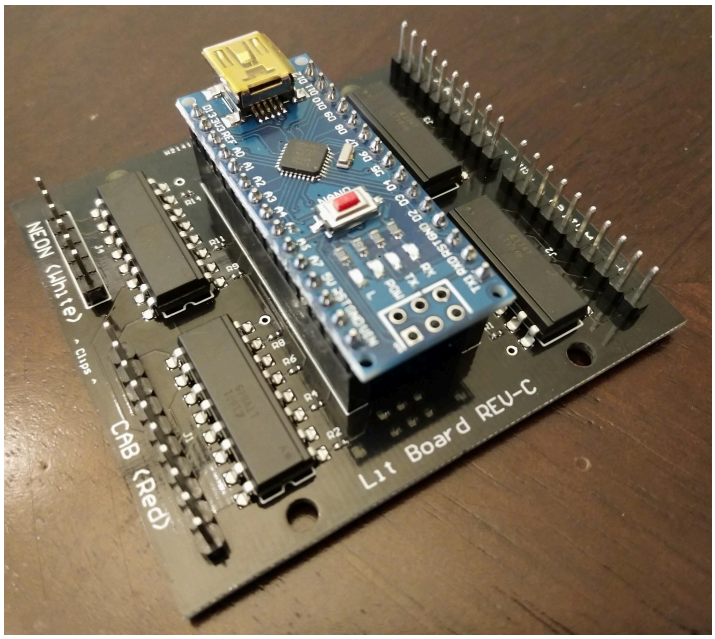
LIT Board



This small circuit board allows for StepMania users to have the existing lights on their Dance Dance Revolution (DDR) cabinet turn on and off to the beat of the game. It is intended to be used in conjunction with existing JAMMA IO adapters. With this your cabinet will be LIT.

Features

- Supports all variants of first generation DDR cabinets.
- Supports all existing versions of StepMania 5, OpenITG, ITGmania, NotITG, and more. No special versions needed!
- Puts your pads in the proper mode, no reset jumper wire needed!
- Windows (XP, 7, 10, etc) and Linux support.
- Works with your existing JAMMA adapter, whichever it may be!
- Complete electrical isolation from your DDR cabinet using the power of optical coupling.
- Easy to use and install
- Free support (I want your cabinet LIT as much as you!)
- 1 year warranty

Compatibility

This board is compatible with all variants of first generation Dance Dance Revolution cabinets, whether it was made in Japan, or Korea. It is capable of being connected to both Windows (XP,

7, 8, 10) and Linux computers and supports StepMania 5, StepMania 5.1, OpenITG, NotITG, and more. Want it to work with something else? Let me know!

Technical Information

This board is powered by the Arduino Nano, so updates to firmware can be rolled out if needed. The board supports the SextetStream protocol that was developed by psmay. Documentation about this protocol is contained here. Communication is done over the USB serial link to the Arduino at 115200 baud.

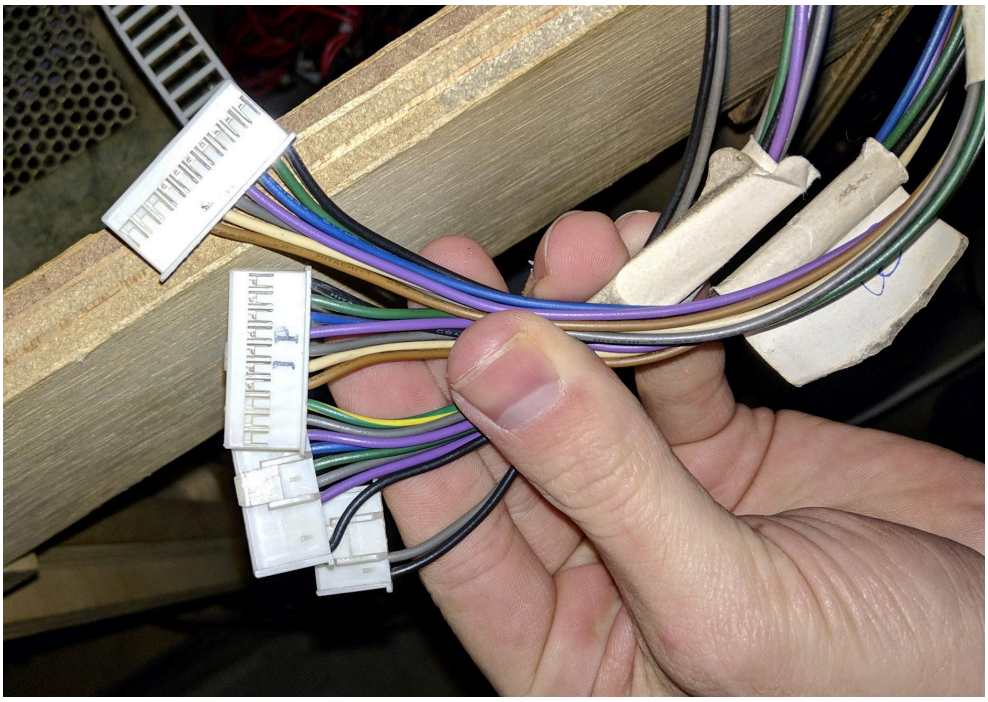
For the Windows implementation I wrote a drop in replacement for the “parallel_lights_io.dll”, one of the oldest StepMania lighting drivers dating back to StepMania 3.9. This DLL will accept lighting information from NotITG, certain versions of StepMania 3.9, and OpenITG and pass that along to the board. For StepMania 5 I found it easier to hook into the MiniMaid calls, so I made an mmmagic.dll that will do the similar function.

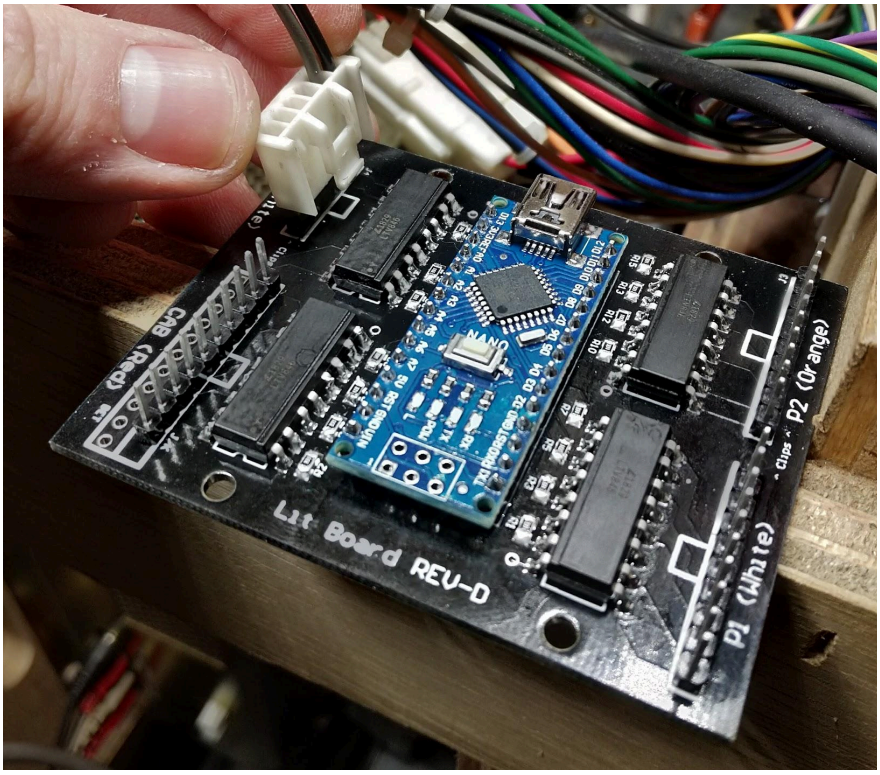
On the Linux side of things the SextetStream driver works correctly in SM5, so we can use that. I also have an open pull request for OpenITG to implement the same here.

