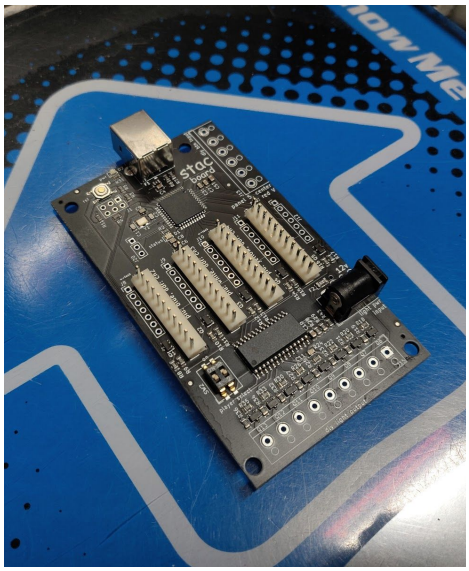
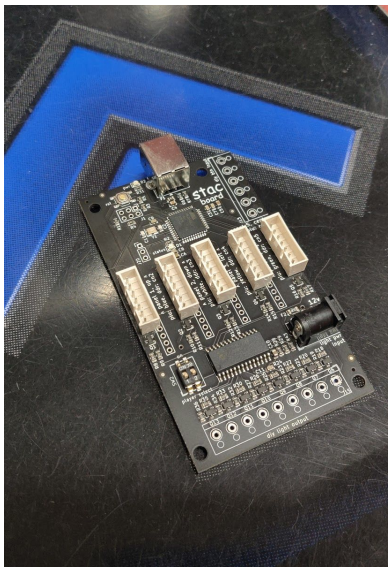
STAC Manual

Overview

The STAC (Stop Throwing Away Cabinets) board is a small electronic PCB that allows you to connect your arcade dance pad to a modern computer to play modern dance games!

One board will connect one player side of your dance pad to your computer to play your favorite games keeping your lighting functionality intact!

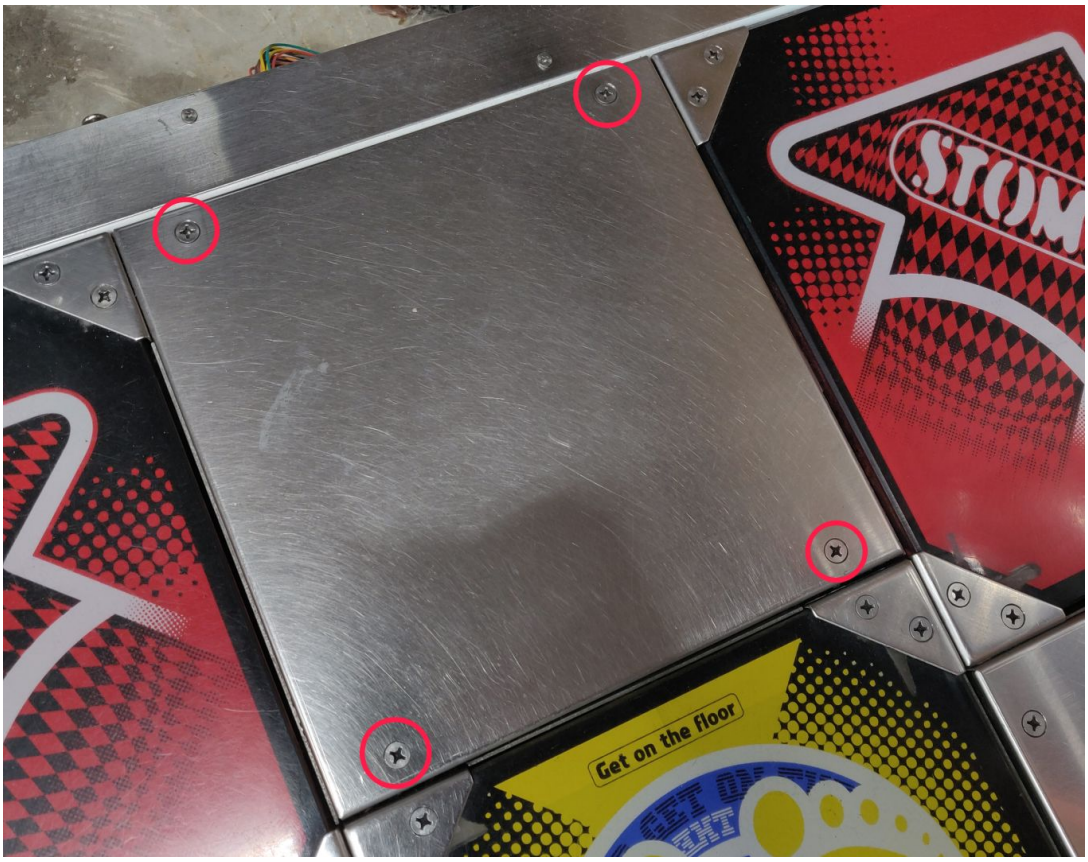
Features

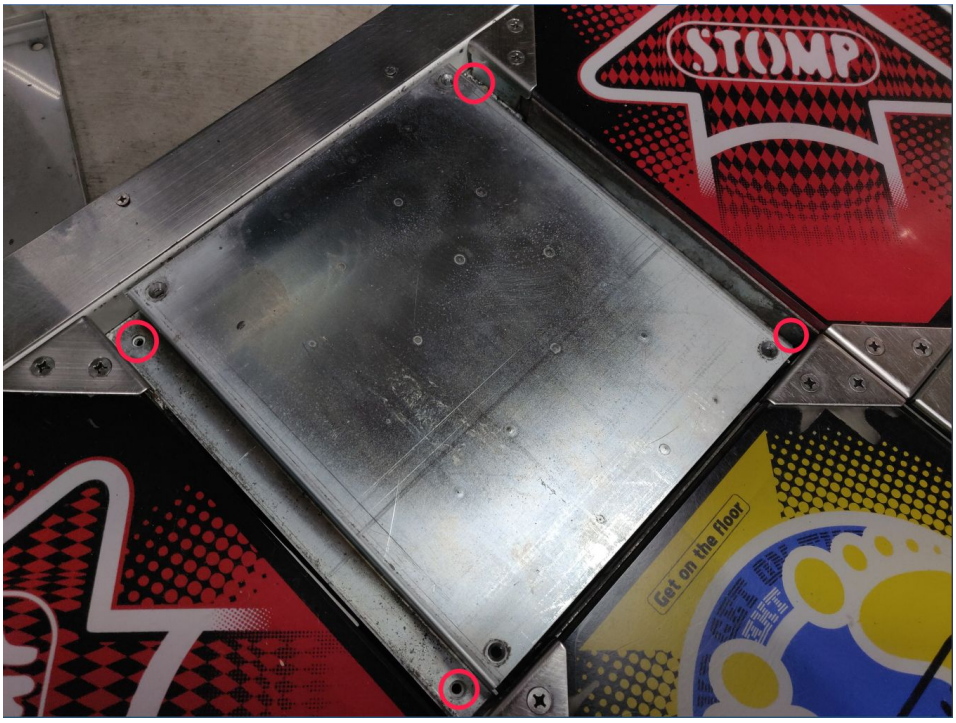
- Easy Installation. Unplug (and save!) your original pad IO, and plug in the STAC. Done.
- Reactive Lighting. Press a panel, it lights up!
- Computer Controlled Lighting. Have the game control the lights!
- Fast 1000Hz/1kHz polling. It “just works”
- Updatable Firmware. Find a bug, we will fix it!
- Startup Lighting Animation. Soak in those glorious lights.
- All 16/20 individual sensors individually sampled and tested. No dead spots!
- Fast debouncing. Player engineered, player tested, player proven.
- Custom configuration utility
- Windows, Mac, and Linux support.

