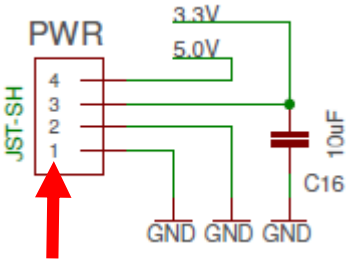
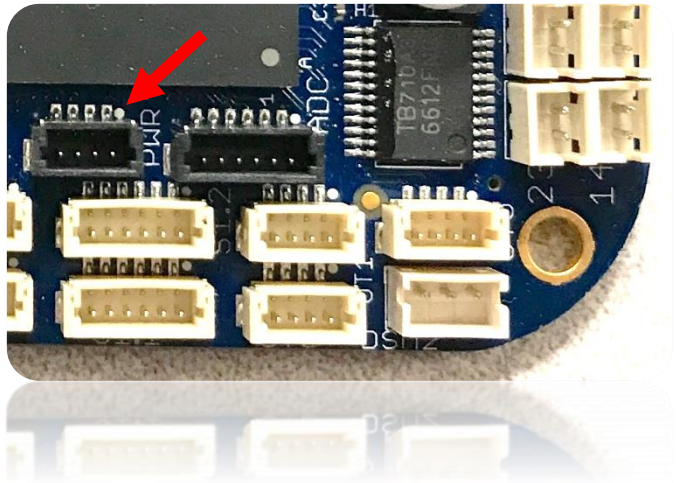
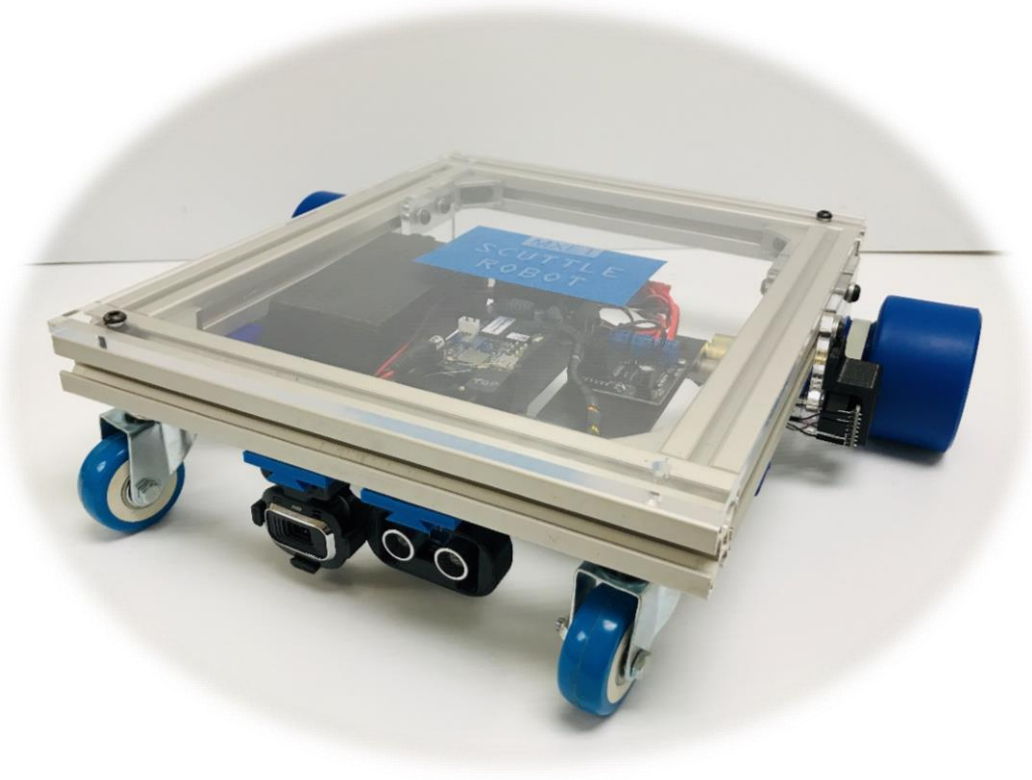
Scuttle robot Wiring Guide (rev 2019.06.11)

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”