Source code for everything is available upon request, just message me. I’d love to know what you want to do with it!

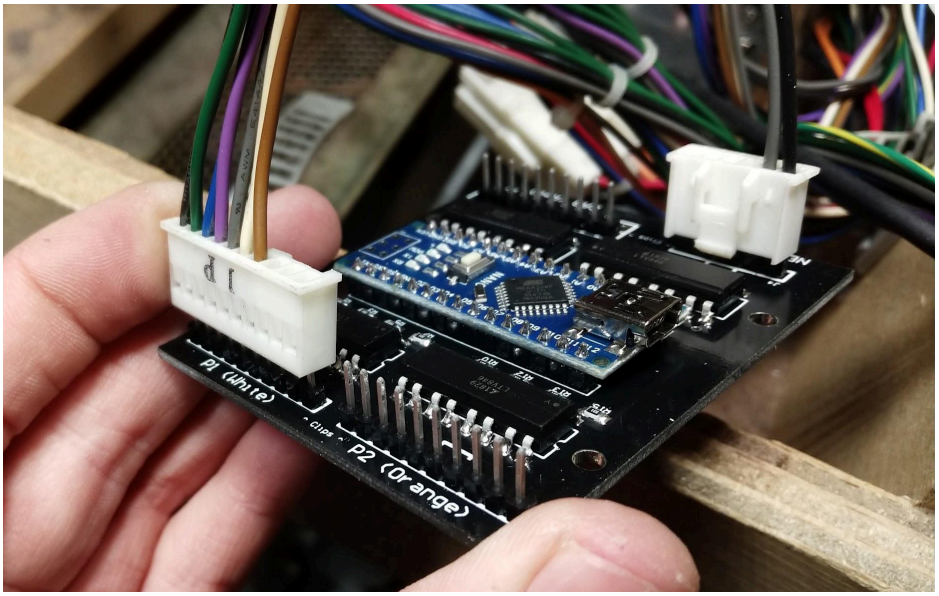
Hardware Installation

WARNING your Dance Dance Revolution cabinet contains very high voltage systems inside, be careful when performing any maintenance and ensure the cabinet is properly unplugged and turned off before proceeding.

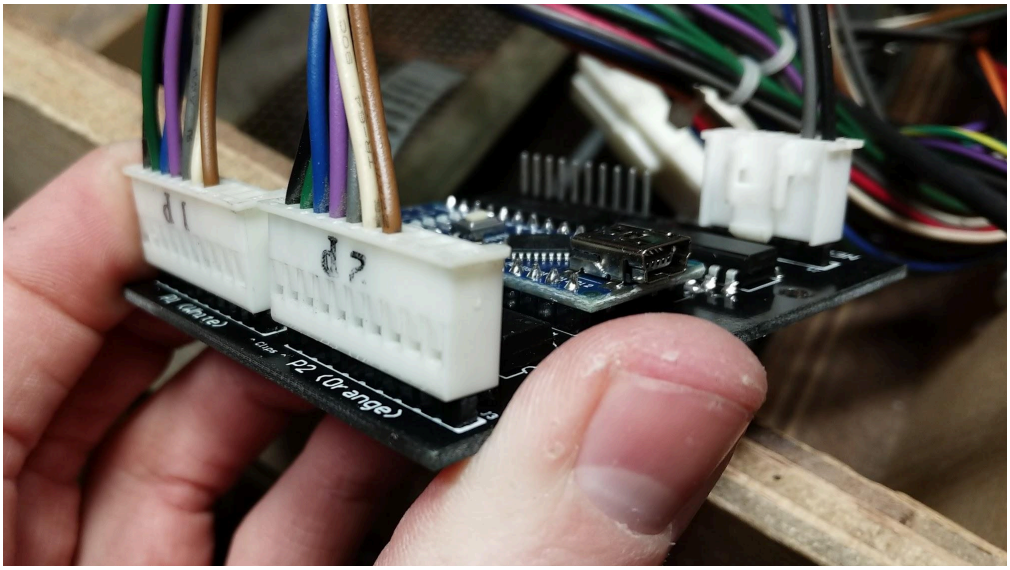
1. Ensure both your computer, cabinet, and monitor are switched off and unplugged.
2. Unwrap the LIT board from the protective anti-static bag.
3. Remove the back from your DDR cabinet.
4. Locate and unplug the four lighting connectors from the device that is currently connected to them.
    a. 
    b. Note: The color and style of these connectors can vary by cabinet type.
    c. To unplug these headers easily, simply place pressure with your thumb in the middle of the connector where the latch is located and pull outward.
5. Take the smallest white connector, referred to as the neon connector, and plug it into the connector next to the neon lettering on the LIT board, ensuring that the latch is facing toward the center of the board as shown.

a. 

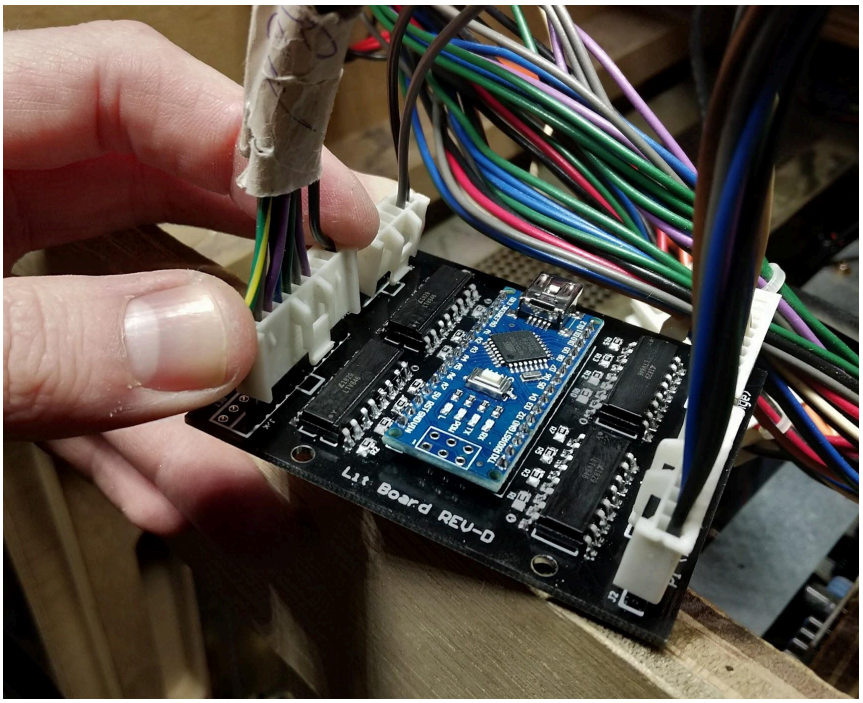
6. Take the red connector, or the one marked “1P” for Player 1, and plug it into the connector label “Player 1”, ensuring that the latch is facing toward the center of the board as shown.

a. 