Installation

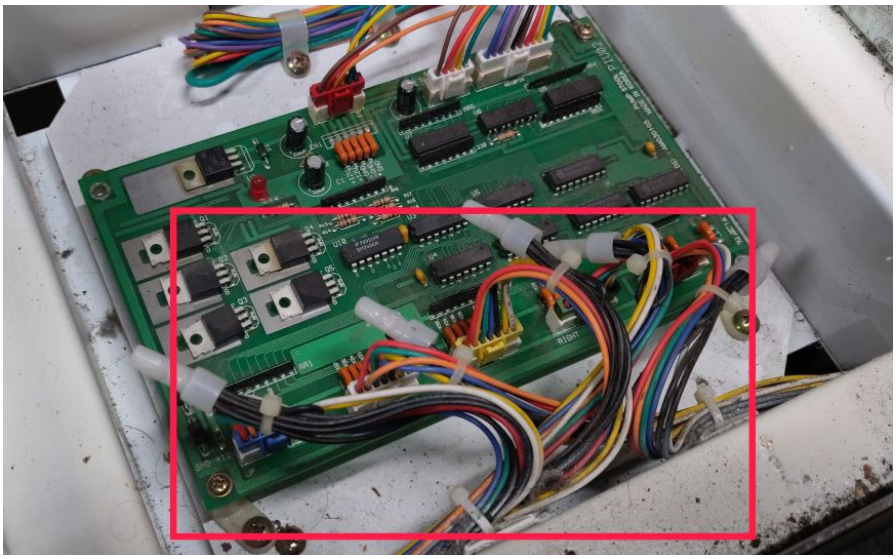
Installation of the STAC into your existing arcade dance pad is very simple. In order to install you need to remove the two metal covers that house your existing pad io hardware, disconnect the existing wiring, and connect the STAC.

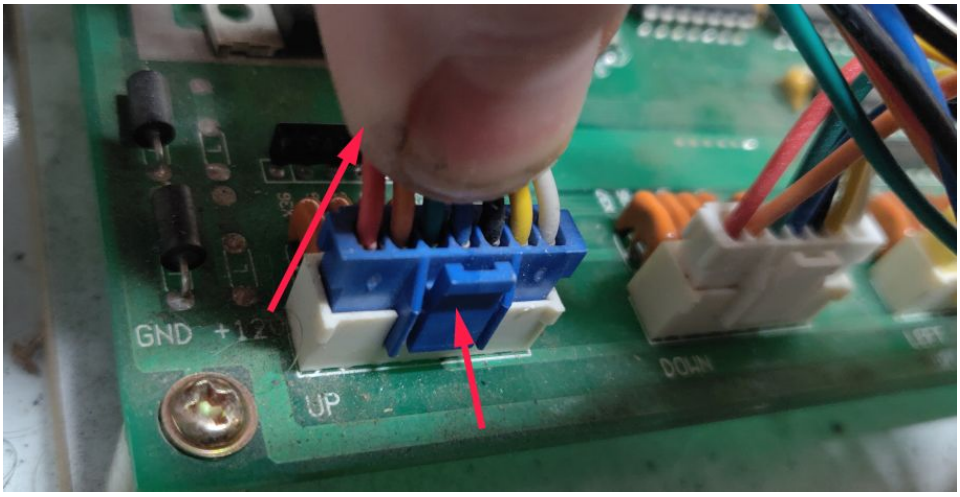
Remove the Existing Metal Structure

1. Locate the Panel that Contains the existing IO Board
    a. For DDR/ITG this is the panel in the Upper Right (Player 1) or Upper Left (Player 2) of the dance pad.
    b. For Pump this is the panel in the top center of each dance pad.
2. Remove the Four Screws that keep the top panel attached.
    a. 

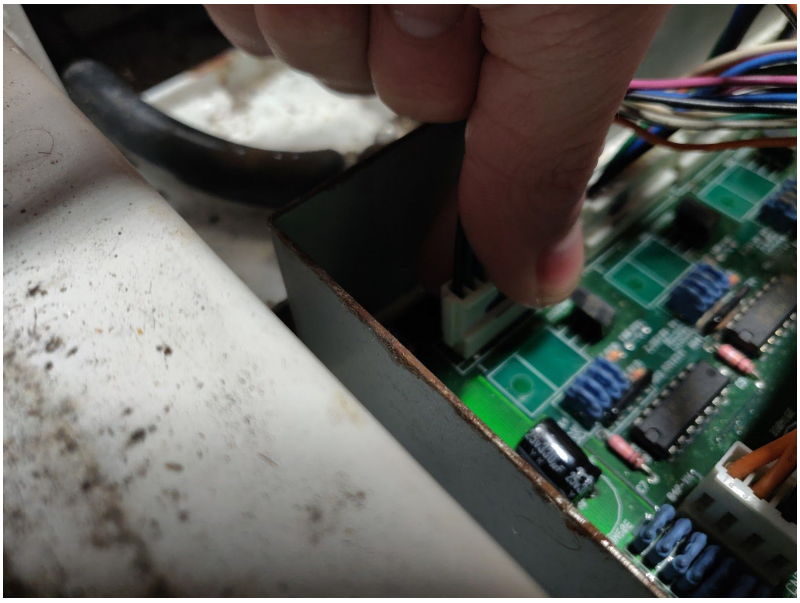
3. Remove the Additional Four Screws that keep the placement panel attached.
    a. 

