

INSTALLATION & MAINTENANCE GUIDE

PH CONTROLLERS & MONITORS

ltem #	Product Description			
270000	pH Controller & ORP Monitor			
270001	ORP Controller & pH Monitor			
270002	pH Controller & pH Monitor			
270003	ORP Controller			
270004	pH Controller			

B.B.B.B. PH CONTROLLER LOJ OUT PH CONTROLLER LOJ CAL

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This symbol indicates "WARNINGS" that are essential in order to protect against injury to people or damage to equipment.



This symbol indicates **"NOTES"** that are specific instructions on how to operate, control, adjust or maintain the units.



This symbol indicates **"TIPS"** that are intended to offer helpful advice for a better user experience.

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Thank you for purchasing an AquaticLife[™] Controller for use with your aquarium!

Thank you for purchasing an AquaticLife™ Controller for use with your aquarium. We know you value quality and innovation and will be pleased with this product's performance.

We encourage you to take a few minutes to become familiar with this manual and note items that apply to your particular model. For additional information, please visit www.aquaticlife.com.

Your purchase includes a coupon on the side of the box. Save Life RewardsTM point coupons from Aquatic Life products and redeem them for free merchandise at www.aquaticlife.com. This is our way of saying thank you for your loyalty.



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Check us out on...



SAFETY INSTRUCTIONS



WARNING

TO GUARD AGAINST INJURY, BASIC PRECAUTIONS SHOULD BE OBSERVED. INCLUDING THE FOLLOWING:

A) READ AND FOLLOW ALL SAFETY INSTRUCTIONS.

- B) DANGER To avoid possible electric shock, special care should be taken since water is employed in the use of aquarium equipment. For each of the following situations, do not attempt repairs by yourself; return the appliance to an authorized service facility for service or discard the appliance:
 - 1) If the appliance falls into the water, DON'T reach for it! First unplug it and then retrieve it. If electrical components of the appliance get wet, unplug the appliance immediately. (Non-immersible equipment only)
 - 2) If the appliance shows any sign of abnormal water leakage, immediately unplug it from the power source. (Immersible equipment only)
 - 3) Carefully examine the appliance after installation. It should not be plugged in if there is water on parts not intended to be wet.
 - 4) Do not operate any appliance if it has a damaged cord or plug, or if it is malfunctioning or has been dropped or damaged in any manner.
 - 5) To avoid the possibility of the appliance plug or receptacle getting wet, position aquarium stand and tank to one side of a wall-mounted receptacle to prevent water from dripping onto the receptacle or plug. A "drip loop," shown in the figure below, should be arranged by the user for each cord connecting an aquarium appliance to a receptacle. The "drip loop" is that part of the cord below the level of the receptacle, or the connector if an extension cord is used, to prevent water traveling along the cord and coming in contact with the receptacle. If the plug or receptacle does get wet, DON'T unplug the cord. Disconnect the fuse or circuit breaker that supplies power to the appliance. Then, unplug and examine for presence of water in the receptacle.
- C) Close supervision is necessary when any appliance is used by or near children.
- D) To avoid injury, do not contact moving parts or hot parts such as heaters, reflectors, lamp bulbs, and the like.
- E) Always unplug an appliance from an outlet when not in use, before putting on or taking off parts, and before cleaning. Never yank cord to pull plug from outlet. Grasp the plug and pull to disconnect.
- F) Do not use an appliance for other than intended use. The use of attachments not recommended or sold by the appliance manufacturer may cause an unsafe condition.
- G) Do not install or store the appliance where it will be exposed to the weather or to temperatures below freezing.
- H) Make sure an appliance mounted on a tank is securely installed before operating it.
- I) Read and observe all the important notices on the appliance.
- J) If an extension cord is necessary, a cord with a proper rating should be used. A cord rated for less amperes or watts than the appliance rating may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled.
- K) For added safety, the appliance must be plugged into a receptacle controlled by a GFCI (ground fault interrupter) circuit breaker. Device must be properly connected to a grounded three-prong receptacle.
- L) This appliance is intended FOR HOUSEHOLD USE ONLY.
- M) This Light Fixture is required to be used over a covered aquarium. A glass top or protective barrier is required to minimize the fixture's exposure to water.

