Scuttle robot Wiring Guide (Pi + Nano)
(rev 2021.02.26)

SCUTTLE Chassis
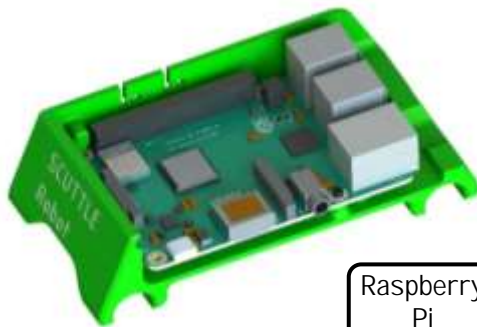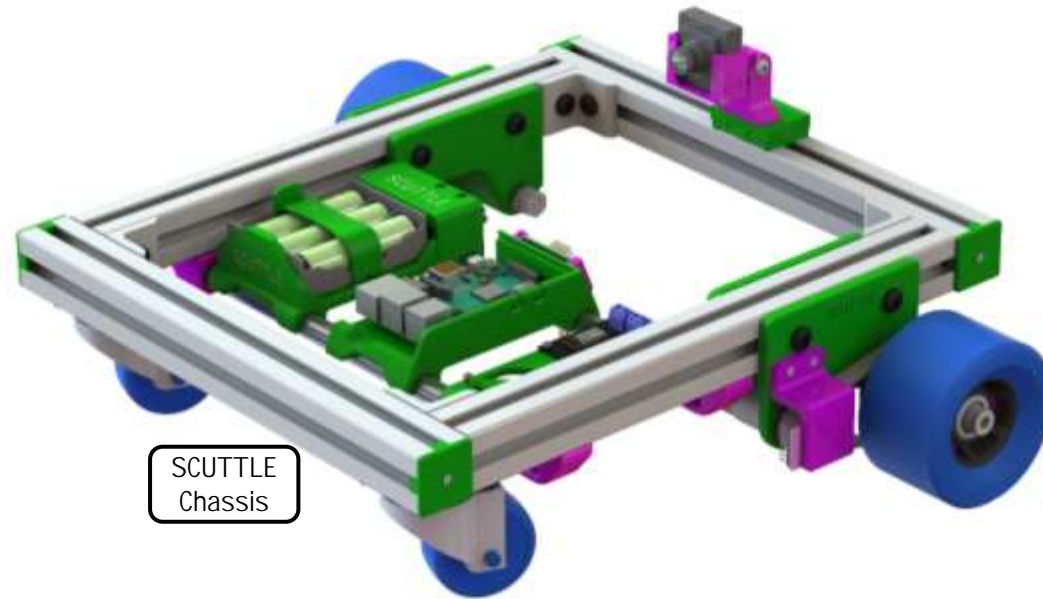
Raspberry Pi

