



## Welcome to VivoAquatics

### This guide will help you navigate your EMEC Edge 200 Chemical Controller

-  This guide contains safety information. If not followed equipment will not work properly and may cause harm.
-  Always follow State and Local Health Codes when applicable.
-  Contact VivoAquatics Support if you are unsure how to operate your equipment.
-  Report any Maintenance failures to VivoAquatics Support as soon as possible.
-  Take care of all equipment with daily, weekly, monthly and annual service per manufacturer recommendations.

### Controller Chemical Ranges

Chlorine: 0-10 mg/l

pH: 0-14 ppm

**Default Controller Password** 0000



### Term Clarification:

Controller= EMEC Edge 200

Chemical Pump= Stenner Pump

English Version

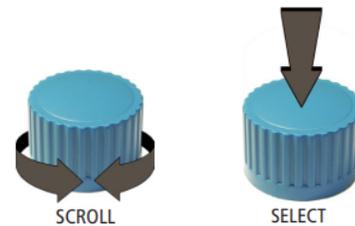
## General Safety Guidelines

- In emergency situations always disconnect controller and chemical pumps immediately. Disconnect the power cable from power supply.
- Always follow State and Local regulations during install and usage.
- Controller and chemical pumps must be accessible at all times for both operating and service. Access must not be obstructed at any time.
- Controller should always be set with proper programming to allow backup safety settings.
- Controller and chemical pumps should be serviced by trained staff.
- Always use proper protection equipment when working on controller and chemical pumps.
- Beware of chemicals and liquid going through controller and chemical pumps if chemical levels are not maintained.
- Always know what chemicals are being controlled by controller and chemical pump.

## Controller Parts \*These may vary in color depending on version

### The Wheel

- Located in the upper right side.
- The wheel is used to navigate the menu of the controller.
- Rotated in both directions to scroll over menus and/or pressed to confirm highlighted section/value.



### Main Screen Figure A

- PH and Chlorine (mg/l)
- Temperature
- Connection
- Alert Notification
- Chemicals Pump On/Off
- Gallons per hour



### Probes & Probe Container Figure B

- pH Probe (ball end/blue connector)
- PPM Probe (Cap and Gel required) Figure C
- Temperature Probe
- Flow Indicator



### Filter & Filter Container Figure D

- White Filter

### Isolation Valves Figure E

### Antenna Figure F



## Preventative Maintenance & Daily Operation

- ✓ Check water chemistry—perform pH calibration if needed (see calibration section).
- ✓ Inspect probes—clean only if necessary.
- ✓ Check chemical pumps and dosing equipment (Stenners, pumps, tubing) and ensure equipment is working with no leaks.
- ✓ Inspect filter basket in controller- clean if necessary.
- ✓ Inspect tubing and valves for corrosion or build up.
- ✓ Make sure setpoints and programming are correct at all times.



## Regular Probe Maintenance

\*pH probe should be cleaned monthly

1. Shut off flow to controller with isolation valves on both sides of controller.
2. Remove probe by undoing locking nut on probe container.  
\*Locking nuts is typically hand tight but a crescent wrench or pliers might be required.
3. Start by applying dish soap to a soft bristle toothbrush and gently scrub probe tip.
4. Thoroughly rinse probe tip.
5. Replace probe into probe container and turn flow back on via isolation valves. \*Be sure not to cross thread nut
6. Allow probes to reacclimate to water for at least 1 hour. \*Be sure to unplug/switch off any chemical equipment while probes are acclimating.
7. After 1 hour test water & Calibrate pH if needed.

## Clean Filter Basket in Controller

\*clean filter basket every month or needed.

1. Shut off flow to controller with isolation valves on both sides.
2. Unscrew filter basket housing.
3. Clean filter basket with water.
4. Screw filter basket back into housing
5. Turn flow back on to controller via isolation valves.

\*If basket is bent, broken or warped it can affect flow.