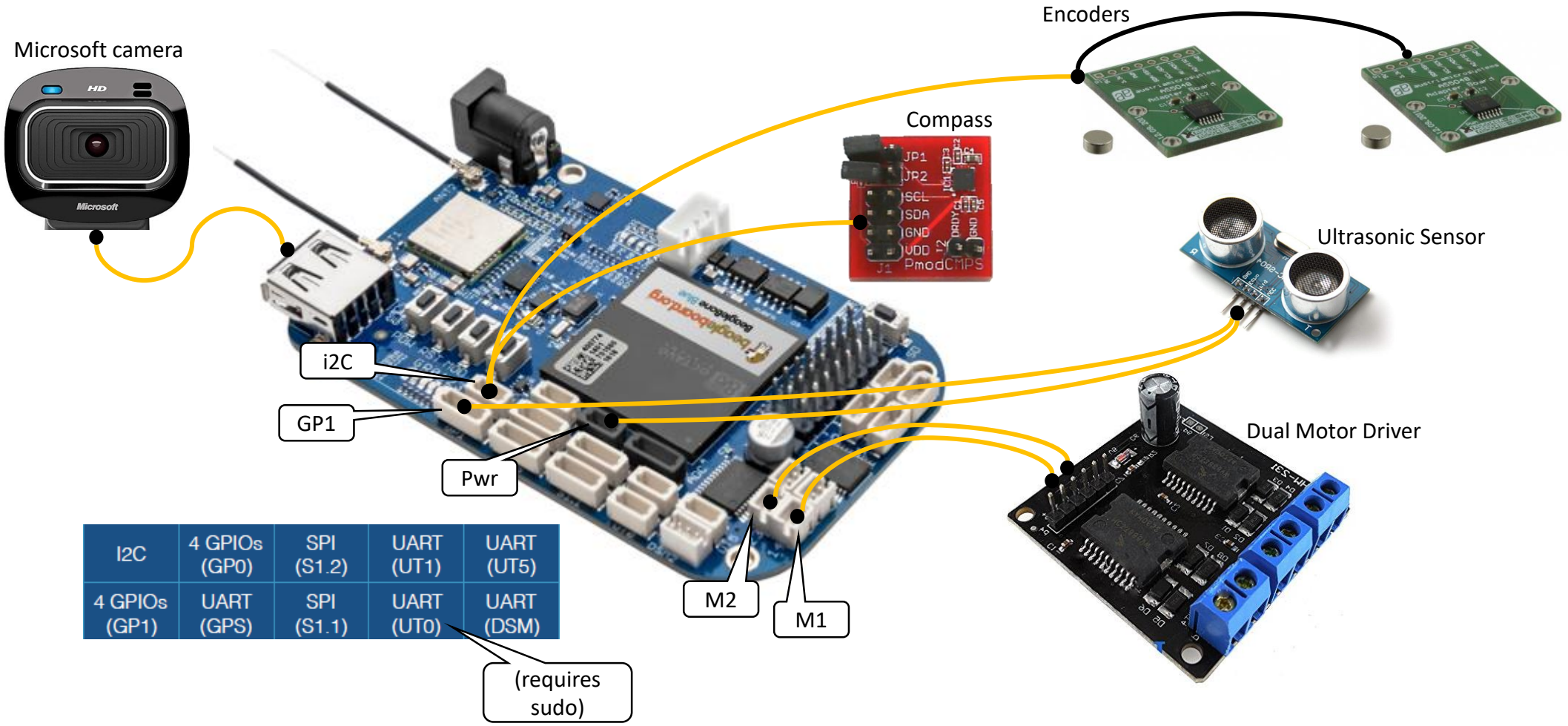
All images of this style are copied directly from the beaglebone schematic







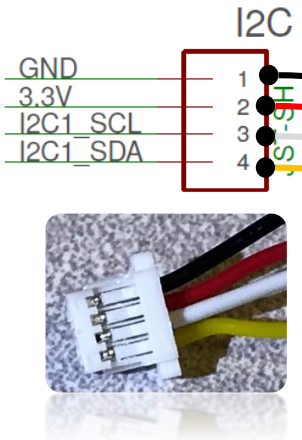
All Sensors on BeagleBone



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

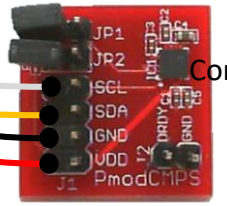
BeagleBone to Compass (I2C)

