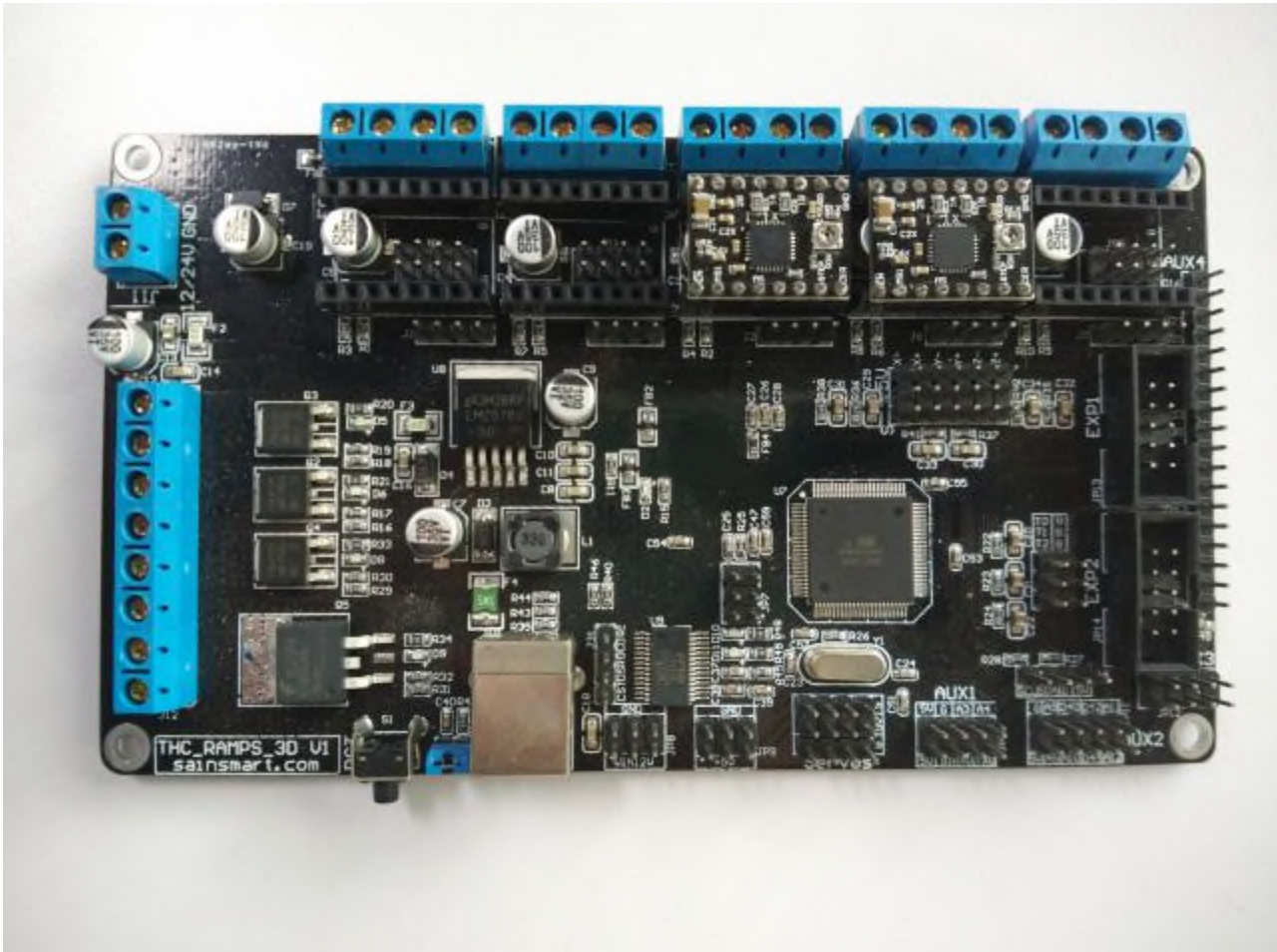