

GG AIO QUICK START GUIDE

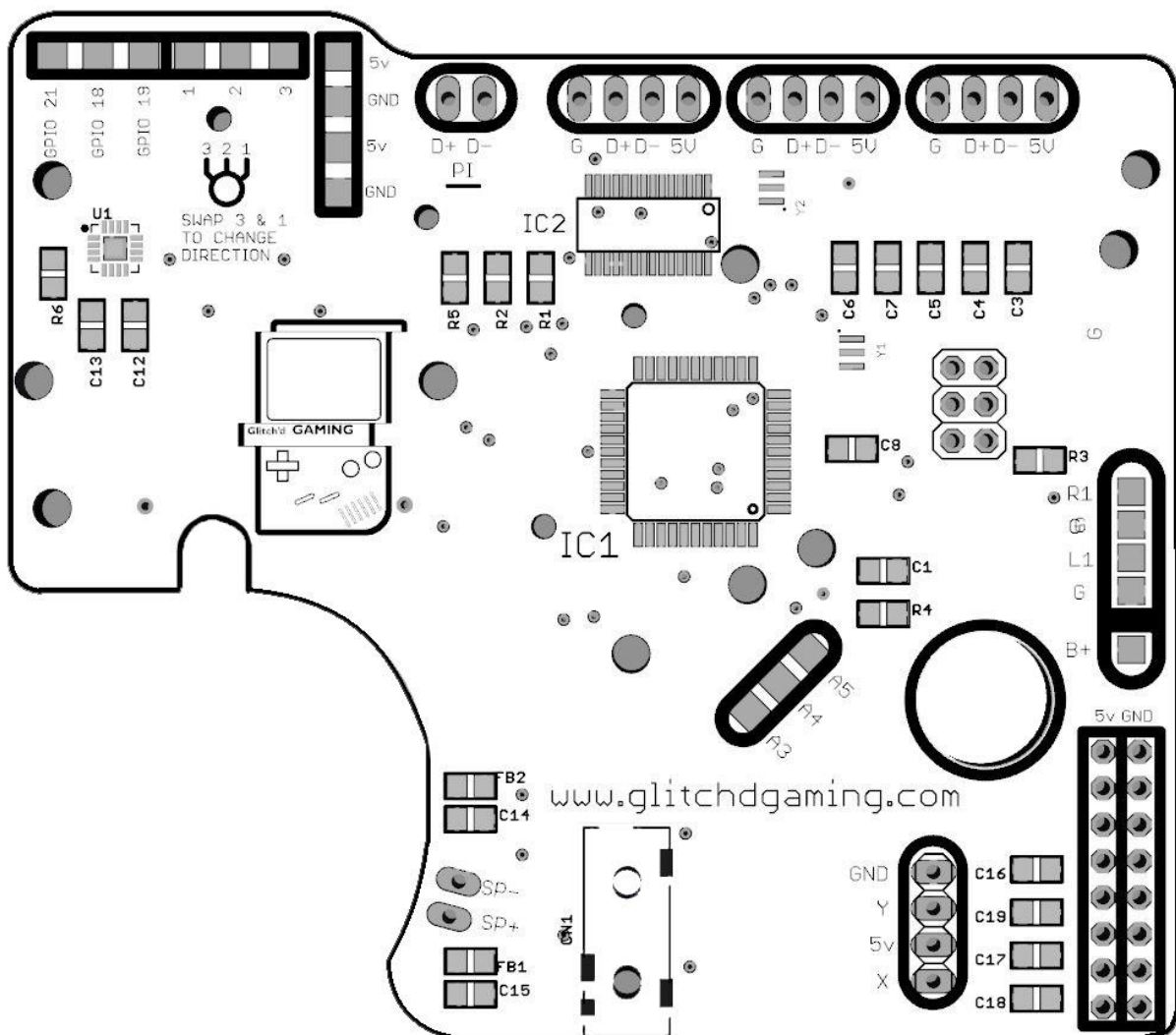