Disconnect the Existing Wiring

1. Locate the four or five wires that are currently connecting your panels to your existing pad io
    a. 
2. Grab the connector with your thumb and index finger
    a. For In the Groove and Pump it Up cabinets, be sure to place pressure on the locking tab to release the connection

i. 

b. For DDR Cabinets, simply lift up to release the lock.

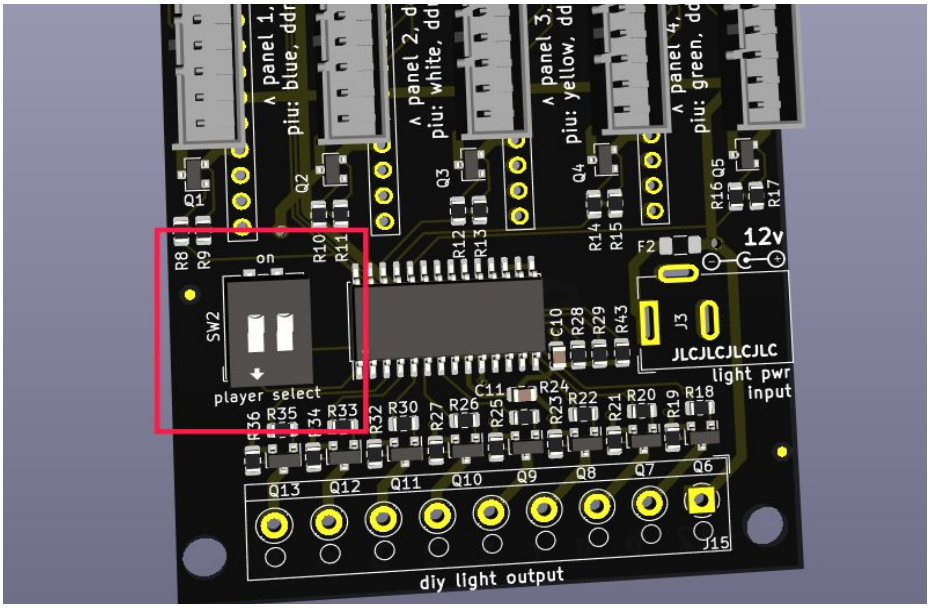
c. 

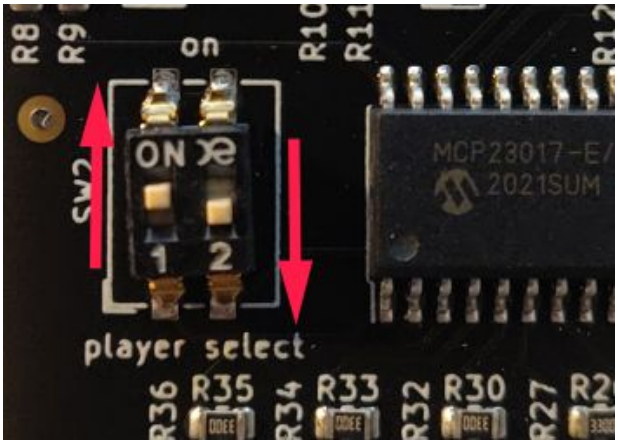
3. With gripping force only on the connector, begin to pull the connector upward until it has released.
4. Repeat for the remainder of the connectors.
5. **Please note** if the original power and signal wires are still in the dance pad safely tuck them away for safe keeping.

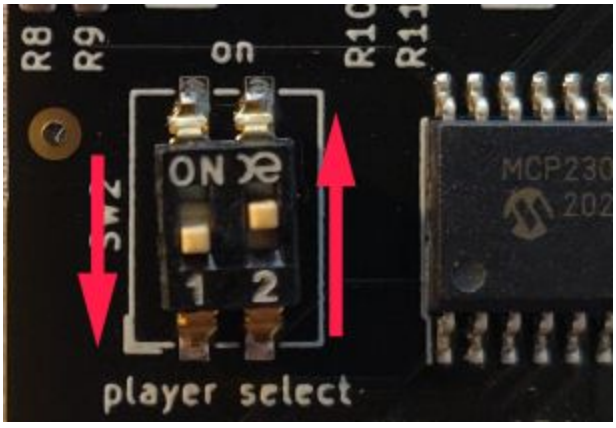
(Optional) Setting the Player Number

If you use two STAC's at once, the STAC has a feature to change the name and id of the gamepad depending on the player number to better help identify the inputs in software and prevent accidental swapping of sides by software.

If you have two dance pads with two STACs you can perform the following settings:

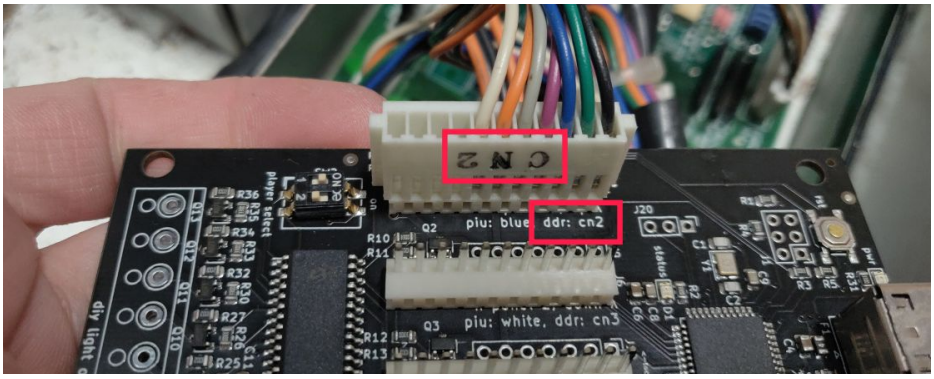
1. Location the Player Select switch in the bottom left hand corner of the board.
    a. 

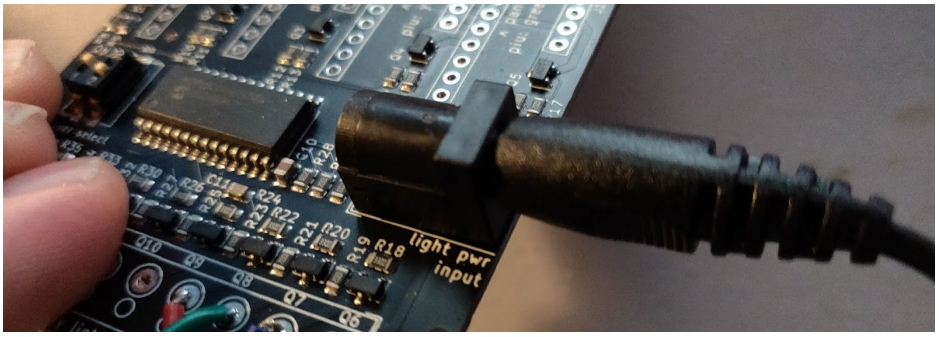
2. For Player 1, simply slide up the switch labeled “1” toward the label “on” and slide the switch labeled “2” down.
    a. 

