

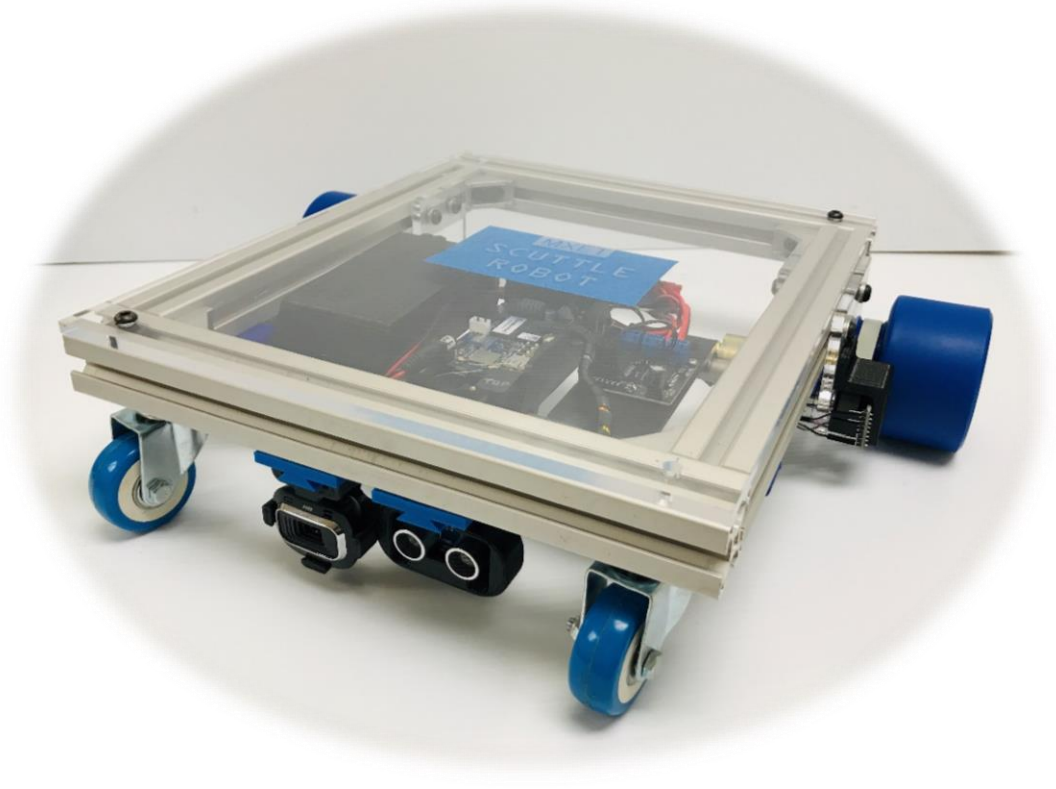
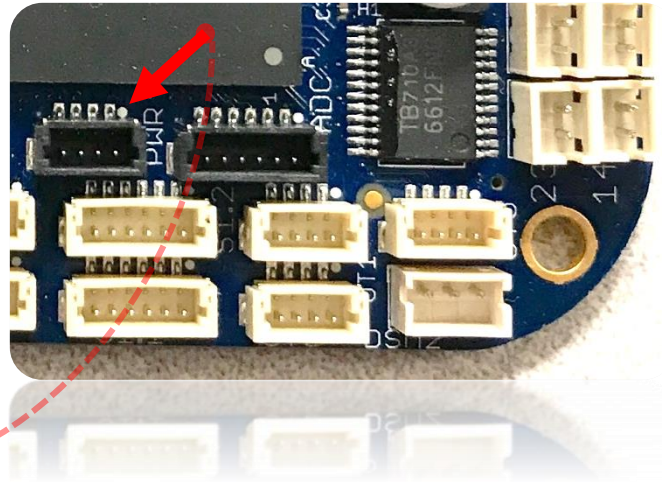
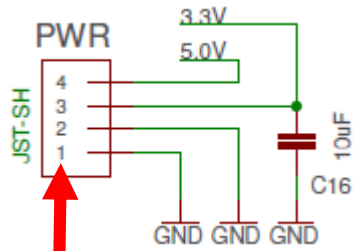
Scuttle robot Wiring Guide (rev 2019.09.26)

Important Info:

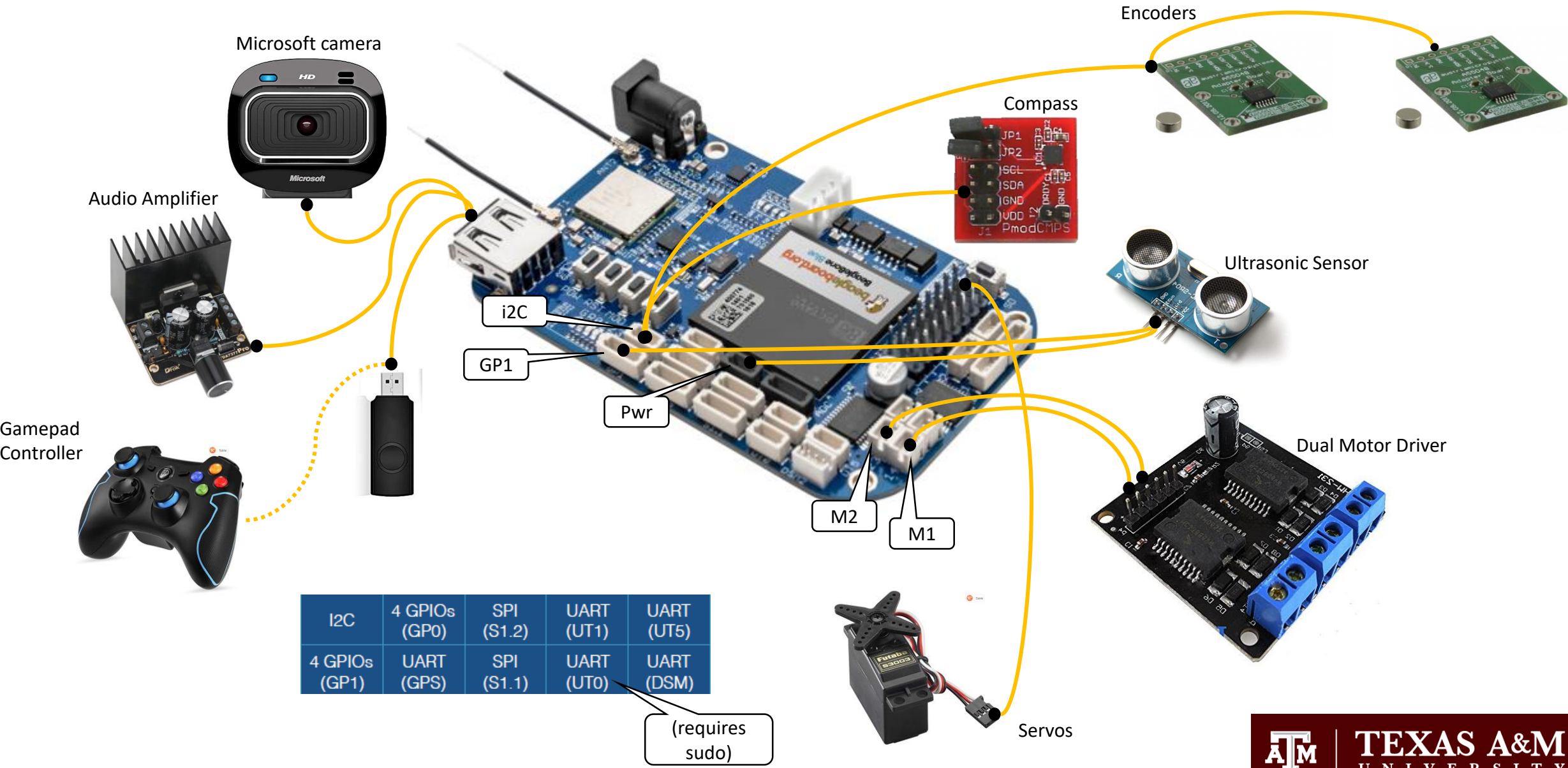
To match the beaglebone pins to the pin numbers on the diagram:

The tiny white circle on the silkscreen at each connector indicates "pin1"