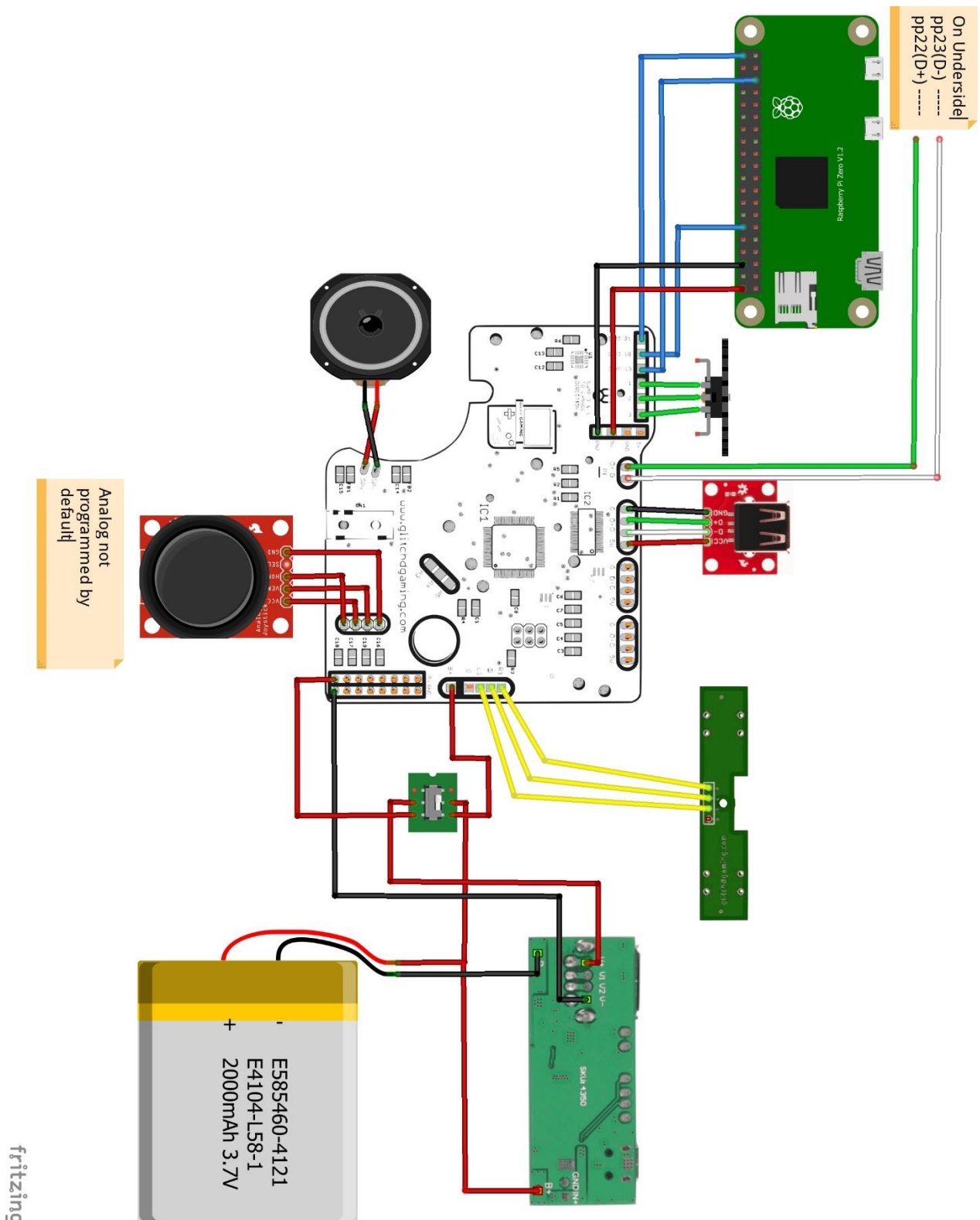