N) SAVE THESE INSTRUCTIONS











GROUNDING INSTRUCTIONS THIS APPLIANCE SHOULD BE GROUNDED TO MINIMIZE THE

GROUNDING SETUP

This appliance should be grounded to minimize the possibility of electric shock. This appliance is equipped with an electric cord having an equipment grounding conductor and a grounding type plug. The plug must be plugged into an outlet that is installed and grounded in accordance with all appropriate codes and ordinances.

This appliance is for use on a normal 120-volt circuit, and has a grounding plug that looks like the plug illustrated below.



A temporary adaptor which looks like the adaptor illustrated in (A) may be used to connect this plug to a two-pole receptacle as shown in (A) if a grounded outlet is not available.

A temporary adaptor should only be used until a grounded outlet can be installed by a qualified electrician.

GROUNDING INSTALLATION

The green-colored rigid tab extending from the adaptor must be fastened to a permanent ground such as a grounded outlet box. 1. Plug temporary adaptor into two-pole outlet. (B)

2. Insert screw through rigid tab on temporary adaptor and into grounded outlet box. (C)

CONTROLLER PARTS / SPECS

PARTS DIAGRAM



	270000	270001	270002	270003	270004
Computer Controller	1	1	1	1	1
Protective Lens Cover	1	1	1	1	1
Mounting Base	1	1	1	1	1
Controlled Grounded Outlet	1	1	1	1	1
ORP Probe	1	1		1	
pH Probe/s	1	1	1		1
Probe Holder/s	1	1	1	1	1
Calibration Solutions (pH 7 & 10)	1	1	1		1
Calibration / Set Point Tool	1	1	1	1	1
Installation & Maintenance Guide	1	1	1	1	1
Mounting Templates (A & B)	1	1	1	1	1
Stainless Steel Screws (Qty. 4)	1	1	1	1	1

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REPLACEMENT PARTS

 ORP Probe
 Item #270005

 pH Probe
 Item #270006

 Calibration Solutions
 Item #270007

 Probe Compression
 Item #270033

 (Fitting ½ MPT)
 Item #270033

PRODUCT SPECIFICATIONS

Rated Voltage	120 Volt AC
Rated Cycle	60Hz
Fuse/Relay	5A
Power Consumption	
Measurement pH:	0 to 14 pH
Measurement ORP:	1999 to 1999 mV
Resolution pH:	0.01pH
Resolution ORP:	1 mV
Accuracy @ 25°C	+/- (0.1%)
Set Range ORP	500 to 500 mV
Set Range	pH 3.5 to 10.5 pH

CONTROLLER INSTALLATION

Tools required for installation:

1) Scissors & Adhesive Tape 2) Phillips head screw driver 3) Drill - optional

4) 3/4 drill bit - optional 5) Pencil

A) MOUNTING BASE





Secured mounting (horizontal or vertical)







NOTE: Mounting surface must be 3/4" thick or screws will penetrate through the mounting material.



NOTE: Make sure that the cutting method used does not damage the mounting surface, front or back.

Stand alone option

1) Insert small tab of the mounting base into the bottom slot of the controller.

2) Press mounting base and controller together until large tab of the mounting base is supporting the back of the controller.

Secured mounting (horizontal or vertical)

- 1) Remove Mounting Template A from page18 of this manual. Remove power cord cutout with scissors if power cord is required to pass through mounting surface.

- 4) If power supply is required to pass through mounting surface, please proceed to Step 8.
- 5) Remove Template.
- 6) Place Mounting Base over the Screws and slide into place.
- 7) Tighten Screws until Mounting Base is secure.

Base Plate cut-out for Power Cord pass through

- 8) Trace opening of the power cord cut-out onto mounting surface (pencil works best). DO NOT mark with a permanent writing implement if the surface is visible or there is concern with damage to the mounting surface.
- 9) Mark the four sides of the tracing with the center marks on the power cord cutout. This will allow you to center the opening.
- 10) The Power Cord cut-out area traced on the mounting surface can now either be removed completely with a saw or a 19 mm (3/4") hole can be drilled into the mounting area to allow the Power Cord to pass through.



NOTE: Mounting surface must be 3/4" thick or screws will penetrate through the mounting material.



TIP: If the Controlled Grounded Outlet is loose, remove Controlled Grounded Outlet and tighten screws. Replace Controlled Grounded Outlet onto screws



- 1) Remove Mounting Template B from page19 of this manual.
- 2) Place Template over the desire mounting location for the Controlled Grounded Outlet. Secure with tape to keep in place. Be sure to create a drip loop when mounting.
- 3) Fasten two of the provided Screws into Template.
- 4) Remove Template
- 5) Place Controlled Grounded Outlet over the Screws and slide into place.

