

How to wire a 2-Axis analog mini joystick directly to the breadboard



This guide shows you how to wire the **mini** 2-axis analog thumbstick directly onto the breadboard and connect it to the BeagleBone. The mini joystick has an X and Y axis and is self-centering.

Each axis will require its own circuit, as highlighted in the diagram on the next page.

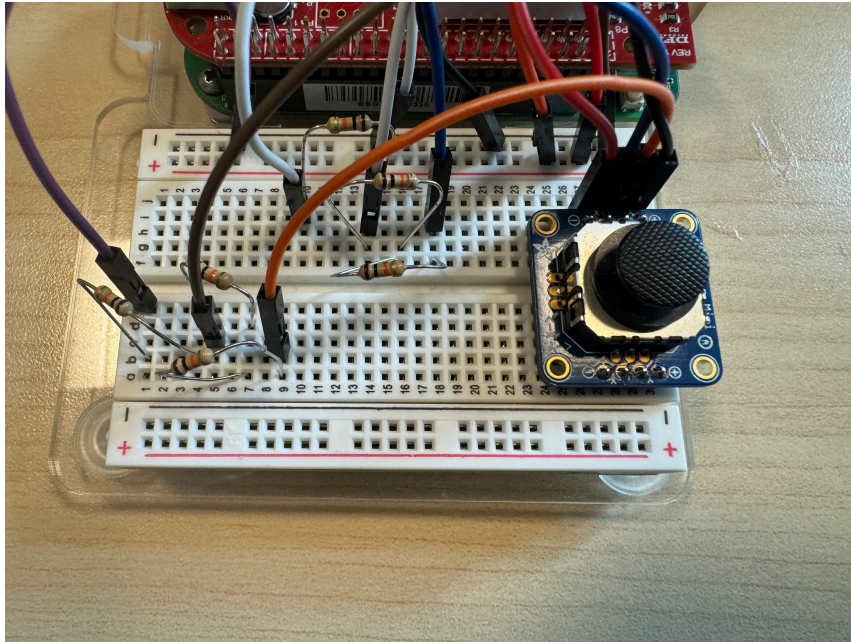
Parts Needed:

- 2-axis mini joystick: <https://www.adafruit.com/product/276>
- Jumper wires
- 6x10k Ω Resistors

Setup:

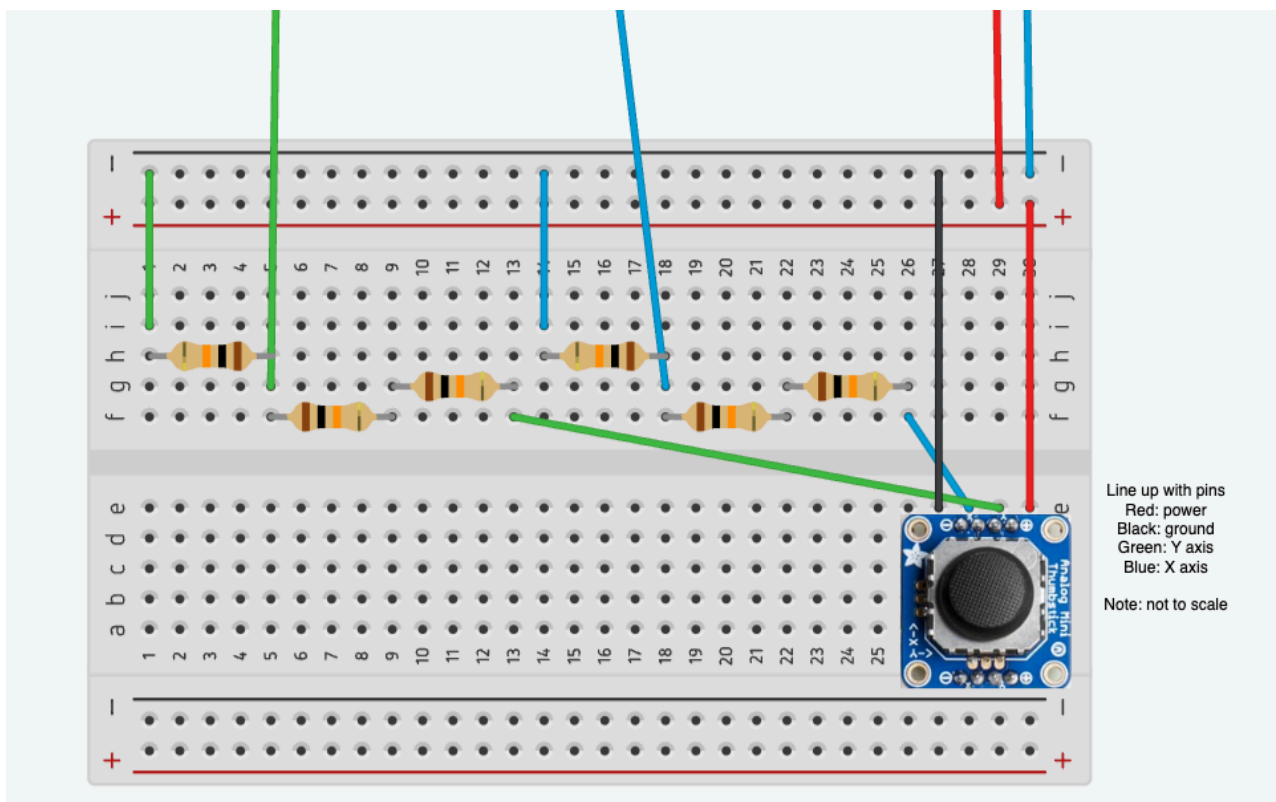
1. First complete the A2D guide:
<https://opencoursehub.cs.sfu.ca/bfraser/grav-cms/cmpt433/guides/files/A2DGuide.pdf>