TABLE OF CONTENTS

Section	Page
<u>Wiring Diagram</u>	3
<u>Audio</u>	4
<u>Hardware</u>	4
<u>Software</u>	6
<u>USB</u>	7
<u>Pi Input</u>	7
<u>External Port</u>	8
<u>Power</u>	9
<u>Main Power</u>	9
<u>Battery Monitor (optional)</u>	9
<u>Shoulder Buttons (optional)</u>	10
<u>Analog Stick (optional)</u>	11
<u>References</u>	12

WIRING DIAGRAM

(Can also be found on product page)

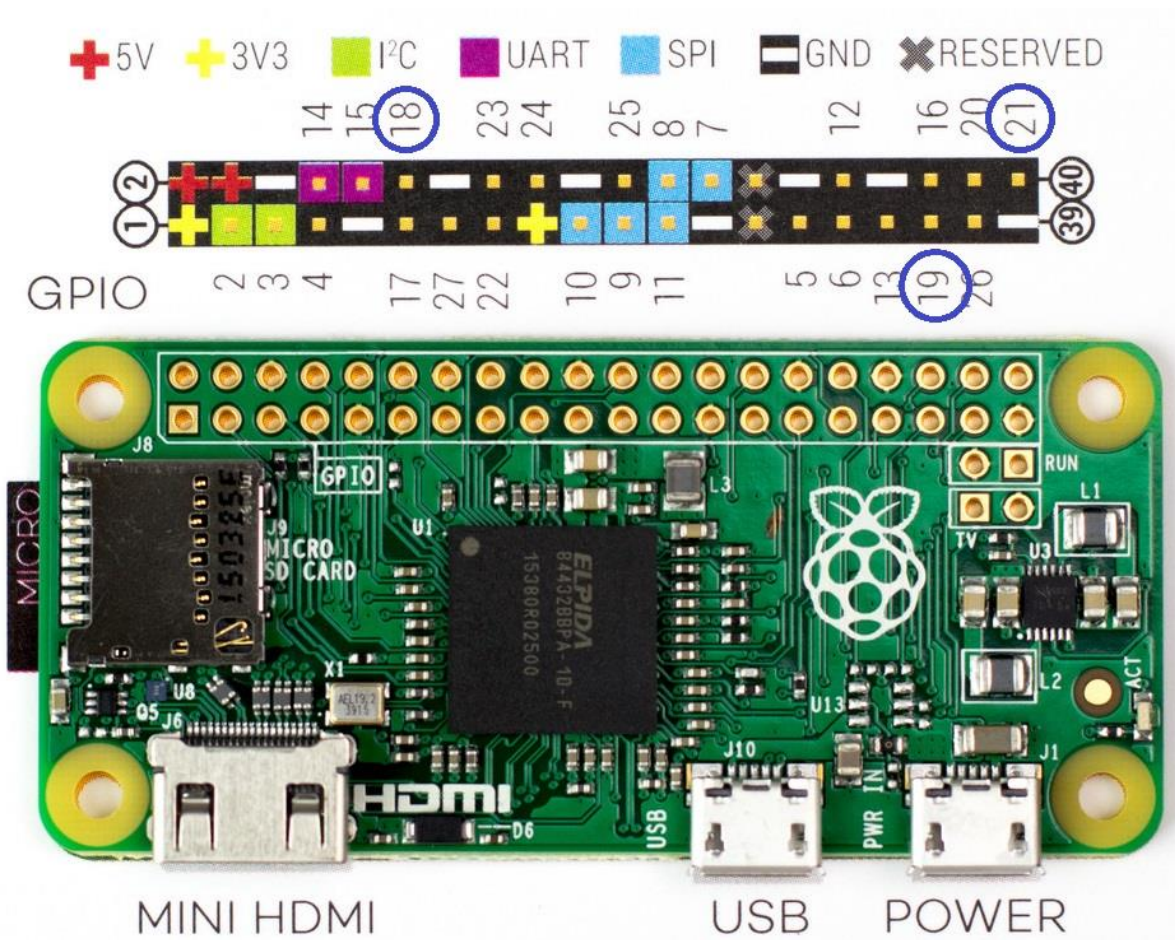


1. AUDIO

A.HARDWARE

Audio on the AIO board is accomplished through i2s. 3 Wires are required to connect audio from the PI to the AIO, whose pads can be found on the top left of the AIO board. Each pad is labeled with the corresponding GPIO on the PI: GPIO 21, 18, and 19. Solder wires from the pads to their corresponding GPIO pins on the PI. Pins circled in blue in **Figure 1.1**, image provided by Pimoroni.

