in a tutorial video at www.tetraponics.com/support

Once setup and configuration are complete, you are ready to start using your FLORATek 3X system! First, it is important to understand how the control algorithm works to treat and balance your water, then keep it balanced.

The FLORATek 3X control has two modes: Pause and Run

When the control is plugged in, it will always startup in the pause mode. While in pause mode, you have the ability to change settings, dosage, and calibration. The control will also display the pH, EC, and temperature of your water.

Pressing the RUN button will enable FLORATek's Smart Proportional Control, which continuously monitors your water, analyzes the need for additional nutrients or pH corrections, calculates the most effective doses, and runs the pumps. You cannot change settings while in the run mode.

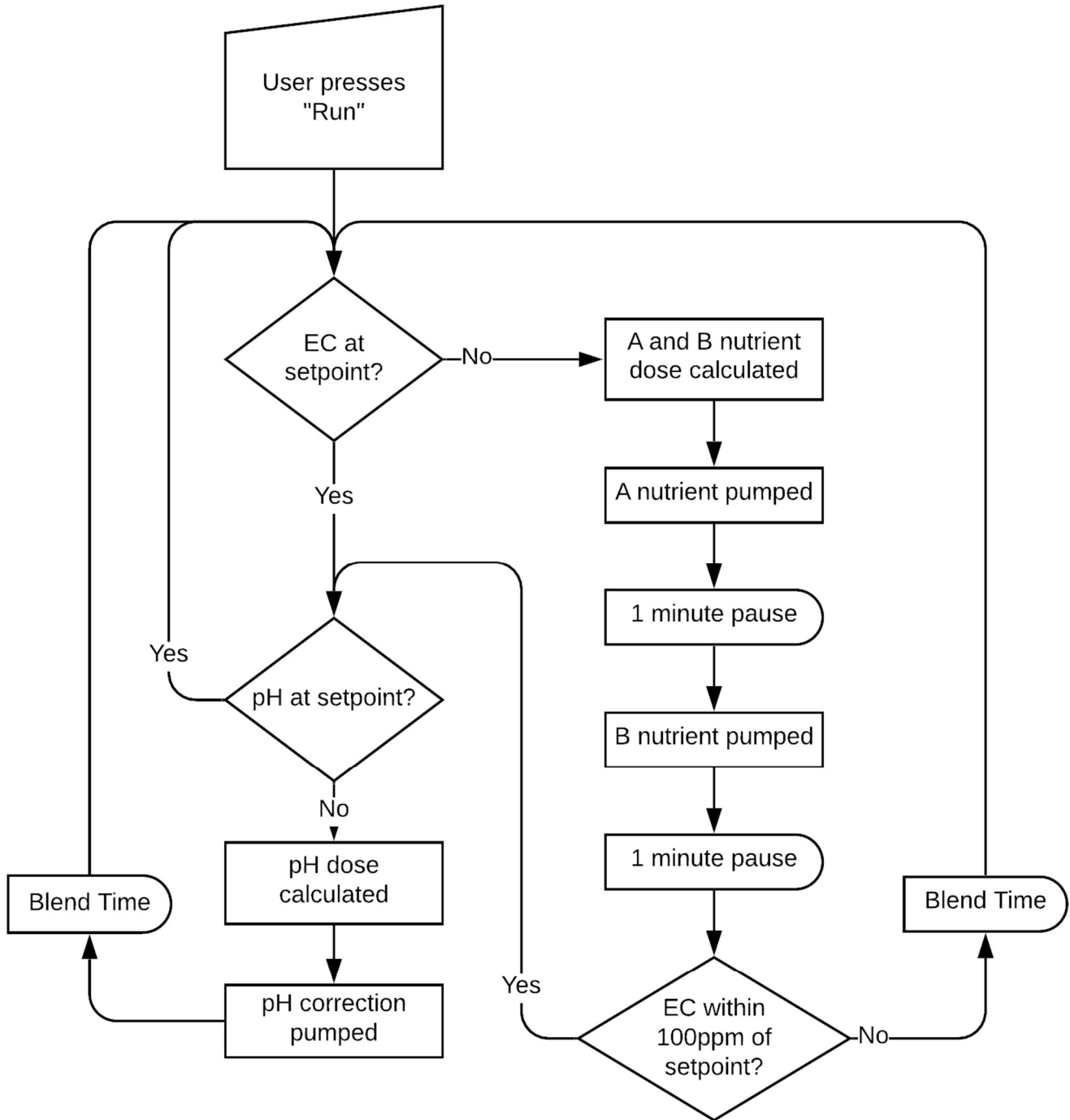
Details:

- The nutrients will always be added at the correct ratio based off of the information imputed on the Dose menu.
- The Smart Proportional Control will always correct EC error before correcting pH error. Many hydroponic nutrients will also affect the pH of your water. If pH is corrected first, adding large amounts of nutrients can push your pH out of balance.
- The control will automatically switch the pumps between high-speed for large doses and low-speed for small doses.

While the FLORATek 3X will accurately and efficiently treat and balance your water, remember that it can only adjust the pH of your water in the direction of the pH control solution you have installed. It can also only raise the EC of the water, as the only way to lower the EC level of your water is to dilute it.

If you are using supplemental nutrients other than what is automatically added with the A and B nutrient pumps, we recommend that you add these nutrients first, then wait for them to thoroughly mix in before pressing the RUN button. If you add these nutrients after your system has reached its EC setpoint, your EC level will be pushed beyond the setpoint as the additional nutrients mix into your water.