All images of this style are copied directly from the beaglebone schematic



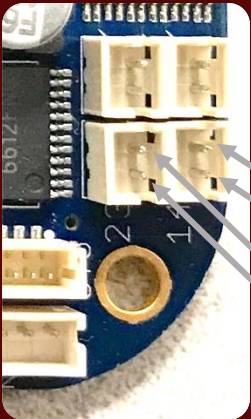
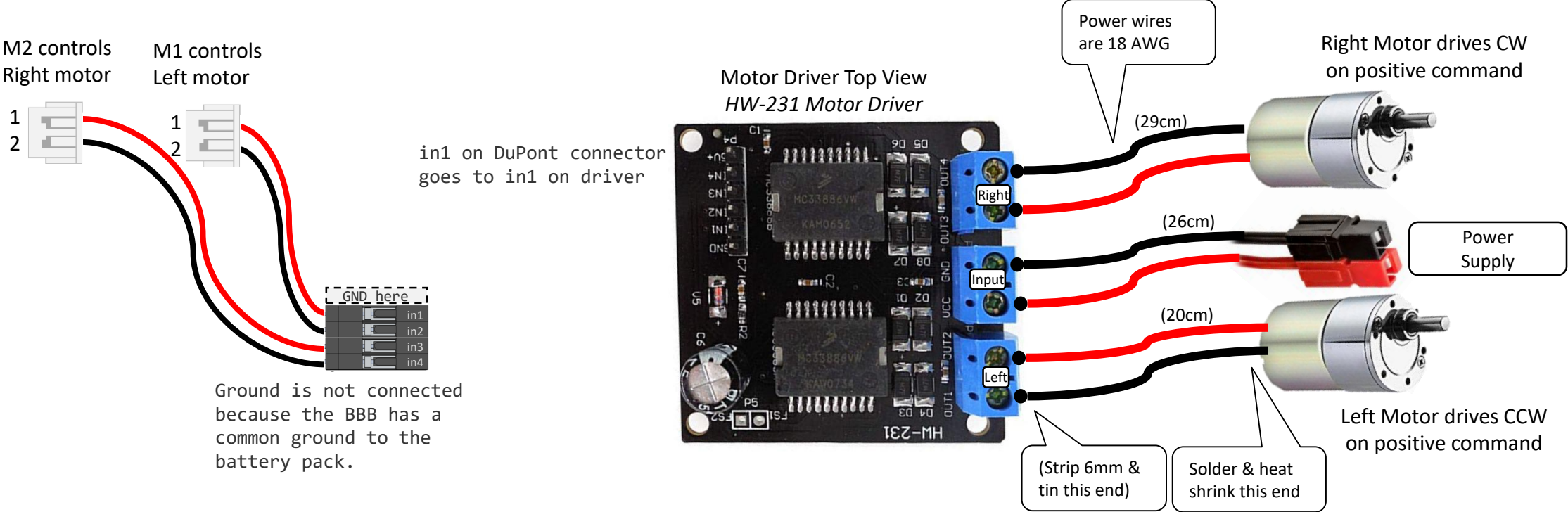
All Sensors & Actuators



| | | | | |
|---------------|---------------|------------|------------|------------|
| I2C | 4 GPIOs (GP0) | SPI (S1.2) | UART (UT1) | UART (UT5) |
| 4 GPIOs (GP1) | UART (GPS) | SPI (S1.1) | UART (UT0) | UART (DSM) |

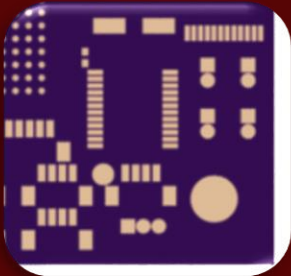
(requires sudo)