Beaglebone Blue

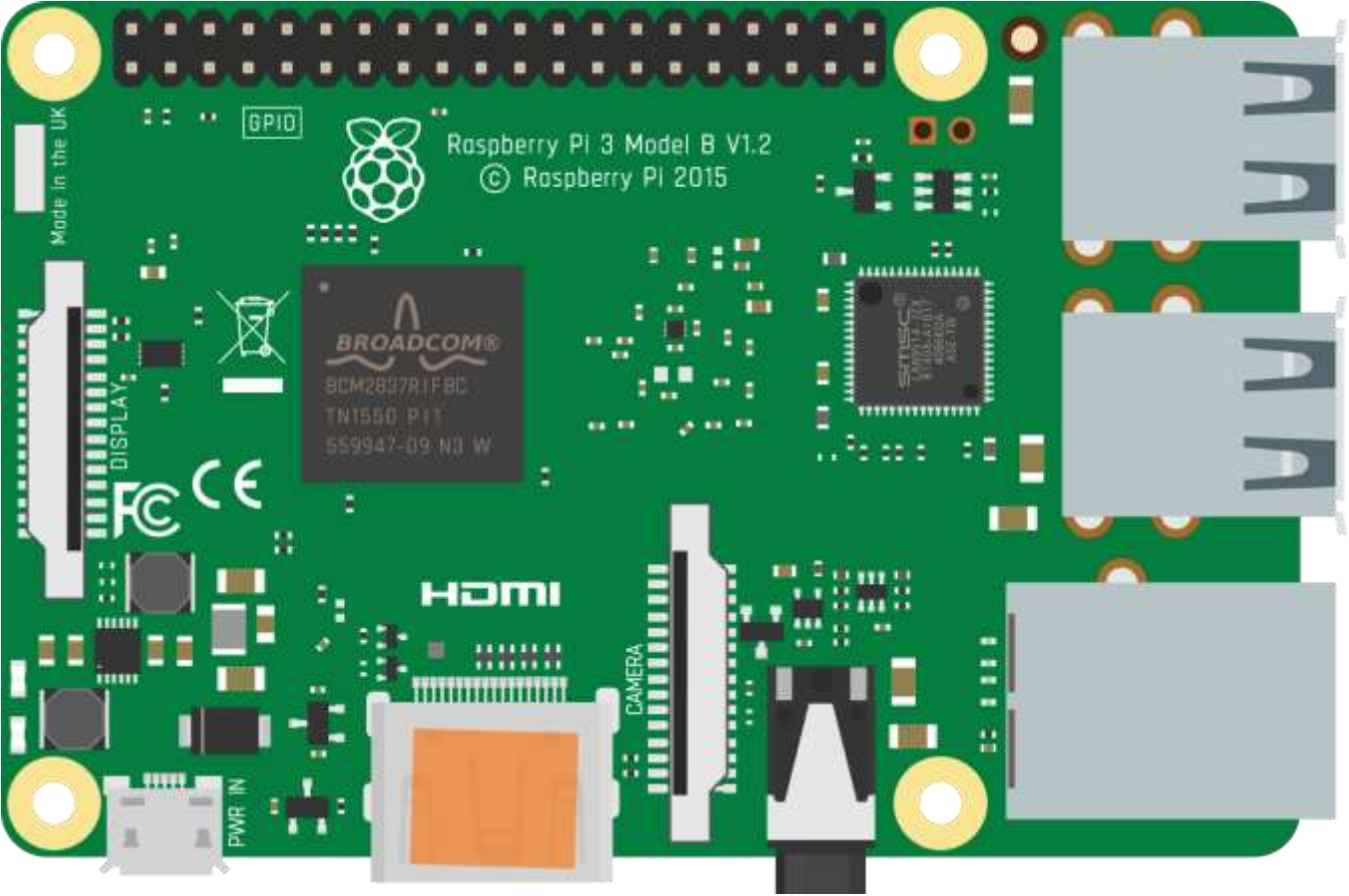Jetson Nano

SCUTTLE Wiring Guide (Pi variant)

Note: This guide is secondary to the wiring guide using beaglebone blue, which has more extensive testing and more details. The selections for pi on wire colors, configurations, and pin locations are improving continuously.
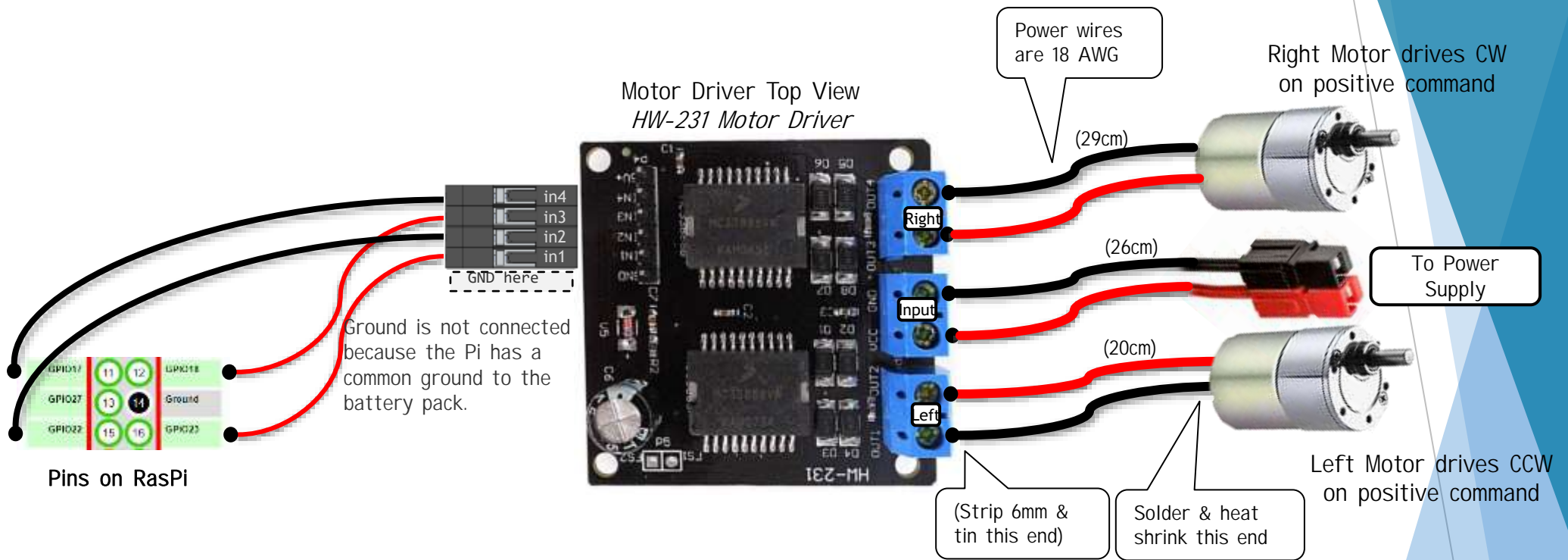
Pin Number Convention

