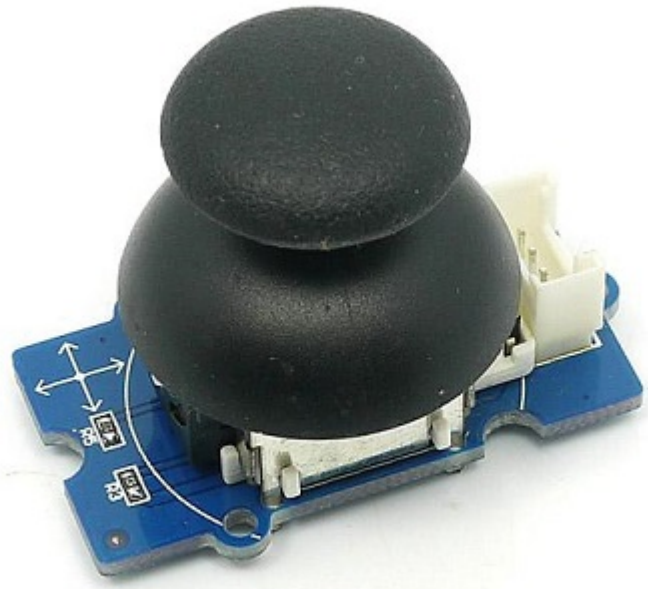
Grove - Thumb Joystick SKU:101020028



Grove - Thumb Joystick is a Grove compatible module which is very similar to the 'analog' joystick on PS2 (PlayStation 2) controllers. The X and Y axes are two ~10k potentiometers which control 2D movement by generating analog signals. The joystick also has a push button that could be used for special applications. When the module is in working mode, it will output two analog values, representing two directions. Compared to a normal joystick, its output values are restricted to a smaller range (i.e. 200~800), only when being pressed that the X value will be set to 1023 and the MCU can detect the action of pressing.

Version

Product Version	Changes	Released Date
Grove - Thumb Joystick V1.1	Initial	Oct 2016

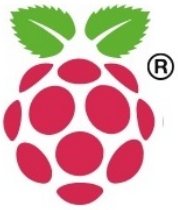
Specifications

Item	Min	Typical	Max	Unit
Working Voltage	4.75	5.0	5.25	V
Output Analog Value （X coordinate）	206	516	798	\
Output Analog Value （Y coordinate）	203	507	797	\
Size		L:40mm W:20mm H:34mm		
Weight		12.2g		
Package size		L: 140mm W: 90mm H: 25mm		

Item	Min	Typical	Max	Unit
Gross Weight		18g		
Certification		ROHS		

!!!Tip More details about Grove modules please refer to Grove System

Platforms Supported

Arduino	Raspberry Pi	BeagleBone	Wio	LinkIt ONE
				

!!!Caution The platforms mentioned above as supported is/are an indication of the module's software or theoritical compatibility. We only provide software library or code examples for Arduino platform in most cases. It is not possible to provide software library / demo code for all possible MCU platforms. Hence, users have to write their own software library.

Getting Started

!!!Note If this is the first time you work with Arduino, we firmly recommend you to see Getting Started with Arduino before the start.