3. For Player 2, simply slide up the switch labeled “2” toward the label “on” and slide the switch labeled “1” down.
    a. 

Installing the STAC

With everything properly disconnected it is now just a matter of connecting the panels to the STAC, power for the lights, and connecting it to your computer.

1. Taking each plug one at a time plug in the four or five wiring looms from your dance pad into the STAC.
    a. The order is important <u>if you wish to have your game control the lights</u> and is labeled accordingly on the board itself.
    b. If you only wish for the lights to react to your input in reactive modes, then the order does not matter.
2. Begin plugging in the four or five wiring looms from your dance pad into the STAC
    a. 

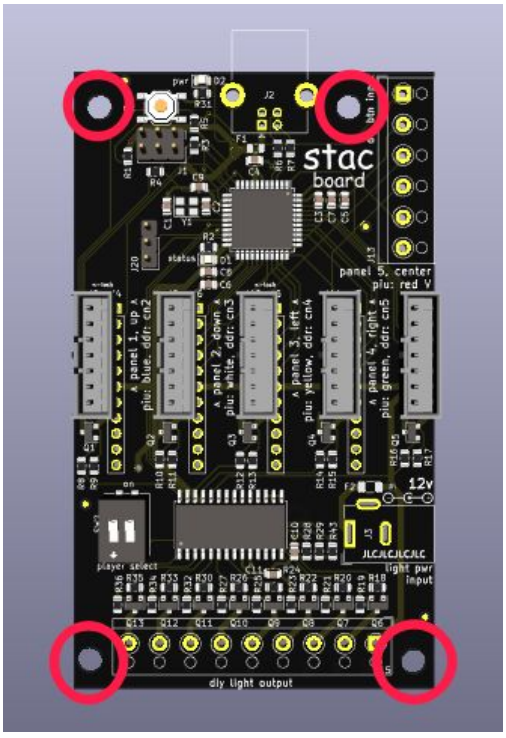
3. Connect the 12v DC barrel jack into the side of the STAC labeled EXT PWR
    a. 

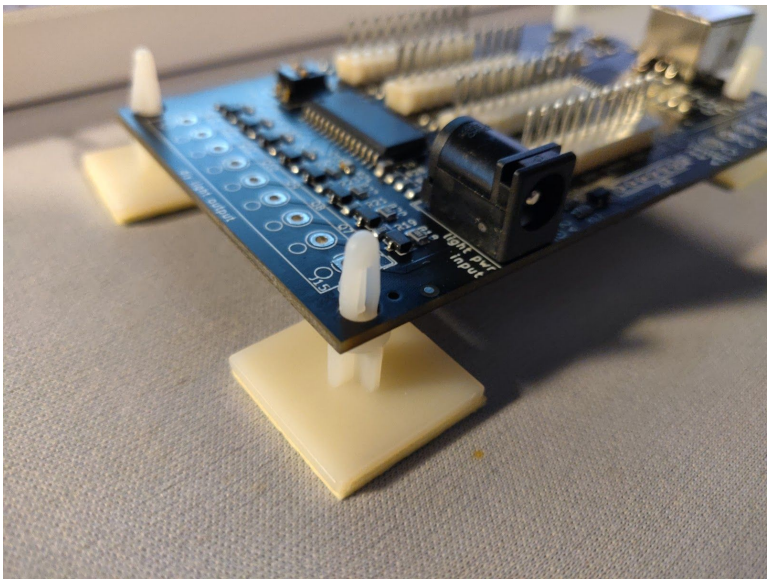
4. Plug the 12v DC power adapter into a wall outlet
    a. **<u>!!! PLEASE NOTE !!!</u>** Some power supplies can be quite noisy! Placing them close to electronics like the stac can cause problems such as disconnects or resets.
    b. Please place 12v power supply bricks outside of the dance pad or well away from the usb connection.
5. Connect the USB type B cable to the stac
6. Connect the USB cable into your computer of choice
    a. **<u>!!! PLEASE NOTE !!!</u>** To mitigate disconnects use the USB ports in the back of your computer or coming directly off the motherboard. These provide the most stable signals to send out the long ways to your dance pad.
    b. **<u>!!! PLEASE AVOID !!!</u>** any USB extension cables or USB hubs if possible as they provide an additional source of potential disconnects or dropouts.

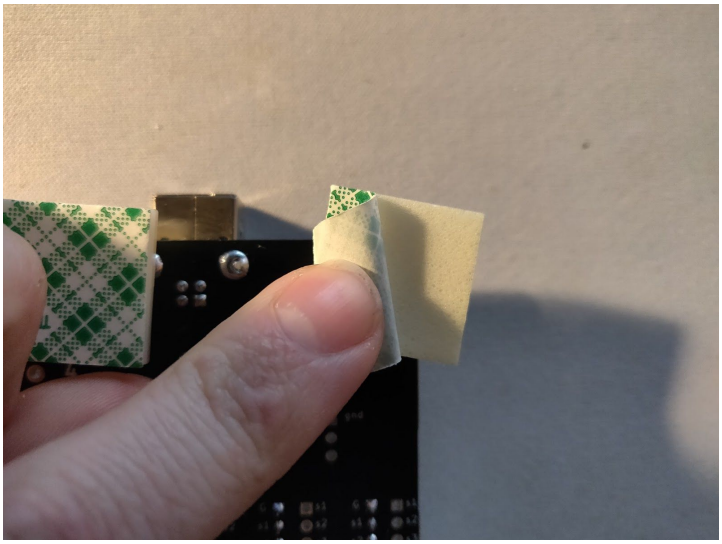
7. **PLEASE NOTE:** The stac board has a 12V power supply being run into it and the surfaces of some dancepads can be conductive. To avoid shorts, ensure that you use the **included standoffs** to separate the device from the metal or line the interior of your dance pad with non conductive material.

(Optional) Permanent Installation

If you wish to remove the original pad io and use only the STAC, you can use the included standoffs to attach the STAC to your dance pad directly.

1. Unscrew your original dance pad controller.
2. Remove and keep in a safe location
3. Locate the four mounting holes of the STAC
    a. 

4. Using the included standoffs, press them into each of the four holes
    a. 

5. Use the adhesive backing to adhere the unit in place in your dance pad
    a. 

(Optional) Setting up Computer Controlled Lights

The STAC by default will automatically light up each and every panel when it is pressed. This satisfies most people; however the STAC can also be controlled by the game itself!