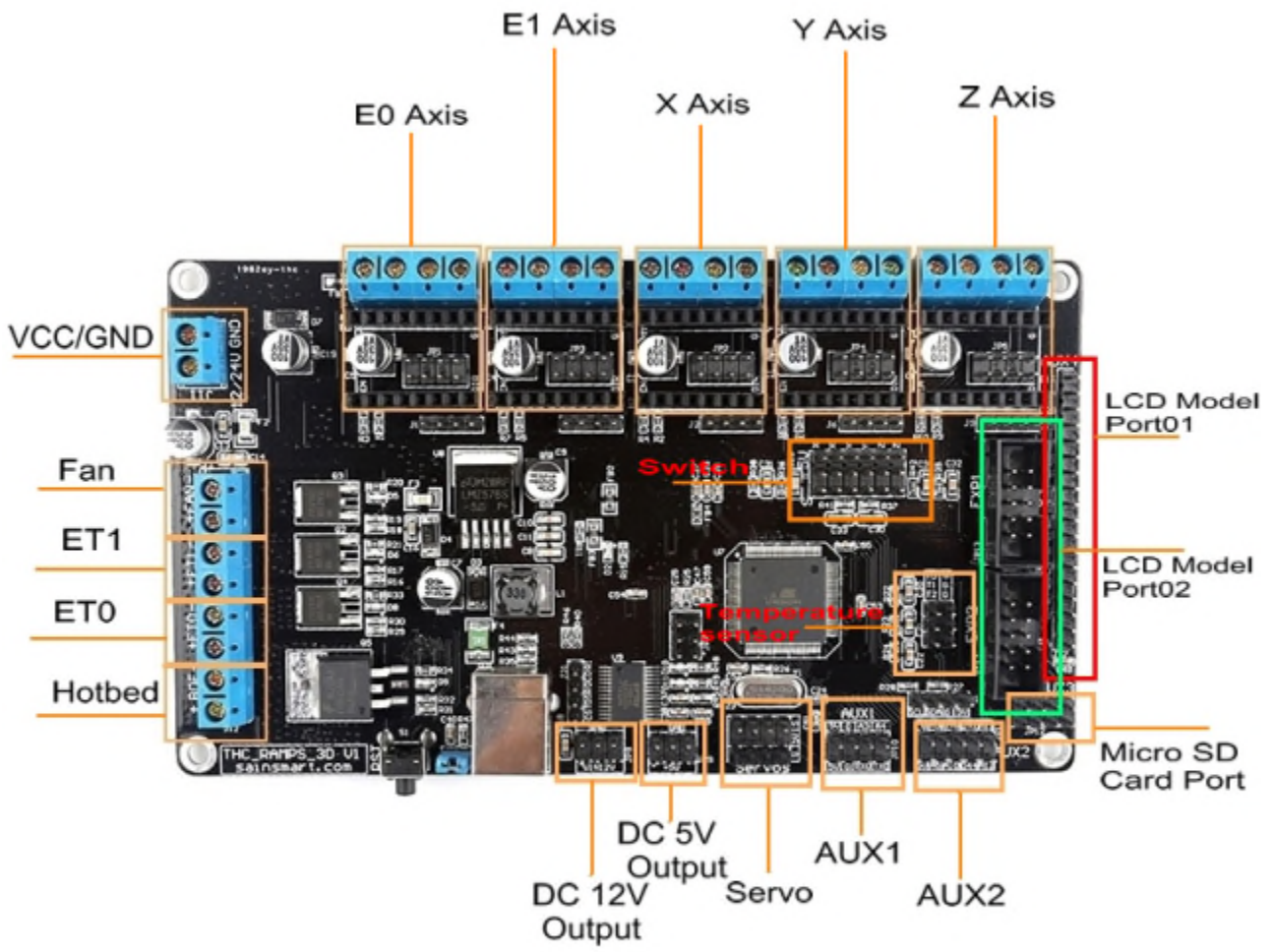# ASM 2IN1-3D REPRAP CONTROLLER