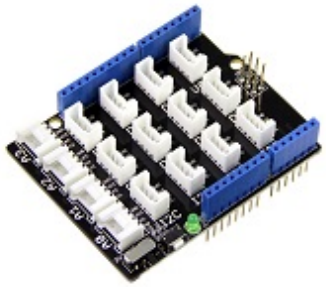
Play With Arduino

Demonstration

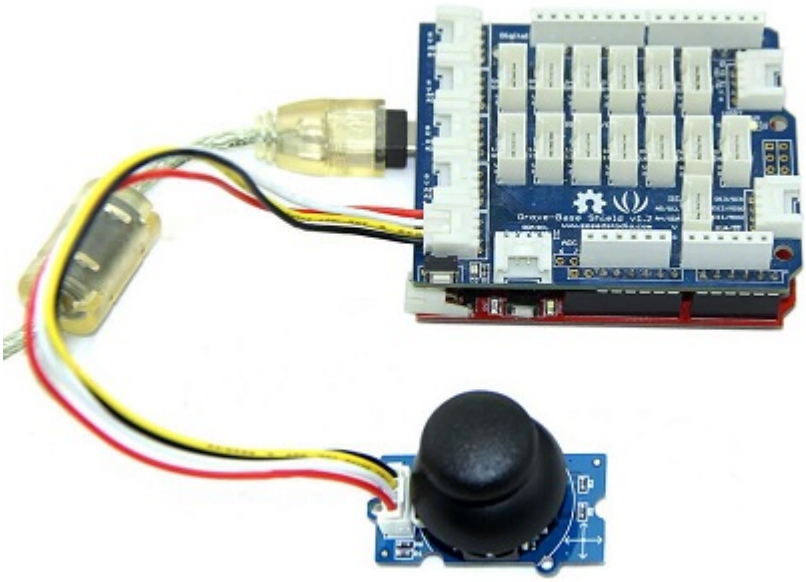
The Grove - Thumb Joystick is an analog device that outputs analog signal ranging from 0 to 1023. That requires us to use the analog port of Arduino to take the readings.

Hardware

- **Step 1.** Prepare the below stuffs:

Seeeduino V4.2	Base Shield	Grove - Thumb Joystick
		

- **Step 2.** Connect the module to the **A0/A1** of Grove - Base Shieldby using the 4-pin grove cable.
- **Step 3.** Plug Grove - Base Shield into Seeeduino.
- **Step 4.** Connect Seeeduino to PC via a USB cable.



!!!Note If we don't have Grove Base Shield, We also can directly connect Grove-Thumb Joystick to Seeeduino as below.