BeagleBone I2C Connector
Style: JST-SH 4-pin

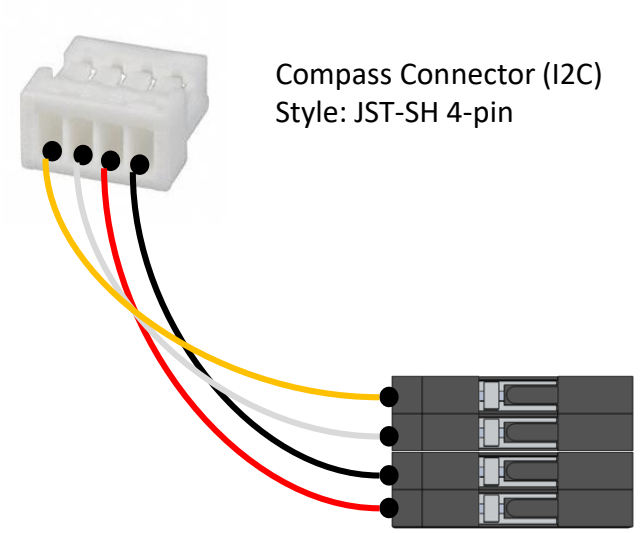


Returns 3 floating point values corresponding to X, Y, Z compass Values.

x



Compass



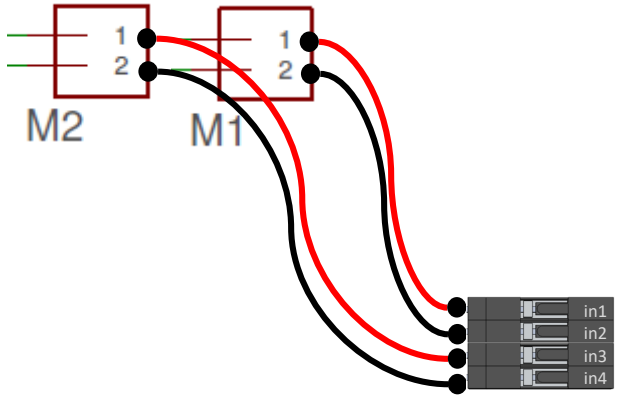
Compass Connector (I2C)
Style: JST-SH 4-pin

This diagram does not show encoders which couple to the same i2C bus

BeagleBone to Motor Driver (PWM)

M2 controls Right motor

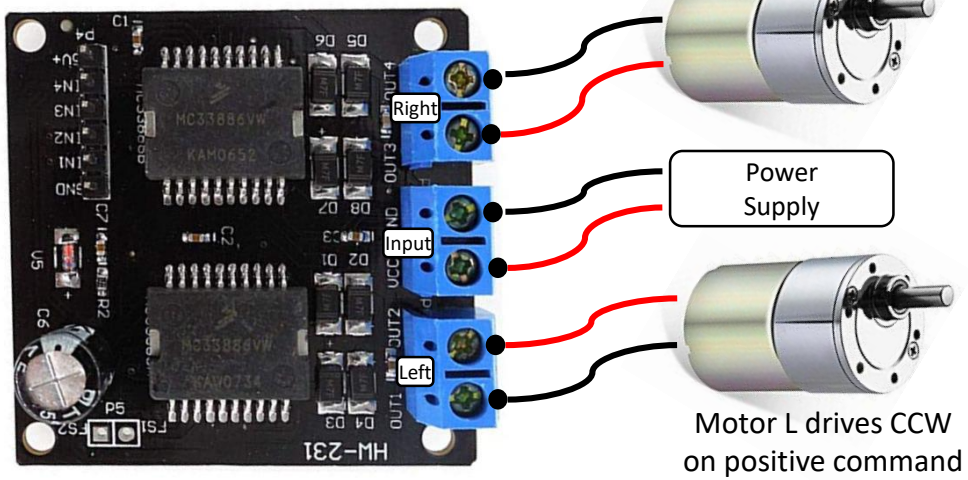
M1 controls Left motor



Ground is not connected because the BBB has a common ground to the battery pack.

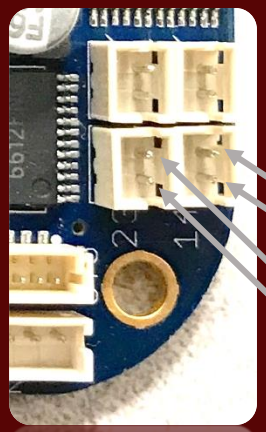
in1 on DuPont connector goes to in1 on driver