Setting this up depends on the game you wish to play, but software has already been created and made for Stepmania 5, OpenITG, Beware's Extreme, MAME, and more!

Driver Installation

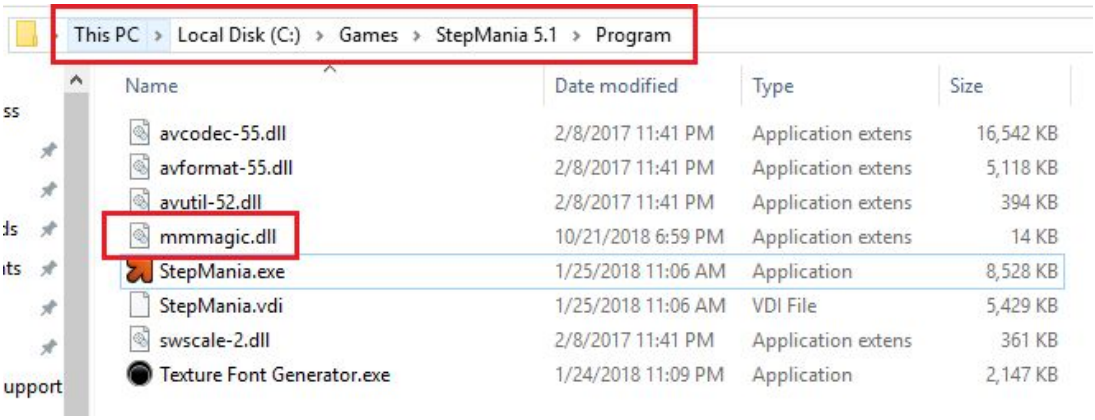
Surprise! There is none. STAC is completely USB HID compliant and requires *no* drivers for input or output!

Enjoy the plug and play operation!

Game Lighting Setup

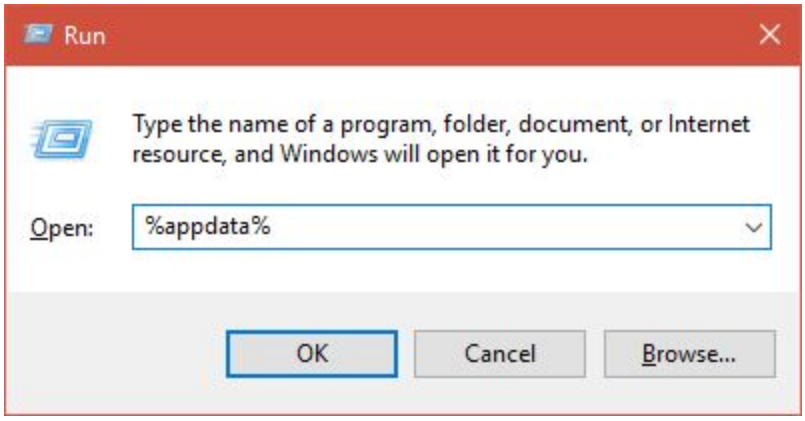
Game lighting requires a bit of setup in order to tell the game how to communicate with the STAC, but it is simple to do.

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.

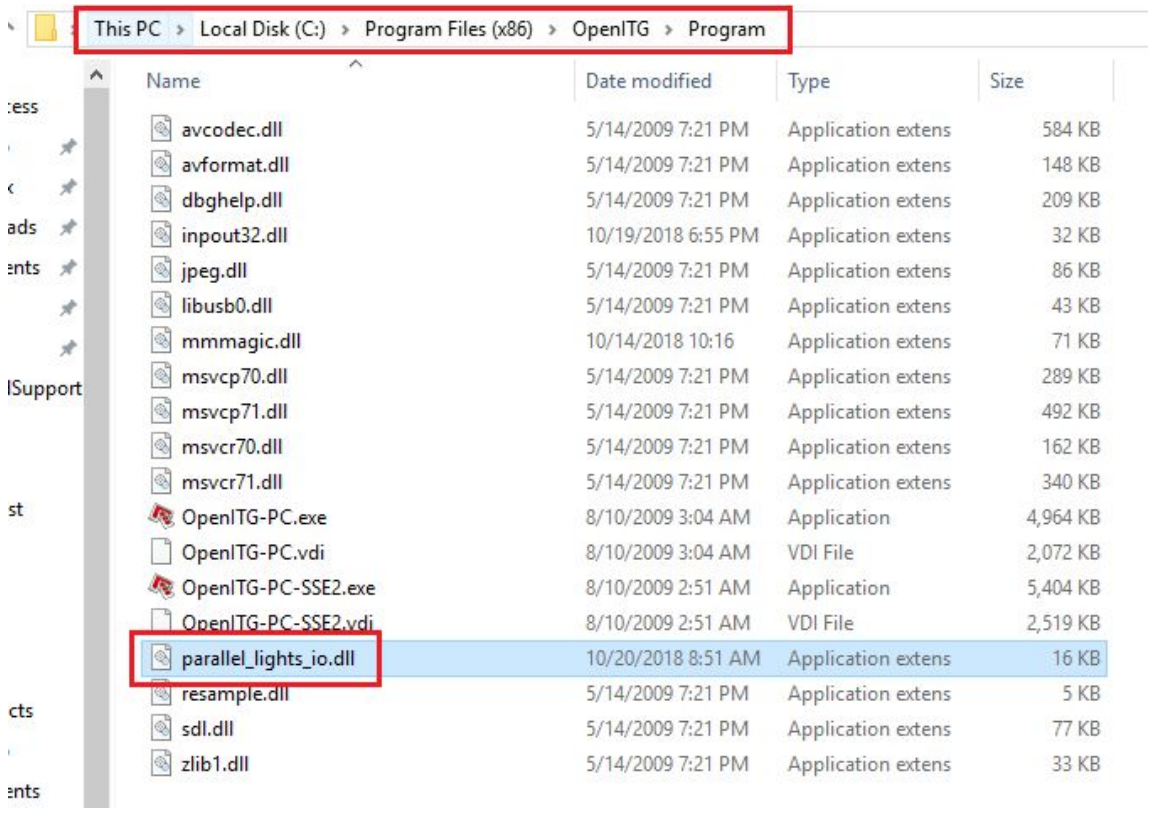
a.
```
LifeDifficultyScale=1.000000
LightsAheadSeconds=0.050000
LightsDriver=Win32Minimaid
LightsFalloffSeconds=0.100000
LightsStepsDifficulty=medium
LockCourseDifficulties=1
```

