

Building Your Own High-Power LED Grow Lights for Hydroponics

You will often hear in the world of hydroponic growing that Light emitting diode (LED) lights simply do not work as well as the traditional HPS (high pressure sodium) or Tungsten Halide lamps when growing large plants. The truth is that this belief is centered around the fact that most of the commercially available LED fixtures are built with low-power cascade LEDs that simply do not give your plants enough light intensity to grow properly. The fact that people do not know how to distinguish one from the other, coupled with the problems of getting a genuine, high power LED lamp makes the use of LED fixtures in hydroponics limited and almost never considered a serious option for modern growers. On today's post I want to talk a little bit about how you can build your OWN high power LED lamp and how this way you can get a cheap, low-energy, highly-efficient device to make your plants grow. The first thing you need to consider here is the amount of LEDs you will be using (the amount you will require for your plants) and the power supply you will need to feed those little hungry fellows. From my experience I can tell you that the lumens measurement of high power LEDs does not give you an accurate estimation of how many you need since LEDs have a highly centered light spectrum that is more accurately measure in micro Einsteins (the appropriate measurement unit for these devices). In this case I advice an empirical measurement of 5, 3W high power LEDs for each plant you wish to grow and 1 blue LED for every 10 red LEDs. (below you can see a picture of one of my LEDs, the LED was dimmed to get a better picture)



The second thing you want to do is buy the LEDs, just google red or blue 3W high power LED on ebay and you will find several chinese or US providers who will sell you these great artifacts for a small price. When you get your LEDs make sure

you buy at least 3-5 more than what you will need since these LEDs are sensitive and they will burn easily if you wire them incorrectly. Since the power requirements of these LEDs are also pretty high they will get VERY hot (however much cooler than traditional lamps) and they will need to be mounted on aluminum rails with at least one 6 inch fan for each 5 LEDs (or a BIG rail than can dissipate all the heat).

The next part – which is the most difficult – is the building of the power supply and voltage regulator side of the device. You can use a laptop supply to power up some LEDs but you need to calculate their power requirements so that you know how many you can power up for the power supply you will be using. A very good guide I used to create my LED assembly can be found [here](#). Of course you should change the setup and LED number to fit your needs but the tutorial shows you exactly how you can choose the power supply, calculate LED needs and build the voltage regulator with a simple electronic circuit.



Finally, after I finished I hooked the power supply of my LEDs to a regular appliance timer which sets them on and off at certain times of the day. Making sure that my basil plants get enough light for their growth even when I am not at home. It is very worth noting that before I installed this LED fixture my basil plants were extremely leggy, etiolated and just dying. A few days after the LEDs where in place they started to grow like crazy :o) **Do you have any questions, comments or suggestions ? Have you also built your own LED fixture ? Leave a comment below !**