Lesson 12 Analog Joystick Module

Introduction

In this lesson, you will learn how to use the analog joystick module to add some control in your projects.

Hardware Required

- ✓ 1 * RexQualis UNO R3
- ✓ 1 * Breadboard
- ✓ 1 * Joystick module
- ✓ 5 * F-M Jumper Wire

Principle

Analog Joystick Module

The module has 5 pins: VCC, Ground, X, Y, Key. Note that the labels on yours may be slightly different, depending on where you got the module from. The thumb stick is analog and should provide more accurate readings than simple 'directional' joysticks tact use some forms of buttons, or mechanical switches. Additionally, you can press the joystick down (rather hard on mine) to activate a 'press to select' push-button.

We have to use analog Arduino pins to read the data from the X/Y pins, and a digital pin to read the button. The Key pin is connected to ground, when the joystick is pressed down, and is floating otherwise. To get stable readings from the Key /Select pin, it needs to be connected to VCC via a pull-up resistor. The built in resistors on the Arduino digital pins can be used. For a tutorial on how

to activate the pull-up resistors for Arduino pins, configured as inputs.

We need 5 connections to the joystick.The connections are: Key, Y, X, Voltage ,and Ground.“Y and X” are Analog and “Key” is Digital. If you don’t need the switch then you can use only 3 pins.

Code interpretation

```
//74HC595  pin 9 STCP

const int SW_pin = 3; // input for detecting whether the jotstick/button is pressed

const int X_pin = A0; // analog pin connected to X output

const int Y_pin = A1; // analog pin connected to Y output

void setup() {

  pinMode(SW_pin, INPUT);          //setup SW input

  digitalWrite(SW_pin, HIGH);      //reading button state:1=not pressed,0=pressed

  Serial.begin(9600);              //Seput serical connection for print out to console

}    //print out values

void loop() {

  Serial.print("Switch:  ");

  Serial.print(digitalRead(SW_pin));

  Serial.print("\n");

  Serial.print("X-axis: ");

  Serial.print(analogRead(X_pin));
```

```
  Serial.print("\n");
  Serial.print("Y-axis: ");
  Serial.println(analogRead(Y_pin));
  Serial.print("\n\n");
  delay(2000);
}
```