Smart Proportional Control Algorithm



Alarms and Faults

When the pH, EC, or temperature of your water is outside of the alarm bands you set in the setup menus, an alarm will activate and the red ALARM light will be illuminated.

You can view current alarms by pressing the Alarm button if the ALARM light is illuminated.

Alarms can be expected sometimes, as usually the pH and/or EC of your untreated water will be outside of the alarm bands when you are just starting out or right after a water change. Give the control some time to bring the pH and EC to their setpoints and the alarms will deactivate.

Potential causes of unexpected pH and EC alarms:

- The water level in your reservoir drops below the tip of the EC probe. This is the most common cause for a pH or EC fault, and can be easily corrected by adding water to the system to bring it back up to the "full" level. All hydroponic systems lose water due to evaporation, but check for leaks if your water level drops unusually quickly.
- Your pH correction solutions or nutrients are empty. Make sure the suction tubes leading to the pumps are fully submerged in solution/nutrients.
- There is a kink or leak in your solution/nutrient tubing. Ensure your tubing is connected properly and is not kinked.
- The pH or EC of your water changes more quickly than the controller can correct. This is typically the result of you adding water or manually adding nutrients.

Faults

Your FLORATek 3X control has safeguard in place to reduce the chances of plant damage in the event of pH or nutrient solutions running out or being incorrectly installed.

Once your water is within both the pH and EC alarm bands, the alarm fault system will be activated. After the system is active, if a pH or EC alarm is active for 3 blend cycles, the appropriate pH or EC fault will be triggered. A pH or EC fault will be indicated by a flashing red alarm light, and the control will automatically enter pause mode.

When you encounter a pH or EC fault, investigate why the fault may be happening. Check to make sure all of your pH and nutrient solutions are at an adequate level and attached to the correct pump per your pump configuration.

To clear the fault, press the ALARM button. You can then press the RUN button to place the control back into run mode.

Water Changes

Regularly changing the water in your hydroponics system is beneficial to remove contaminants from the water, manually clean any algae growth, and ensure ideal growing conditions for your plants. However, changing your water too frequently is also inefficient and wasteful.

When deciding how frequently to change your water, consider the following:

- Upcoming changes to your nutrient dosing. When moving to a new week or stage on your nutrient feedchart, you should complete a water change.
- How quickly algae growth appears in your reservoir, grow containers, or plumbing. You should always check for algae growth and clean it when necessary.
- If your water is filtered at any point in the circulation. Filters can keep your water cleaner for longer.
- The type of plants you are growing. Some plants are “pickier” about water changes than others.

If you expect the pH probe to be out of the water for more than 15 minutes, the tip should be placed in probe storage solution.

Typical water change procedure with a FLORATek system:

1. Unplug your FLORATek control
2. Remove your probes and properly store them in a safe place.
3. Drain the water from your hydroponic system
4. Clean your hydroponic system as needed
5. Refill your hydroponic system with clean water to the proper level. Remember to circulate the water before starting your FLORATek control.
6. Place your probes back in your reservoir and ensure all tubing is reinstalled correctly
7. Plug in your FLORATek system
8. If your EC is negative or higher than 50, adjust your EC base in the EC setup menu
9. Update your dose to the new stage/week of your feedchart, as required
10. Press RUN to start treating your water

Using the FLORATek 3X Online Portal

Your FLORATek 3X system can be used completely standalone without connecting it to the internet. However, by connecting your control to the internet using your home Wi-Fi network, you enable the use of the FLORATek 3X Portal. The portal can be securely accessed anywhere in the world from any computer or device that has a web browser.

Using the portal, you can remotely:

- Monitor your EC, pH, and temperature
- View current setpoints and alarms
- Run and pause your control
- Change dose settings
- Change setup settings

For users wanting even more features, you can subscribe to Portal Plus!

With Portal Plus, you get all the features of the standard portal, with the addition of:

- Data logging
- Interactive charting to view and download data logs
- Dose scheduling
- Email alerts for pH, EC, and temperature alarms

Connecting your FLORATek 3X to your Wi-Fi

Your FLORATek 3X is delivered to you ready to connect to your secure online portal.

First, you will need to connect your FLORATek 3X to your home Wi-Fi network:

1. When you power up your control without it knowing a wi-fi network, it will broadcast its own network. You will be able to connect to it at "FTX (serial number)". The network password is "TetraPonics".
2. Once connected, open your internet browser and type in "192.168.4.1". This is the address of the wi-fi module on your FLORATek 3X control.

Note: If you are using a cell phone to set up your control, you will have to put your device in airplane mode before turning your wi-fi back on and connecting to your FLORATek 3X.

3. On this page, you will be able to select your desired wi-fi network and enter the password. Once you click connect, your FLORATek 3X will attempt to connect to that network. If it is successful, it will save that network information locally. **Your network information is not transmitted or shared with TetraPonics or anyone else.**
4. Once your FLORATek successfully connects, you can switch your device or computer back to your normal network connection
5. Your portal can be found online at:

(Your 7-digit serial number).floratek.app

For example: 0921070.floratek.app

Further instructions on using the portal can be found inside the portal.

Contact Us

If you have any questions or concerns while setting up or using your FLORATek 3X system, please contact us for support:

www.tetraponics.com/contact

support@tetraponics.com