Overview

This board is the combination of Mega2560 R3 and ramps 1.4. In this case, you do not have any worries on the connection problems. It is compatible with A4988 and 8825 driver which is more flexible. In order to achieve better cooling, the board has the highest quality circuit board and MOSFET. What's more, we use LM2576 ultra-wide power supply chip which supports 12v-24v power input. In this case, we can solve the heating problem of the Ramps. We will offer you a detailed tutorial including project introduction and their source code.
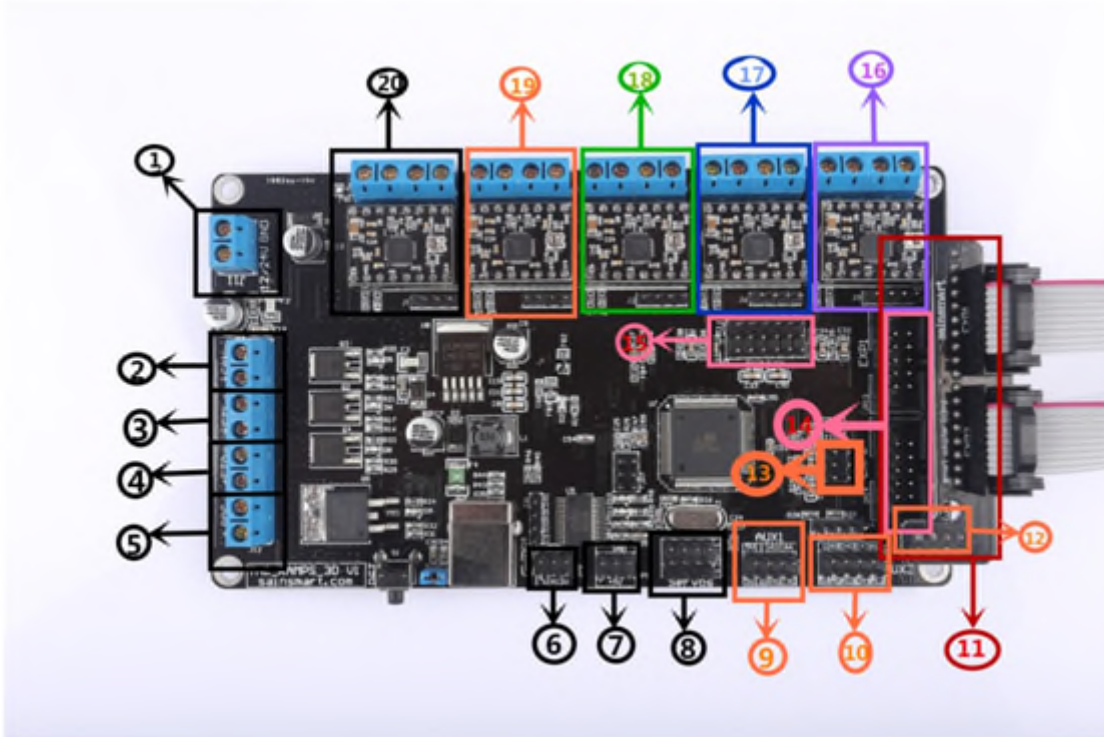
Specification:

- accept 24V power supply input
- decrease 1/4 current of the heatbed to solve the heating problem of MOS
- use Marlin software as Ramps 1.4
- connect Ramps 1.4 LCD2004 and LCD12864 directly
- reserve pulse motor and direction output ports to make it convenient to connect heavy current motor driver (eg. 2A/5A)

- retain the Servos, AUX-1, AUX-2, AUX-3 ports, provide three 5V output ports and three 12V input ports

Package list

1X SainSmart Ramps 3D Printer Controller Panel Board For RepRap Arduino

E0 Axis

E1 Axis

X Axis

Y Axis

Z Axis

VCC/GND

Fan

ET1

ET0

Hotbed

Switch

Temperature sensor

LCD Model Port01

LCD Model Port02

Micro SD Card Port

DC 12V Output

DC 5V Output

Servo

AUX1

AUX2

1. Power Supply (12v-24v)

For 12v supply ensure you use more than 10A otherwise the board may not function correctly. 16A-18A (500w-600w) is recommended.