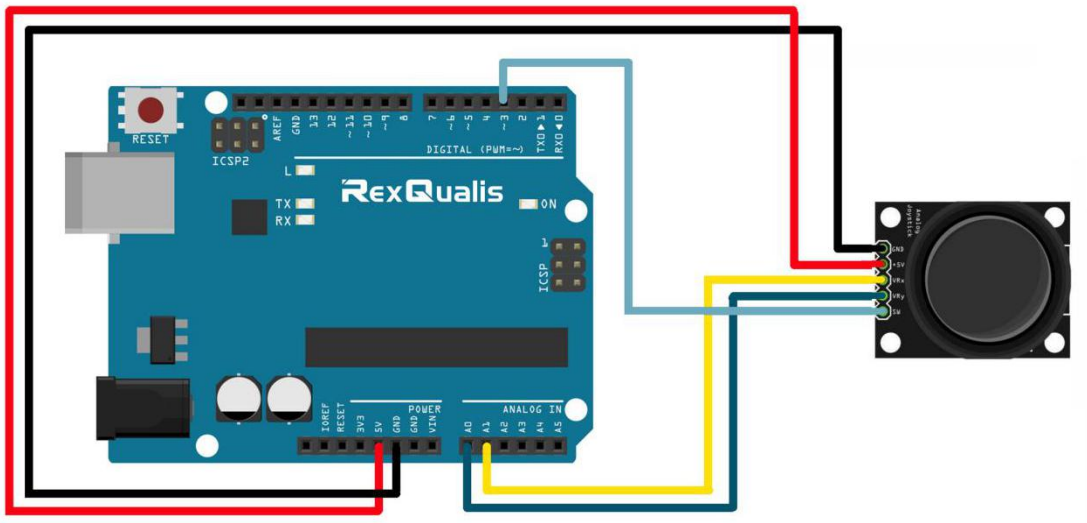
Experimental Procedures

Step 1:Build the circuit

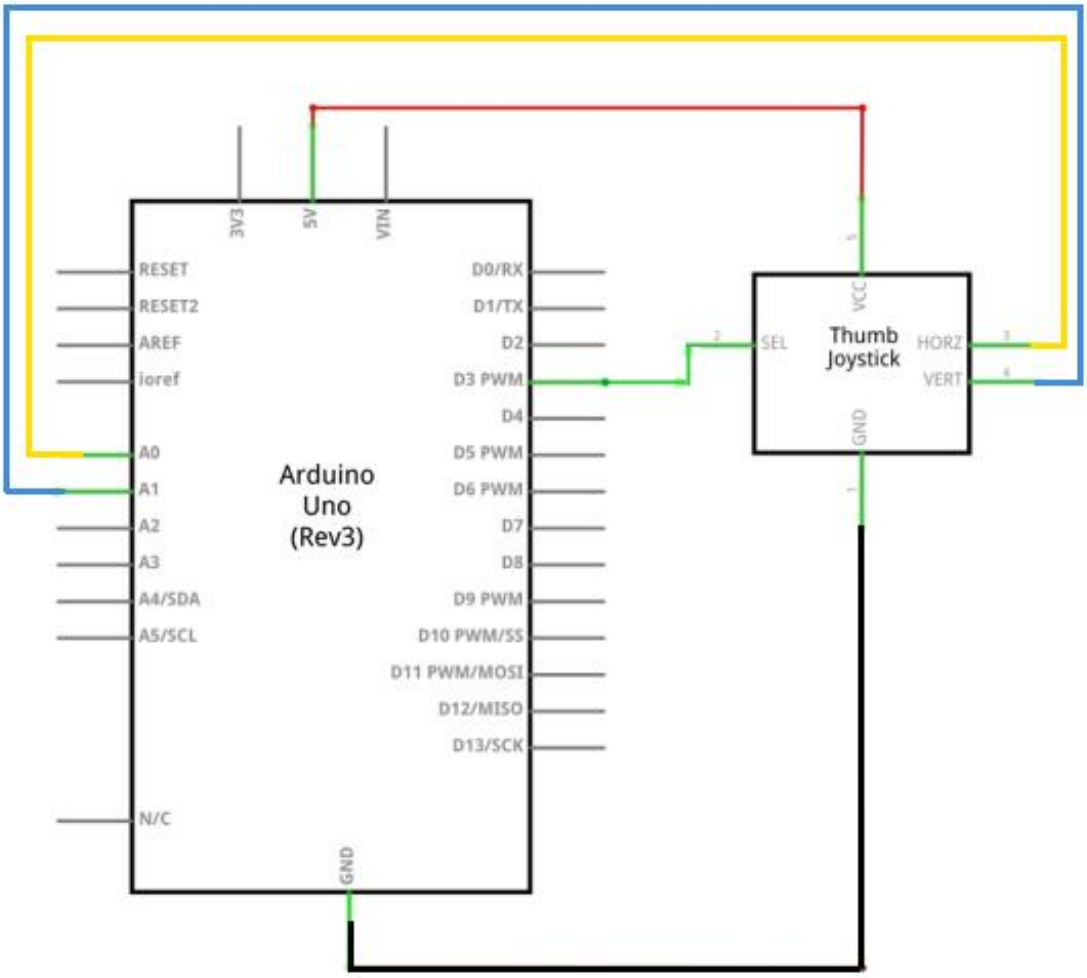
We need 5 connections to the joystick.

The connections are: K, Y, X, Voltage and Ground.

