








Welcome to VivoAquatics

This guide will help you navigate your EMEC Edge 100 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

ORP: 0-999mv

pH: 0-14 ppm

Default Controller Password 0000



Term Clarification:

Controller= EMEC Edge 100

Chemical Pump= Stenner Pump used to feed chlorine or acid into the body of water.

English Version

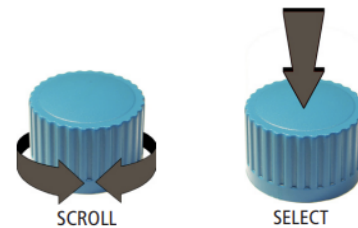
General Safety Guidelines

- 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

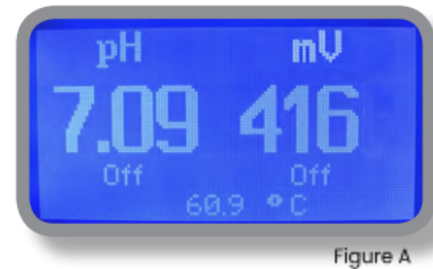
The Wheel

- Located on 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 ORP
- Temperature
- Connection
- Active Alarms
- Chemicals Pump On/Off
- Gallons per hour (if using water meter)



Probes & Probe Container Figure B

- pH Probe (ball shaped probe tip/blue connector) Figure C
- ORP Probe (pointed probe tip/yellow connector)
- Temperature Probe
- Flow Indicator



Figure B

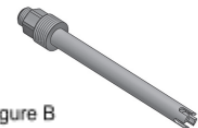


Figure C

Filter & Filter Container Figure D

- White Filter



Figure D

Isolation Valves Figure E and Sample Values

Antenna Figure F



Figure E



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 & ORP probes 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
ORP Probe	Replace 12 - 18 Months	Clean Monthly or 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

Recommended Chemical Guidelines

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

ORP

ORP (Oxidation Reduction Potential) is a way to measure how clean water is and its ability to deactivate contaminants. The higher the ORP value the cleaner the water, whereas the lower the ORP value the dirtier the water.

ORP setpoints are the most important part of using your ORP probe. You may be asking if the chart shown before is not meant to be used to create setpoints how do I find them? While it takes a bit more work than finding setpoints for pH probes or Chlorine probes the process is fairly straightforward.

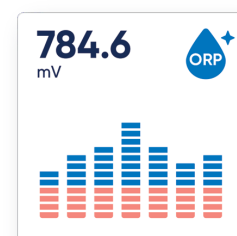
- 1) Adjust alkalinity to between 80 and 120.
- 2) Manually adjust pH using dosing calculations to be exactly where you want it to be typically between 7.4 or 7.5.
- 3) Manually adjust your chlorine to be exactly where it should be.
- 4) Look at your controller and record the ORP value. This will be used as a setpoint for your controller.

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
Increase Chlorine	<2 PPM	Granular Shock, Liquid Chlorine
Decrease Chlorine	>6PPM	Thiosulfate
Increase pH	<7.2	Soda Ash
Decrease pH	>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

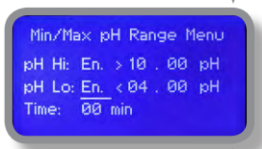
Out of Range Alarms

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 ORP 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.

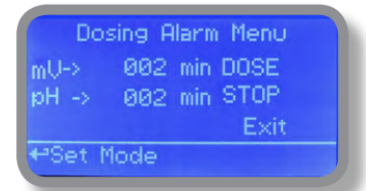


Time: How long the Hi/Lo number has to be reached before chemical dosing pumps stop dosing .
Mode should be set to **STOP**.



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 mV 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

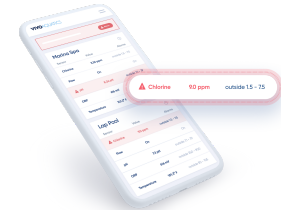
Helpful Alarm TIPS

- 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

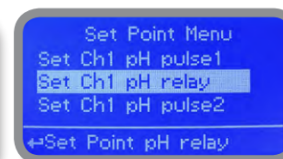
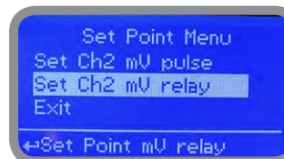
- Stage 1** **When Initial alarm is Received**
- Step 1: Go to equipment room
 - Step 2: Manually test pH and Chlorine
 - Step 3: Inspect controller for type of alarm
 - Step 4: Use the troubleshooting guide below to identify the cause of the alarm and resolve the issue.
 - Step 5: Alarm believed to 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
- ✓ 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.