Seeeduino	Grove - Thumb Joystick
5V	Red
GND	Black
A1	White
A0	Yellow

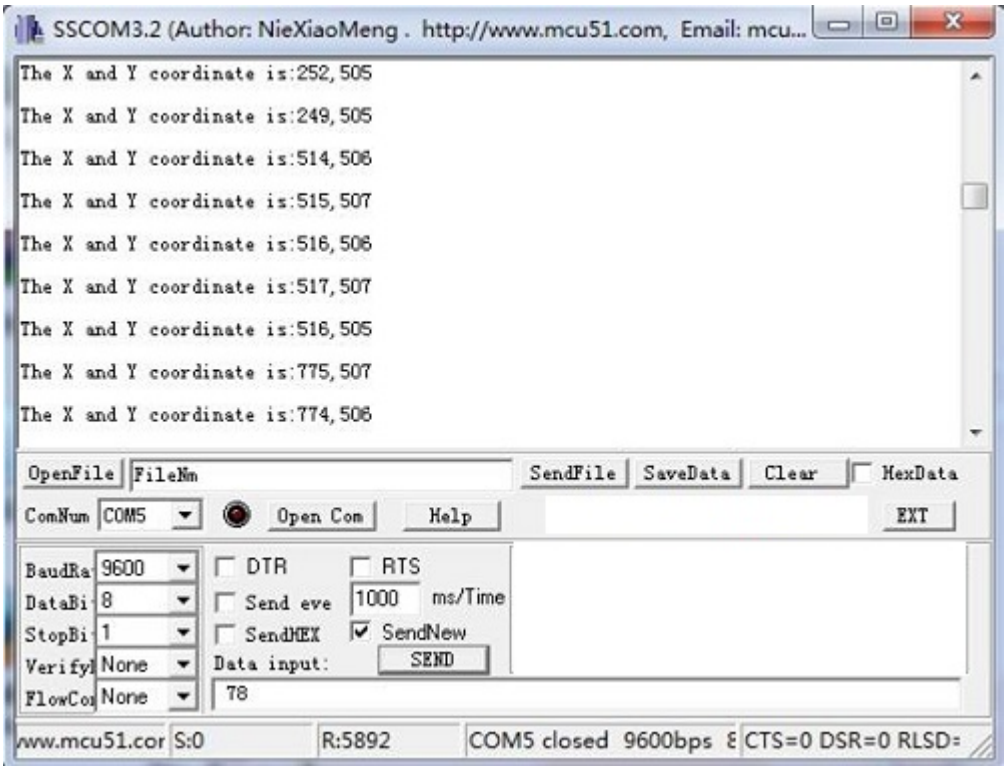
Software

- **Step 1.** Copy and paste code below to a new Arduino sketch.

```
/*
  Thumb Joystick demo v1.0
  by:http://www.seeedstudio.com
  connect the module to A0&A1 for using;
*/

void setup()
{
    Serial.begin(9600);
}
```

```
void loop()
{
    int sensorValue1 = analogRead(A0);
    int sensorValue2 = analogRead(A1);

    Serial.print("The X and Y coordinate is:");
    Serial.print(sensorValue1, DEC);
    Serial.print(",");
    Serial.println(sensorValue2, DEC);
    Serial.println(" ");
    delay(200);
}
```

- **Step 2.** You can check the values of the output analog signals by opening the Serial Monitor.



The output value from the analog port of Arduino can be converted to the corresponding resistance by using the formula:R=(float)(1023-sensorValue)*10/sensorValue.

Play with Codecraft

Hardware

Step 1. Connect a Grove - Thumb Joystick to port A0 of a Base Shield.

Step 2. Plug the Base Shield to your Seeeduino/Arduino.

Step 3. Link Seeeduino/Arduino to your PC via an USB cable.

Software

Step 1. Open Codecraft, add Arduino support, and drag a main procedure to working area.

!!!Note If this is your first time using Codecraft, see also Guide for Codecraft using Arduino.

Step 2. Drag blocks as picture below or open the cdc file which can be downloaded at the end of this page.

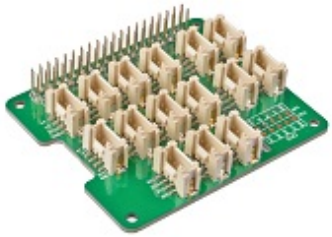
Upload the program to your Arduino/Seeeduino.

!!!Success When the code finishes uploaded, you will see the coordinate of X and Y displayed in the Serial Monitor.

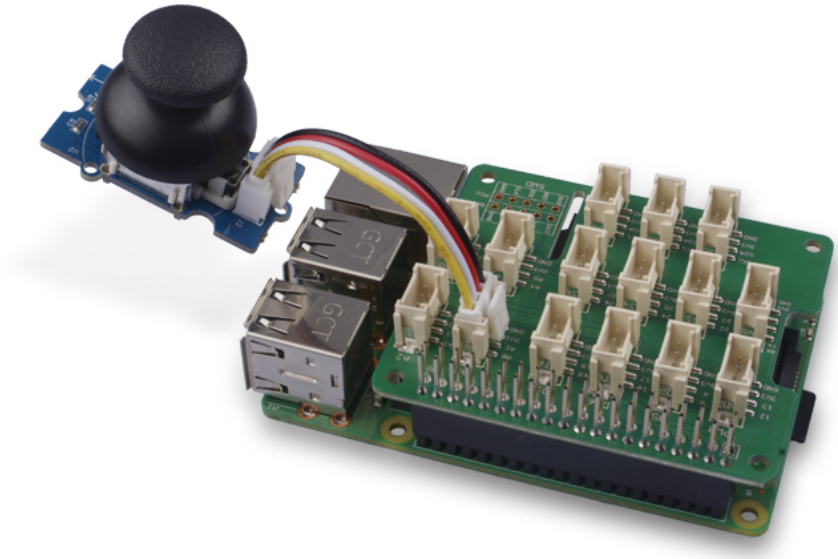
Play With Raspberry Pi (With Grove Base Hat for Raspberry Pi)

Hardware

- **Step 1**. Things used in this project:

Raspberry pi	Grove Base Hat for RasPi	Grove - Thumb Joystick
		

- **Step 2**. Plug the Grove Base Hat into Raspberry.
- **Step 3**. Connect the Thumb Joystick to port A0 of the Base Hat.
- **Step 4**. Connect the Raspberry Pi to PC through USB cable.