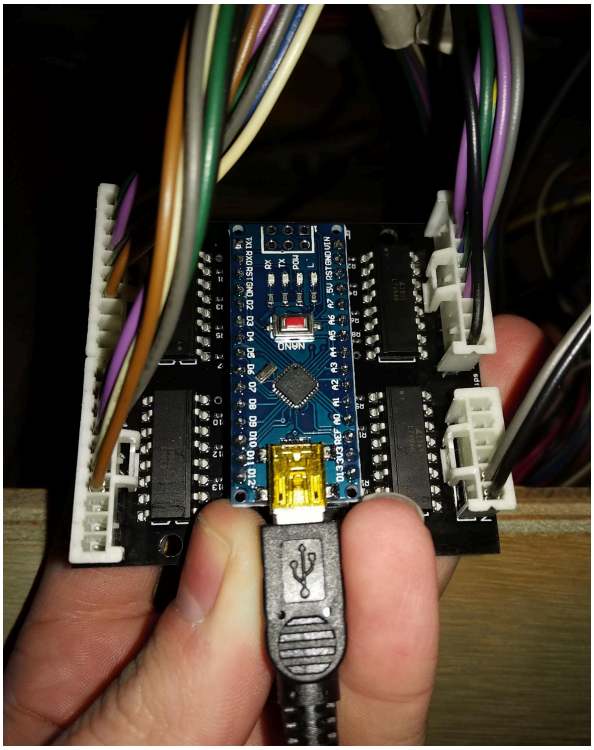
7. Take the orange connector, or the one marked “2P” for Player 2, and plug it into the connector label “Player 2”, ensuring that the latch is facing toward the center of the board as shown.

a. 

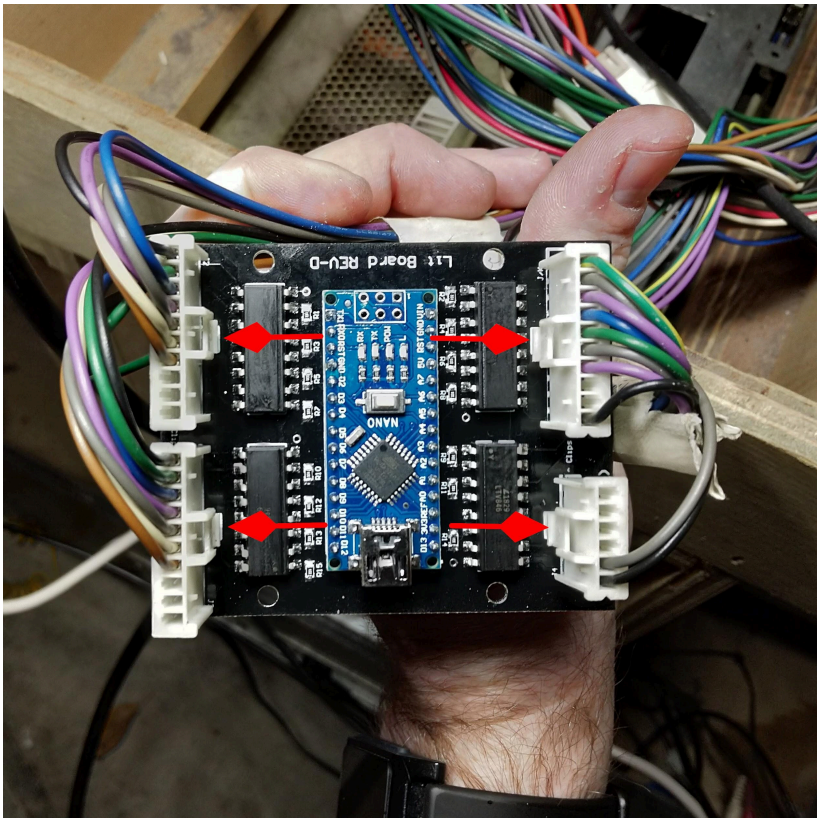
8. Take the last white connector, and plug it into the connector label “CAB” for cabinet, ensuring that the latch is facing toward the center of the board as shown.

a. 

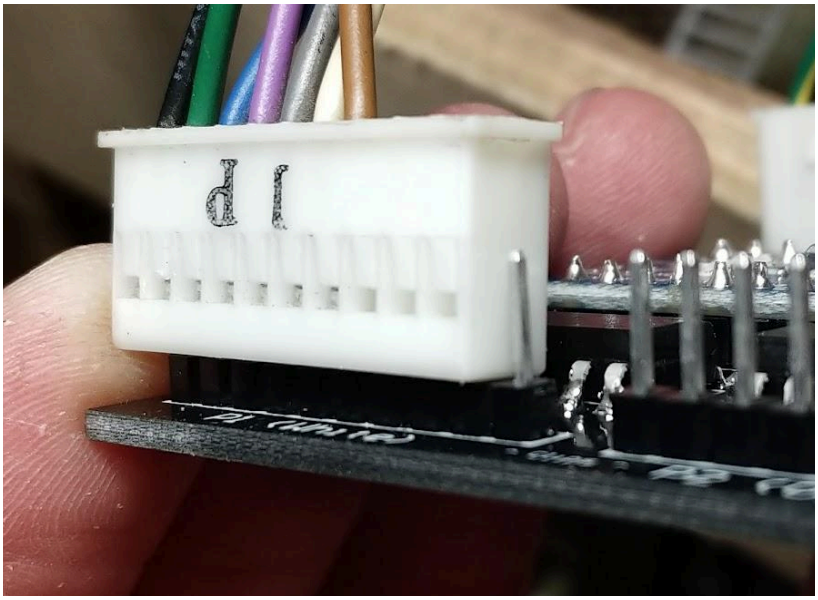
9. Take a mini USB cable and plug it into the USB connector on the LIT board.

a. 

10. Take the other end of the USB cable and plug it into any free USB port on your computer.
11. Double check all cabinet connections to ensure that all four of the latches at facing toward the center of the board.

a. 

12. Double check no pins are offset like the example below:

a. 

