



GEM5 ^(TM)

**Underwater Submersible Light
for Refugiums, Algae Scrubbers, Algae Reactors,
Chaeto Reactors, Seaweed Cultivators,
Hydroponics and Aquaponics**

Updated July 2018

For questions about your GEM5 TM light, email us or ask at: www.AlgaeScrubber.net
Updated instructions: www.AlgaeScrubber.net/GEM-Instructions.pdf

Gem and Gem5 are trademarks (TM) of Santa Monica Filtration®

Thank you for your purchase of the Santa Monica Filtration® GEM5™ underwater submersible lamp light. This patent pending light has the highest rating for underwater usage, IP69K, which withstands high pressure steam sprayed directly onto the light. It is also rated for less demanding water environments such as IP65, IP66, IP66K, IP67, and IP68. But just as important as underwater usage is that you can also use the GEM light above water, and in small spaces, without it overheating. This is because the GEM light is made of a special high tech material which seals out water but also pulls heat away from the internal LEDs, keeping them within operating temperature for long life operation. The GEM5 has patents pending on this method, apparatus, and design, and the GEM and GEM5 name is a trademark of Santa Monica Filtration.

Power Supply: The 4-outlet power supply is very unique to plant-grow lights, because it allows 1, 2, 3 or 4 of the GEM lights to be operated by just one power supply. The power supply comes caps, so that any outlet which is not being used can be capped off and kept clean. If you started out by buying less than 4 lights, you can add more by just plugging them in, up to a total of 4 lights..

Mounting: The GEM5 lights can be mounted at least three different ways: screws, suction cups, or foam tape, and can face either into or away from a wall, and can be vertical or horizontal. The mounting lugs at each end of the light are built into the shape of the GEM5 and are designed so that the light can be easily removed by just lifting up one end of the light and sliding out the other end. This way you can easily move the lights out of your way for cleaning, etc.

For screw mounting, the GEM lights can be screwed or bolted into wood, plastic or steel. Do not over-tighten however; snug is fine because you do not want to harm the case. GEM lights do not need any connection to metal (or anything else) for cooling; they are self-cooled; so any screws or bolts are purely for mounting and positioning. Any type of screw or bolt material is acceptable; metal will cause no harm to the lights. Just don't over tighten. And of course don't use metal in saltwater.

For suction cup mounting on plastic, acrylic, glass or other smooth surfaces, the included clear suction cups and clear plastic screws are ready to be positioned on the mounting lugs, and can be placed either above water or below water. Similar to screw mounting, the GEM lights can face away from the mounting wall, such as on the inside of a sump, or can be on the outside of the mounting wall, such as on the outside of a sump, shining inwards through the wall.

For foam tape mounting, the light must be above water, and preferably where there will be no splashing; the foam tape is not designed to resist water. And as with screws or suction cups, the mounting can be towards or away from the mounting wall. Foam tape is not removable, however, so the light should be placed in a permanent location where it will not have to be moved.

In any type of mounting above water, there should be a small gap for air to flow between the light and the wall. Thus, if facing away from the mounting wall, the raised letters on

the back side of the light should be allowed to let air circulate there; do not block or tape this gap closed. Similarly, if the light is facing a wall, the clear plastic bars on the front of the light should be allowed to let air circulate there too; do not block or tape this gap closed. When mounting below water, cooling is done by the water and the GEM lights can be placed anywhere convenient.

Other mounting options can also be tried, such as hanging the light by the wire; attaching one lug and not the other; setting on the bottom of a sump; setting on top of a sump; dropped down into the back compartment of a nano aquarium, etc, and even glue. If gluing above water, only glue the lug areas so that the middle section of the light can stay cool; silicone glue is recommend so that you can cut it off with a razor if needed. For underwater use, an aquarium-safe silicone glue such as GE-1 is good.

When mounting multiple GEM lights together above water, keep them separated as much as possible, at least 1 inch (3 cm) apart, so they can cool. And if mounting more than 4 lights together, mount them vertically so that air can more easily flow along the lights. If in doubt of the lights being too close together, or in too small of a space, let them operate for a hour and then touch the middle light one with your fingers; you should be able to hold your finger on the light for several seconds without it feeling like it's too hot to touch. If it feels too hot, spread the lights out more from each other, or open up the space more so that air can circulate. Nearness to water helps to, because the water will cool the air. When mounted under water, you can put as many GEM lights close together as you want, in any direction.