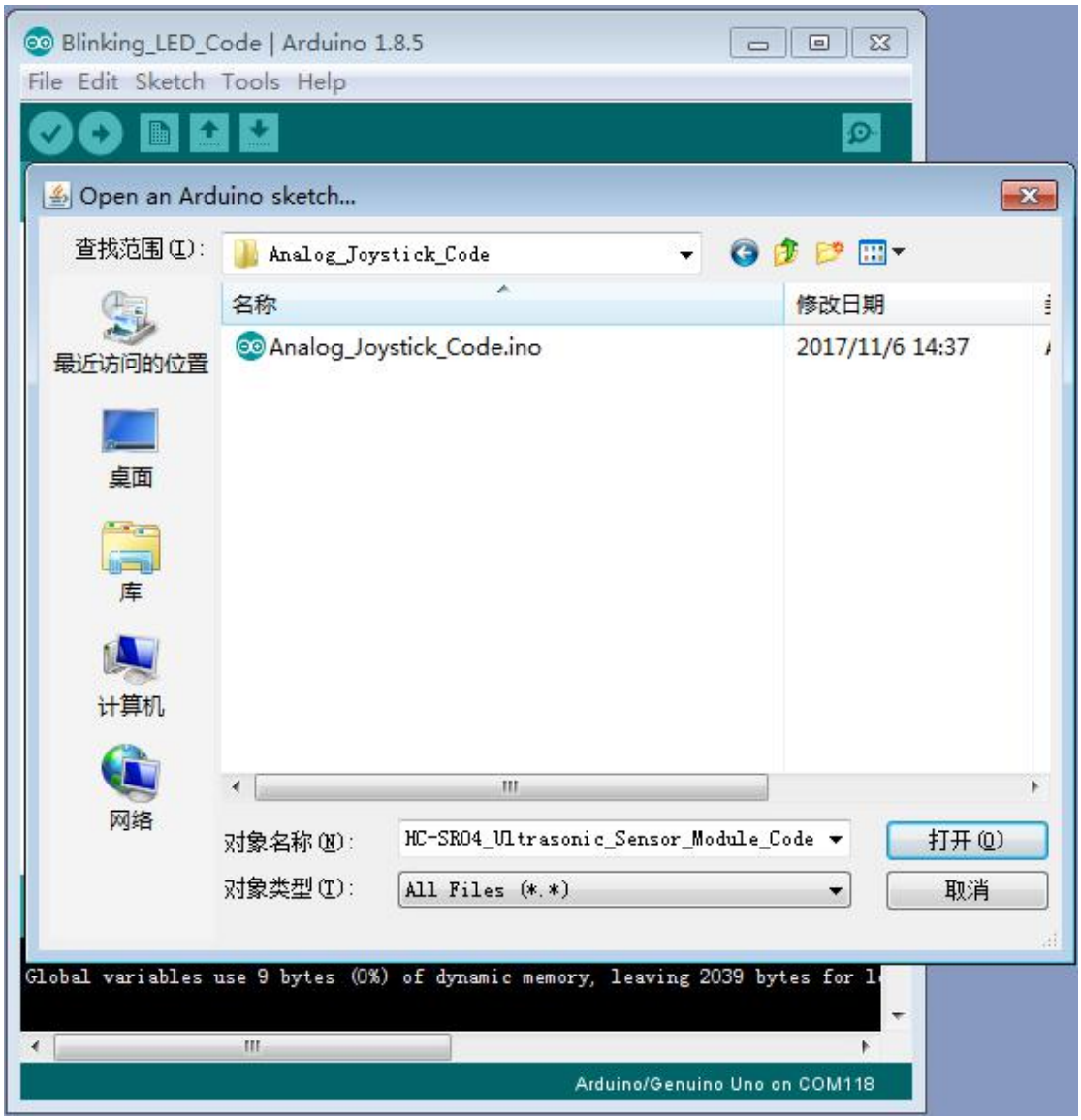
“Y and X” are Analog and “K” is Digital. If you only need Any one switch then you can use only 3 pins.