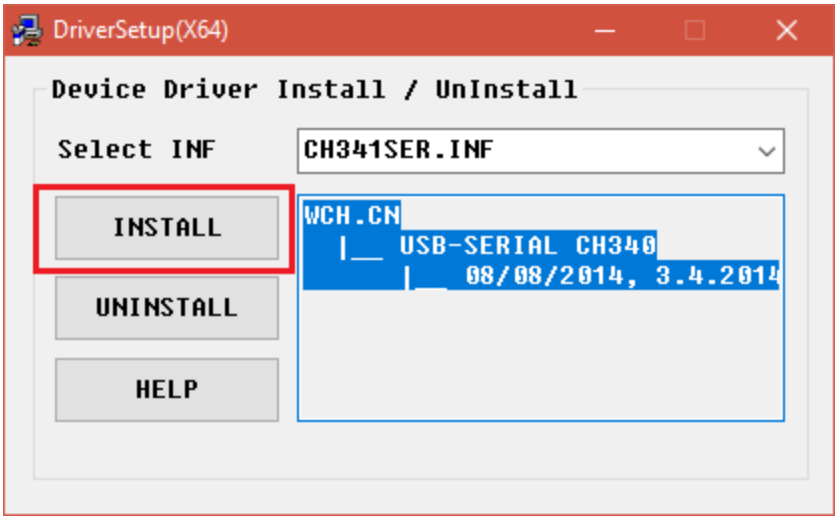
Software Installation

Windows

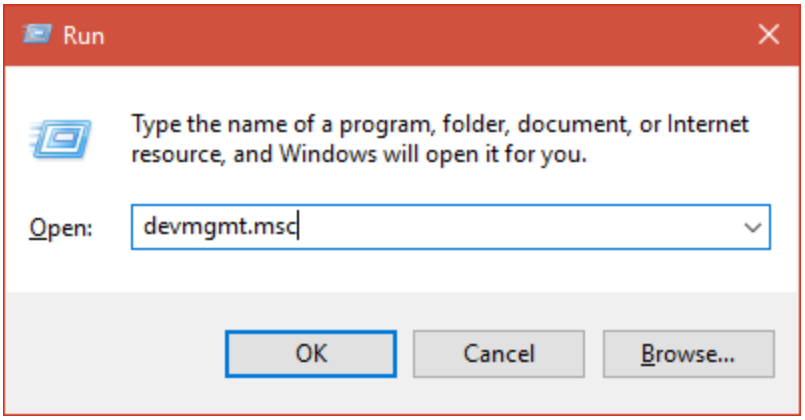
Installation on Windows is very straight forward. We first need to install the drivers for the LIT board, set the COM port to the correct number (COM54), and tell StepMania how to interface with it.

DOWNLOAD THE WINDOWS SOFTWARE PACKAGE HERE

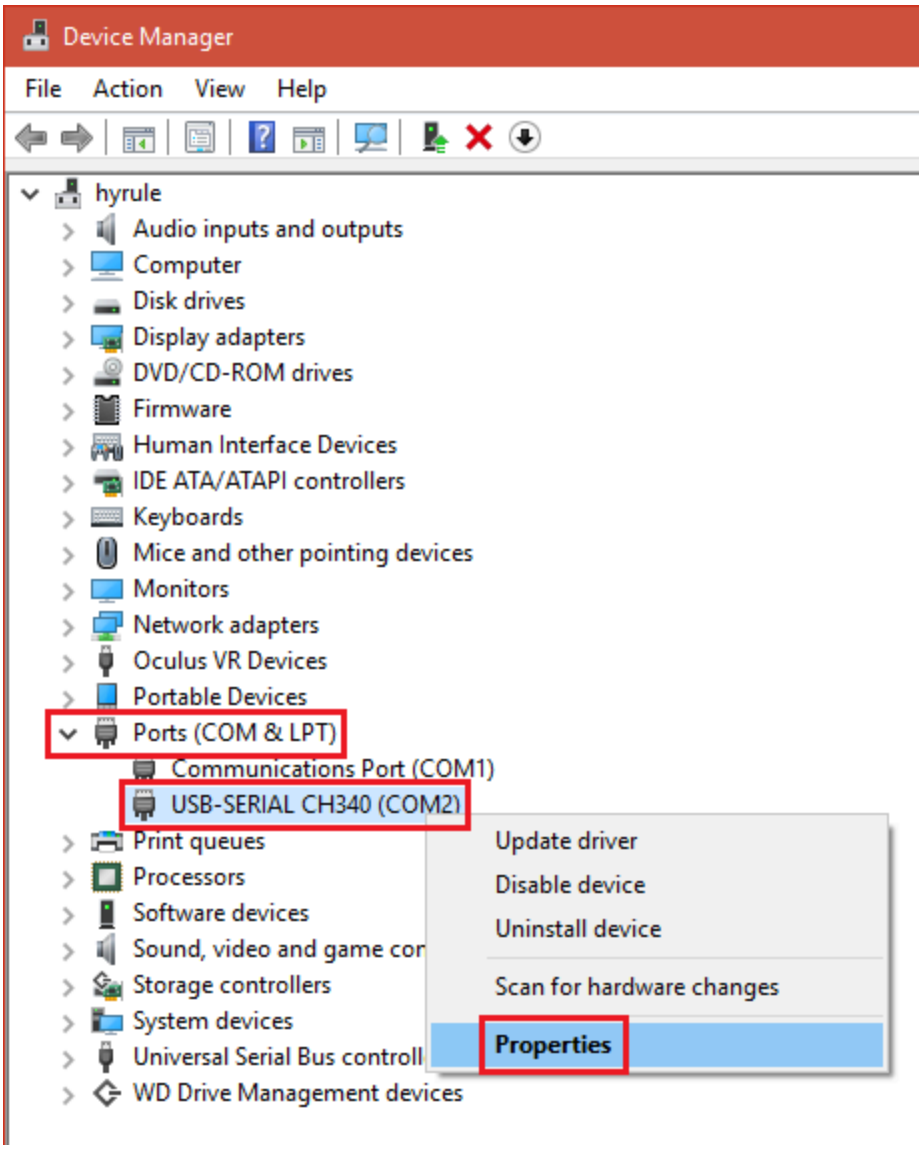
Driver and COM Port Setup

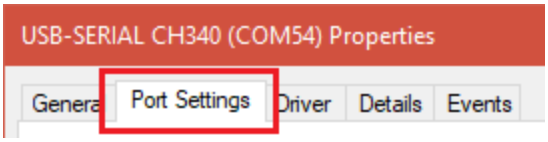
1. Ensure the LIT board is plugged into the computer.
2. Download the support package from above onto the computer.
3. Unzip it into its own directory.
4. Run “Arduino Driver Install.exe”
5. Accept any administrative prompts if they show.
6. Click the “INSTALL” button.
    a. 