Motor Driver Signal Cables

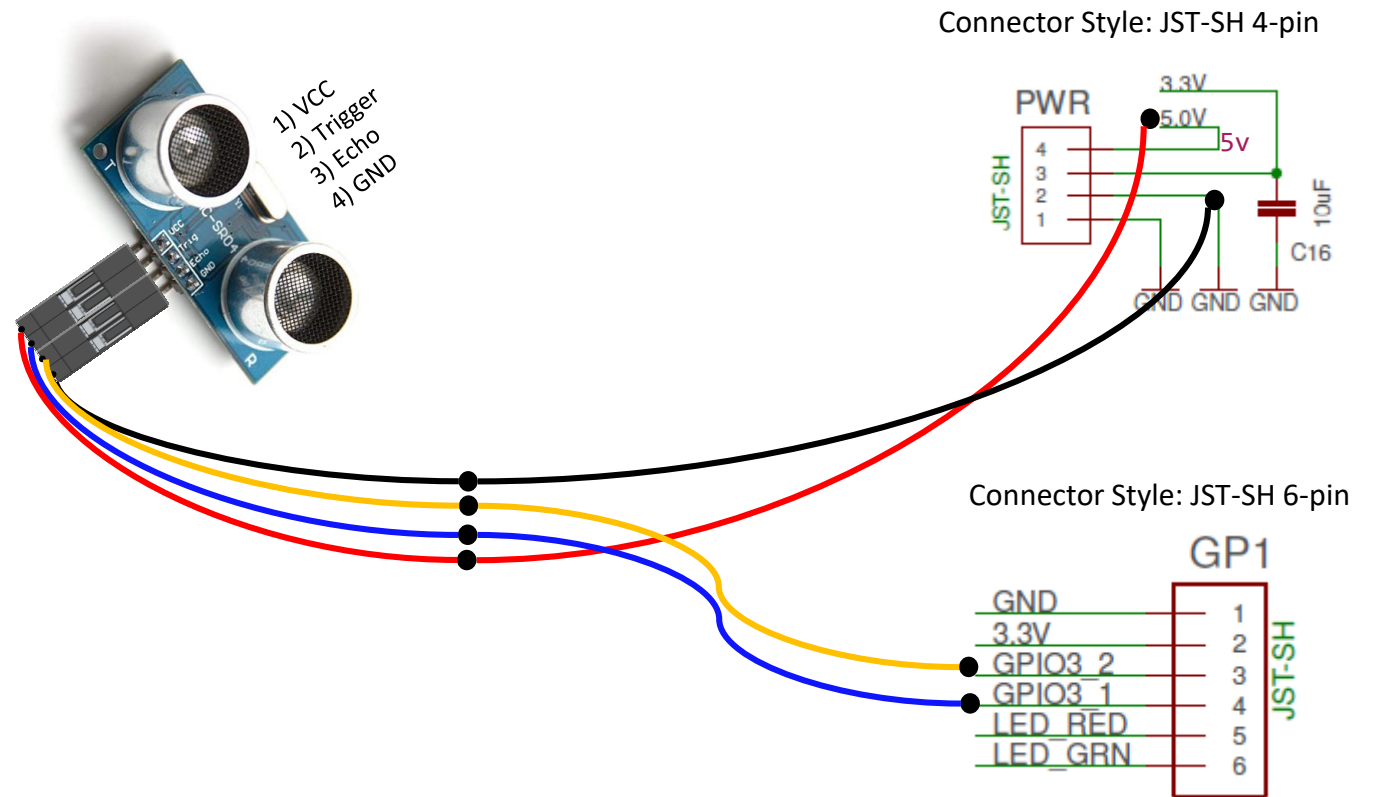


Pin 1 should be HIGH when motor is driven FORWARD

The hardware design convention is pin 1 gets the square solder pad.



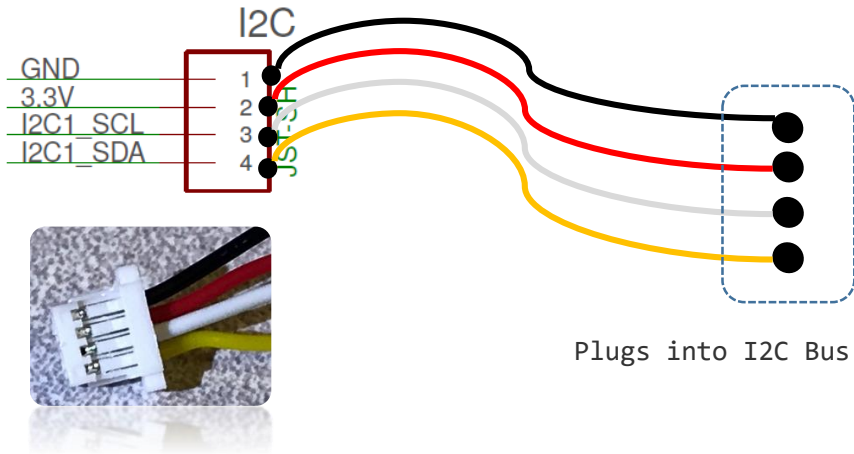
Ultrasonic Distance Sensor (GPIO)