Wiring overview:



Wiring steps for breadboard:

1. First choose a place on the breadboard for the thumbstick
2. We need to wire two separate circuits for each axis (each one has 3x10kΩ resistors)
 - a. Follow the circuits below for X axis, with blue wiring
 - b. Follow the other circuit below for Y axis, with green wiring



Wiring steps for BeagleBone:

1. Power to P9.5 for 5V power
2. Ground to P9.1 or one of the ground pins
3. X output to one of the AIN pins
4. Y output to one of the AIN pins

P9				P8			
DGND	1	2	DGND	DGND	1	2	DGND
VDD_3V3	3	4	VDD_3V3	GPIO_38	3	4	GPIO_39
VDD_5V	5	6	VDD_5V	GPIO_34	5	6	GPIO_35
SYS_5V	7	8	SYS_5V	GPIO_66	7	8	GPIO_67
PWR_BTN	9	10	SYS_RESETH	GPIO_69	9	10	GPIO_68
GPIO_30	11	12	GPIO_60	GPIO_45	11	12	GPIO_44
GPIO_31	13	14	GPIO_50	GPIO_23	13	14	GPIO_26
GPIO_48	15	16	GPIO_51	GPIO_47	15	16	GPIO_46
GPIO_5	17	18	GPIO_4	GPIO_27	17	18	GPIO_65
I2C2_SCL	19	20	I2C2_SDA	GPIO_22	19	20	GPIO_63
GPIO_3	21	22	GPIO_2	GPIO_62	21	22	GPIO_37
GPIO_49	23	24	GPIO_15	GPIO_36	23	24	GPIO_33
GPIO_117	25	26	GPIO_14	GPIO_32	25	26	GPIO_61
GPIO_115	27	28	GPIO_113	GPIO_86	27	28	GPIO_88
GPIO_111	29	30	GPIO_112	GPIO_87	29	30	GPIO_89
GPIO_110	31	32	VDD_ADC	GPIO_10	31	32	GPIO_11
AIN4	33	34	GND_ADC	GPIO_9	33	34	GPIO_81
AIN6	35	36	AIN5	GPIO_8	35	36	GPIO_80
AIN2	37	38	AIN3	GPIO_78	37	38	GPIO_79
AIN0	39	40	AIN1	GPIO_76	39	40	GPIO_77
GPIO_20	41	42	GPIO_7	GPIO_74	41	42	GPIO_75
DGND	43	44	DGND	GPIO_72	43	44	GPIO_73
DGND	45	46	DGND	GPIO_70	45	46	GPIO_71

Reading input:

Depending on which AIN pin you used above, check the corresponding voltage on BeagleBone. For example, if we plugged X axis into AIN2, then we can use

```
(bbg)$ cat /sys/bus/iio/devices/iio:device0/in_voltage2_raw
```

Moving the corresponding axis will give a higher / lower voltage.

Troubleshooting:

1. If the file is not found when you do cat, then you must complete the A2D guide first
2. If the value of your voltage is not changing as you are moving the joystick but you are getting a high reading, then double check your wiring, including your resistors.

Source:

<https://opencoursehub.cs.sfu.ca/bfraser/grav-cms/cmpt433/links/files/2018-student-howtos/ParallelAxisJoystickOnBBG.pdf>

<https://opencoursehub.cs.sfu.ca/bfraser/grav-cms/cmpt433/guides/files/GPIOGuide.pdf>