C) LENS COVER INSTALLATION



- 1) The Lens Cover can be installed to open from either the left or right depending on the location requirements.
- 2) The Lens Cover is supplied unattached.
- 3) Locate the Lens Cover TAB along the side of the Lens Cover. Orient the TAB either on the right for a left side opening, or on the left for a right side opening.
- 4) Press the Lens Cover onto the Controller and align the raised tabs with the insert in the Controller.







- 2) Place Template over the desire mounting location for the controller. Secure with tape to keep in place.
- 3) Fasten two of the provided Screws into the Template. Attach Screws into either the top two holes (C) or the bottom two holes (D).

CONTROLLER INSTALLATION

D) PROBE ATTACHMENT





E) POWER CORD ATTACHMENT



Male BNC Connection Guides protrude along side

1) Insert female BNC Connection onto appropriate number male BNC Connection. Align guides to allow the connection between male and female connection. 2) Rotate female BNC Connection 90° CLOCKWISE until the connection snaps into place.



TIP: When the connection is secure, the writing on the female connection will be butted against and partially underneath the male connection.



a) Female connection b) Male connection on Controlled

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- 1) After mounting the Controlled Grounded Outlet in section B, attach female connection from the Controlled Grounded Outlet to the male connection wire on the back of the controller.
- 2) Insert and press the male and female connections until secure.
- 3) Insert the grounded Power Cord from the Controlled Grounded Outlet into an approved power outlet.
- 4) Ensure that a "drip loop" is made with the power cord and controller cord.



TIP: Probes will take 24 - 48 hours to stabilize. DO NOT attach the system to be controlled by the Controller until stabilization is complete.

on Controller Grounded Outlet



1) After the pH Probe is attached and power to the Controller is on, place the pH Probe into the standard buffer solution pH 7. Keep the Probe in the buffer solution for a few seconds to allow the pH to stabilize on the Controller's display.

- 2) Insert the Calibration Tool into the CAL setting; adjust the CAL until a pH 7 is displayed on the Controller.
- 3) Remove the Probe from the standard buffer solution and rinse with freshwater. (a small cup of water work best to rinse the probe)
- 4) Place the Probe into a standard buffer solution pH 10 (or pH 4). Keep the Probe in the buffer solution for a few seconds to allow the pH to stabilize on the Controller's display.
- 5) Insert the Calibration Tool into the SLOPE setting; adjust the SLOPE until a pH 10 or pH 4 is displayed on the Controller.
- 6) Remove the Probe from the standard buffer solution and rinse with freshwater. (a small cup of water work best to rinse the probe)
- 7) The Probe is now calibrated and ready for use.

F) pH PROBE CALIBRATION (Models: 270000, 270001, 270002, 270004)



CONTROLLER INSTALLATION

G) PROBE HOLDER ASSEMBLY

- 1) A Probe Holder is included with each probe.
- 2) The Probe Holder includes four parts.
- a. Two Probe Holder Clips (adjustable)
- b. "L" Mounting Bracket
- c. Mounting Tab (adjustable)
- 3) Attach the Mounting Tab to the "L" Mounting Bracket creating a U shape with the two parts.



 Slide one of the Probe Holder Clips onto the "L" Mounting Bracket, so that it is extends past the top of the "L" Mounting Bracket.





 Slide the second Probe Holder Clip onto the bottom of the "L" Mounting Bracket. This will create the widest support for the Probe.



H) PROBE PLACEMENT / INSTALLATION

1) In the Aquarium Filtration System



CAUTION: Damage to the Probe will occur if the Probe is completely submerged. The water level line should be 2 cm (0.79") below bottom of Probe's Black Cap and 4 cm (1.57") above the bottom of the Probe. Probes should be kept wet at all times, if allowed to dry, damage to the Probe may occur.



TIP: Probes should be positioned vertically ONLY. Any other position could result in inaccurate readings.

2) Floating in the Sump with a block of Styrofoam

3) In the Aquarium



TIP: When placing a Probe into a clean water supply line, it is recommended that shut off valves are used to stop the flow of water before and after the Probe. This will aid in removal of the Probe for calibration and cleaning.



TIP: Probe Compression Fitting 1/2" MPT Item # 270033 sold separately.