## Part Replacement Schedule

| Item                              | Replacement Interval                  | Maintenance                                 |
|-----------------------------------|---------------------------------------|---|
| PPM Probe Gel                     | Replace gel once a year               | When Needed                                 |
| pH Probe                          | Replace 12 - 18 Months                | Clean Monthly or when needed                |
| Stenner Squeeze Tube              | Replace every 6 months or when needed | When Needed                                 |
| Acid Tubing                       | Replace every year or when needed     | When Needed                                 |
| Chlorine Tubing                   | Replace every 2 years or when needed  | When Needed                                 |
| Stenner Injectors                 | Replace every year or when needed     | Clean every Month or when needed            |
| Stenner Duckbills (If applicable) | Replace every 6 months                | Replace every time Stenner tube is replaced |
| Isolation Valves                  | Replace every year or when needed     | Check for leaking every month               |
| Sample Valves (edge 100 only)     | Replace every year or when needed     | Check for leaking every month               |
| CCH Feeder                        |                                       | Clean every month or sooner if needed       |

## PPM Probe Cap and Gel Replacement

### Gel needs to be replaced when:

- 1) The manual reading is not matching the controller after multiple calibrations
- 2) After calibration of the probe, the reading automatically drops away from calibration.

### Gel goes bad when:

- 1) When the chlorine in the body of water goes above 10ppm
- 2) When there is too much water flow going through the controller
- 3) Gel is old (Typically 12 months)

When replacing gel does not always mean you need to replace the cap. As long as the cap is not leaking or the tip of the cap is intact and not discolored you can reuse the cap.

**Troubleshooting:** Probe acclimation could take up to 24 hours. If still not tracking after 24 verify that no air bubbles are in the cap and ensure that the cap is fully screwed on.

### Steps:

1. Isolate controller from flow
2. Remove PPM from probe housing
3. Remove cap from PPM probe
4. Clean out all old gel from probe tip and cap
5. Loosen transparent ring around cap to uncover the overflow hole
6. Prepare electrolyte gel by screwing on funnel cap
7. Turn electrolyte gel upside down to force gel into funnel cap
8. Insert funnel of electrolyte gel into cap and squeeze with constant pressure making sure no air bubbles get into gel.
9. Fill to inner step
10. Remove electrolyte gel and inspect to make sure no air is in cap
11. Insert probe into cap and screw all the way in. Gel will come out overflow hole
12. Replace transparent ring around cap to cover overflow hole
13. Wipe excess gel from cap
14. Install PPM probe back in probe housing
15. Turn flow back on to controller
16. Wait a few hours for probe to reacclimate to pool water

## Recommended Chemical Guidelines

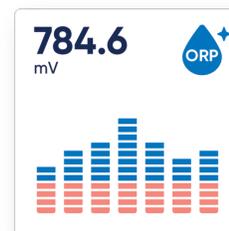
|                               | MINIMUM | IDEAL       | MAXIMUM |
|-------------------------------|---------|-------------|---------|
| <b>Free Chlorine Pool</b>     | 3 ppm   | 3-4 ppm     | 5 ppm   |
| <b>Free Chlorine Spa</b>      | 3 ppm   | 3-5 ppm     | 5 ppm   |
| <b>Combined Chlorine</b>      | 0       | 0           | 0.2     |
| <b>pH</b>                     | 7.2 ppm | 7.4-7.6 ppm | 7.8 ppm |
| <b>Total Alkalinity</b>       | 60 ppm  | 80-100 ppm  | 120 ppm |
| <b>Calcium Hardness Pool</b>  | 150 ppm | 200-400 ppm | 850 ppm |
| <b>Calcium Hardness Spa</b>   | 100 ppm | 150-200 ppm | 750 ppm |
| <b>Total Dissolved Solids</b> | -       | -           | 1500    |
| <b>Cyanuric Acid</b>          | 0       | 15-20 ppm   | 30 ppm  |
| <b>Salt (salt systems)</b>    | 3,000   | 5000        | 7000    |
| <b>Phosphates</b>             | -       | <300        | 500     |
| <b>LSI</b>                    | 0.03    | 0.0         | 0.03    |

## Hand Dosing Guidelines

Hand dosing may be required if the automation equipment is not functioning as intended. Use the chart below to determine when it's time to hand dose and what to use. Refer to your specific chemical dosing instructions that are listed on the product to dose appropriately.

**Caution:** If hand dosing is needed close chemical controller probe isolation valves while chemicals are added to prevent damage to the probes. Reopen after chemicals have mixed appropriately usually takes 1 hour.

|                          | When to dose | What to use                     |
|--------------------------|--------------|---------------------------------|
| <b>Increase Chlorine</b> | <2 PPM       | Granular Shock, Liquid Chlorine |
| <b>Decrease Chlorine</b> | >6PPM        | Thiosulfate                     |
| <b>Increase pH</b>       | <7.2         | Soda Ash                        |
| <b>Decrease pH</b>       | >7.8         | Hydrochloric Acid               |



\*Guidance based on publicly listed industry standards and recommendations. VivoAquatics recommends you refer to local, regional, and federal guidelines to check your specific requirements and standards.