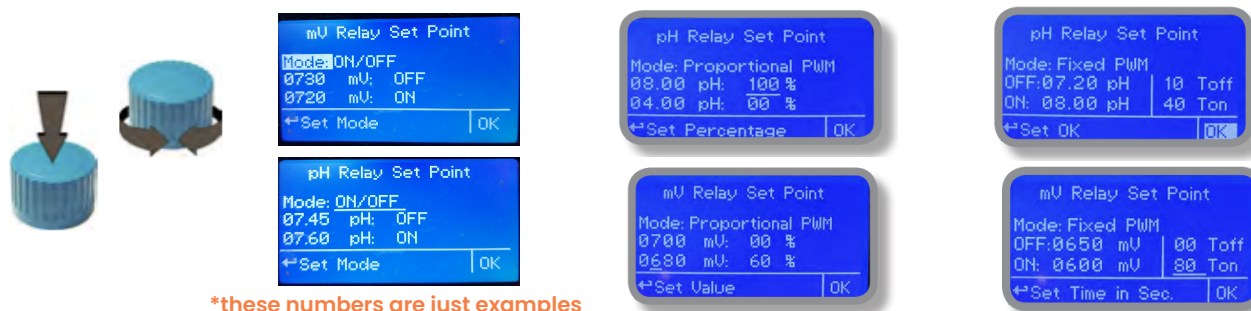
We only use **Relay** menu for both mv and pH. *only use pulse if you have a pulse chemical pump (we do not see this often).

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.



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 (mv) 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 overfeed.
- **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 860 ORP Use on/off mode Raise % if using Proportional mode Adjust time if using Fixed mode	Raise ORP setpoint Bring pH to setpoint Clear alarms Bring pH setpoint number further apart
High Chlorine (Overshooting Chlorine)	Not less than 600 ORP Use Proportional mode Use Fixed mode Lower % if using Proportional mode Adjust time if using Fixed mode	Low ORP Setpoint Bring pH to setpoint Bring ORP setpoint closer together
Low pH (Overshooting pH)	Not to exceed 7.8ppm Use Proportional mode Use Fixed mode Lower % if using Proportional mode Adjust time if using Fixed mode	Raise pH setpoint Bring pH setpoint numbers closer together
Hi pH	Not Less than 7.2ppm Use on/off mode Raise % if using Proportional mode Adjust time if using Fixed mode	Lower pH setpoint Bring pH setpoint numbers further apart

⇒ Helpful tips for Chlorine (mv) 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.

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

⇒ Suggestion- keep your set points 10-15 point difference. IF points are too far apart the feed will behave sluggishly and cause low chlorine issues. If too close, special feed modes such as Proportional feed will not have time to work correctly.

⇒ 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 will cycle pumping chemicals and pausing and pumping chemicals.

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

⇒ Suggestion- keep your set points .2-.25 point difference when using proportional feed modes. Do not exceed 0.25 in difference unless otherwise directed.

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

Probe Calibration

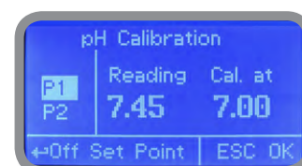
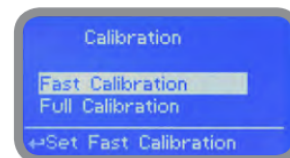
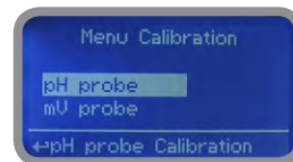
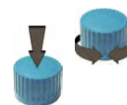
We only calibrate the **pH probe** and the **Temperature Probe**.

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 0.2 difference.

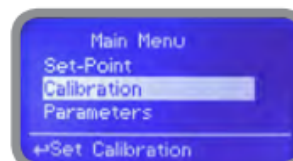
pH Calibration Steps:

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