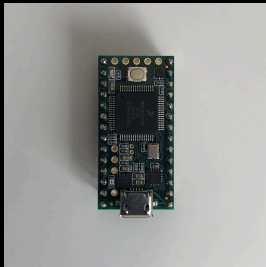# LIGHT STORM

UPDATE AND CUSTOMIZE

INTRODUCTION

This document will explain how to upload and customize the source code of the Lightstorm module. This process will require a computer and the users ability to download applications. The tutorial for updating the module will not require any coding experience.

The Lightstorm module uses a Teensy 3.2 that runs a program written in the Arduino language. In order to upload code to the module (which is the same as updating the module) you will need two applications, **Arduino** and **Teensyduio**, both are free.

The Teensy 3.2 is the small board that is located on the back of the module. You will need a **micro USB cable** to connect the module to your computer via the usb port on the Teensy 3.2.

Teensy 3.2   micro USB cable

REQUIRED SOFTWARE

In order to upload the Lightstorm Module's source code you will need the **Arduino** and **Teensyduino** applications. If you think that you might have one or both of these applications you can check in the following ways:

- First check if you have Arduino by looking in the Applications folder on a Mac or the Program Files folder on a PC.

- To check if you have Teensyduino, first open the Arduino application, then open the Tools menu, then open the Board menu. If you have Teensyduino you will see a list of Teensy boards in the Board menu.

Download and Install Arduino

At the time of writing this document Arduino is on version 1.8.10, while Teensyduino only supports up to Arduino version 1.8.9. If this is still the case while you are following these instructions, you should not download Arduino from the link provided in the step by step instructions below, and instead download version 1.8.9 from this link (https://www.arduino.cc/en/Main/OldSoftwareReleases#previous). Teensyduino will likely be updated to work with newer versions of Arduino. To be sure you get a version of Arduino that works with Teensyduino visit this link (https://www.pjrc.com/teensy/td_download.html) to learn the versions of Arduino supported by Teensyduino.

You can get all the information on how to install Arduino on any operating system at this link https://www.arduino.cc/en/Guide/HomePage. You can also follow the steps here in this document for a simplified guide.

1) Visit https://www.arduino.cc/en/Main/Software and click the appropriate download link for the operating system that you use.
For Windows users it's recommended that you download the installer and not the .zip because of the drivers that get automatically installed with the installer.

2) For **Mac** you will receive a .zip file that contains the Arduino app, all you need to do is drag the app into your Applications folder.
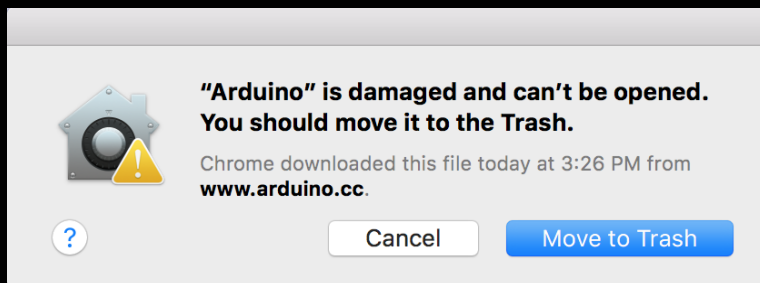
   For **Windows** you will receive an .exe file (the installer) which you need to run. The installer has a few installation parameters to check, it is recommended that you keep the default settings and installation path. You will get a warning from the operating system about installing drivers, you should allow the installation to proceed.

3) The last step is to open Arduino. This is required because it will generate a folder called "Arduino" for your projects and code libraries. On a Mac this will be in the Documents folder and on Windows this will be in My Documents. After you've opened the app and you see the editor window open you can close it.

Download and Install Teensyduino

The link for downloading Teensyduino as well as detailed instructions on how to install it is here https://www.pjrc.com/teensy/td_download.html. You can also follow the simplified instructions below:

On **Mac,** before installing Teensyduino be sure that you've opened the Arduino app at least once. Otherwise you will get the error shown in the image below and you will not be able to open Arduino. If this happens simply repeat the Arduino installation process and replace the existing Arduino app in the Applications folder.

1) Visit https://www.pjrc.com/teensy/td_download.html and click the appropriate download link for the operating system that you use.

2) On all operating systems you will receive an installer file which you should run.

3) The installer will ask you to "Select Arduino Folder." The Arduino folder it is referring to is the one in your Applications folder on Mac or your Program Files folder on Windows. It **is not** the Arduino folder located in Documents on Mac or My Documents on Windows.

4) The installer will ask you what libraries to install. None are required but it's easier to have them all so you don't have to download them later if you need them.

5) Complete the installation process and close the installer window.

6) Check if the installation has worked by opening the Arduino application, then open the Tools menu, then open the Board menu. If Teensyduino was successfully installed you will see a list of Teensy boards in the Board menu.
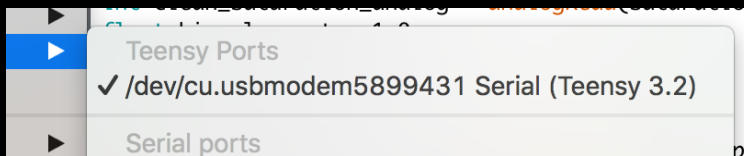
UPLOADING THE LIGHTSTORM CODE WITH ARDUINO

The Lightstorm source code is available on github at this link
https://github.com/StrangeElectronic/Lightstorm

To download the code you click the green button that says "Clone or download" then you click "Download ZIP"

Each version of the Lightstorm source code will come with a **readme.txt** file that will tell you where to put the files on your computer. Once the files are properly placed on your computer follow these steps to upload the code:

- Find the **.ino** file in the folder of the version you want to upload and open it in Arduino. This will open an editor window with the Lightstorm source code in it.

- In Arduino, go to the **Tools** menu, then go to the **Board** menu. Select Teesny 3.2 (if you don't see Teensy 3.2 refer to the Required Software section of this document)

- In order to upload to the module it needs to be powered by the eurorack.

- Connect the module to your computer with a micro USB cable.

- Go to the **Tools** menu, then go to the **Port** menu. You should see a port that has the word "Teensy" in it along with some other text and numbers.

  If you don't see it the first thing to do is try a different micro USB cable. Many micro USB cables will only power the device they're connected to, you need one that will also carry data.

- Click the upload button in the Arduino window with the source code in it. The upload button is located in the top left corner of the window and looks like a circle with an arrow pointing right.

- Once you've clicked the upload button wait a few seconds for the upload process to complete. During the uploading process the Teensy Uploader window will open

to show an uploading progress bar. If the upload process has completed but the **white LED on the module is not blinking**, wait until it starts to blink before disconnecting the module from the computer. Sometimes it can take up to a few minutes to start blinking even after Aduino and Teensy Uploader say that the upload is complete. This a bug that we are still trying to determine the cause of.

If you've done all these steps without any problems then the process is complete and the Lightstorm code is successfully uploaded! You can now disconnect the module from your computer.

Customization Tutorials coming soon!

Once you've followed all the steps on how to upload code to the Lightstorm you are fully set up to customize the code. If you have experience programming with arduino than you can probably dive right in and it will all be pretty familiar. If you have no experience in arduino or in coding at all than there are tons of beginner tutorials online. We will be adding a few simple tutorials on cool customizations for the Lightstorm in the future.