

# STEVES LEDS

Congratulations on your purchase of a Steve's LEDs retrofit kit! Please read through this entire installation guide before unpacking your retrofit kit.

This kit assumes you have a basic knowledge of electronics, such as never touching a live electrical circuit under any circumstances whatsoever, understanding polarity, wiring in series and parallel, electrical safety and handling, and the use of basic handheld tools. Consider researching the internet or asking a friend if you are unfamiliar with these terms. Please read all of the installation related documents such as the Terms and Conditions, Driver Installation guide, and the LED installation guide before proceeding with building your kit. We are not responsible for mistakes published in this guide, or installation errors as a result of mistakes published in this installation guide, you are ultimately responsible for proper and safe installation. By proceeding with the installation, you are accepting full responsibility of the safe and proper installation of your LED retrofit kit. Remember that your biggest resources are your friends that are familiar with electronic device installation. Steve's LEDs is available for [support](#) during normal business hours.

**WARNING:** This product contains lead, a chemical known to the State of California to cause neurological damage, cancer and birth defects or other reproductive harm. Wash your hands after handling this product and its components.

**LEAD IS GOOD!!!** We use leaded solder because it requires a relatively low temperature to melt. The lower the temperature we can keep our electronics and LEDs, the longer they last. I have heard of many people getting very poor lifespan out of LEDs that have been soldered with lead-free solder (much higher melting temperatures). Once installed, you will not be handling your retrofit kit regularly, so it is not a health risk for you during day-to-day usage of your LED system. Frankly, if we see an LED related product that is soldered with lead free solder, we just don't buy it because chances are that it will have a significantly reduced lifespan.

This guide is just that....a guide. There are many ways to install an LED retrofit system correctly. This guide serves as an outline, based on our years of experience, of the most efficient, safest, and most economical way to install your kit.

Before unpacking your retrofit kit from the box, please be aware that mishandling the LEDs is the #1 cause of permanent damage to the system. Putting a mere 2 ounces of pressure in the wrong spot can tear apart a fragile high power LED or rip apart essential wiring. Be prepared to treat all of the components as if they are as fragile as eggs while unpacking. The unpacking process should not be rushed; take your time and ensure all items are treated with great care. We have listed the steps in painstaking detail so that even a person unfamiliar with electronic component handling will have a safe and proper installation. Please read though all of the steps before beginning installation. NEVER use super glue (cyanoacrylate) of any kind, anywhere near the LEDs. The fumes from the super glue will permanently damage the LED lenses.

This guide was designed for the Biocube 14, Biocube 29, Nanocube 12, and Nanocube 24 (non-completed systems) kits only. This kit has components that have been designed to simplify the assembly process, and was designed to be fun to build. This LED system kit is not a suitable first electronics project, or suitable for those individuals who do not have experience soldering. It requires experience with basic electronics, basic hand tools, and a significant amount of patience.

If you purchased this LED kit in hopes of saving a few dollars and do not have any electronics experience, we highly recommend you DO NOT proceed! If this is the case, please contact us immediately, and we will gladly arrange for a swap for a 99% Completed System (additional charge applies, and we will extend the discounted price as if you were to purchase this all together). [TechSupport@StevesLEDs.com](mailto:TechSupport@StevesLEDs.com)

Please bear in mind this guide is a general reference, with included photos showing the Nanocube 12 Oceanic kit being assembled. The same principles of construction apply to all of our LED kits, and your kit may have more or less LEDs and components.