Schematic Diagram



Step 2: Open the code:Analog_Joystick_Code

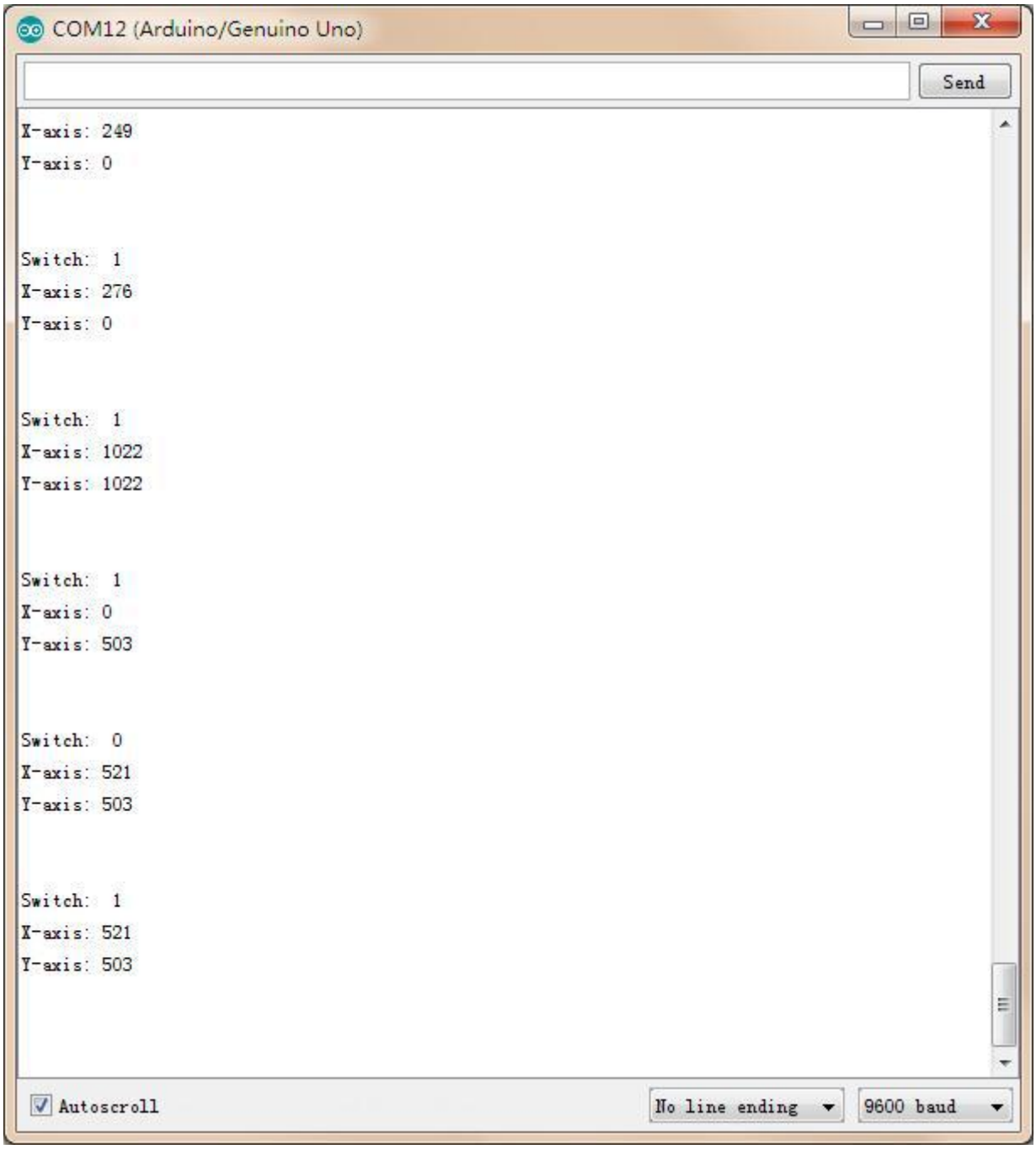


Step 3: Attach Arduino UNO R3 board to your computer via USB cable and check that the 'Board Type' and 'Serial Port' are set correctly.

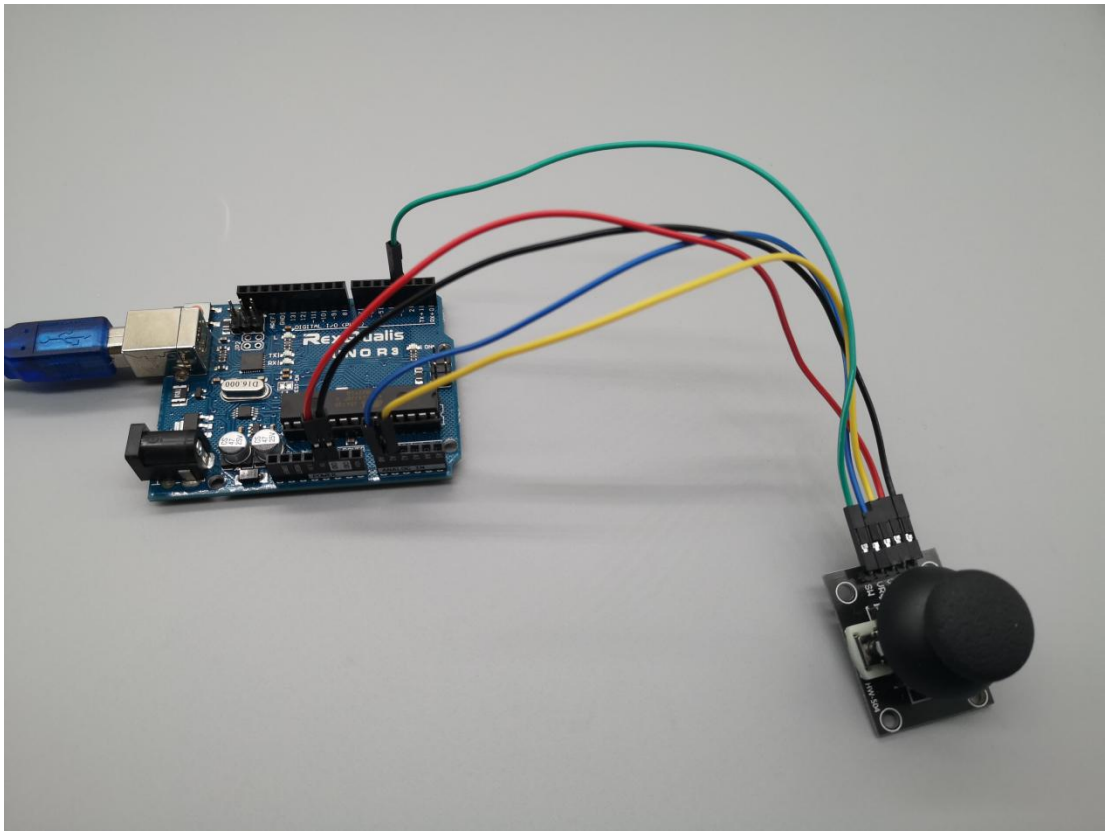
Step 4: Upload the code to the RexQualis UNO R3 board.

Step 5: Open the Serial Monitor then you can see the data as below:

(How to use the Serial Monitor is introduced in details in Lesson 0 Preface)



Then, Turn the joystick so you can see the data changes on the monitor.



If it isn’t working, make sure you have assembled the circuit correctly, verified and uploaded the code to your board. For how to upload the code and install the library, check Lesson 0 Preface.