SCUTTLE Robot

Pi - Motor Driver Signals

Motor Driver Top View
HW-231 Motor Driver

Power wires are 18 AWG

(29cm)

Right Motor drives CW on positive command

Right

(26cm)

To Power Supply

Input

(20cm)

Left

Left Motor drives CCW on positive command

in4
in3
in2
in1

GND here

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

GPIO17 11 12 GPIO18
GPIO27 13 14 Ground
GPIO22 15 16 GPIO23

Pins on RasPi

(Strip 6mm & tin this end)

Solder & heat shrink this end

SCUTTLE Robot

Pi - Motor Driver Signals

Keep the wires bonded
To each other, if possible.

Top View
HW-231 Motor Driver

Left   Input   Right

+   -

Left
Motor

Right
Motor

Pins on RasPi

GPIO17	11	12	GPIO18
GPIO27	13	14	Ground
GPIO22	15	16	GPIO23

HW-231

SCUTTLE Robot
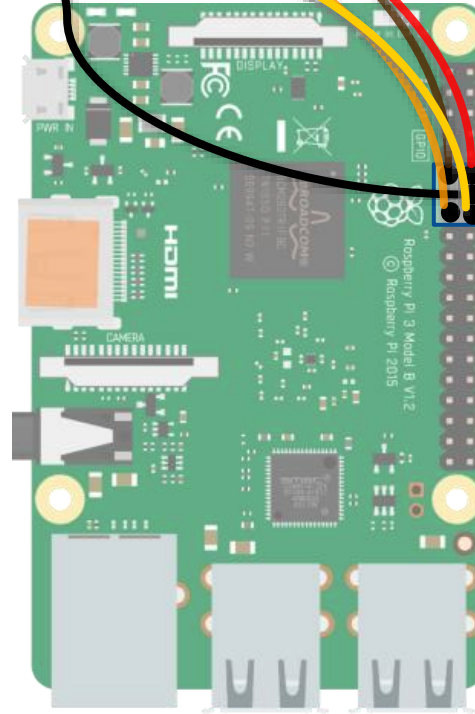
Pi - Encoder AMS AS5048 (I2C)

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

Left

Nodes on the I2C bus board
are indicated here

Gnd
3.3v
SCK
SDA
3.3v
Gnd
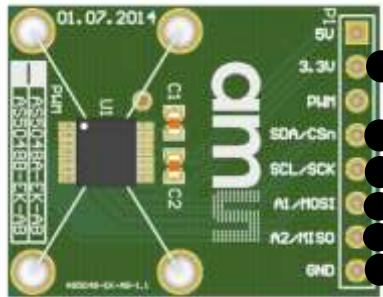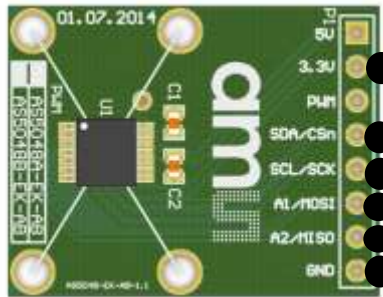
Right

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

SCUTTLE Robot

Pi - Power Supply

CHUANGRUIFA
CAR POWER
DC-DC 15W
IN   OUT
12V   5V 2A
⊕ ⊖   ⊖ ⊕

5.0v regulator

Female Dupont Connector

Male Dupont Connector

To battery (12v)