## Controller ALARMS

### Types of Alarms

#### Out of Range Alarms

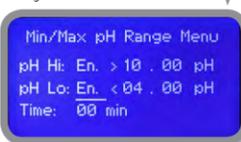
The controller number is outside the Minimum and Maximum set points.

#### Dosing Alarm

One of the chemical pumps has reached their run time limit.

**Out of Range Alarms:** defines the minimum and maximum pH and PPM Probe reading before the chemical pumps stop dosing and alarm message goes off.

\*this is a safety backup



Set Hi/Lo ranges based on when you want to make sure the controller shuts off chemical pumps until alarm is cleared.



Time: How long the Hi/Lo number has to be reached before chemical dosing pumps stop dosing.

Mode should be set to **STOP**.

**Dosing Alarms:** defines the maximum amount of time chemical pumps dosing chemicals before automatically shutting off and alarm message goes off. This will happen even if setpoint is not reached. \*this is a safety backup  
Both Cl and pH should be set to **STOP**

⇒ Helpful tips- Every pool is different

⇒ Never turn dosing alarms off



⇒ Suggestion- Spa & small bodies of water 30-60 mins; large bodies of water 60-120 mins. There may be times when you have higher dosing alarms.

⇒ Dosing alarms could be changed seasonally if needed.

### HOW TO CLEAR A DOSING ALARM

- ⇒ Login to controller
- ⇒ Exit back to main screen
- ⇒ Contact VivoAquatics support if this happens regularly

### Helpful Alarm TIPS

- Alarms are programmed as a safety back-up.
- Alarms should not be set off at any time.
- Chemical pumps will not dose until alarms are cleared.
- When controller is in alarm the main screen will flash alarm on the bottom left hand corner.

## Alarm Parameters

Alarms are sent out when chemicals are outside of the following alarm parameters. \*these are customizable

|                    | Below | Above |
|--------------------|-------|-------|
| Free Chlorine Pool | 2.5   | 5.5   |
| Free Chlorine Spa  | 3     | 5     |
| Flow               | OFF   |       |
| pH                 | 7.2   | 7.8   |



## Alarm Issue Resolution

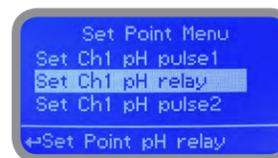
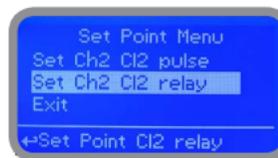
- Stage 1** *When Initial alarm is Received*
- Step 1: Go to equipment room
  - Step 2: Manually test pH and Chlorine
  - Step 3: Inspect controller for type of alarm
  - Step 4: Use the troubleshooting guide below to identify the cause of the alarm and resolve the issue.
  - Step 5: Alarm believed to be resolved recheck equipment after 30 minutes to verify issue resolution
- Stage 2** *If Alarm is Not Resolved*
- Step 1: Ready your most recent manual test for chlorine and pH (must have taken test 15 minutes prior to this step)
  - Step 2: Call VivoPoint Support at (888) 702-8486 (See hours below)
  - Step 3: Work with VivoPoint Support for further troubleshooting steps to resolve the issue
- Stage 3** *Issue Escalated to Physical Response*
- Vivo Aquatics representative or qualified contractor is sent out to assist in resolving the issue.

## Setpoints

- ✓ Setpoints will be different for every body of water. \*It takes time to get setpoints correct up to a few weeks.
- ✓ Setpoints can be found in the main menu list after password is entered.
- ✓ Setpoints can vary and need to be changed based on season, probe lifespan, chemical readings.

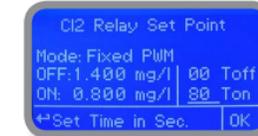
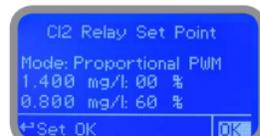
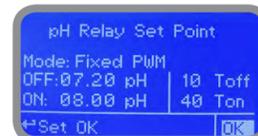
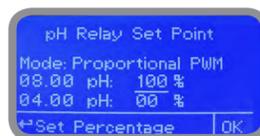
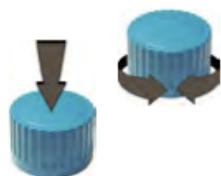
We only use **Relay** menu for both Cl and pH. \*only use pulse if you have a pulse chemical pump (we do not see this often).