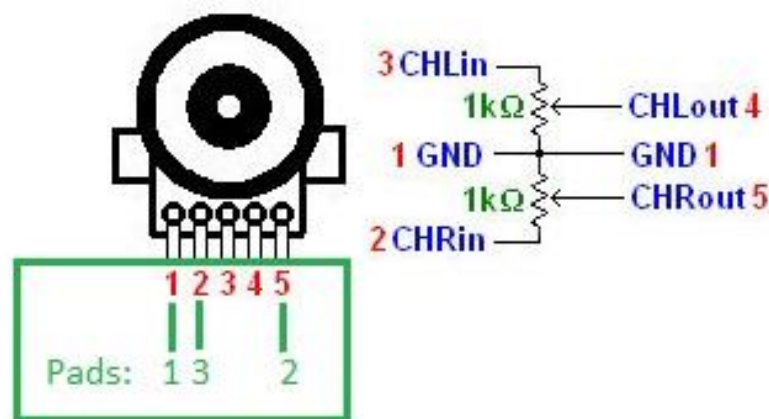
Figure 1.1 - Pi Pinout



Next, attach your volume wheel. A mono 3 wheel pot is recommended. Wire the pins to the pads labeled "1,2,3", next to the I2S GPIO pads. Wire them to the 3 pin wheel in the same order as the pads: center pad goes to center pin, side pads go to side pins. Depending on the way you orient your wheel to your case, you may need to reverse the order of the pins(ie swap the left and right pins, center stays the same).

You can use a 5 pin wheel, although its not suggested as adding complexity increases the chance of making a mistake. **Figure 1.2** shows how to wire the 5 pin pot. Here we are only using the right channel, since we have mono audio. The pad numbers in green correlate to the pad numbers on the AIO board, wire them as show. Note that unlike the 3 pin wheel, the wiring is NOT reversable. The 5 pin wheel must be wired as shown.

Figure 1.2 - 5pin Wheel



If you plan to use digital audio controls, and NOT use a wheel, you **MUST** solder pads 2 and 3 together with a wire. Otherwise audio will not work. Volume change via hotkeys provides a much smoother and accurate way to adjust volume, as the wheel will only have an effective range near the last 10% of the turn (depending on which volume wheel you use and speaker rating). You can solder a wheel, turn it all the way up, and then use hotkey volume change if you wish to have both options.

Finally, solder your speaker to the "SP+" and "SP-" pads near the bottom.

B.SOFTWARE

The pi must be set-up to use I2s audio. Luckily, setting up is very trivial as Adafruit provides exactly what is needed. The following section is taken directly from Adafruit's instruction page on their I2s amp, all credit belongs to them and Pimoroni, who they based their instructions off of. More details and pictures can be found on Adafruit's page which can be accessed [here](#). (if unable to use permalink, full link can be found at end of document)

The simplest way to do this is to connect your pi to the internet via wifi or ethernet. Then at the command prompt, which can be accessed from retropie by using f4 key on keyboard, type the following:

```
curl -sS https://raw.githubusercontent.com/adafruit/Raspberry-Pi-Installer-Scripts/master/i2samp.sh | bash
```