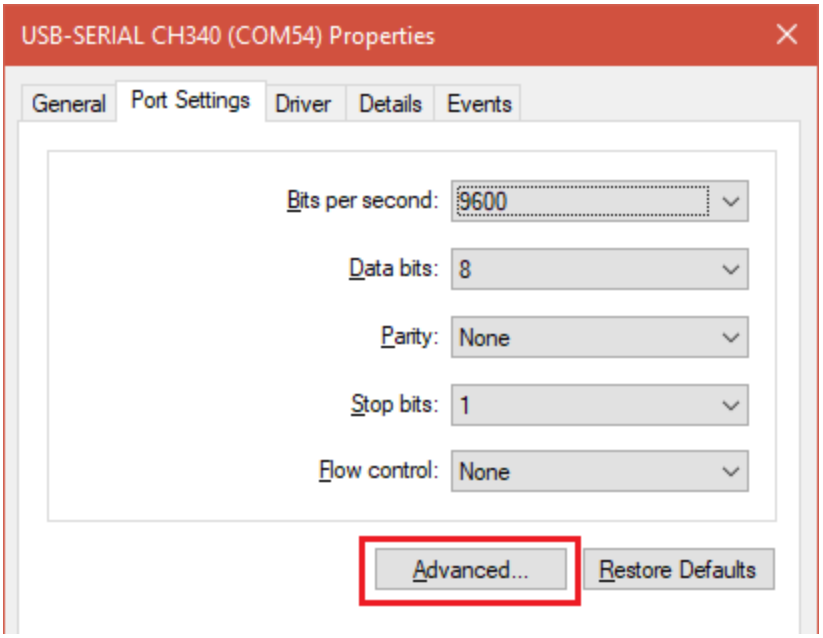
7. Wait for the successful message, it can take a moment to install.
    a. When I say a moment, it can look like it hangs. Just be patient!
8. Close the Driver Setup windows.
9. Open up Device Manager
    a. Using your keyboard open the run dialog window by pressing the WINDOWS key and the R key together.
    b. Type “devmgmt.msc” into the dialog like so.

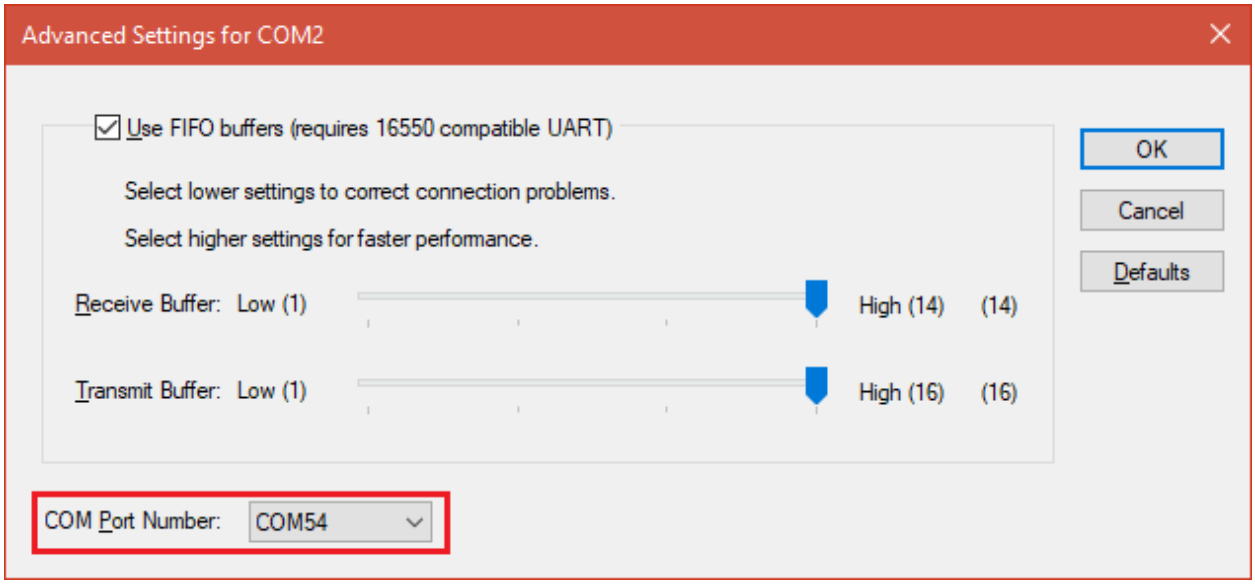
c. 

10. Look for the section labeled “Ports (COM & LPT)”
11. Expand the section using the arrow to the left.
12. Right click the “USB-SERIAL CH340” device that is shown.

a. 

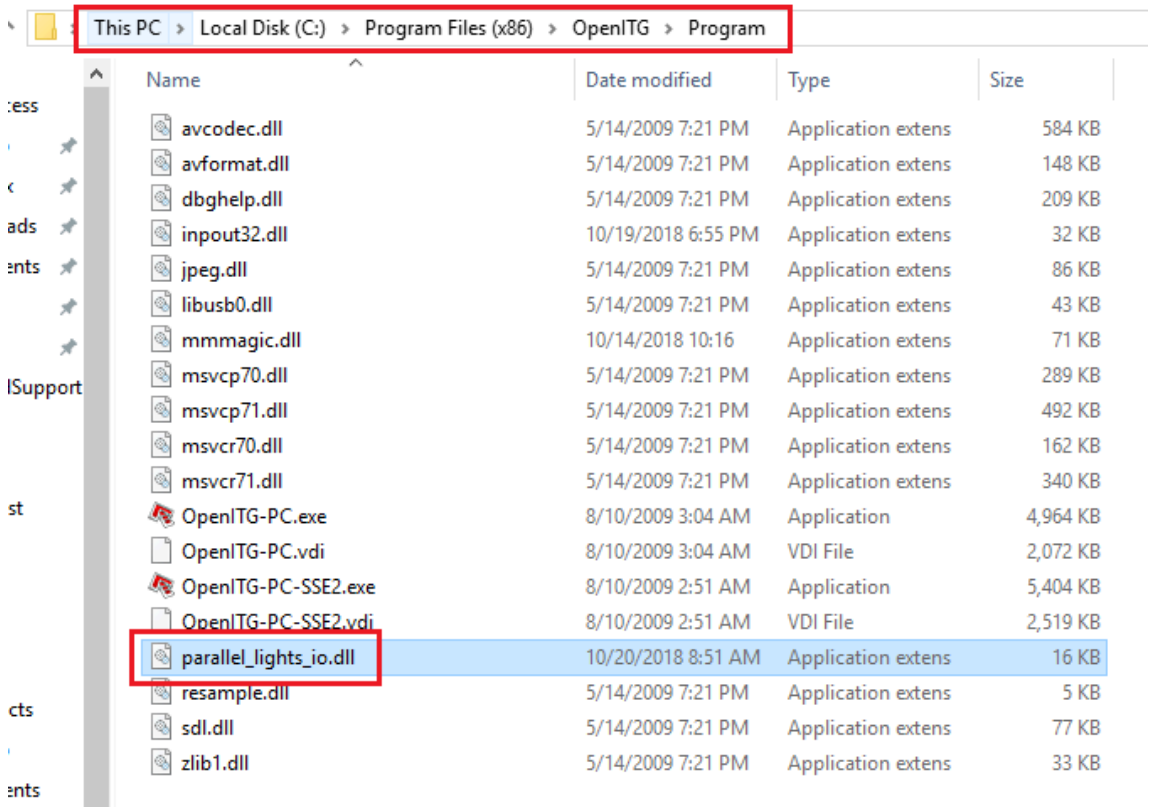
13. Click the “Port Settings” tab at the top of the window.
    a. 