SCUTTLE Robot
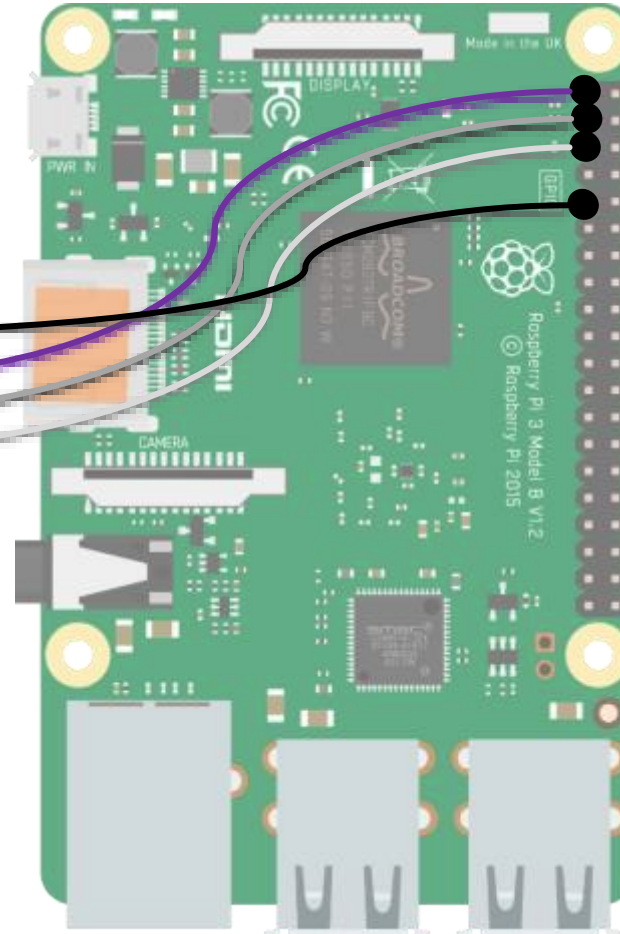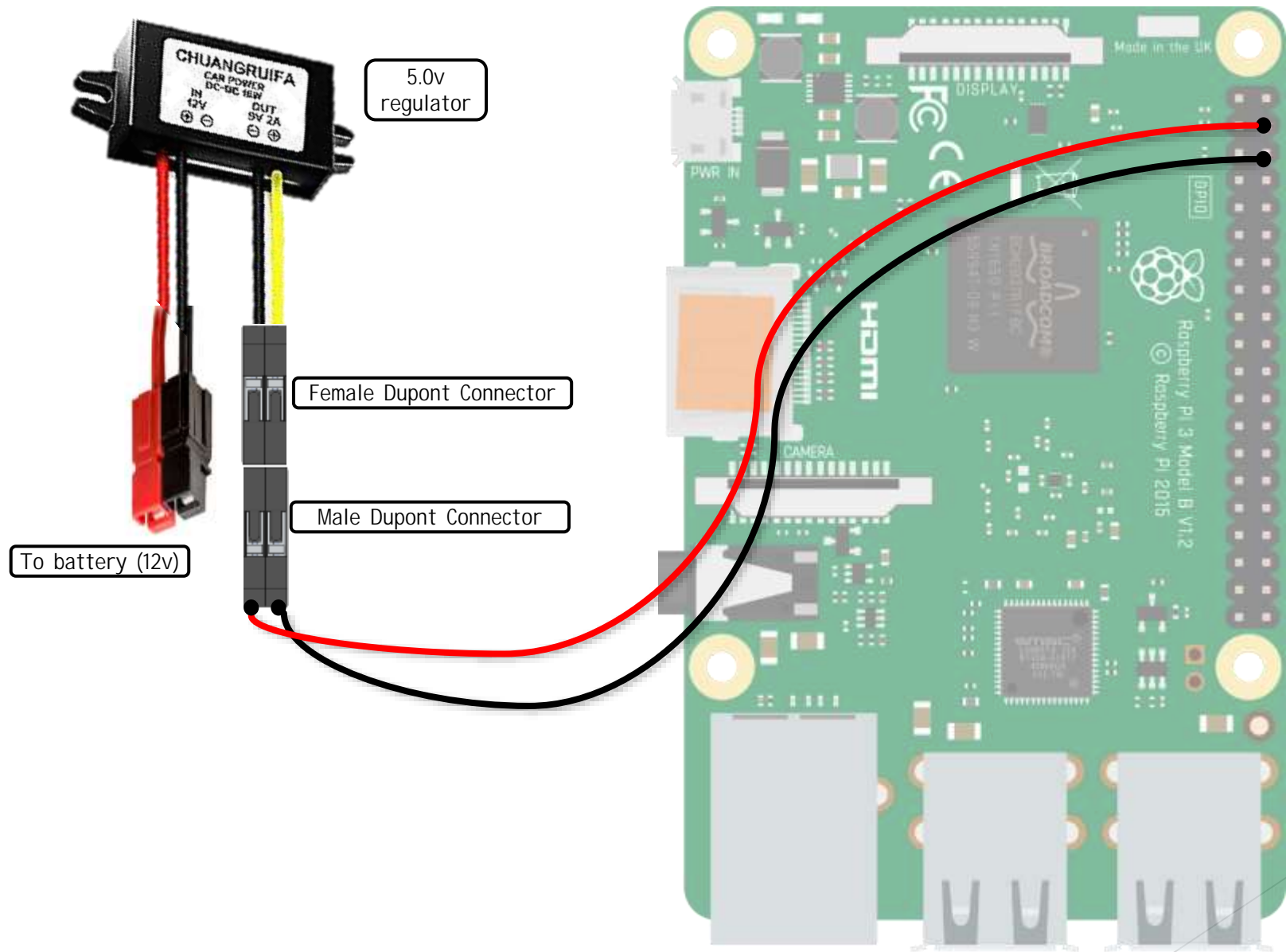
Voltage Meter — Adafruit ina219