For 24v a supply of 14A-18A (350w-450w) is recommended.

The -ve terminal is the one marked with the "GND" and the +ve is the one marked "12/24v"

2. Fan Port

Make sure to use the correct voltage fan based on your voltage supply (12v or 24v).

3. Extruder Heater (ET1)

NOTE: Although this is labeled as the second extruder I found marlin treats it as the first, so be sure to check this if you heater is not powering up.

4. Extruder Heater (ET0)

NOTE: As stated above, I can only assume that this is extruder two. Not extruder one as labeled

5. **Buildplate Heater**

Connect your heatbed here, and ensure you have setup the heatbed to the correct supply voltage of 12v or 24v.
NOTE: Check connection polarity if your headbed has LED's. Otherwise -ve and +ve are not important.
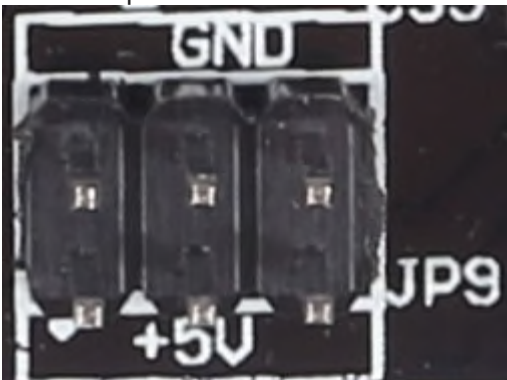
6. **12v Power Ports**