!!! Note For step 3 you are able to connect the the thumb joystick to **any Analog Port** but make sure you change the command with the corresponding port number.

Software

- **Step 1**. Follow Setting Software to configure the development environment.
- **Step 2**. Download the source file by cloning the grove.py library.

```
cd ~
git clone https://github.com/Seeed-Studio/grove.py
```

- **Step 3**. Excute below commands to run the code.

```
cd grove.py/grove
python grove_thumb_joystick.py 0
```

!!!Note you can excute the program with ++python grove_thumb_joystick.py pin++, where pin could be one of {0, 2, 4, 6} in the ADC group and connect the device to the corresponding slot {A0, A2, A4, A6}.

Following is the grove_thumb_joystick.py code.

```
import math
import sys
import time
from grove.adc import ADC


class GroveThumbJoystick:

    def __init__(self, channelX, channelY):
        self.channelX = channelX
        self.channelY = channelY
        self.adc = ADC()

    @property
    def value(self):
        return self.adc.read(self.channelX), self.adc.read(self.channelY)

Grove = GroveThumbJoystick


def main():
    from grove.helper import SlotHelper
    sh = SlotHelper(SlotHelper.ADC)
    pin = sh.argv2pin()

    sensor = GroveThumbJoystick(int(pin), int(pin + 1))

    while True:
        x, y = sensor.value
        if x > 900:
            print('Joystick Pressed')
        print("X, Y = {0} {1}".format(x, y))
        time.sleep(.2)

if __name__ == '__main__':
    main()
```

!!!success If everything goes well, you will be able to see the following result

```
pi@raspberrypi:~/grove.py/grove $ python grove_thumb_joystick.py 0
Hat Name = 'Grove Base Hat RPi'
X, Y = 506 484
X, Y = 484 484
X, Y = 506 484
```

```
X, Y = 506 487
Joystick Pressed
X, Y = 999 485
X, Y = 310 736
X, Y = 681 484
Joystick Pressed
X, Y = 999 277
Joystick Pressed
X, Y = 999 487
X, Y = 506 484
X, Y = 501 486
X, Y = 509 484
X, Y = 511 486
X, Y = 510 485
^CTraceback (most recent call last):
  File "grove_thumb_joystick.py", line 69, in <module>
    main()
  File "grove_thumb_joystick.py", line 66, in main
    time.sleep(.2)
KeyboardInterrupt
```

You can quit this program by simply press ++ctrl+c++.

!!!Notice You may have noticed that for the analog port, the silkscreen pin number is something like **A1, A0**, however in the command we use parameter **0** and **1**, just the same as digital port. So please make sure you plug the module into the correct port, otherwise there may be pin conflicts.