14. Click the “Advanced” button on the bottom left hand row of the “Port Settings” tab.
    a. 

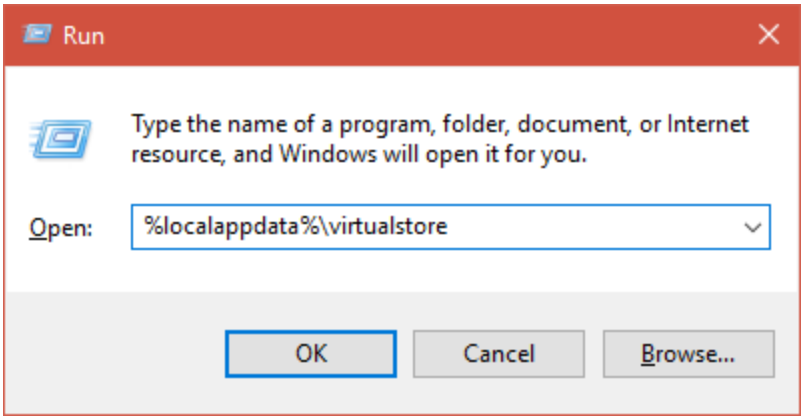
15. Using the drop down menu next to “COM Port Number” select “COM54”.
16. 

17. Leave all other settings stock.
18. Click “OK”
19. Close all Device Manager windows.
20. **<u>Restart windows to save your settings.</u>**

Windows OpenITG/NotITG setup

1. Open up a new Windows Explorer window.
2. Navigate to your OpenITG/NotITG program directory
    a. For OpenITG this is located in “C:\Program Files (x86)\OpenITG\Program”
    b. For NotITG, this is located wherever you downloaded the setup package.
3. Copy the “parallel_lights_io.dll” file from the OpenITG support package folder into this folder like so:
    a. If the file already exists, proceed to overwrite it.
    b. 

4. Open a new Windows Explorer window.
5. Navigate to your OpenITG/NotITG Data Directory
    a. For OpenITG, this is located in “C:\Program Files (x86)\OpenITG\Data”
        i. Please note when using versions of Windows past XP, Windows will store these files in the “virtual store”.
        ii. To access this, open up the Run Dialog like before and type “%localappdata%\virtualstore”

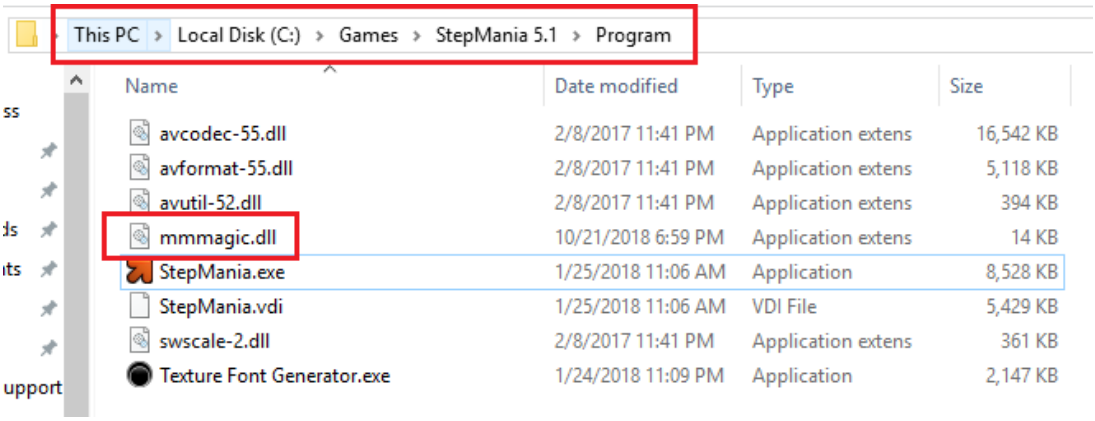
1. 

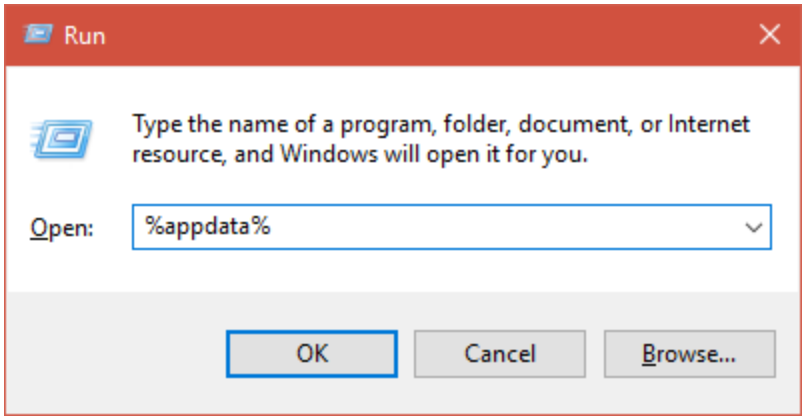
    iii. Open up “Program Files (x86)\OpenITG\Data”
6. Open up “StepMania.ini” using Notepad.
7. Scroll down to the section labeled “LightsDriver”
8. Next to “LightsDriver=” type “Parallel” as shown.

```
LightsAheadSeconds=0.050000
LightsChartsInMenus=0
LightsDriver=Parallel
LightsFalloffSeconds=0.100000
LightsStepsDifficulty=hard,medium
LockCourseDifficulties=0
```

    a.
9. Save the file.
10. Close Notepad.
11. Launch OpenITG/NotITG and enjoy your lights!

Windows StepMania 5+ setup

1. Open up a new Windows Explorer window.
2. Navigate to your Stepmania 5 program directory
    a. By default this is located in "C:\Games\StepMania 5\Program"
3. Copy the “mmmagic.dll” from the Stepmania 5 support package folder file into this folder like so:
    a. If the file already exists, proceed to overwrite it.
    b. 

4. Open a new Windows Explorer window.
5. Navigate to your StepMania Data Directory
    a. For StepMania 5+ this is located in your AppData folder.
        i. Open up the Run dialog box pressing the Windows key and R at the same time.
        ii. Type “%appdata%” as shown:
        1. 