Pulse menu should always say **OFF**



Once in Relay menu you have 3 options-

- 1) **On/off Mode**- turns on at setpoint number turns off at setpoint number.
- 2) **Proportional PWM Mode**- controls how much the chemical pumps to get to the setpoint and how fast it is pumped into the pool. This mode lets you tell the controller how slow the chemicals should be added to the pool as it gets close to setpoint. \*It is very normal for the chemical pump to not pump while in proportional setting. It will run for a length of time and stop for a length of time (the %).
- 3) **Fixed PWM Mode**- controls how much the chemical pumps to get to the setpoint and how fast it is pumped into the pool. This mode lets you tell the controller how long to pump chemicals into the pool and how long to stop pumping chemicals into the pool before it starts pumping again. \*It is very normal for the chemical pump to stop pumping while in fixed setting. It will run for a length of time and stop for a length of time you set.



\*these numbers are just examples

### Tips for Setpoints Modes:

- **The bottom number is the number you want the chemical pump to turn on and the top number is the number you want the chemical pump to turn off.**
  - For Chlorine (Cl) the bottom number is going to be lower than the top number. \*Santizer brings chlorine up.
  - For pH the bottom number is going to be higher than the top number. \*acid brings pH down.
- **Use ON/OFF for bigger bodies of water.** If used for smaller bodies of water, they are more likely to overshoot.
- **Use Proportional/Fixed for smaller bodies of water.** Normally we use Proportional more than Fixed.
- **Proportional mode percentage is the percentage you want the chemical pump to run as it gets closer to setpoint.** Example 60%- the chemical pump will start to taper off pumping chemicals run 60% of the time and off for 40% of the time and decrease until setpoint is reached.
- **Fixed mode you tell the controller how long to run in seconds (Ton) and how long to stop in seconds (Toff) until setpoint is reached.** Example 80 (Ton) 40 (Toff) chemical pump will run for 80 seconds and off for 40 seconds until setpoint is reached.

## Setpoint Recommendations & Troubleshooting

| Problem                                  | Setpoint Recommendation  | Troubleshooting   |
|--|--|---|
| Low Chlorine                             | Not to exceed 6.0ppm<br>Use on/off mode<br>Raise % if using Proportional mode<br>Adjust time if using Fixed mode                         | Raise Cl setpoint<br>Bring pH to setpoint<br>Clear alarms<br>Bring pH setpoint number further apart |
| High Chlorine<br>(Overshooting Chlorine) | Not less than 1.0ppm<br>Use Proportional mode<br>Use Fixed mode<br>Lower % if using Proportional mode<br>Adjust time if using Fixed mode | Low Cl Setpoint<br>Bring pH to setpoint<br>Bring Cl setpoint closer together                        |
| Low pH<br>(Overshooting pH)              | Not to exceed 7.8ppm<br>Use Proportional mode<br>Use Fixed mode<br>Lower % if using Proportional mode<br>Adjust time if using Fixed mode | Raise pH setpoint<br>Bring pH setpoint numbers closer together                                      |
| Hi pH                                    | Not Less than 7.2ppm<br>Use on/off mode<br>Raise % if using Proportional mode<br>Adjust time if using Fixed mode                         | Lower pH setpoint<br>Bring pH setpoint numbers further apart  |

⇒ Helpful tips for **Chlorine (Cl)** Set Point- Every pool is Different.

⇒ Using Proportional the pool is less likely to overshoot, however might not keep up with demand on bigger bodies of water.

⇒ When using proportional your feeder will cycle pumping chemicals and pausing and pumping chemicals. This might not be the best choice for CCH feeders.

⇒ Do not mix up the percentages and put the number at the top

⇒ The closer your setpoints are set, the lower overshooting occurs. Suggestion- keep your set points 1.0-2.0ppm point difference.

⇒ Helpful tips for **pH** Set Point- Every pool is Different.

⇒ Using Proportional the pool is less likely to overshoot, however might not keep up with demand on bigger bodies of water.

⇒ When using proportional your Stenner wil cycle pumping chemicals and pausing and pumping chemicals.

⇒ Do not mix up the percentages and put the number at the top

⇒ The closer your setpoints are set, the lower overshooting occurs. Suggestion- keep your set points .2-.25 point difference.

⇒ Unlike chlorine, you should rarely have to adjust your set points once set.

