

**CAUTION:** Working with electronics can be dangerous. Every region has its own Electrical bylaws and it is important to follow them. Make sure you follow all Local/Federal guidelines whenever working with electricity.

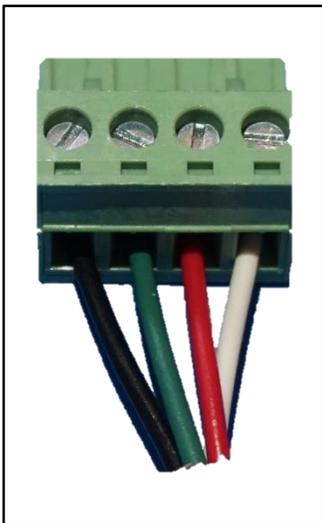
Our current system contains several different components ranging from power, embedded systems and motion. Each of these systems has been selected to reduce the overall electrical complexity of the RBX1 Robot. All components and their interconnections are shown below.

This guide will cover how to setup the electrical aspects of the RBX1 Robot.

### Stepper Wiring

Each Stepper motor is wired to one of the SlushEngine drivers. If you take a look at the SlushEngine board you will notice that beside each connector the motor number is written. This relates directly to the motor number used in the software.

The robot kit comes with two steppers that are wired together. These steppers are wired this way so that they can share a driver. To connect these steppers to the SlushEngine, we want to connect all wires to pluggable terminal blocks, and then plug those into the SlushEngine driver board.



SlushEngine Motor Number	Motor Description
0	Dual Nema 23 – Shoulder motor
1	Nema 17 – Base Motor
2	Nema 17 (geared) – Arm Motor
3	Nema 17 – Forearm Motor
4	Nema 17 – Wrist Motor
5	Nema 17 – Wrist Rotation Motor

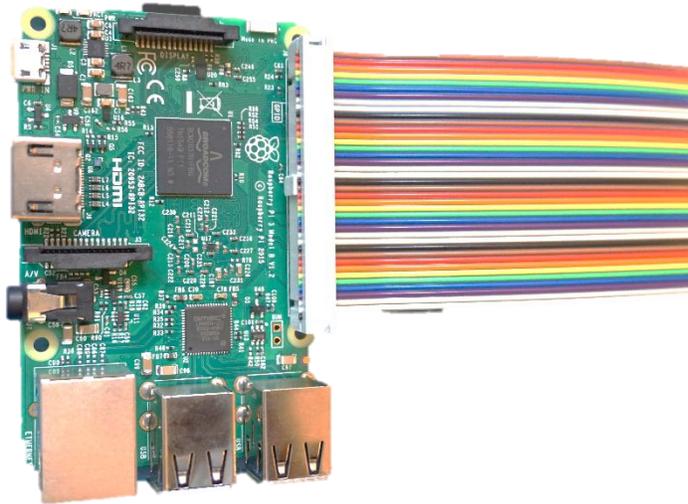


Motor Number Label

## Connecting the Pi

Once all of the motors are connected you can connect the Pi. For this you need the 40 pin IDE ribbon cable. The below instructions assume that you are looking at the SlushEngine from the top with the ribbon cable connector on the left hand side.

1. Connect the ribbon cable to the SlushEngine. This can only be done one way.
2. Connect the ribbon cable to the Pi with the cable notch facing in towards the Pi.



## Connecting Power

First we want to connect the power to the wall connection and power it on to make sure that the power supply is wired correctly. On the wall plug cable there are three wires. Each of these goes to a terminal on the power supply. It is critical that ground is connected.

Check that the power supply is wired to the outlet cord correctly. The ground terminal should have a green wire and the terminals (L, N) should have a black, white or blue wire going to them.

**DO NOT DO THIS STEP WITH THE WALL OUTLET PLUGGED IN. ALWAYS POWER DOWN A SYSTEM BEFORE WORKING ON IT.**



1. Wire the V- to the Power – terminal on the SlushEngine ( Located in the bottom right of the board )
2. Wire the V+ to the Power + terminal on the SlushEngine

Plug the power into the wall. The Raspberry Pi should boot and a red light on the SlushEngine will come on. Now check out the software guide for the next steps.