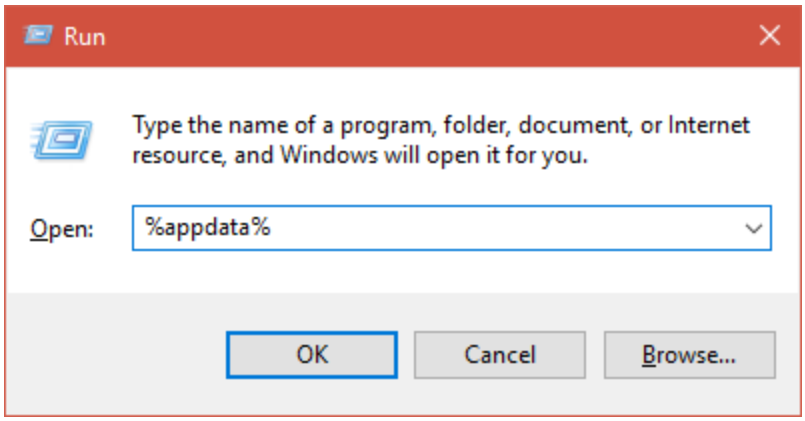
        iii. Click the StepMania 5 or StepMania 5.1 folder
        iv. Click the Save folder
6. Open up “Preferences.ini” using Notepad.
7. Scroll down to the section labeled “LightsDriver”
8. Next to “LightsDriver=” type “Win32Minimaid” as shown.

a.

```
LifeDifficultyScale=1.000000
LightsAheadSeconds=0.050000
LightsDriver=Win32Minimaid
LightsFalloffSeconds=0.100000
LightsStepsDifficulty=medium
LockCourseDifficulties=1
```

9. Save the file.
10. Close Notepad.
11. Launch StepMania and enjoy your lights!

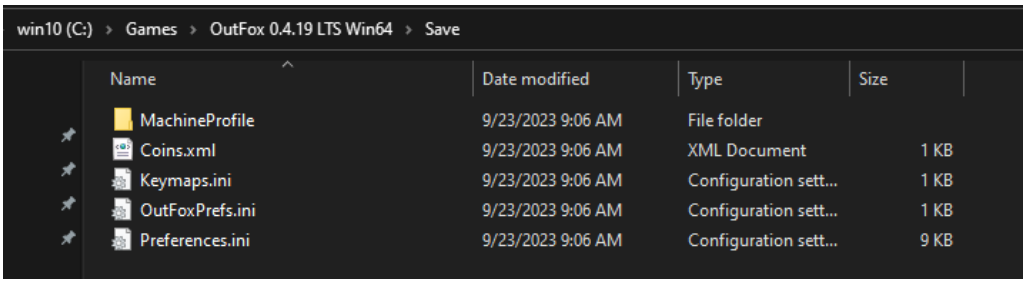
Windows ITGmania setup

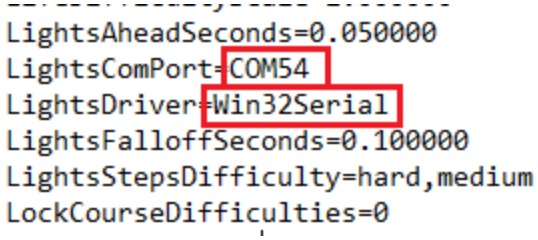
1. Open up a new Windows Explorer window.
2. Navigate to your ITGmania Data Directory
    a. For ITGmania this is located in your AppData folder.
        i. Open up the Run dialog box pressing the Windows key and R at the same time.
        ii. Type “%appdata%” as shown:
        1. 

        iii. Click the ITGmania folder
        iv. Click the Save folder
3. Open up “Preferences.ini” using Notepad.
4. Scroll down to the section labeled “LightsDriver”
5. Next to “LightsDriver=” type “Win32Serial” as shown.
6. Ensure “LightsComPort=” is set to “COM54” as shown
    a.
```
LightsAheadSeconds=0.050000
LightsComPort=COM54
LightsDriver=Win32Serial
LightsFalloffSeconds=0.100000
LightsStepsDifficulty=hard,medium
LockCourseDifficulties=0
```
7. Save the file.
8. Close Notepad.

Launch ITGmania and enjoy your lights!

Windows OutFox setup

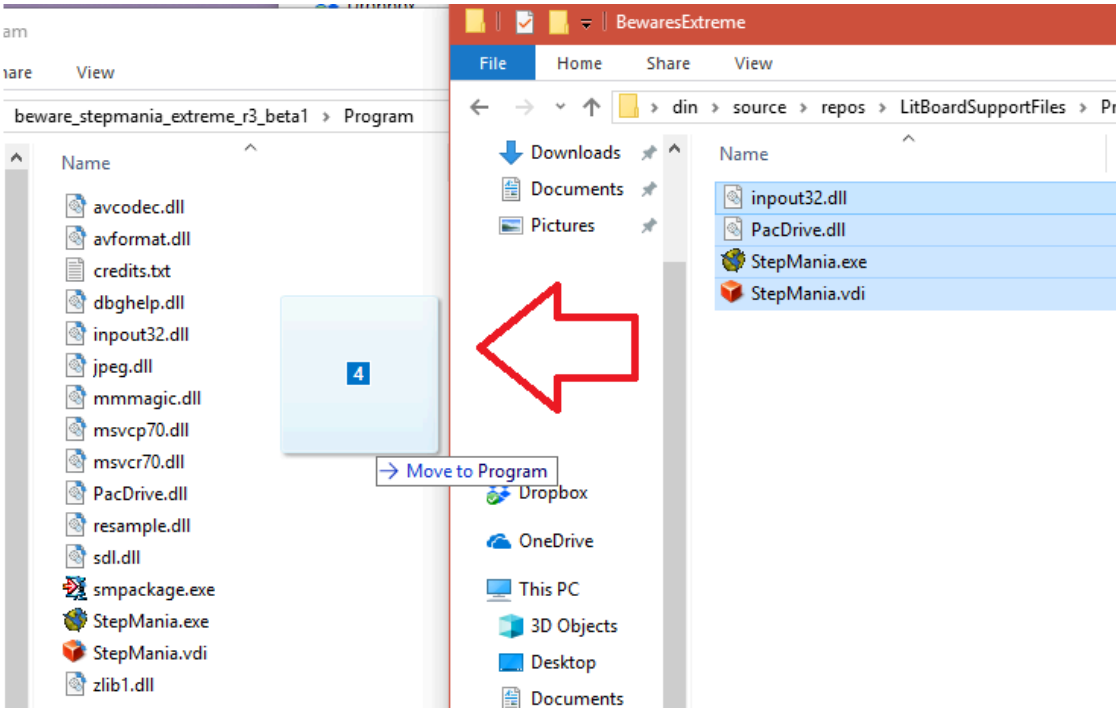
9. Open up a new Windows Explorer window.
10. Navigate to your OutFox Data Directory
    a. For OutFox this is located in the C:\Games\Outfox <version>\Save folder.
    b. 

