

Analog Joystick Module

The PS2 style joystick is a thumb operated device, that when put to creative use, offers a convenient way of getting operator input. It fundamentally consists of two potentiometers and a push button switch.

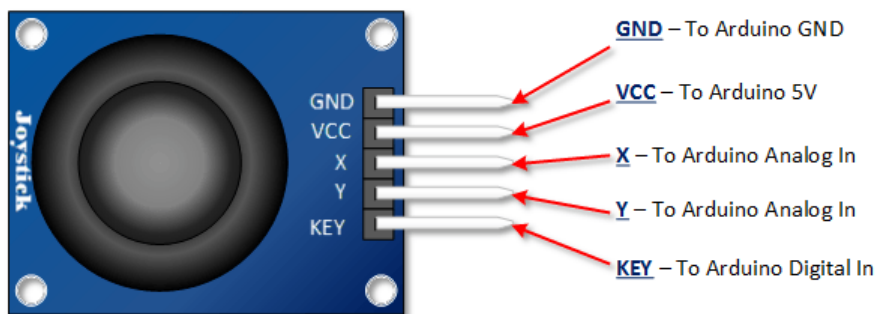
The two potentiometers indicate which direction the potentiometer is being pushed.

The switch sends a low (or ground) when the knob is pressed.



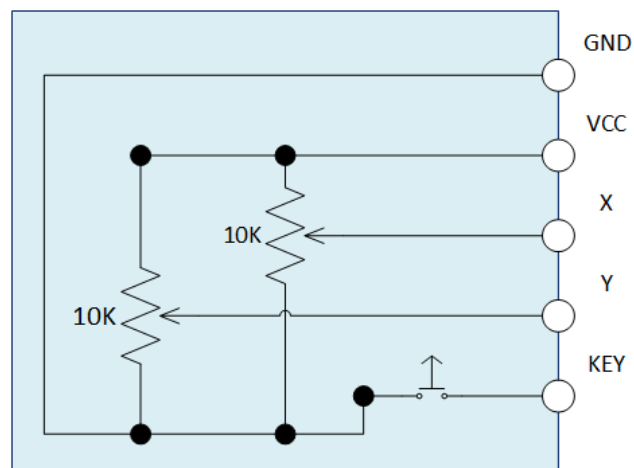
Pinout

This input device interfaces to your Arduino via five pins. Three of which are inputs to your Arduino, while the remaining two supply voltage and ground.



Arduino PS2 Joystick Schematic

As you can see in the schematic below, full deflection of a potentiometer in either direction will provide ground or the supply voltage as an output

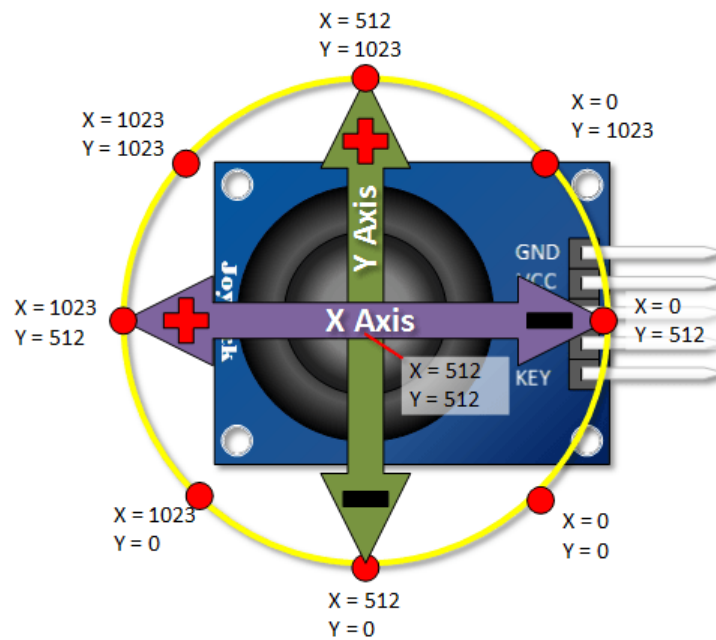


Arduino PS2 Joystick Output Orientation

In order to put this thumb control to use, you are going to want to understand which direction is X and which direction is Y. You will also need to decipher the direction it is being pushed in either the X or the Y direction.

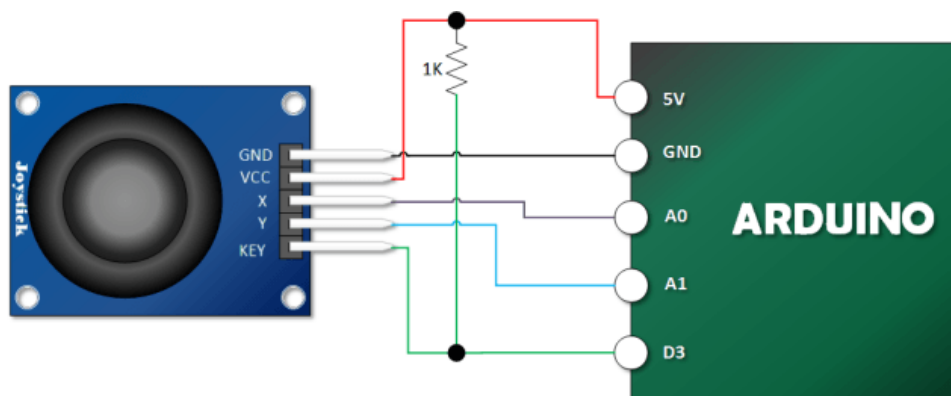
In this tutorial we are using analog inputs to measure the joystick position. The analog inputs provided indications that range between 0 and 1023.

The graphic below shows the X and Y directions and also gives an indication of how the outputs will respond when the joystick is pushed in various directions.



Connection to Arduino

Note that I use a pull up resistor between the key switch and the digital input. Once you move beyond experimentation, I highly recommend some sort of software or hardware debounce for this switch as well.



Arduino Example Sketch

The following Arduino Sketch will read both joystick axis and the push button and output the values in serial monitor.

```
int Xin= A0; // X Input Pin
int Yin = A1; // Y Input Pin
int KEYin = 3; // Push Button

void setup ()
{
  pinMode (KEYin, INPUT);
  Serial.begin (9600);
}
void loop ()
{
  int xVal, yVal, buttonVal;

  xVal = analogRead (Xin);
  yVal = analogRead (Yin);
  buttonVal = digitalRead (KEYin);

  Serial.print("X = ");
  Serial.println (xVal, DEC);

  Serial.print ("Y = ");
  Serial.println (yVal, DEC);

  Serial.print("Button is ");
  if (buttonVal == HIGH){
    Serial.println ("not pressed");
  }
  else{
    Serial.println ("PRESSED");
  }

  delay (500);
}
```