Light Timer: The GEM lights should normally be put on a timer or controller so that it stays on for part of the day, and off for the rest of the day. The lights usually should not stay on for 24 hours or your algal or plant growth may not be sufficient (freshwater, however, can be attempted without a timer). A good starting point is 18 hours of light per day for your first week. 24 hours of operation does not harm the GEM light however.

Bulb Replacement: The GEM5 LED light does not need replacing.

Power Supply Box: Do not put the power supply box in the water, or get any water on it. The power supply box is the black box on the power cord. Also do not let salt spray accumulate on the power supply box. The power supply box is best placed far away from the aquarium, reservoir, sump, stand or cabinet, so that if water is spilled, the power supply box will not get wet. Setting it on a box, up off the floor, is a good idea. And placing it outside of an aquarium cabinet is better than inside. You can hang the power supply box by the AC power cord if you wish.

The GEM lights use a low voltage that is perfectly safe. The UL, Canadian UL, and CE approved power supply works on both 120 or 220 volts; it converts and isolates the 120 or 220 volt mains to the safe low voltage which is isolated from the water, meaning that even if the LED were not sealed at all you could put the GEM lights into the water and they would continue to work and nothing would happen. The power plug is for North America, so if you need to plug into a different type of outlet you'll need to get a plug-

adapter (available at any hardware, electronics, home improvement store, or online) or just cut the plug off and attach your own 2-prong plug from a hardware store. Also, it is recommended that you use a GFCI safely plug, available at any aquarium, hardware, electrical or home improvement store, or online. The power cord is actually the same as a laptop computer cord with a C7 connector (the connector looks like a figure eight), so you can swap your laptop cord with your GEM if you want to.

Troubleshooting:

Lights have stopped working: If the little indicator light (blue or green) is on the power supply box, the red GEM lights should be on. The power supply box has 4 plugs for 4 GEM lights, and 1 or 2 or 3 or 4 of them should operate at the same time.

First, check to see if there is a problem with one GEM light; if one light is not operating, it might stop the other GEM lights from operating too, so unplug one GEM light at a time. If the red GEM lights come on when one light is removed, then that one GEM light must be replaced. Also, if one GEM light has one red LED that is dim or off, that GEM light must be replaced. Until it is replaced, it can be unplugged and capped so that the remaining GEM lights can operate.

Sometimes people will drop the black power supply box on a hard floor, and this will bend some of the components inside it, causing the red GEM lights to go out. This can sometimes be fixed by tapping the power supply on a hard wood surface such as a desk, on all the sides of the power supply. Try harder each time, on different sides, until the GEM lights come back on. Also, sometimes water gets inside the power supply box from drips, sprays, or condensation. This can be solved by setting the power supply in warm sunlight for several hours, or on top of a warm surface (like your aquarium lights) for several days. If none of the above works, contact us for a solution.

Dimensions: Each GEM5 light is 7.5" long x 1" wide x ¼" thick (190 mm long x 25 mm wide x 7 mm thick). The power cord is 10' (3 m) from the plug to the light, which allows the power supply box to set far away from the light. The shipping box is 10" x 7" x 5" (25 cm x 18 cm x 15 cm).

Warranty: This GEM5 light and/or set of lights comes with a 6 month warranty. Warranty is for replacement or repair only; not a refund. Costs for shipping back to us are not covered; you will need to ship the entire unit back to us before we can ship a replacement.

Warranty is limited to repair or replacement, and does not cover fish loss, personal injury, property loss, or direct, incidental or consequential damage arising from the use of it. The warranty and remedies set forth above are exclusive and in lieu of all others, whether oral or written, express or implied. We specifically disclaim any and all implied warranties, including but not limited to lost profits, downtime, goodwill, damage to or replacement of other equipment and property, and any costs of recovering animals, plants, tanks or other aquarium related items and/or

equipment. We are not responsible for special, incidental, or consequential damages resulting from any breach of warranty, or replacement of equipment or property, or any costs of recovering or reproducing any equipment, animals or plants used or grown with this product.