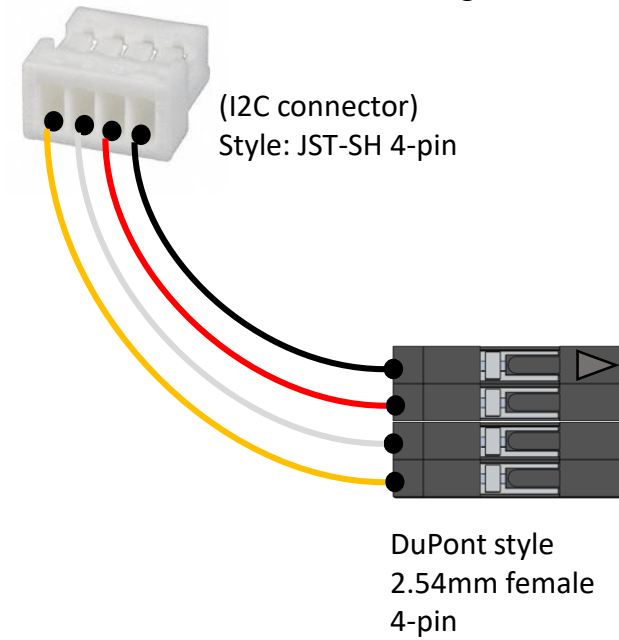
Beaglebone to I2C bus cable

Diagram

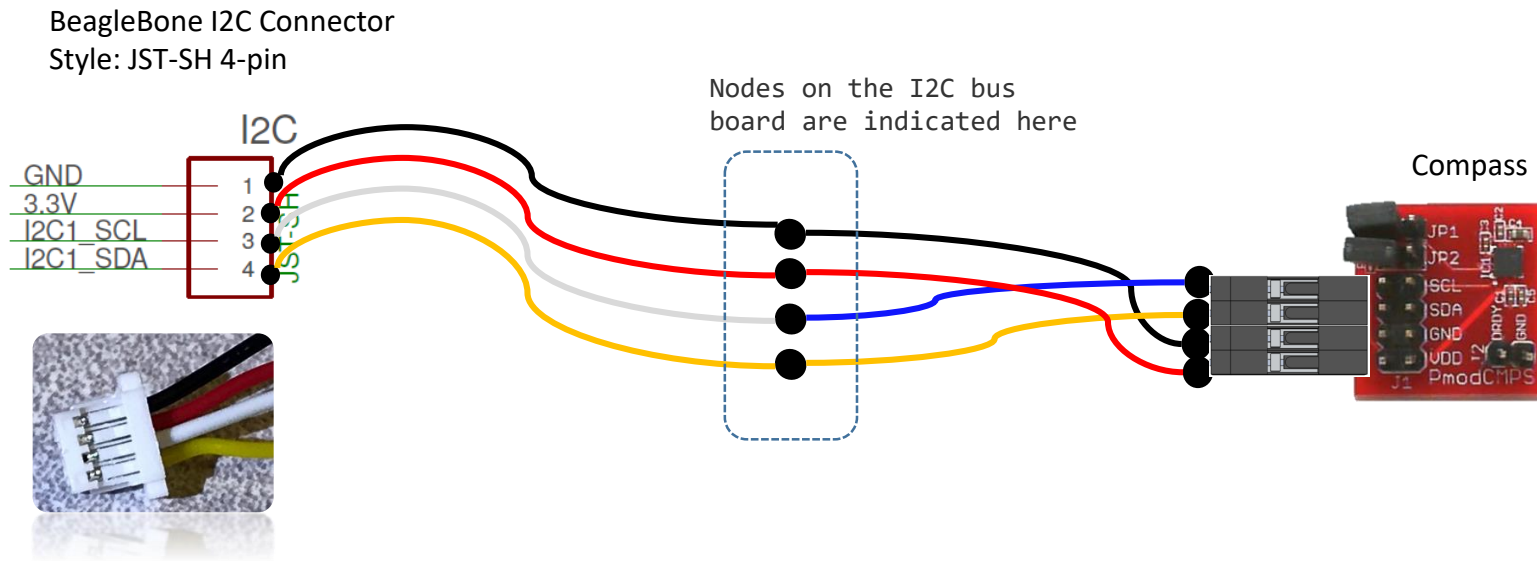
BeagleBone I2C Connector
Style: JST-SH 4-pin



Cable Design

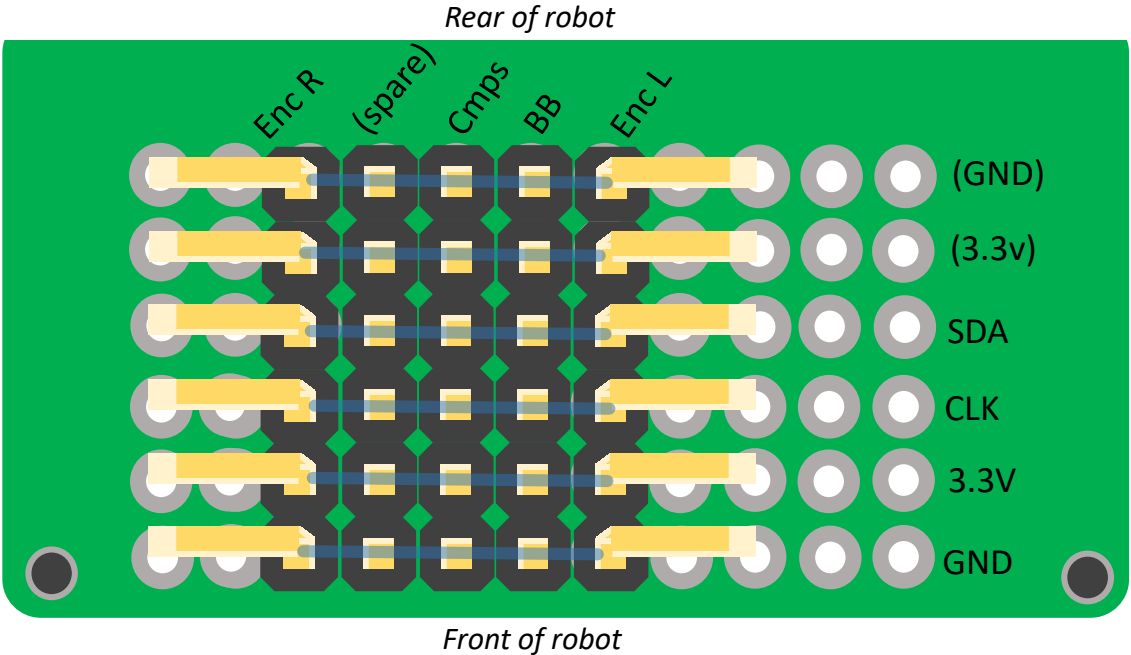
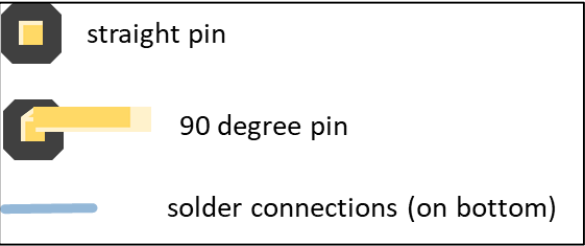


Compass CMPS or CMPS2 (I2C)



I2C Bus Board

The board is made from a breadboard and soldered manually. The board can be cut between rows J & K. The solder bridges all pins from left to right.