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

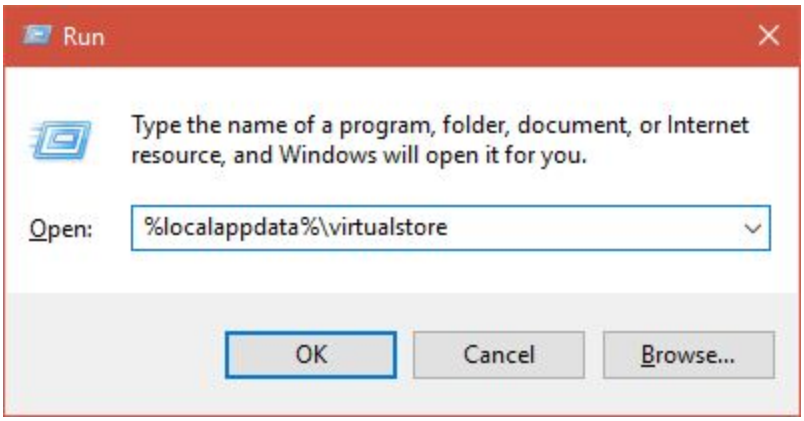
Windows OpenITG/NotITG setup

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\Save”
        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\Save”
6. Open up “Preferences.ini” using Notepad.
7. Scroll down to the section labeled “LightsDriver”
8. Next to “LightsDriver=” type “Parallel” as shown.

a.

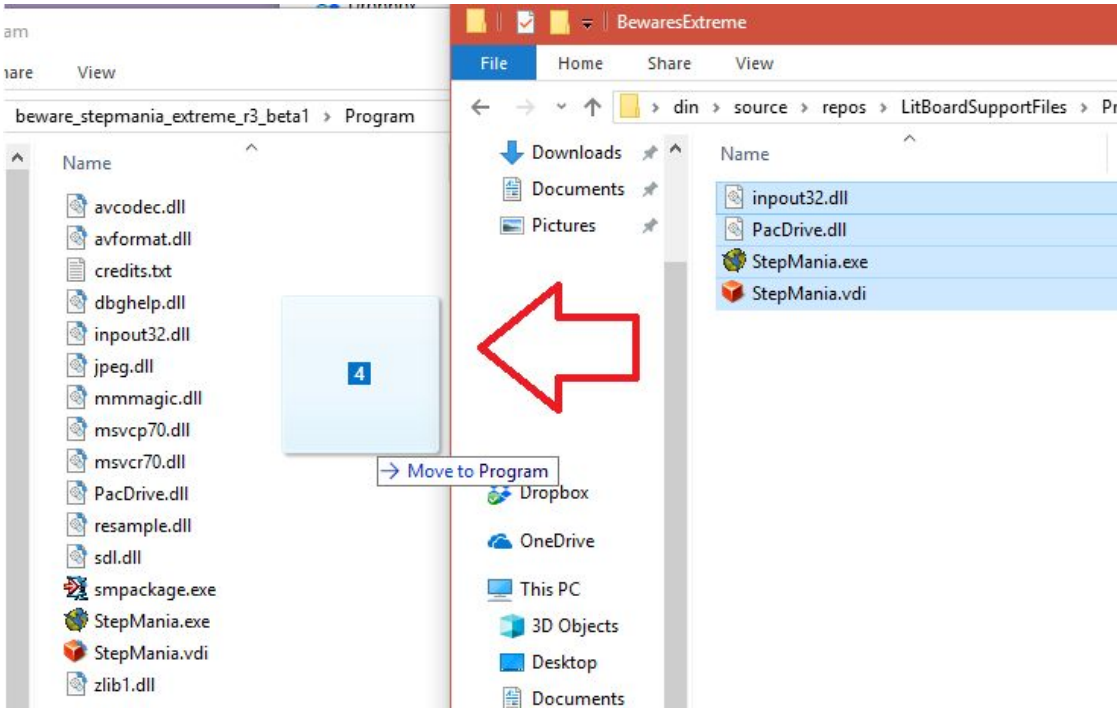
```
LightsAheadSeconds=0.050000
LightsChartsInMenus=0
LightsDriver=Parallel
LightsFalloffSeconds=0.100000
LightsStepsDifficulty=hard,medium
LockCourseDifficulties=0
```

9. Save the file.
10. Close Notepad.
11. Launch OpenITG/NotITG 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!

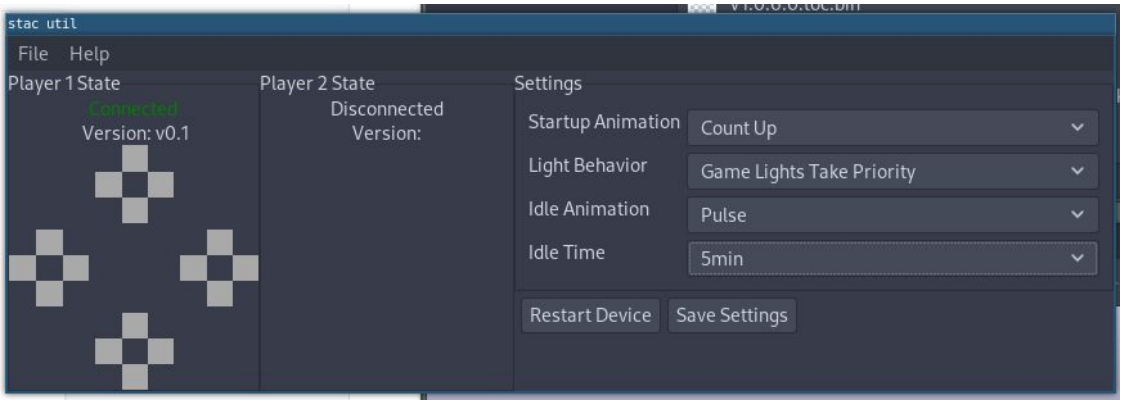
Other Game Setups

STAC is entirely USB HID compliant, so using your game's utility or configuration feature for light setups you can easily map which light is which. Simply select the light from the drop down box that matches the light in game that you would like to light and confirm the operation in real life.

Configuration Utility

STAC comes with a neat cross-platform utility to set, configure, and change settings on your STAC.

To use the utility, simply double click and launch!