DC 12v output

7. **5v Power Ports**

DC 5v output
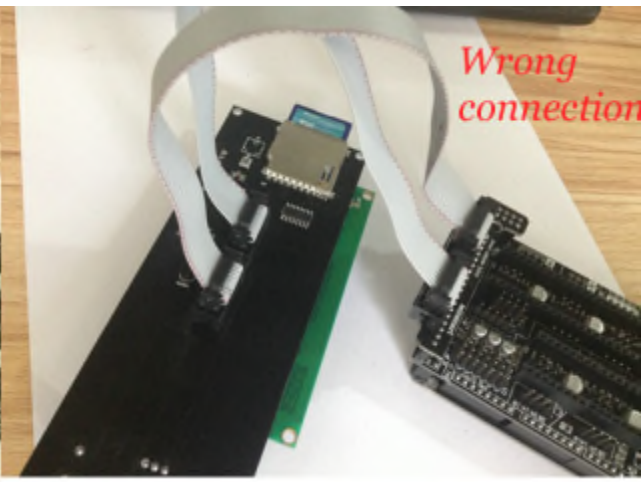
8. Servo Ext Ports

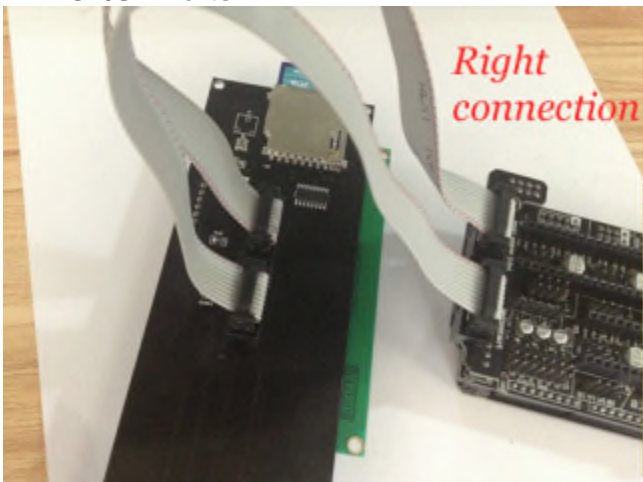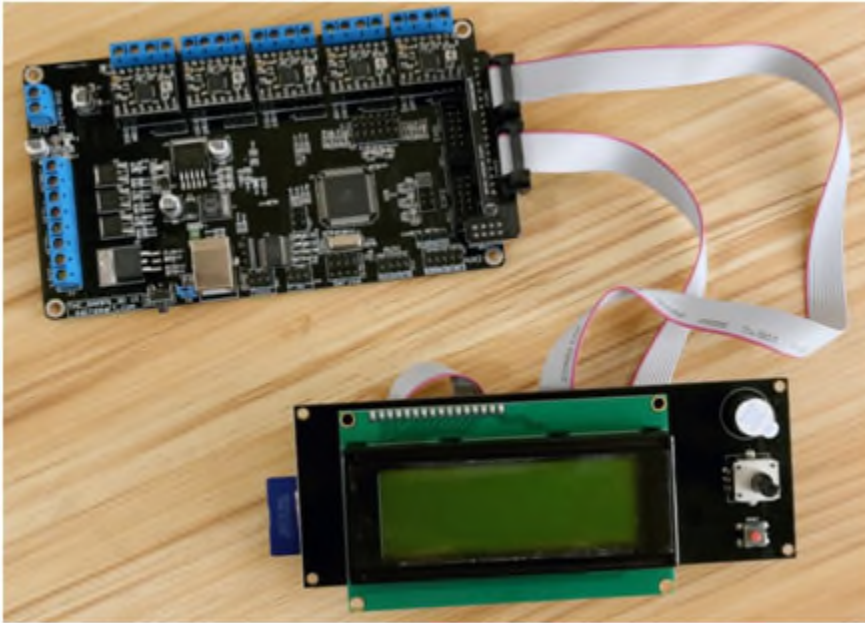Servo interface

9. Aux 1 Ports

As Labeled

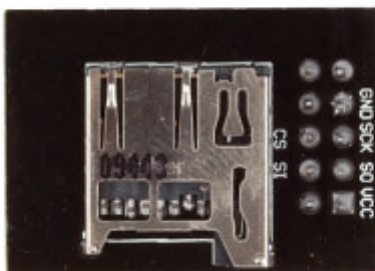## 10. Aux 2 Ports
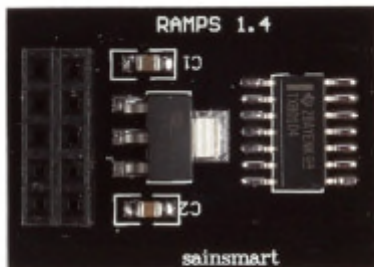
As Labeled

11. LCD/SD Ports

If you want to install an all in one LCD/SD module use the supplied adapter to ensure that the SD card reader works. If you only use the ribbon cabled plugged directly into the board it will not include the SD card pins (*see point 12*).

If you do not care about the SD card reader you can plug the ribbon cables as shown in point 14.

12. **SD Port**

13. **Thermistor Ports**

On my marlin setup the pins are as follows, you will have to check your marlin setup to discover what goes where.
NOTE: I use 100k thermistors, be sure to setup marlin to use the correct settings for your thermistor to avoid any damage to the control board.