4) Plumbed Inline (into a water supply line)

5) In a reactor (Example: Calcium Reactor)

Note: For accurate readings, Probes should be spaced at least 10cm (4") apart.

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CONTROLLER OPERATION

DISPLAY

All Controllers will have a blue Display that shows the pH or ORP that is being controlled by the computer. If you have a Controller with a secondary monitor function, it will display the pH or ORP in red.



TIP: The Controlled Grounded Outlet will activate only after the SET point has been reached and increases or decreases 4 – 6 mV.







ORP CONTROL SETTING (Models: 270001, 270003)

- 1) Make sure that the Controller power is on, the ORP Probe is connected and that you have the Calibration Tool available.
- Slide the ORP/SET Switch to the "SET" position.
- Insert the Calibration Tool into the SET adjustment and rotate to desired set point.
- (clockwise will INCREASE set point value, counter clockwise will DECREASE set point value)
- 4) Slide the ORP/SET Switch to the ORP position for measurement.
- 5) Slide the HI/LO Switch to the HI position to activate the Controlled Grounded Outlet when the ORP level increases above the SET point.
 - 6) Slide the HI/LO Switch to the LO position to activate the Controlled Grounded Outlet when the ORP level decreases below the SET point.
 - 7) Plug the controlled item into the Controlled Grounded Outlet. The Controller will now activate the power to the Controlled Grounded Outlet when the ORP level exceeds the set point.

pH CONTROL SETTING (Models: 270000, 270002, 270004)

- 1) Make sure that the Controller power is on, the pH Probe is connected and that you have the Calibration Tool available.
- 2) Slide the pH/SET Switch to the "SET" position.
- 3) Insert the Calibration Tool into the SET adjustment and rotate to desired set point.
- (clockwise will INCREASE set point value, counter clockwise will DECREASE set point value)
- 4) Slide the pH/SET Switch to the pH position for measurement.
- 5) Slide the HI/LO Switch to the HI position to activate the Controlled Grounded Outlet when the pH level increases above the SET point.
- 6) Slide the HI/LO Switch to the LO position to activate the Controlled Grounded Outlet when the pH level decreases below the SET point.
- 7) Plug the controlled item into the Controlled Grounded Outlet. The Controller will now activate the power to the Controlled Grounded Outlet when the pH level exceeds the set point.



TIP: In the event of a power failure, the programmed set points will be maintained in memory. The unit will function properly when power is restored to the Controller.

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CONTROLLER MAINTENANCE

HOUSING

Unplug the Controller and wipe the Housing with a clean moist/semi dry cloth to remove dust, salt and any other debris that may built-up on the Controller. Do not spray or submerge the Controller, it is not water proof.



PROBE CLEANING

To ensure Probe accuracy, it is recommended that the Probe be cleaned at least every three months. Minerals, algae and slime found naturally in the aquarium will build-up on the Probe over time. The Probe will not measure accurately with this build-up. Cleaning the Probe will remove the debris and prolong its life.

- 1) Disconnect the Probe from the Controller and unplug the Controller until cleaning is completed.
- 2) Place the Probe to be cleaned into a stable cup with either full strength Lemon Juice or White Vinegar (both are weak acids).
- 3) Allow the Probe to soak for 5 10 minutes.
- 4) Remove the Probe from the cup and wet a cotton swab with the Lemon Juice or Vinegar and gently wipe the Probe with the swab. Gently remove the hardened materials that have built-up on the Probe.
- 5) Attach the Probe to the Controller and power on the Controller.

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6) For accuracy, recalibrate the Probe after cleaning.



TIP: Probes should be replaced every 12 to 18 months.

TIP: DO NOT USE abrasive cleaners, sponges, scouring

pads or hazardous chemicals

to clean the Probe

pH PROBE CALIBRATION

pH Probes should be calibrated every four to six weeks. Clean Probes prior to calibration. Refer to the Probe Cleaning information above for details. Refer to pH Probe Calibration on page 10 for calibration steps.

GLOSSARY OF TERMS

BNC Connection: (Bayonet Nut Coupling) A commonly used plug and socket for networking applications that provides a tight connection. Using a mount somewhat similar to the way a bayonet (knife) is mounted onto the end of a rifle, BNCs are used to connect a variety of different coaxial cable types. After the plug is inserted, it is turned, causing pins in the socket to be pinched into a locking groove on the plug.