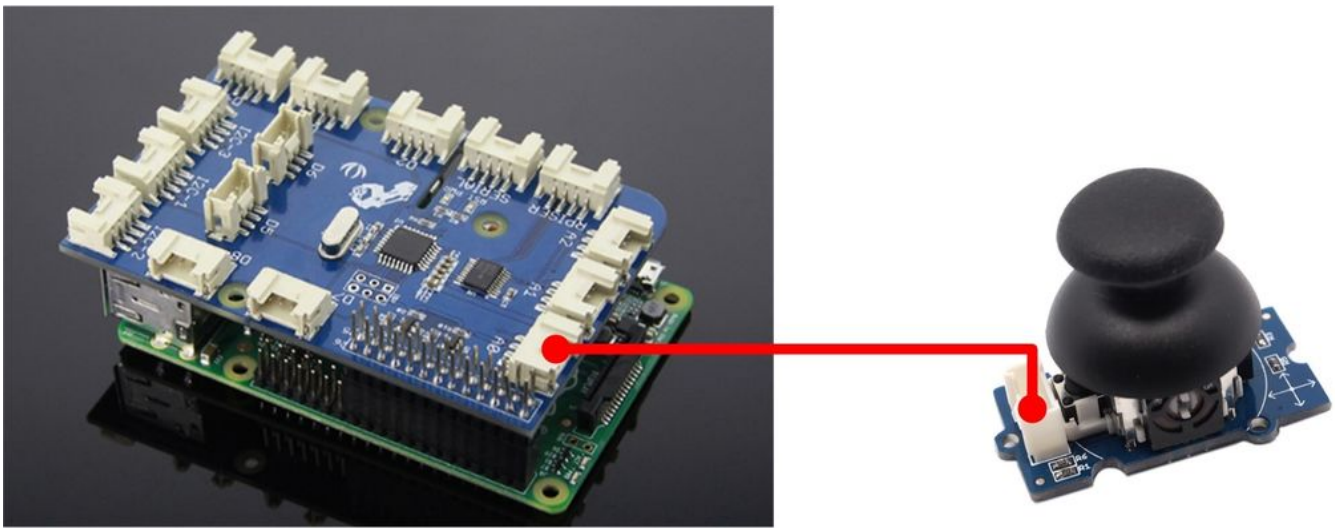
Play With Raspberry Pi (with GrovePi_Plus)

Hardware

- **Step 1.** Prepare the below stuffs:

Raspberry pi	GrovePi_Plus	Grove - Thumb Joystick
		

- **Step 2.** Plug the GrovePi_Plus into Raspberry.
- **Step 3.** Connect Grove-Thumb Joystick ranger to **A0** port of GrovePi_Plus.
- **Step 4.** Connect the Raspberry to PC through USB cable.



Software

- **Step 1.** Navigate to the demos' directory:

```
cd yourpath/GrovePi/Software/Python/
```

- **Step 2.** To see the code

```
nano grove_thumb_joystick.py   # "Ctrl+x" to exit #
```