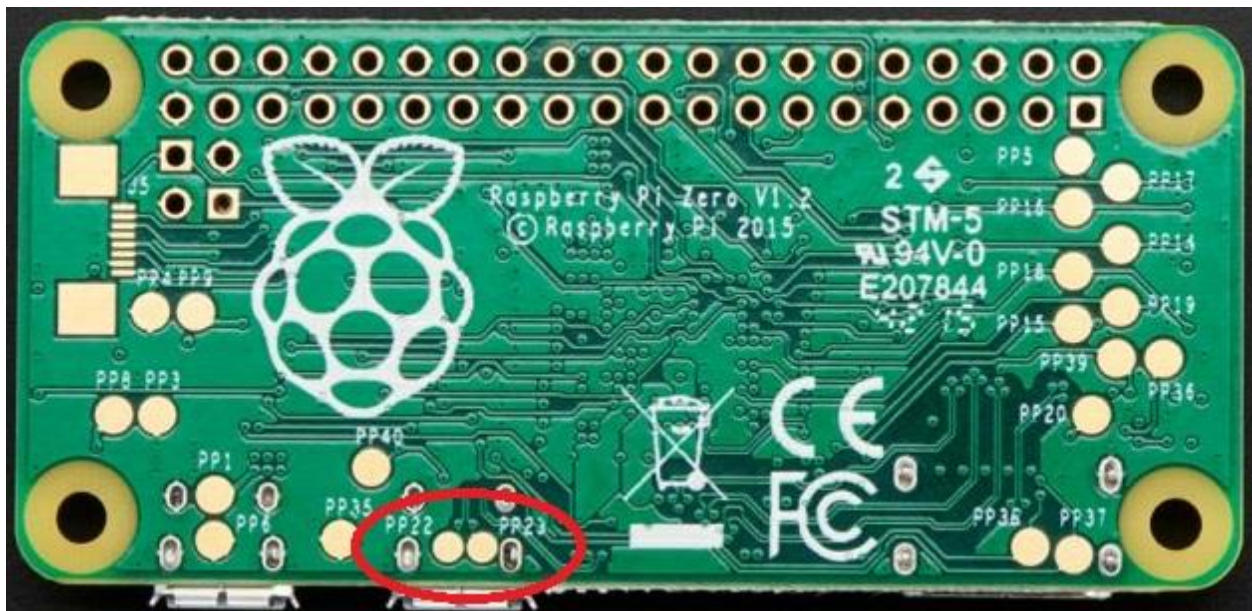
Make sure it is entered EXACTLY as shown, every space and character. Then reset your pi. Upon restart, audio should now be working. If it does not, or if you can not connect to internet for some reason, you can install everything manually by following the Adafruit link and following the instructions on the second half, adjusting the files on the SD card directly.

2.USB

A.PI INPUT

First, you will need to solder the pi's USB input to the AIO board. This will connect the pi to the built-in USB hub, and in-turn, to the Atmega controller. To do this, flip your pi over and solder a wire to pad pp22 and another wire to pad pp23, which can be seen in the image below.

Figure 2.1 - USB Input

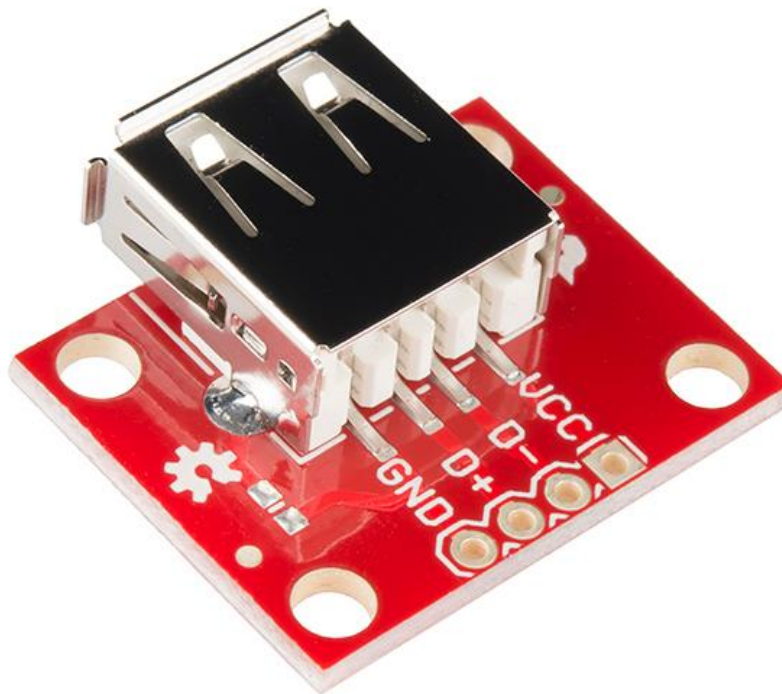


The wire soldered to pp22 should be connected to the pinhole "D+" near the power pads (view wiring diagram), and pp23 should be connected to "D-". Once this is done, the hub data lines should now be connected to the pi and the only thing remaining is the powerlines. As long as a 5v and a gnd are connected from your power source to the AIO, and your pi is getting its power from the AIO powerstrip or power pads, this will already be taken care of for you.