This circuit drawing in progress

Shunt circuit

Gnd
3.3v
SCK
SDA
3.3v
Gnd

INA219 DC Current Sensor

Vin-   Vin+

R100

I2C Address

A1   A0

Gnd   SDA   Vin+
Vcc   SCL   Vin-
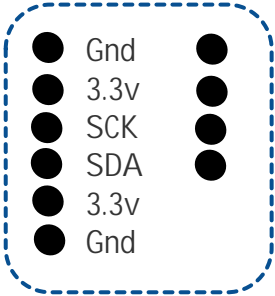
SCUTTLE Robot
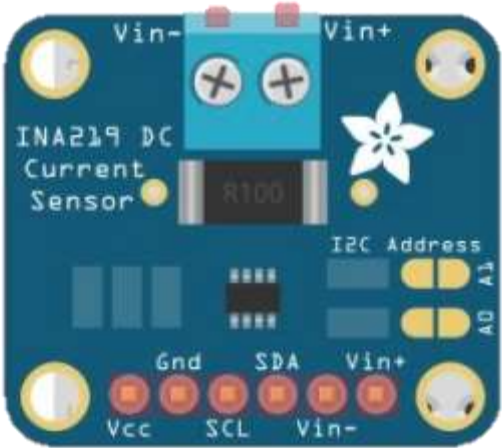
Pi - Configuration for remo.tv

This slide will document a tested, successful configuration of hardware on RasPi B 3+, and indicate the associated device numbers that belong in software. (i.e., alsamixer)