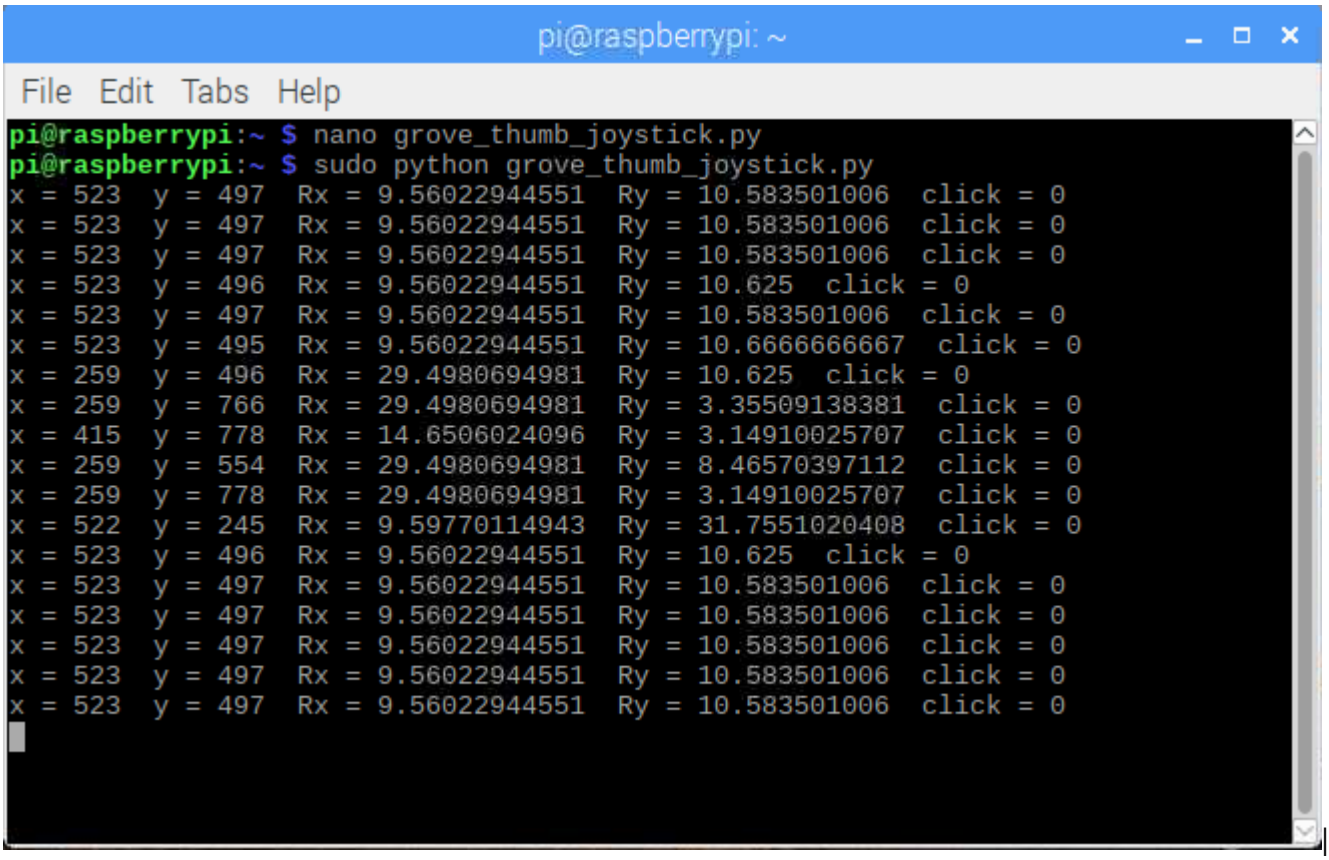
```
import time
import grovepi

# Connect the Grove Thumb Joystick to analog port A0

# GrovePi Port A0 uses Arduino pins 0 and 1
# GrovePi Port A1 uses Arduino pins 1 and 2
# Don't plug anything into port A1 that uses pin 1
# Most Grove sensors only use 3 of their 4 pins, which is why the GrovePi shares
Arduino pins between adjacent ports
# If the sensor has a pin definition SIG,NC,VCC,GND, the second (white) pin is not
connected to anything

# If you wish to connect two joysticks, use ports A0 and A2 (skip A1)

# Uses two pins - one for the X axis and one for the Y axis
# This configuration means you are using port A0
xPin = 0
yPin = 1
grovepi.pinMode(xPin,"INPUT")
grovepi.pinMode(yPin,"INPUT")
```

```
# The Grove Thumb Joystick is an analog device that outputs analog signal ranging
from 0 to 1023
# The X and Y axes are two ~10k potentiometers and a momentary push button which
shorts the x axis

# My joystick produces slightly different results to the specifications found on
the url above
# I've listed both here:

# Specifications
#     Min  Typ  Max  Click
#  X  206  516  798  1023
#  Y  203  507  797

# My Joystick
#     Min  Typ  Max  Click
#  X  253  513  766  1020-1023
#  Y  250  505  769
while True:
    try:
        # Get X/Y coordinates
        x = grovepi.analogRead(xPin)
        y = grovepi.analogRead(yPin)

        # Calculate X/Y resistance
        Rx = (float)(1023 - x) * 10 / x
        Ry = (float)(1023 - y) * 10 / y

        # Was a click detected on the X axis?
        click = 1 if x >= 1020 else 0

        print "x =", x, " y =", y, " Rx =", Rx, " Ry =", Ry, " click =", click
        time.sleep(.5)

    except IOError:
        print "Error"
```

- **Step 3.** Run the demo.

```
sudo python grove_thumb_joystick.py
```

- **Step 4.** We will see the output display on terminal as below.



Resources

- **[Eagle]** Grove-Thumb Joystick Schematic
- **[Datasheet]** Analog Joystick Datasheet
- **[PDF]** Joystick Schematic PDF File
- **[Codecraft]** CDC File servo

Tech Support

Please submit any technical issue into our forum.