Motor Driver Top View



Motor R drives CW on positive command

Motor L drives CCW on positive command



Pin 1 should be HIGH when motor is driven FORWARD

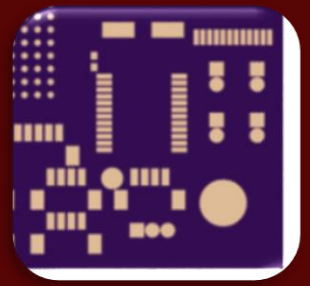
Motor1 Pin1

Motor1 Pin2

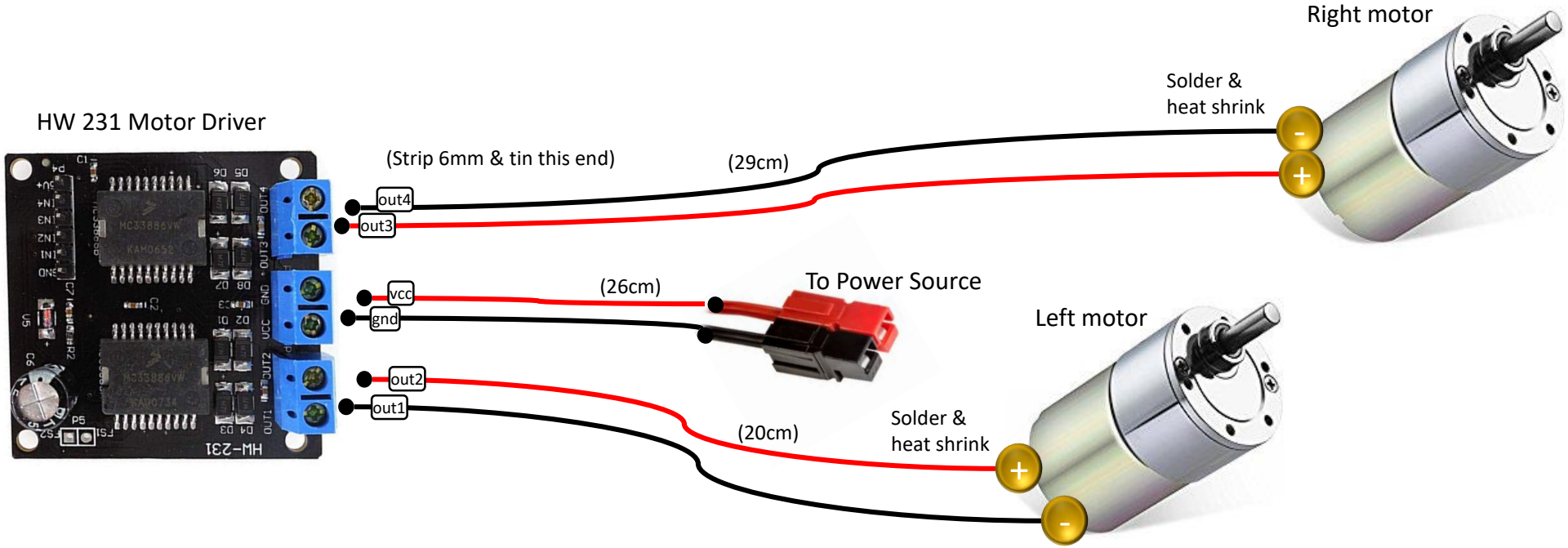
Motor2 Pin1

Motor2 Pin2

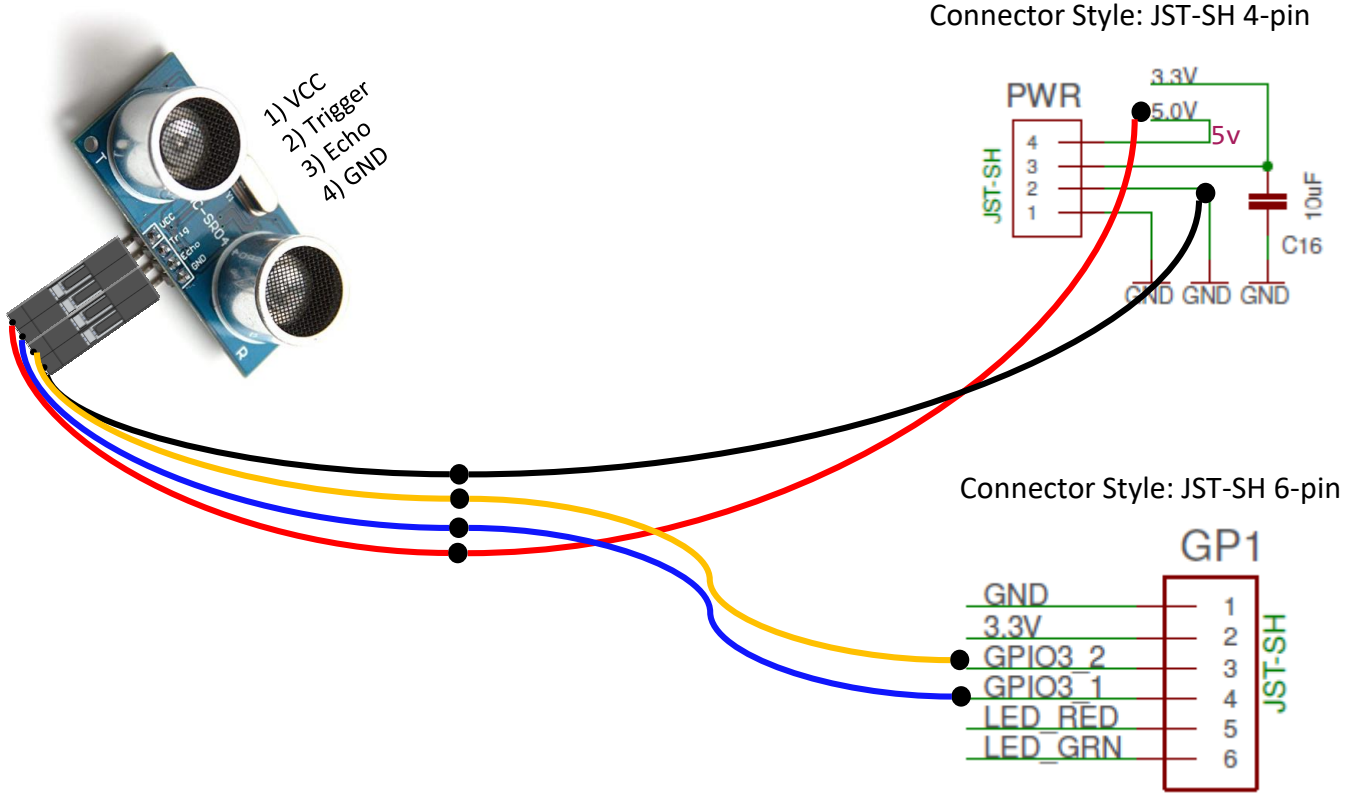
The hardware design convention is pin 1 gets the square solder pad.



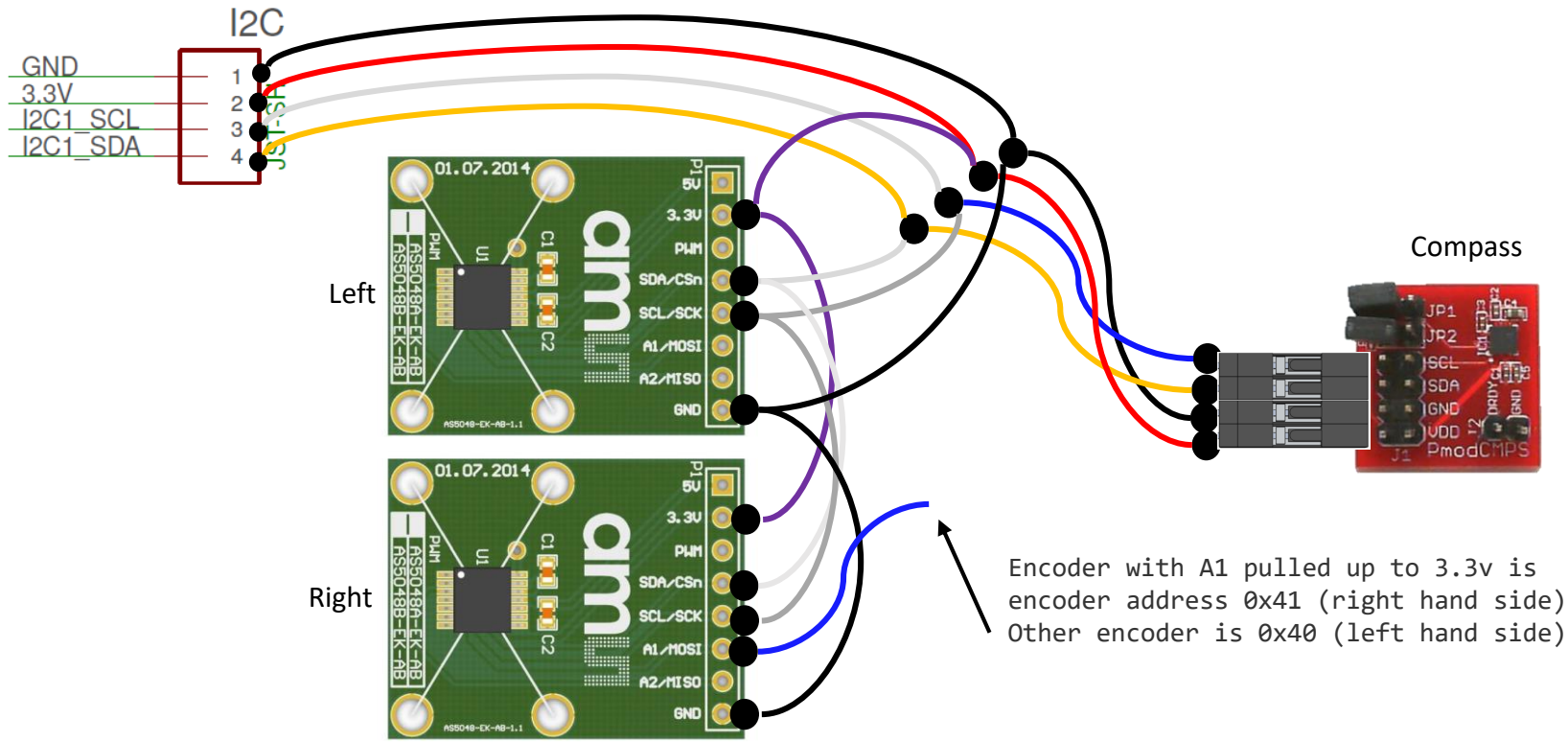
Motor Driver Power Cables (18awg)