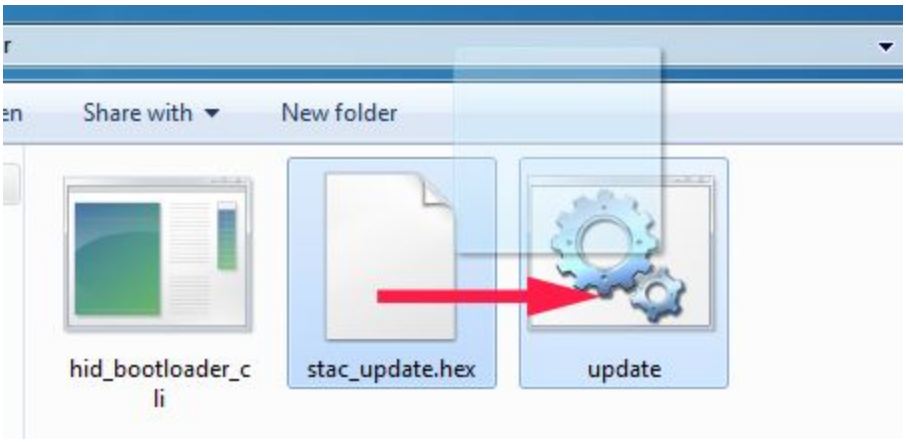
Utility Setup

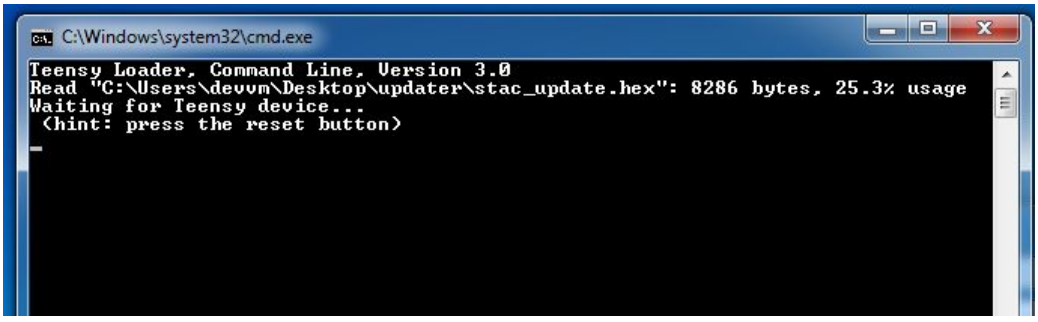
When first launching the utility, it needs to know what kind of pad you have connected!

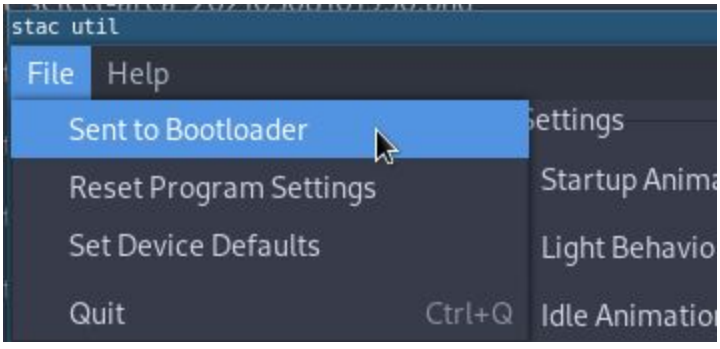
Simply select if you have the device connected to a four panel pad (such as DDR or ITG) or a five panel pad (like PIU) to get a nice layout screen.

Updating

The STAC has user updatable firmware that is easily updated and changed.

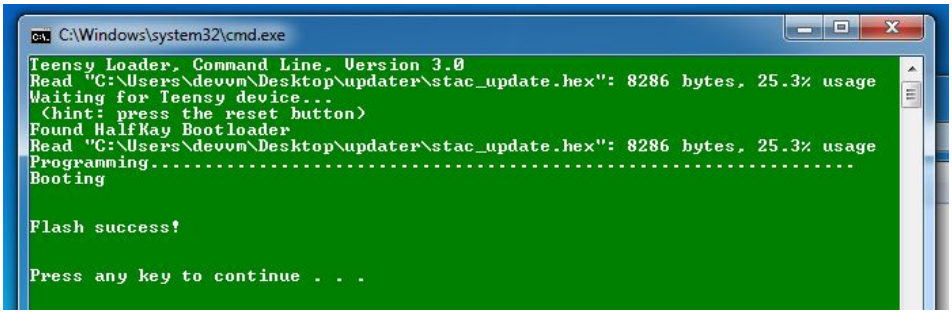
1. Ensure that the STAC is correctly connected to your computer.
2. Download the software update utility and update file from the manufacturer's website.
    a. https://icedragon.io/stac
3. Extract the software update utility to a folder of your choosing.
4. Click and drag the software update file into the `update.bat` script.
    a. 

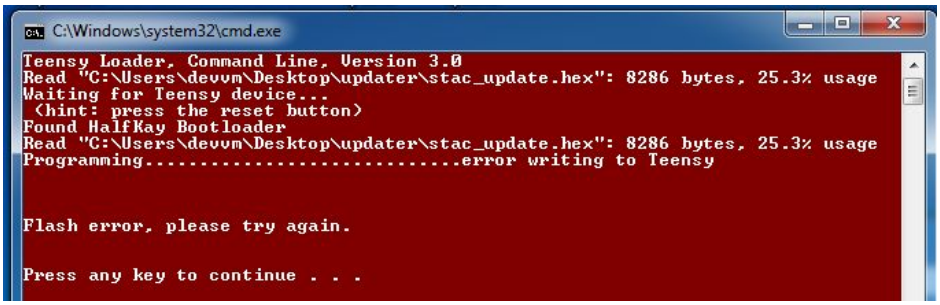
5. The updater utility should be at a black screen waiting for the device.
    a. 

6. Launch the stac utility and wait for the device to connect
7. From the File menu, select Send to Bootloader
    a. 

8. The software update utility should have recognized the bootloader and began to flash the device

a. If the process does not start, then attempt to enter the bootloader again by double tapping the reset button.

9. Wait for the flashing process to occur
10. Take note of the color of the software update utility
    a. If the screen has turned green, then the flashing was a success
        i. 

    b. If the screen has turned red, then begin the flashing process from the start to try again
        i. 