## **Probe Calibration**

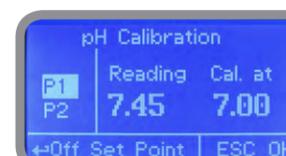
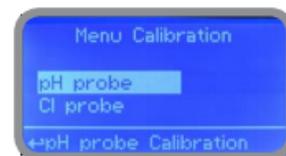
We only calibrate the **pH probe**, **Chlorine (ppm)** and the **Temperature Probe**.

If you need to calibrate ORP something is wrong with the probe- Lets troubleshoot that first before calibration.

Calibrate controller if manual test reading is greater than 0.1 difference.

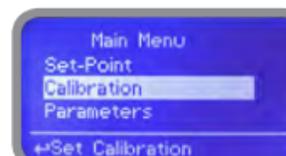
### **pH & Chlorine Calibration Steps:**

1. Perform a manual water test and record results.
2. Log into the controller by pressing the scroll wheel in. Password Screen
3. Select "Calibration" from the main menu. Push scroll wheel in.
4. Select the pH probe by pressing in scroll wheel.
5. Select fast calibration.
6. Use scroll wheel to to select P.
7. With the value under "Cal. at" highlighted enter the value from manual test and push scroll wheel in.
8. Scroll to OK and push the scroll wheel in.
9. When reading matches closely to the manual test, press EX to exit.
10. Save results and return to the main screen.



### **Temperature Calibration Steps:**

1. Perform a manual test or look on heater to determine correct temperature.
2. Log into the controller by pressing the scroll wheel in. Password Screen
3. Select "calibration" from the main menu. Push Scroll wheel in.
4. Select Temp from calibration menu.
5. Use scroll wheel to to select P.
6. With the value under "Cal. at" highlighted enter the value from manual test and push scroll wheel in.
7. Scroll to OK and push the scroll wheel in.
8. When reading matches closely to the manual test, press EX to exit.
9. Save results and return to the main screen.



### **Helpful Calibration TIPS**

- Calibration needs to be done when manual readings and controller readings do not match.
- **Fast Calibration vs Full Calibration:**
  - **Fast Calibration**- involves one point calibration, telling the controller what the number is.
  - **Full Calibration**- involves two calibration points and needs 2 buffer solutions.
- Full calibration can be used with buffer solution to run a complete calibration on the pH and ORP Probe.
- Full calibration can be used to troubleshoot if a probe is still working.
- If you are calibrating every day/every week- there might be something wrong with the probe and needs troubleshooting.

## Troubleshooting

|   |  |
|---|--|
| Controller Offline  | Powercycle needed  |
| Chlorine not dosing/ Chlorine Low                           | Chlorine Barrel/Container is empty<br>Chlorine injector is clogged<br>Probe Failure<br>Setpoints not set correctly<br>Stenner needs a new tube<br>Dosing limit to low<br>Powercycle needed |
| Acid not dosing/ pH High                                    | Acid Barrel is empty<br>Probe Failure<br>Setpoints not set Correctly<br>Stenner tube needs replaced<br>Dosing limit to low<br>Powercycle needed  |
| Probe Failure<br>Controller not reading the correct numbers | Probe Unresponsive<br>Probe needs cleaning<br>Probes needs replaced<br>Power Cycle needed<br>Need to change cap & gel  |
| Chlorine too high   | Setpoints not set correctly<br>Too much chlorine going through Stenner- turn down percentage<br>Dosing limit too high<br>Adding chemicals by hand  |
| pH too low  | Setpoints not set correctly<br>Too much acid going through Stenner- turn down percentage<br>Dosing limit too high<br>Adding chemicals by hand.   |
| No Flow   | Adjust sample flow valves to allow more flow<br>Backwash/clean filter if necessary<br>Clean controller pre-filter  |



## Warning from VivoAquatics

- Call Support if you are unsure how to operate your controller.
- Request training if you need more training.
- Consult Vivo Support before changing any relay, alarm or feeding parameters.
- Do not reset the controller without vivo support.
- Do not change controller programming without consulting Vivo Support.
- Never disable alarms or dosing times.
- Report any mechanical failures to Vivo Support.
- Close the body of water as soon as it is identified as unsafe.

### Special Circumstances

Pool leaks- Constantly adding freshwater to the pool will dilute water going through the controller and cause a false reading.

Adding chemicals manually- When adding chemicals to the pool manually, close controller valves for at least 1 hour after to not cause a false reading or destroy probes.

Winterization- If you close your pool for the winter, the controller needs to be winterized. Contact Vivo Support for directions.

\*Guidance based on publicly listed industry standards and recommendations. VivoAquatics recommends you refer to local, regional, and federal guidelines to check your specific requirements and standards.