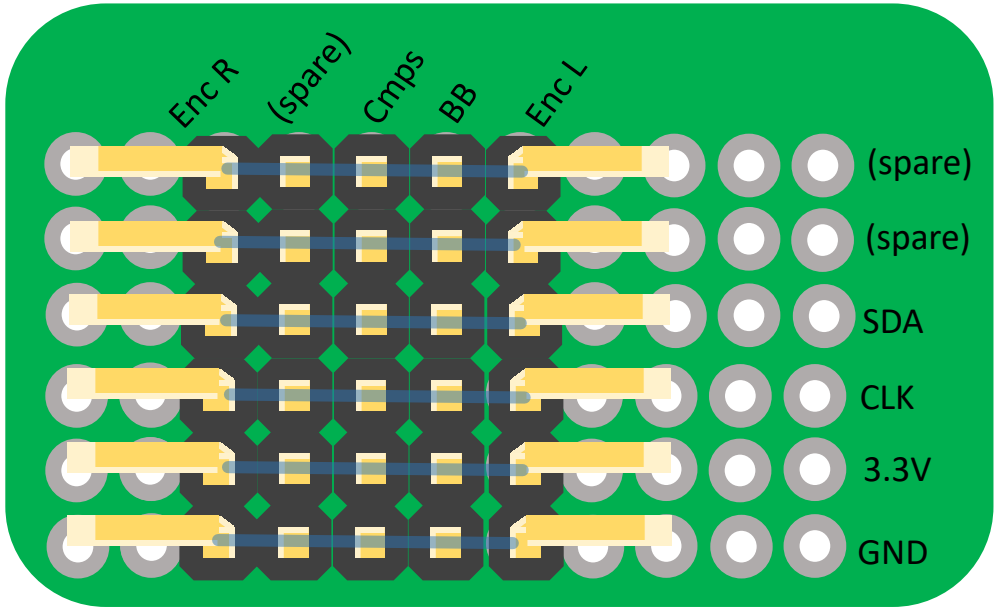
Ultrasonic Distance Sensor (GPIO)



Encoder AS5048 (I2C)