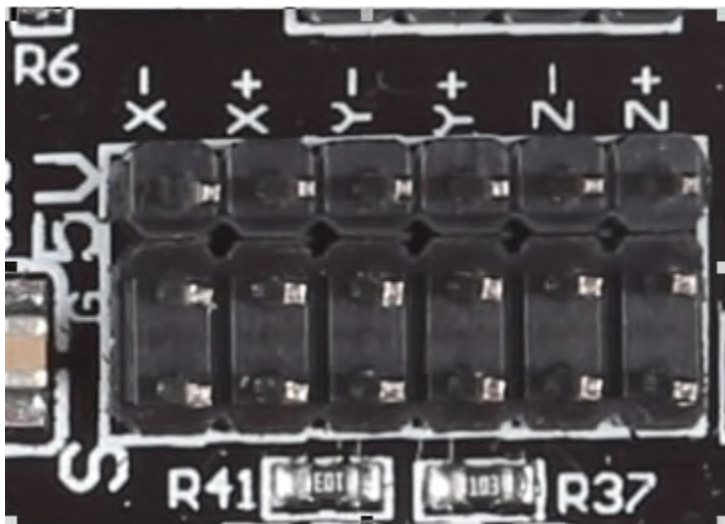t0 = Extruder 0 Temp Sensor
t1 = Heatbed Temp Sensor
t2 = N/A

14. **LCS Ports**

Install the LCD directly to these ports if you have an external SD card or do not care to use the LCD onboard SD card if it has one.
NOTE: Be sure to check that the correct cables go to the correct ports. See the above pics.

15. **Limit Switch Ports**

Rigidbot only really needs the x-,y-,z- switches but you can add more if you want to add the max switches as well. Be sure to update your marlin config.