B.EXTERNAL PORT

To add a free USB port to the shell, to plug in other devices, you can use any of the free USB hub headers located along the top of the AIO board. The figure below shows the names of each of the pins on the USB socket, match them with the markings on the AIO board. The Sparkfun board is used as an example to see the order of the pins, but all female sockets have the exact same order, so match the orientation of your part with the image to identify your pins. VCC = 5v

Figure 2.2 - USB Socket



*Note: Hub only supports 1 speed, you may have troubles connecting multiple devices at different speeds (ie Full speed and high speed).

3. POWER

A. MAIN POWER

Concerning the components on the AIO, everything is already routed for power. All that is needed from the user is the input supply. This usually comes from your charger/booster board(such as the powerboost or banggood power supply). Simply solder your 5v output from your supply board to any 5v and gnd pins on the AIO. Any of the points on the powerstrip or power pads will work as they are all connected. Then, power your pi by soldering it to any of the powerstrip pins or power pads as well. On the pi zero, you can use the test pads on the bottom or the 5v and GND GPIO to connect to the AIO power.

B. BATTERY MONITOR -- OPTIONAL

Every AIO comes pre-loaded with HoolyHoo's battery monitor and controls sketch. If you don't want to complicate your build and don't care for an on-screen battery monitor, you can skip this section.

To add this feature, you must solder a cable from the positive end of your battery to the "B+" pad along the right side of the board. Then you will need to install the proper scripts on your pi. The following instructions are pulled directly from HoolyHoo's GitHub page [here](#). All credit for both the AIO sketch and pi script go to HoolyHoo.

Start by pulling up the command prompt, then type "cd ~" and press enter to ensure you are in home directory. Make sure you are connected to a network. Afterwards, type:

```
wget https://raw.githubusercontent.com/HoolyHoo/gbzbatterymonitor/master/Install.sh
```

Then type:

```
sudo chmod 755 Install.sh
```

And finally type:

```
./Install.sh
```

Afterwards, do a sudo reboot to reset the pi and script should be running on boot up if everything was done correctly.

If there are issues, you can install the script manually by following the link provided to HoolyHoo's GitHub page and following the manual instruction on the second half of his instruction.

4. SHOULDER BUTTONS -- OPTIONAL

Pads to connect your shoulder buttons are located on the back of the AIO board, along the right side. If using a Glitch'd Gaming shoulder bracket, connecting the 2 is very trivial. Connect the "R1" pad on the AIO to the "R" pinhole on the shoulder board, the "L1" to the "L", and then one "G" on the AIO to one "G" on the shoulder. Both grounds do not need to be connected, only one ground connection is necessary.

Figure 4 - Shoulder Board



If you are using tactile switches, then simply connect one side of the switch to L1 or R1 on the AIO, and the other side to a G pad on the AIO. Then do the same thing with the other switch. It does not matter which side of the switch you connect to G and which you connect to the signal pad, as the switch is just opening and closing the connection. Make sure you know which pins on your switch are connected together though, as 4 pin tactile switches are connected in pairs.

To connect 4 shoulder buttons, you will notice 2 points labeled "GPIO 10" and "GPIO 11" around the center of the board. These points are connected to the signals for the "Z" and "C" buttons on the front. If you aren't using a 6 button layout for the front, you can use these signals to connect your extra shoulder buttons. Then connect the other side of the shoulder buttons to any open ground points on the