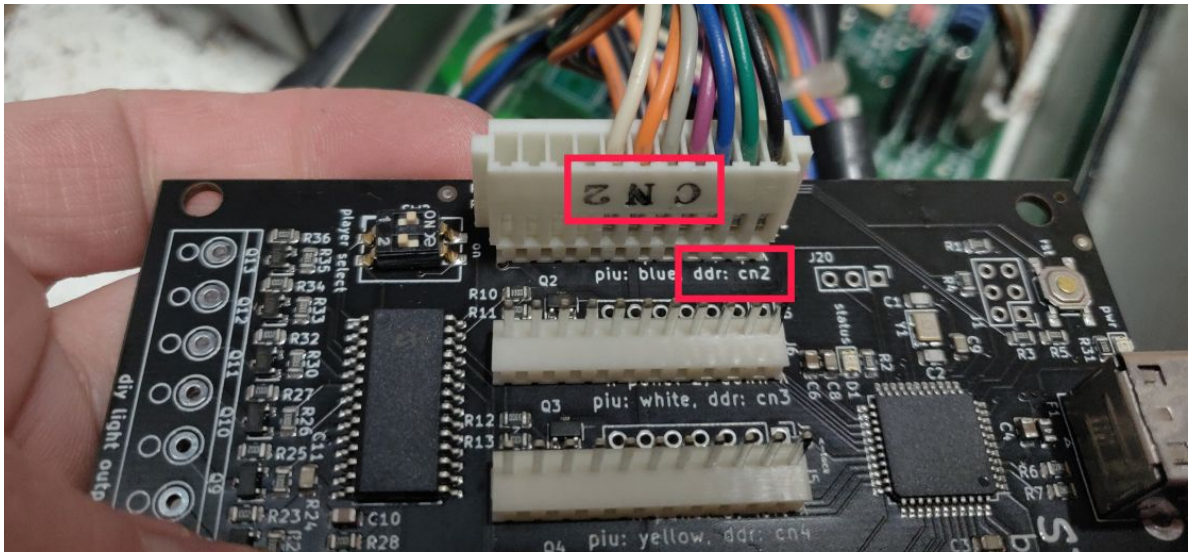
Troubleshooting

I am getting input on the computer, but no lights?

The lights are driven entirely by the DC barrel jack and are only controlled by the STAC. Please ensure you are getting the proper 12v power from your power supply.

The lights from the game are in the wrong order?

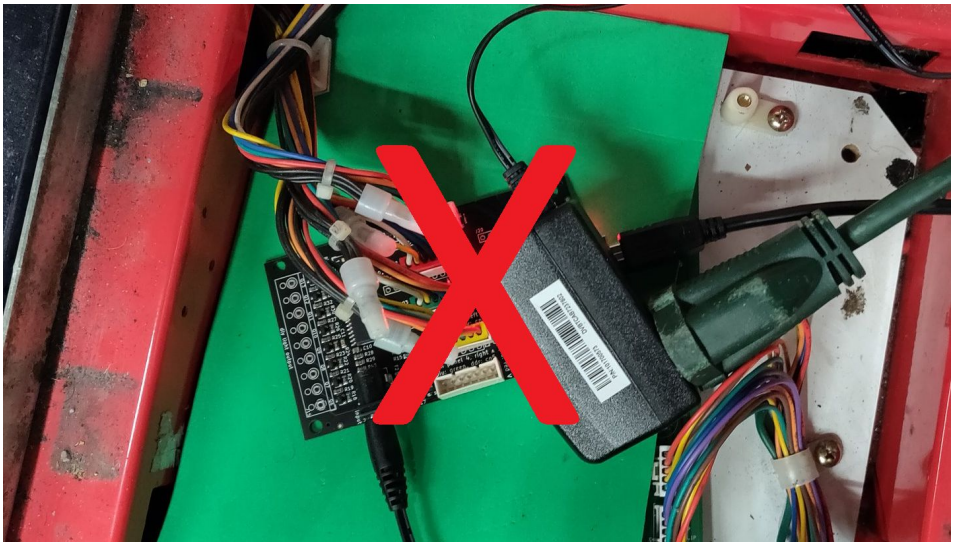
No problem! A lot of the lighting software designed for STAC is designed to match the wiring in your dance pad. So to switch the problem of lights being in the wrong spot, simply swap the order of each of the connections to match the expected panel location!



The device randomly resets or disconnects from the computer, what gives?

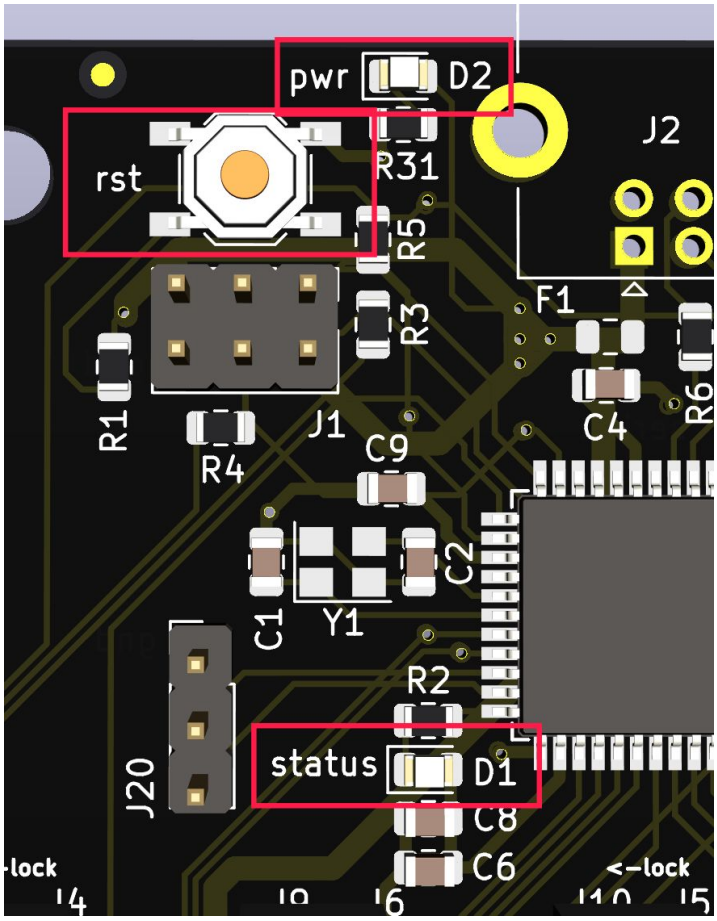
The stac was designed to mitigate any disconnects or problems with faulty wiring, but there are a couple of things you can do to help prevent these from occurring!

1. Ensure the stac is properly on standoffs to prevent electrical shorts.
2. Ensure you are connected directly to the computer with the USB cable
    a. The best connections are usually in the back of the computer
3. Avoid use of any **non-powered** USB hubs
    a. Power drips and drops over long distances can cause issues.
4. Ensure the placement of the power supplies is **not** located near the stac.

a. 

I could not get the device to update, the software never recognizes it?

Certainly worrying! An easy way to attempt to bypass this is to manually enter the update process using the board. Go ahead and follow the updating steps to force the board to update.



1. Connect the stac to your computer
2. Ensure the power LED is lit.
3. Press and hold the reset button on the STAC for a second.
4. Release the reset button and quickly press the reset button a second time
    a. The goal is to create a short “double press”
    b. A double press of the reset button must be done in order to go into updating bootloader
5. Check to ensure the status LED of the board is blinking
6. Check to ensure the update utility has recognized the board.
7. Wait for the update process to complete