Jetson Nano Wiring

Diagram from Jetsonhacks.com

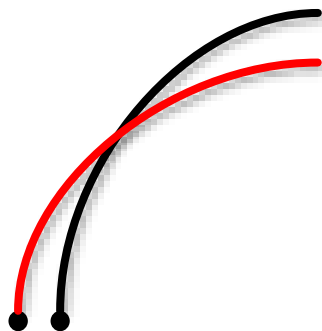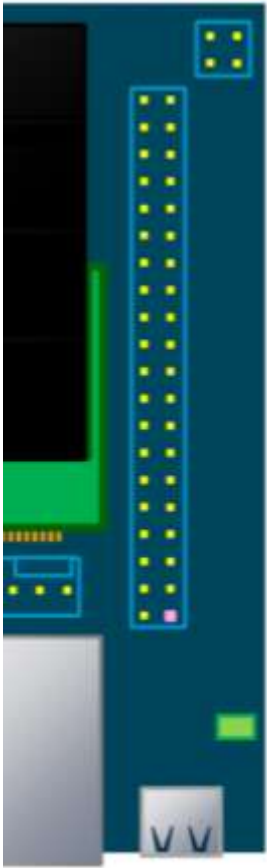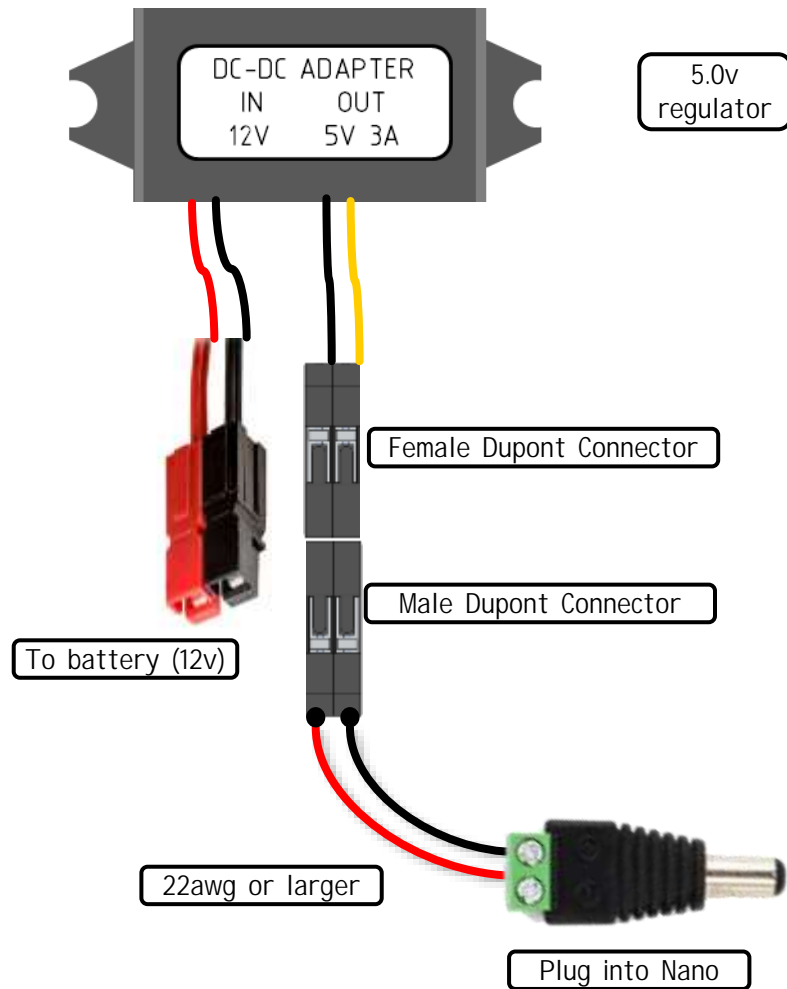| Sysfs GPIO	Name	Pin	Pin	Name	Sysfs GPIO
	3.3 VDC *Power*	1	2	**5.0 VDC** *Power*	
	I2C_2_SDA *I2C Bus 1*	3	4	**5.0 VDC** *Power*	
	I2C_2_SCL *I2C Bus 1*	5	6	**GND**	
gpio216	**AUDIO_MCLK**	7	8	**UART_2_TX** */dev/ttyTHS1*	
	GND	9	10	**UART_2_RX** */dev/ttyTHS1*	
gpio50	**UART_2_RTS**	11	12	**I2S_4_SCLK**	gpio79
gpio14	**SPI_2_SCK**	13	14	**GND**	
gpio194	**LCD_TE**	15	16	**SPI_2_CS1**	gpio232
	3.3 VDC *Power*	17	18	**SPI_2_CS0**	gpio15
gpio16	**SPI_1_MOSI**	19		**GND**	
gpio17	**SPI_1_MISO**	21	22	**SPI_2_MISO**	gpio13
gpio18	**SPI_1_SCK**	23	24	**SPI_1_CS0**	gpio19
	GND	25	26	**SPI_1_CS1**	gpio20
	I2C_1_SDA *I2C Bus 0*	27	28	**I2C_1_SCL** *I2C Bus 0*	
gpio149	**CAM_AF_EN**	29	30	**GND**	
gpio200	**GPIO_PZ0**	31	32	**LCD_BL_PWM**	gpio168
gpio38	**GPIO_PE6**	33	34	**GND**	
gpio76	**I2S_4_LRCK**	35	36	**UART_2_CTS**	gpio51
gpio12	**SPI_2_MOSI**	37	38	**I2S_4_SDIN**	gpio77
	GND	39	40	**I2S_4_SDOUT**	gpio78

40 Pin Array on Jetson Nano

SCUTTLE Robot

Jetson Nano - power

Diagram for powering Jetson Nano

DC-DC ADAPTER
IN   OUT
12V   5V 3A

5.0v regulator

Female Dupont Connector

Male Dupont Connector

To battery (12v)

22awg or larger

Plug into Nano

SCUTTLE Robot

Jetson Nano – i2c

Diagram for connecting i2C to SCUTTLE

TO BE COMPLETED...

SDA	SCL
	GND

SCUTTLE Robot