I2C Bus Board

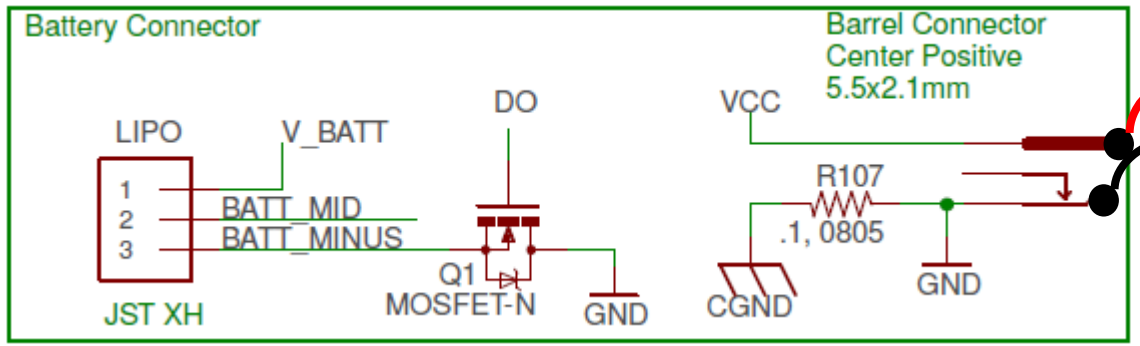


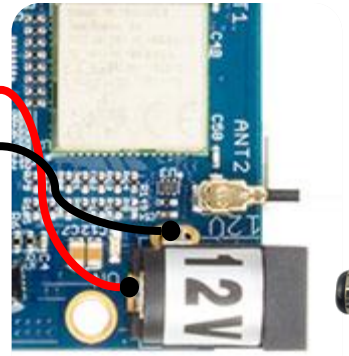
straight pin

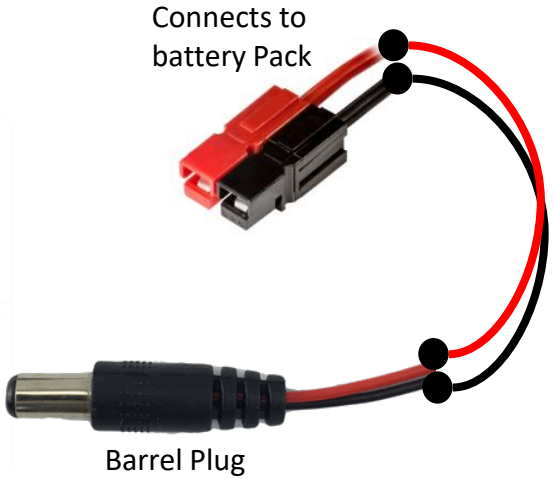
90 degree pin

solder connections on bottom

Battery



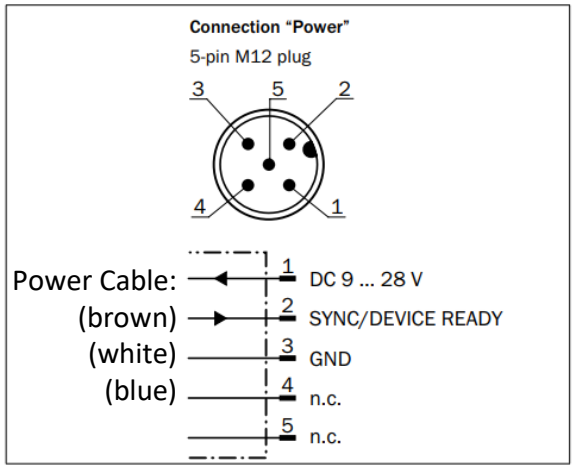




The "Battery Connector" is disconnected. Actual battery uses Barrel Connector.

LIDAR

POWER connection (supply voltage)



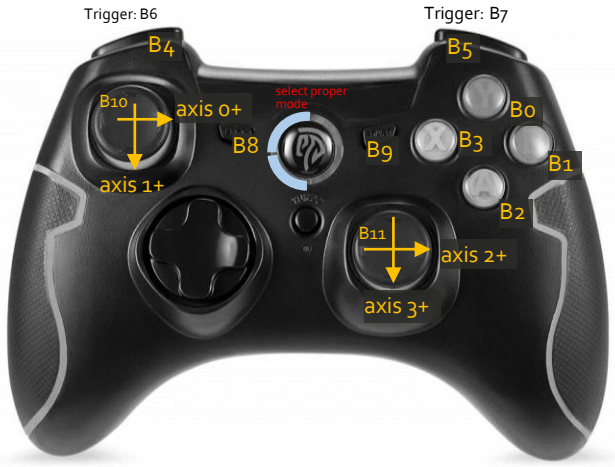
LIDAR-side connector (male pins)