## Installation

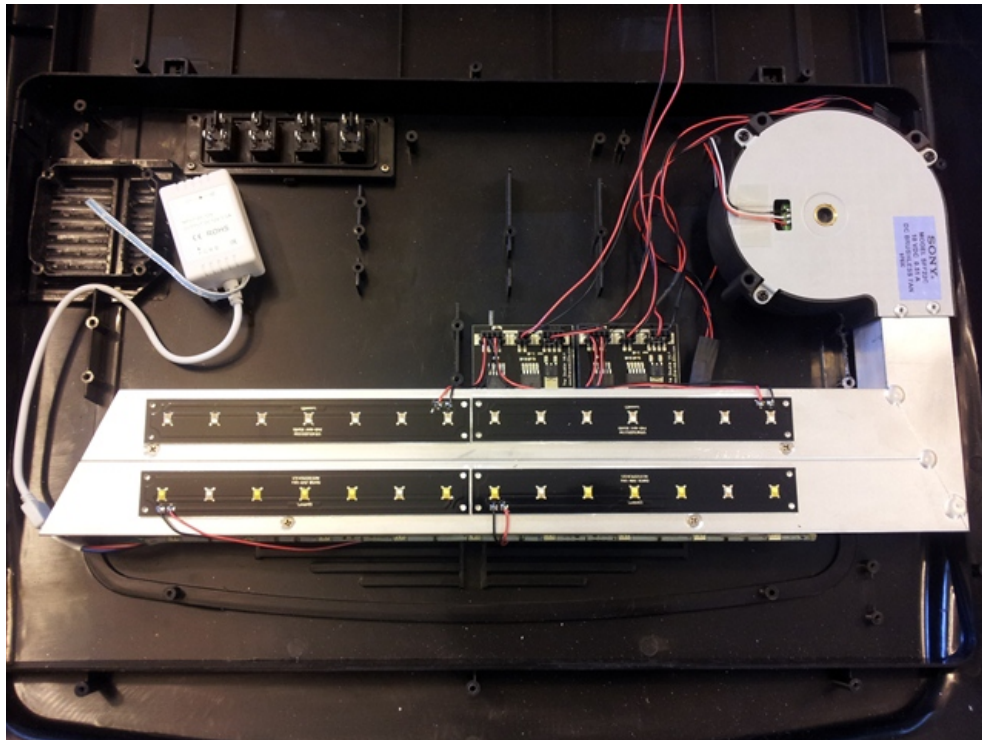
1. Unplug all electrical connections, and verify there is no power going to any part of your aquarium.
2. Remove the hood from your aquarium, and place it top-side down on a work surface. You may wish to lay a towel on the work surface to prevent it from scratching the hood.
3. Remove the clear plastic cover, also known as the splash shield.
4. Remove ALL existing electronic components including the existing lighting, fans, moonlights, etc. Nothing electrical will be reused; only the rubber grommets that are interfacing the existing power cables into the hood. Save those!
5. Take wire cutters (or a Dremel rotary or Dremel Multi-max type tool) and remove the baffle/plastic walls that surrounded where the old fans were. There is no clean way to do it, just remove as much of the material as possible, until it is mostly flush with the hood. The only screw lugs (posts) that you will cut at this time are those that are connected to the fan baffle/wall. Do not cut any other posts right now.
6. Now you will need to either cut the vent ribs as low as possible to maximize airflow, or, simply cut out every other vent rib. Do this to both vents. For aesthetics, you may wish to only remove every other vent rib, just ensure that you feel air moving when you test the system. With only every other vent rib removed, the water temperature may be slightly higher than removing every vent rib. The more airflow that your vents allow, the cooler your water temperature will be and the LED system will last much longer.



7. Now it is time to install the LED system into the hood. Secure the heatsink to the hood using the supplied 2-4 stainless steel screws (~#4 X 1.5"). Be very careful not to over-tighten the screws or the posts will easily break off. Using a screwdriver, just make them finger tight, they only need to support the weight of the heatsink, no more, no less. Take care to Minimize the gap of the hood and the fan intake, using the (occasionally included) 1/2" X 1/2" flexible foam weather-stripping, or foam tape available at any local hardware store.

8. See photo 12 of a properly installed heatsink with optional [Moonlighting kit](#) installed.

Photo 12 – Properly oriented and mounted heatsink.