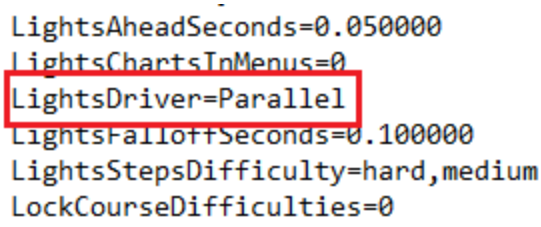
11. Open up “Preferences.ini” using Notepad.
12. Scroll down to the section labeled “LightsDriver”
13. Next to “LightsDriver=” type “Win32Serial” as shown.
14. Ensure “LightsComPort=” is set to “COM54” as shown
    a. 

15. Save the file.
16. Close Notepad.

Launch OutFox and enjoy your lights!

Windows Beware's Extreme setup

1. Open up a new Windows Explorer window.
2. Navigate to your Beware's Extreme program directory
    a. As this was a ZIPed download, this would be wherever you have it downloaded.
3. Copy the all the files from the Beware's Extreme support package folder into the Program folder like so:
    a. 

4. Navigate to the Data Directory in the beware's extreme folder
5. Open up "StepMania.ini" using Notepad.
6. Scroll down to the section labeled "LightsDriver"
7. Next to "LightsDriver=" type "Parallel" as shown.
    a. 
```
LightsAheadSeconds=0.050000
LightsChartsInMenus=0
LightsDriver=Parallel
LightsFalloffSeconds=0.100000
LightsStepsDifficulty=hard,medium
LockCourseDifficulties=0
```
8. Save the file.
9. Close Notepad.
10. Launch Beware's Extreme and enjoy your lights!

Linux

With the Linux side of things we can use the SextetStream LightsDriver as intended. For this reason, things are different than the Windows setup. The ultimate goal is to create a fifo, set StepMania to write to that fifo, and export that fifo with socat.

With these Linux directions I am under the assumption that you are comfortable with the terminal. If you need more assistance, let me know!

These directions are based off the original documentation located here, which I highly recommend you read as well.

Note: Ensure your user has proper serial rights before proceeding. For example in Arch this means your user is part of the "uucp" and "lock" groups. Please check with your distribution's documentation on serial access.

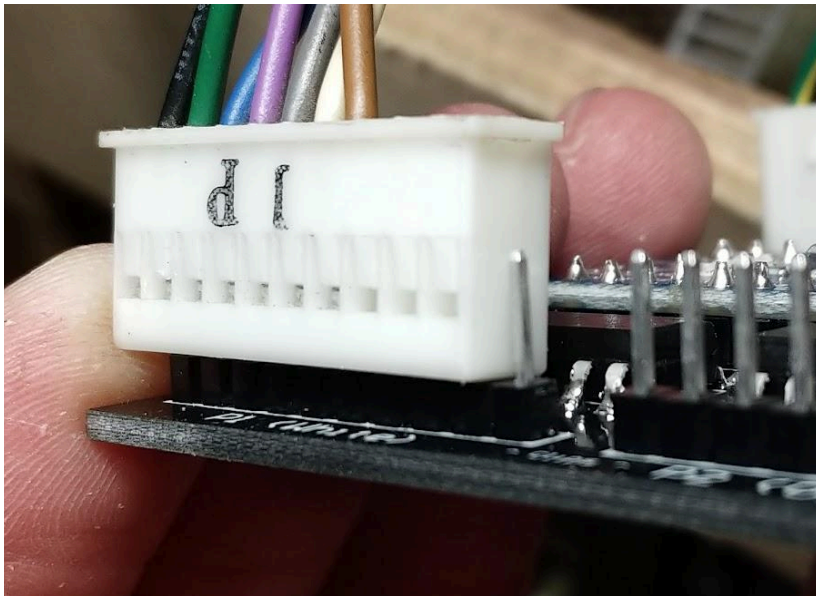
1. Navigate to your StepMania program directory in your terminal emulator of choice
    a. On Arch, the package is created in /opt/stepmania
2. Make the FIFO file that StepMania will write to
    a. `mkfifo "Data/StepMania-Lights-SextetStream.out"`
    b. Ensure this fifo has the proper read/write permissions as the same account running StepMania
3. Navigate to your StepMania save folder
    a. In most cases it will be located in your home directory, with the name `.stepmania`
4. Open "Preferences.ini"
5. Change the LightsDriver to be "SextetStreamToFile"
6. Save "Preferences.ini"
7. Ensure that socat is installed from your package manager.
8. Start outputting the fifo using socat using a command like this:
    a. `socat "/opt/stepmania/Data/StepMania-Lights-SextetStream.out" /dev/ttyUSB0,raw,echo=0,b115200`
9. Keep socat running in a different terminal window, or run it in the background by applying & to the command.
    a. For example: `socat "/opt/stepmania/Data/StepMania-Lights-SextetStream.out" /dev/ttyUSB0,raw,echo=0,b115200 &`
10. Start StepMania and enjoy your lights!
    a. Please note with the way that StepMania 5 is currently written, the program will halt on load if socat is not running and emptying the fifo. So be sure to always have it running before you launch stepmania!

b. I have a batch script that starts socat, stepmania, sets the volume, etc I can send you way if you'd like.

Troubleshooting

Some of the lights are working, but a pad or two isn’t, and up and right don’t work!

Check to see if you have any exposed pins on the LIT board. All pins need to be plugged in the right spot for everything to be working as expected. Try reseating all connectors and checking that no pins are showing like this picture:



*This is what you *don’t* want.*

My lights were working, now they aren’t. What's up with that?

Windows likes to change the COM port around depending on the computer. Ensure you are using the same USB port each t ime.

If that did not do it, be sure to check and see the COM Port is correctly set to COM54 in device manager.

If Windows is still being dumb, then the easiest way to get around this is just to uninstall and reinstall the drivers.

Open up the Device Manager and locate the “USB-SERIAL CH340” device from before. Right click it and select “Uninstall”. When prompted, be sure to click the checkbox “Delete the driver software for this device” before clicking okay.

Once the device is properly uninstalled, unplug the device, then follow the section under “COM Port Setup”.

I use COM54 for something else, can I pick a different COM Port number?

If you need to use a different COM Port number, let me know! I can work with you on that to make it fit your setup.

I installed everything properly, set the port, but it’s still not working?

After installation Windows may need a reboot to remember the port number. Go ahead and give that a shot.

I got lights working with StepMania 5, but now all the marquee lights just flash constantly. What's up?

Believe it or not, older versions of StepMania 5 do not automatically generate lights for songs, instead it just blinks all the cabinet lights to the BPM. StepMania 5.0.12 for example is affected by this bug. I would recommend upgrading to a newer version of StepMania or changing to a program like ITGMania which keeps a more up to date source.

I need to see if my lights are working outside the game, how can I do that?

Sure thing! I wrote a quick test program to light up the lights in a sequence. In the Windows package, open up the “Utilities” folder and start up “LightsTest.exe”.

For Linux users, I wrote a quick python script located here that will toggle through all the lights. Run it with “litboard_test.py /dev/ttyUSB0” or whichever device your board is mapped to.

Okay I know I did everything right, but it's still not working. What’s up?

Contact me! We’ll get it fixed asap. My email is dinsfire64@gmail.com or feel free to contact me on other social media platforms.