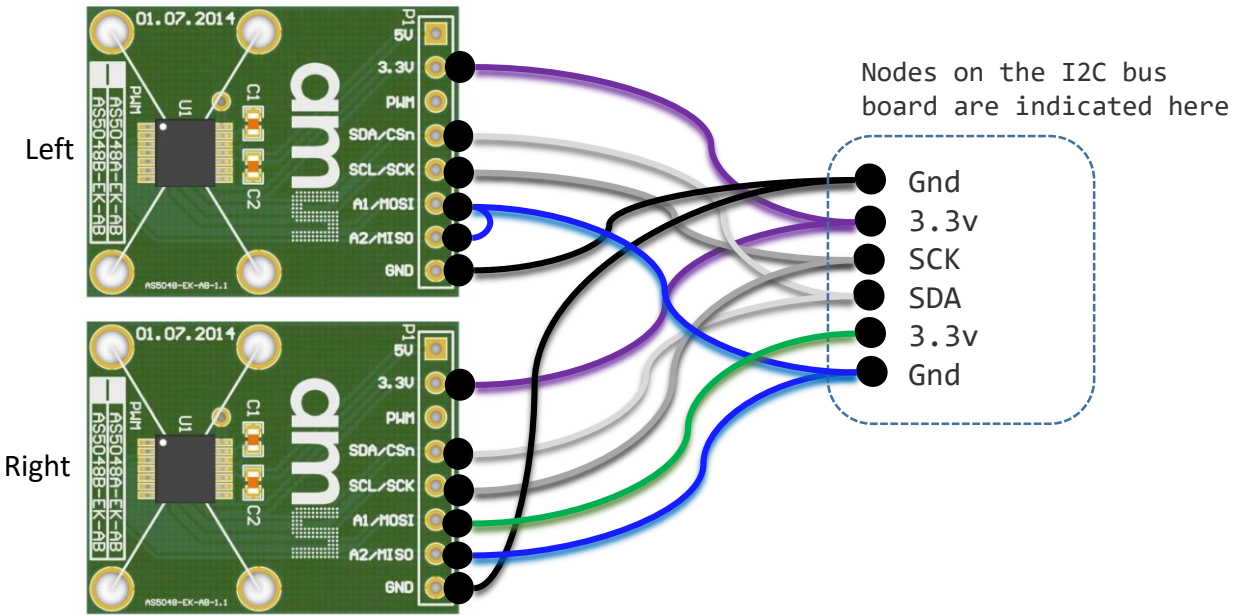


Screw Hole

Encoder AS5048 (I2C)

Left Hand Encoder
A1 is pulled **down** to GND
I2C address is 0x40

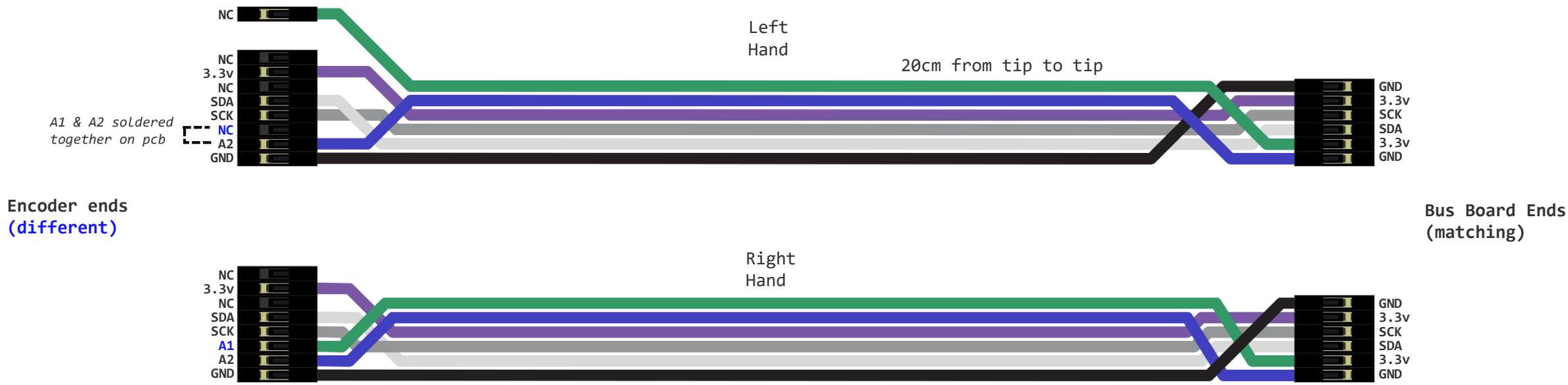
Right Hand Encoder
A1 is pulled **up** to 3.3v
I2C address is 0x41