9. Attach the main black power cable to the main power supply. Green goes to the Ground (not COMM!!!), Black goes to "L", and White goes to "N". See Photo 11 for exact locations. These terminals are labeled (imprinted) on the case, just above the respective terminal. Give a gentle tug on each of these wires to ensure a secure connection.
10. On the side of the main power supply, select the appropriate voltage of the wall outlet that you are using. In the USA and Canada, it is common for the wall outlet to be about 115V. In Australia and Europe, it is common for the wall outlet to be about 230V. See photo 13

showing the side of the power supply, where the recessed switch is located.

Photo 13 – Main Power Supply voltage selector switch. Currently shown in the 220V position – suitable for Australia and Europe.



11. Before powering up your LED system, carefully inspect each and every LED to ensure the LED's lens is intact (if not, it needs to be replaced). Only if there are fingerprints, thermal paste, debris, etc on the LED lenses should they be cleaned. If so, clean only those that need it using a cotton ball, or an alcohol prep pad (occasionally included); carefully and gently clean each LED.
12. Keep all hands clear of the LED system. Turn the dimmer knobs (if used) to the clockwise/minimum setting. Do not ever look directly at the LEDs –they can damage human retinas. Using polarized sunglasses is best. Make sure you plug the unit into a GFCI and have drip loops on all wiring. Plug in the black power cord to your main power supply to test your system out to see if you have light, and ensure that each and every LED is producing light. If you are not getting any light or some LEDs are not working – in almost every case there is a wiring issue to blame – so double and triple check your wiring. See photo 10 for the wiring photo.
13. Optional Step. Now is the time to install the aquarium controller. Please refer to the [HurricaneX LED Controller Installation Guide](#), [Bluefish Installation Guide](#), or [Aquarium Controller Interface Installation](#)

Guide. Remember, if your driver has a DIP switch on it, it must be turned to the OFF position for the aquarium controller to take control over your LED system.

14. After you have verified that the unit is functioning properly, replace the clear cover (splash shield) over the LEDs, and ensure that the seal is good. Inspect O-ring on the splash shield to ensure it is intact with no gaps. Inspect the perimeter of the splash shield once it is mounted, and ensure it is making contact with the respective lip on the hood, and ensure there are no bulges or gaps. Remember that the #1 cause of LED system failure is due to saltwater or salt creep entering the hood.

## *ACCLIMATION PROCEDURE*

Your new LED system will provide significantly more usable lights to your corals. Your corals need a relatively long acclimation to be able to physically adjust to this light. They will undergo some internal physical changes, and this is best done over the course of about 8 weeks. During this time their colors will enhance and sometimes change as they adapt. Sometimes browns will turn to blues, sometimes blues will turn to greens, etc. Every individual coral is somewhat unique and as it adapts its colors may change, improving in almost every case! To determine how much light to provide your corals with, it is very important to watch your corals and their response to the LED light.

Initially, start off at around 30% (which is about 1200 on the HurricaneX), and see how the polyps respond after 5 days. If the polyps are balloon like and relatively clear, they need more light. If they are small and dark, they are getting too much light, compromising their health. Think of the corals as little solar collectors. They will grow big if they require more light, and they will shrink if they want to receive less light. If they are pure white, they likely have been bleached (blasted with too much light), and will take about 3 months to recover using a 30% light intensity level. If they appear to be relatively normal, just let them adjust to the LED spectrum for another 3-5 days. After that, increase the intensity of the LEDs approximately 1% every day) over the course of the next 2 months.

As you ramp up, day after day, always take notice of their size to ensure they are adjusting – you may need to hold that value for a few days, or reduce the intensity if the polyps are small. If you rush this process, it is highly probably that you will bleach and could even kill your corals. Corals will take an absolute minimum of 6 weeks to acclimate and adjust to the new brighter LED light AFTER you have completed the acclimation, and this is usually when they undergo a slight color change, and enhance iridescence. When introducing new corals, you must restart this entire acclimation process, by bringing the light intensity down to less than half.