Calcium Reactor: A device used to create a balance of alkalinity in the system. An acidic solution is produced by injecting carbon dioxide into a chamber with salt water and calcium-rich media. The carbon dioxide lowers the pH, dissolving the calcium media, and producing a solution high in carboxylic acid. The effluent is then returned to the reef aquarium where the calcium is consumed by organisms, primarily corals when building skeletons. A calcium reactor is one of the most efficient methods of supplying calcium to a reef aquarium.

CE: (Consumer Electronics) The CE Mark indicates conformity to the legal requirements of the European Union (EU) Directive with respect to safety, health, environment, and consumer protection. This visible declaration proves that the product complies with all applicable Directives.

Drip Loop: To arrange an electrical cord so it hangs down well below the outlet before running back up again. Any water running down the cord will drip down from the loop, rather than running uphill to enter the outlet.

Mounting Template A: Guide used to drill holes and attach screws used to secure the Mounting Base to a surface.

Mounting Template B: Guide used to attach screws used to secure the Controlled Grounded Outlet to a vertical surface.

mV: (millivolt) A unit of potential equal to one thousandth of a volt.

ORP: (Oxidation Reduction Potential) Measured in millivolts (mV). A measurement of the loss and gain of electrons by a molecule, atom or ion. For aquarium keeping purposes, ORP is the measurement of the "livability" of the aquarium water. Natural seawater has a range of 350-400mV; however some aquarists have broken the 400 mV barrier with great success.

pH: (potential Hydrogen) A measure of the acidity or alkalinity of a solution. Aqueous solutions at 25°C with a pH less than seven are considered acidic, while those with a pH greater than seven are considered basic (alkaline). When a pH level is 7.0, it is defined as 'neutral' at 25°C because at this pH the concentration of $H^+ = OH^-$ equals the concentration of OH^- in pure water.

Slope: The measurement of the steepness, incline, gradient, or grade of a straight line. A higher slope value indicates a steeper incline. The slope is defined as the ratio of the "rise" divided by the "run" between two points on a line, or in other words, the ratio of the altitude change to the horizontal distance between any two points on the line.

REGISTRATION & WARBANTY

REGISTERING YOUR PRODUCT(S) WITH AQUATIC LIFE

When you purchase an Aquatic Life product, you will find a Warranty Registration Card accompanying the product. Please complete this Card and mail it in within 15 days from the date of purchase or register your product online at www.aquaticlife.com/register. Some Aquatic Life products will include a Serial Number. To validate your warranty, the Serial Number must be included for appropriate products.

Product Serial Numbers

Serial Numbers DO NOT contain the letters "UL", "CUL", "CSA", "EN" or "CE". These letters refer to a US, Canadian and European Standards for that product. If you need help locating the Serial Number for your product, please visit our website at www.aquaticlife.com/register or call Aquatic Life at 1-888-548-3480.

LIMITED WARRANTY

Aquatic Life, LLC warrants that this Controller/Monitor shall be free from defective electrical components and leaks or cracks due to defects in materials or workmanship for a period of twentyfour (24) months from the date of purchase. If a defect is shown, Aquatic Life, LLC will, at Aquatic Life's sole discretion, either repair or replace the product without charge. No cash refunds will be made. This warranty is provided solely to the original consumer purchaser of the product and may not be transferred or assigned.

This warranty does not apply to damage resulting from accident, misuse, abuse, lack of reasonable care, failure to follow safety and installation instructions, use of the product with non-standard electrical service, or any other defect not resulting from defects in the electrical components of the product or defects in materials or workmanship. This warranty will not be effective unless and until the Aquatic Life product is shown to have been used in accordance with the safety and installation instructions accompanying the product.

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Aquatic Life, LLC shall not have any obligations under this warranty unless the owner notifies Aquatic Life, LLC in writing of any alleged defect(s) within 30 days of discovery of the defect(s). Any notice to Aquatic Life, LLC must be delivered by United States or electronic mail to the following address: U.S. Mail

Aquatic Life, LLC 2416 W. Victory Blvd, #136 Burbank, CA 91506

Electronic Mail: customersupport@aquaticlife.com

Aquatic Life, LLC shall be allowed a reasonable period of time to investigate any warranty claim and to perform any testing Aquatic Life, LLC deems necessary to determine the cause of the defect. This warranty shall be interpreted under the laws of the State of California.

TEMPLATE A



TEMPLATE A



TEMPLATE B CONTROLLED OUTLET

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