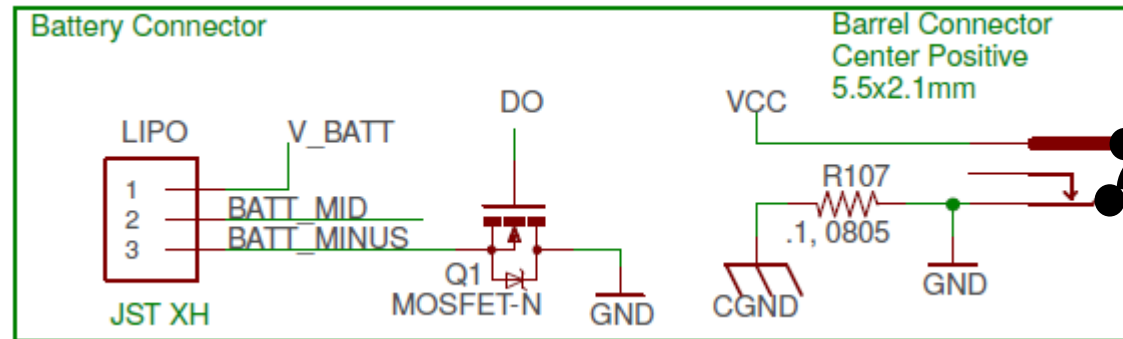
| PIN | Left | Right |
|-------------|---------|----------|
| A1 | 0 (low) | 1 (high) |
| A2 | 0 (low) | 0 (low) |
| i2C Address | 0x40 | 0x41 |

On the Left Hand Encoder PCB, bridge the pins A1 and A2 using solder, to each other.

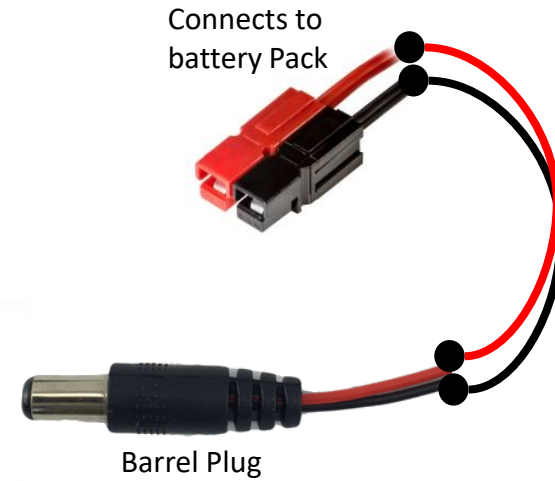
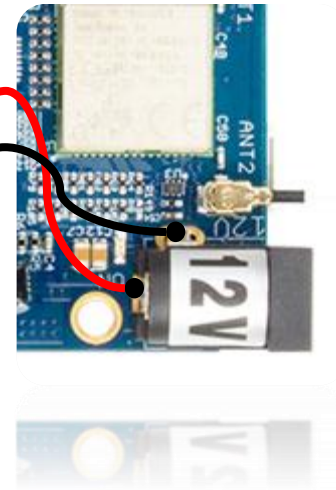
Encoder Cables