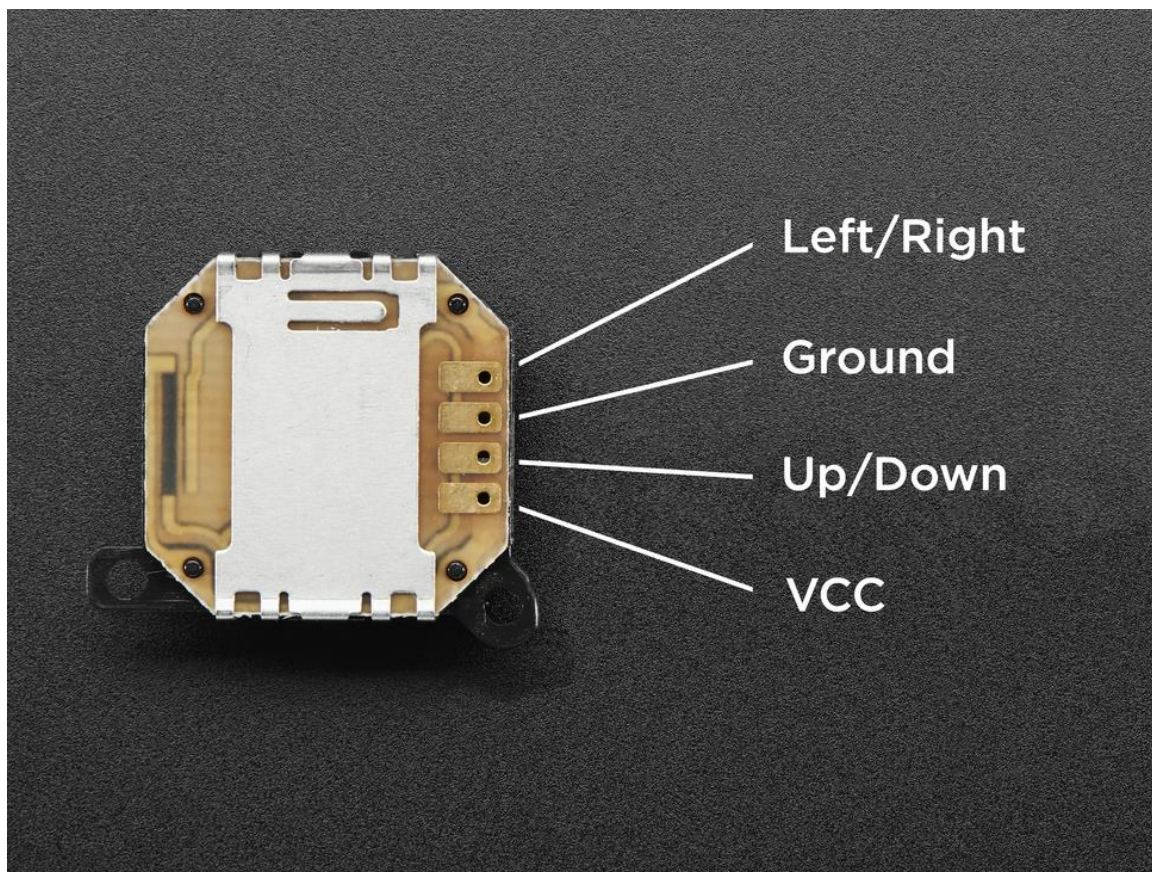
board. However, you can not do both at the same time, you must choose one or the other: 6 button layout or 4 shoulder buttons.

5. ANALOG STICK - OPTIONAL

To use an analog stick with the AIO, you must contact me before making the purchase so that I can install the analog stick sketch on your board as it is not installed by default. If you have already purchased and wish to add the analog stick sketch, you will need a USBASP device (very cheap, just a few dollars), and you can contact me for help in installing it yourself.

To connect the stick, use the image below (provided by Adafruit) which illustrates the pinout for a basic psp joystick. Then simply connect each pad to the corresponding analog pinhole on the AIO, located near the powerstrip. VCC = 5v

Figure 5 - PSP Analog Stick



REFERENCES

1) Adafruit I2S Audio:

<https://learn.adafruit.com/adafruit-max98357-i2s-class-d-mono-amp/raspberry-pi-usage>

2) HoolyHoo Battery Monitor Github:

<https://github.com/HoolyHoo/gbzbatterymonitor>

3) GG AIO Board:

<http://glitchdgaming.com/index.php/product/pre-order-gg-aio-controller/>

4) GG AIO Shoulder Kit

<http://glitchdgaming.com/index.php/product/aio-shoulder-kit/>

5) Shoulder Button Set

<http://glitchdgaming.com/index.php/product/dmg-shoulder-bracket/>