16. **Z Stepper Driver Connector** 17. **Y Stepper Driver Connector** 18. **X Stepper Driver Connector** 19. **Extruder 2 (E1) Stepper Driver Connector** 20.**Extruder 1 (E0) Stepper Driver Connector**
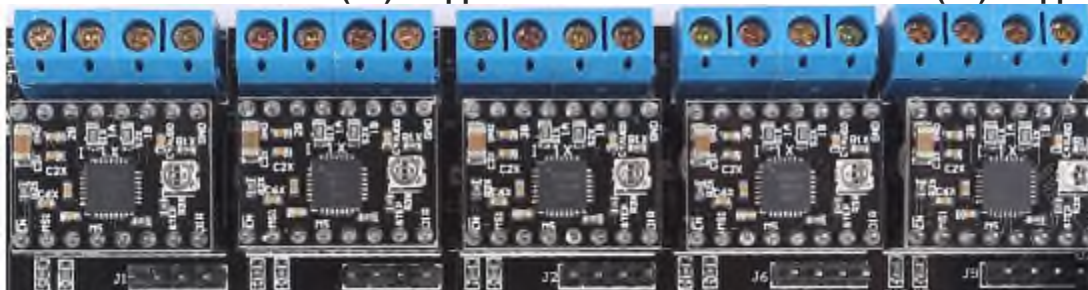
WARNING: Ensure your stepper drivers are correctly install before powering on otherwise you will damage the controller board.
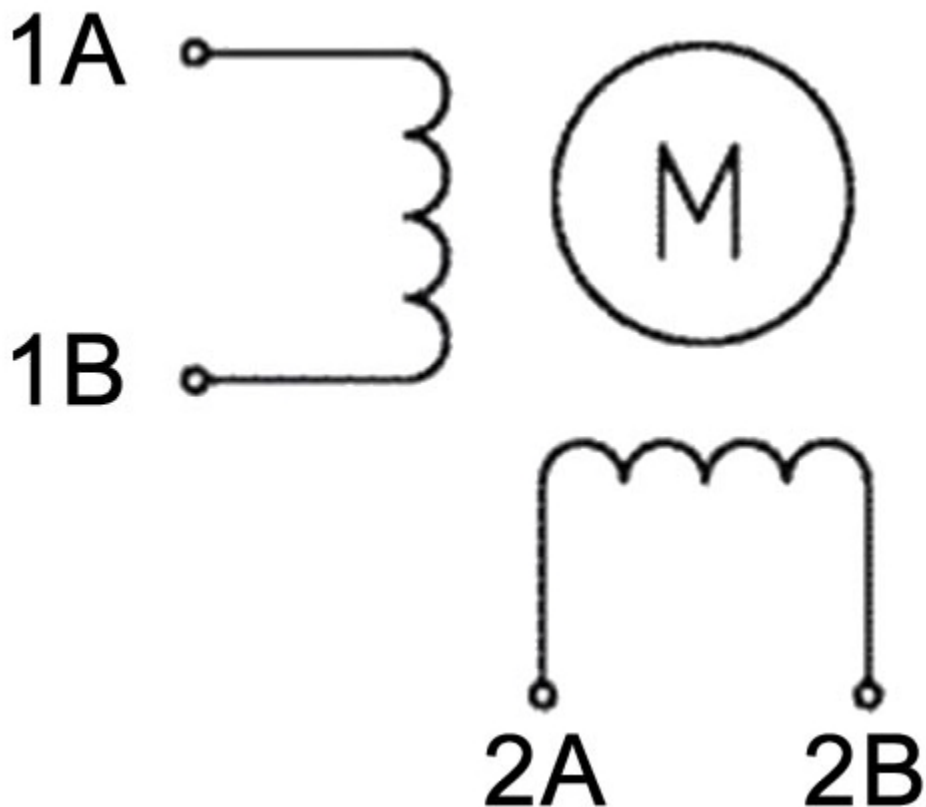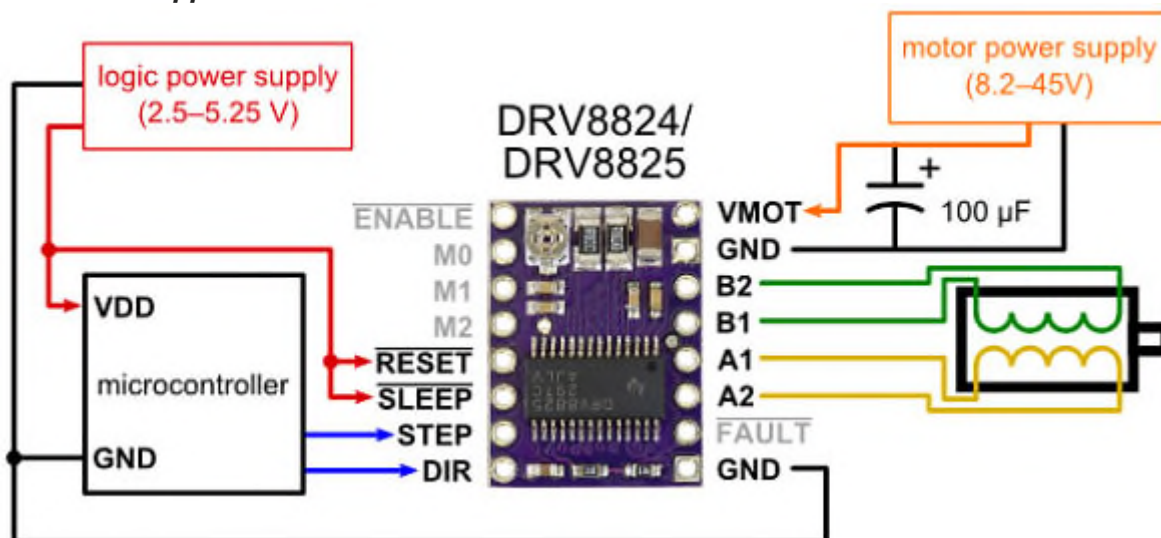
Configuring the Stepper's step size is dependent on driver board that you install. There are a number of jumper pins under the stepper module that need to be configured.

For the Rigidbot the default step sizes are as follows:
X Axis = 1/16 step
Y Axis = 1/8 step
Z Axis = 1/16 step
Extruder = 1/8 step

DRV8825 Stepper Driver

The pin config chart for this driver is as follows

MODE0	MODE1	MODE2	Microstep Resolution
Low	Low	Low	Full step
High	Low	Low	Half step
Low	High	Low	1/4 step
High	High	Low	1/8 step
Low	**Low**	**High**	**1/16 step**
High	Low	High	1/32 step
Low	High	High	1/32 step
High	High	High	1/32 step