The final intensity settings (once the acclimation is fully complete after 3-4 months) will depend on your specific corals. If you have mostly soft corals, the intensity settings will be around 50%. If you have mostly LPS, then it will be around 60-70%. If you have mostly SPS, then it will be around 65%-85%. Rarely would you need more light than both channels on 85%. If the color is too blue for your liking, simple decrease the blues channel MAX setting by 5%, and increase the white channel MAX setting by 5%. If the color is too white for your liking, simple decrease the white channel MAX setting by 5%, and increase the blue channel MAX setting by 5%. You can continue to refine until you are satisfied. Just remember to adjust both colors the same amount, otherwise you may have to re-acclimate.

To determine percentage on the HurricaneX, just divide the value you are at by 4095. For example, if you want to know what value 2040 is, then:

$$2040 \div 4095 = .50 (50\%)$$

$$1023 \div 4095 = .25 (25\%)$$

$$3071 \div 4095 = .75 (75\%)$$

15. For Fun! – After you have had your new LED system and aquarium up and running for about 4 months. You will find that so long as your water quality is good, that all of your corals are doing really well! (If they are not doing well with good water quality, please contact us right away for helpful tips on getting even the most difficult corals to thrive). Something that you can do for fun is to learn to frag (aquaculture) your



corals. Fraggling information can be found online. This helps reduce the amount of corals harvested from the natural ocean, and promotes the hobby by offering a sustainable and perpetual source of amazing corals!

16. Coral Rescue! - You can also take your hobby one step further and next time you are in your local fish store (or perhaps at a friend's house whom has a saltwater aquarium), try to find some species of corals that are not doing so well – health-wise. Find the coral frags that are dying off, or otherwise looking miserable. Offer to purchase these poor frags and rescue them at a steep discount. You can then take them home and put them in your aquarium and fully revive them! This process takes anywhere from 3 months to a year – but it is a great way to save the life of a coral, and in turn, after several months – you will have a potentially beautiful, amazing and valuable corals in your aquarium! My local fish store knows us quite well, and they used to collect and save these dying coral frags for us. We would revive them and sell them right back to the store! That is, until they got their own LED recovery aquarium set up with the help of Steve's LEDs!
  
17. Optional - This LED lighting system is completely compatible with all popular automated aquarium controllers on the market. We highly recommend getting the Typhon LED Controller. There is no upgrade that costs less that has such an amazing impact on your aquarium. It is a simple light controller that allows you to simulate silky smooth sunrises and sunsets. It dims all the way down to completely off (no light) up to full power in 1% resolution! You can independently control up to 4 separate channels or color arrays of LEDs using the Typhon. You get to choose the dimming duration, sunrise, sunset and intensity levels of each color right from the on-screen backlit LCD display. Using this LED controller has many other benefits. Since it simulates what the fish and corals experience in the ocean, it encourages feeding responses, lowers stress levels, increases immune systems, eliminates fish heart-attacks (cause by instant on lights) and allows for faster acclimation of newly introduced species of fish and invertebrates. The only soldering required for installation on the Typhon is to solder the extension wires that connect the Typhon to the LED system. If you do not want to solder anything, then you will want to get the Typhon extension, which is pre-soldered (assured to be wired correctly!) for

your convenience, and allows the total installation time to be approximately 45-60 seconds. Please see our [aquarium controller](#) page for more details. Using any other controller may require the Steve's LEDs Aquarium Controller Interface. Steve's LEDs recommends the Neptune Systems AquaController Apex and the Digital Aquatics ReefKeeper. We highly recommend using the Typhon, even if you have another aquarium controller since this provides a level of redundancy to your aquarium.

Thank you once again for your purchase of a Steve's LEDs Digital LED system. Please feel free to contact us at any time with your questions, comments, feedback and suggestions – we are always listening.  
TechSupport@StevesLEDs.com

END OF INSTALLATION GUIDE