Battery

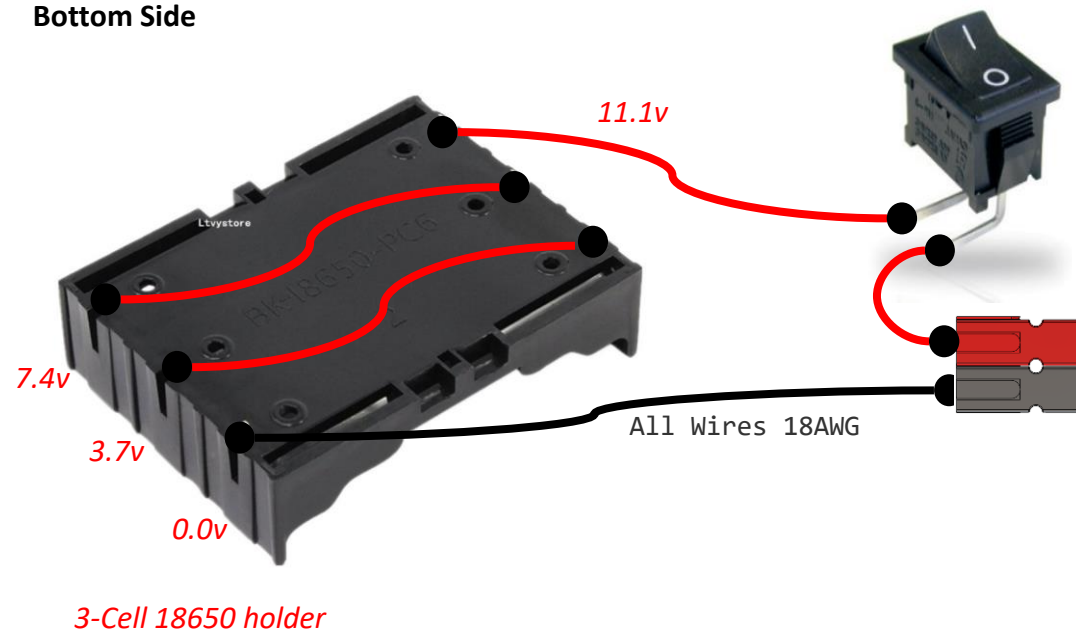


The "Battery Connector" is disconnected. Actual battery uses Barrel Connector.



Battery Pack

Bottom Side



LIDAR

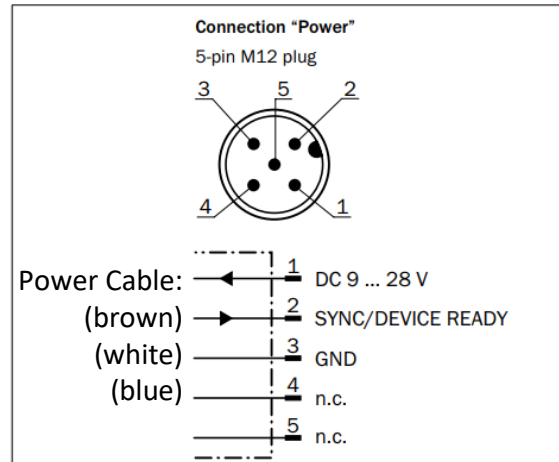
Lidar Device



TiM 561

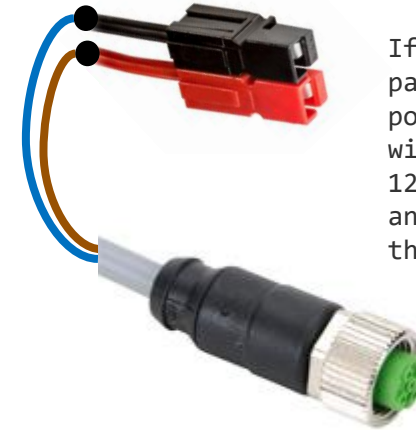
Power Connector Diagram (lidar side)

POWER connection (supply voltage)



LIDAR-side connector (male pins)

Power Cable Diagram (plugs into lidar)



If the indicated cable part number is used for power to the lidar, brown will be crimped into the 12v positive APP terminal and blue is crimped into the negative.

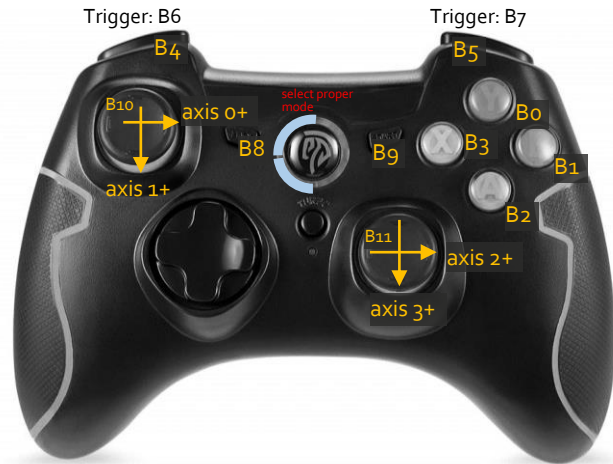
[Cable: 7000-12241-2150300](#)

Cable-side connector (female pins)

Typical Lidar power consumption: 2.1w

GamePad

Gamepad Controls Mapping



Button Behavior:

- not pressed: 0
- Pressed: 1

Axis behavior:

- Right returns positive values
- down returns positive values

```
# Get Button States
x_button = joystick.get_button( 3 )
l_button = joystick.get_button( 6 )
r_button = joystick.get_button( 7 )

l_joy_x = joystick.get_axis( 0 )
l_joy_y = joystick.get_axis( 1 )
```


Servos

Bridge Power to the LiPo connector

positive terminal

solder to third pin

Without a power source available at the positive (third pin) input of the LiPo connector, the board has insufficient current available to the servos to drive servos at full torque or to drive multiple servos.

A safe fix is to solder the positive terminal of the DC jack to the third pin of the connector shown. When a battery is connected, the pins correspond to 0.0v, 3.7v, and 7.2v terminals of a 2-cell lipo.



Servo Channel 8

Servo Channel 1

Read the silkscreen to see correct connector orientation for positive, negative, and signal.



RFID reader