Cable: 7000-12241-2150300

TiM 561

GamePad

Gamepad Controls Mapping



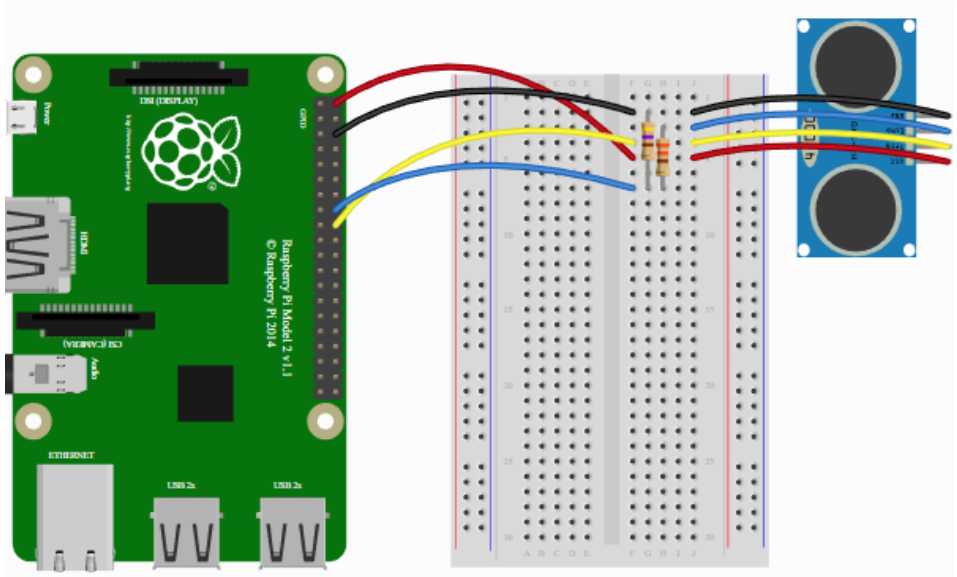
Button Behavior:
- not pressed: 0
- Pressed: 1

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 )
```

Ultrasonic/Pi

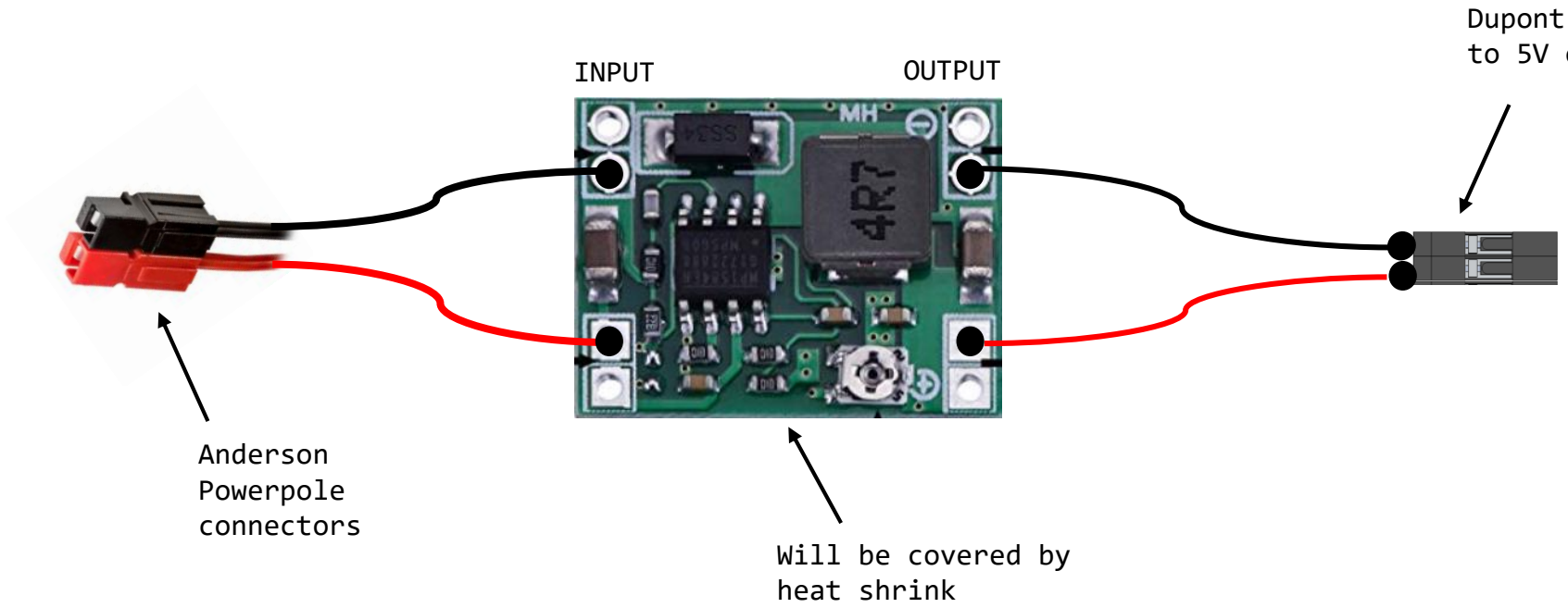


Visit the gpiozero library documentation and find the example for ultrasonic here.

Pi-dedicated Component.

5V Regulator (Power)

If you use Raspberry Pi, build this wire harness to regulate battery pack to 5v.



Pi-dedicated Component.