Lesson 25 Water Level Detection Sensor Module

Introduction

In this lesson, you will learn how to use a water level detection sensor module. This module can perceive the depth of water and the core component is an amplifying circuit which is made up of a transistor and several pectinate PCB routings. When put into the water, these routings will present a resistor that can change along with the change of the water's depth. Then, the signal of water's depth is converted into the electrical signal, and we can know the change of water's depth through the ADC function of Mega 2560.

Hardware Required

✓ 1 * RexQualis Mega 2560

✓ 3 * F-M Jumper Wires

✓ 1 * Water lever detection sensor module

Principle

Water sensor:

A water sensor brick is designed for water detection, which can be widely used in sensing the rainfall, water level, even the liquate leakage. The brick is mainly composed of three parts: an electronic brick connector, a 1 MΩ resistor, and several lines of bare conducting wires.

This sensor works by having a series of exposed traces connected to ground. Interlaced between the grounded traces are the sense traces.

The sensor traces have a weak pull-up resistor of 1 MΩ. The resistor will pull the sensor trace value high until a drop of water shorts the sensor trace to the

grounded trace. Believe it or not this circuit will work with the digital I/O pins of your Mega 2560 board or you can use it with the analog pins to detect the amount of water induced contact between the grounded and sensor traces.

This item can judge the water level through with a series of exposed parallel wires stitch to measure the water droplet/water size. It can easily change the water size to analog signal, and output analog value can directly be used in the program function, then to achieve the function of water level alarm.

It has low power consumption, and high sensitivity. Features:

1、Working voltage: 5V

2、Working Current: <20ma

3、Interface: Analog

4、Width of detection: 40mm×16mm

5、Working Temperature: 10℃~30℃

6、Output voltage signal: 0~4.2V

Code interpretation

```
int adc_id = 0;

int HistoryValue = 0;

char printBuffer[128];

void setup()

{

    Serial.begin(9600);

}

void loop()
```

```
{

    int value = analogRead(adc_id); // get adc value

    if(((HistoryValue>=value) && ((HistoryValue - value) > 10)) ||
((HistoryValue<value) && ((value - HistoryValue) > 10)))

    {

        sprintf(printBuffer,"ADC%d level is %d\n",adc_id, value);

        Serial.print(printBuffer);

        HistoryValue = value;

    }

}
```
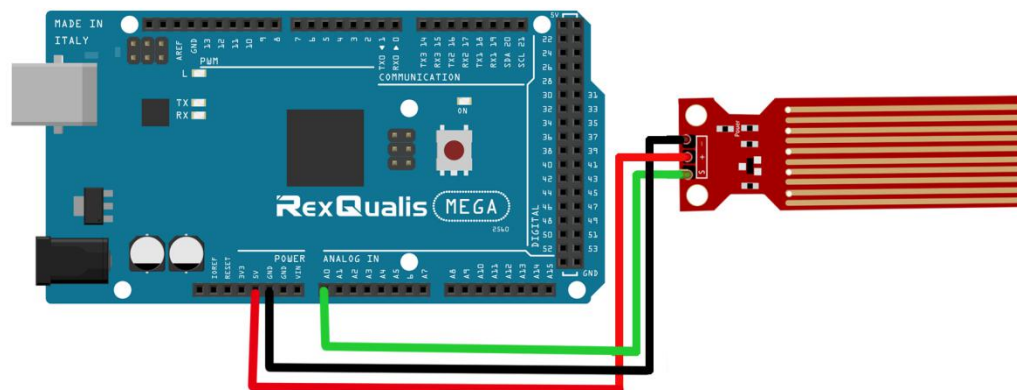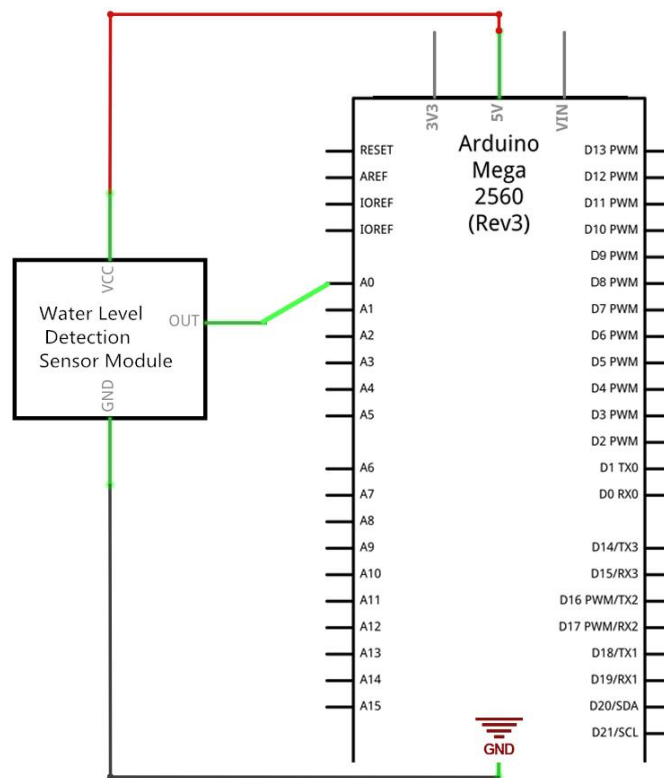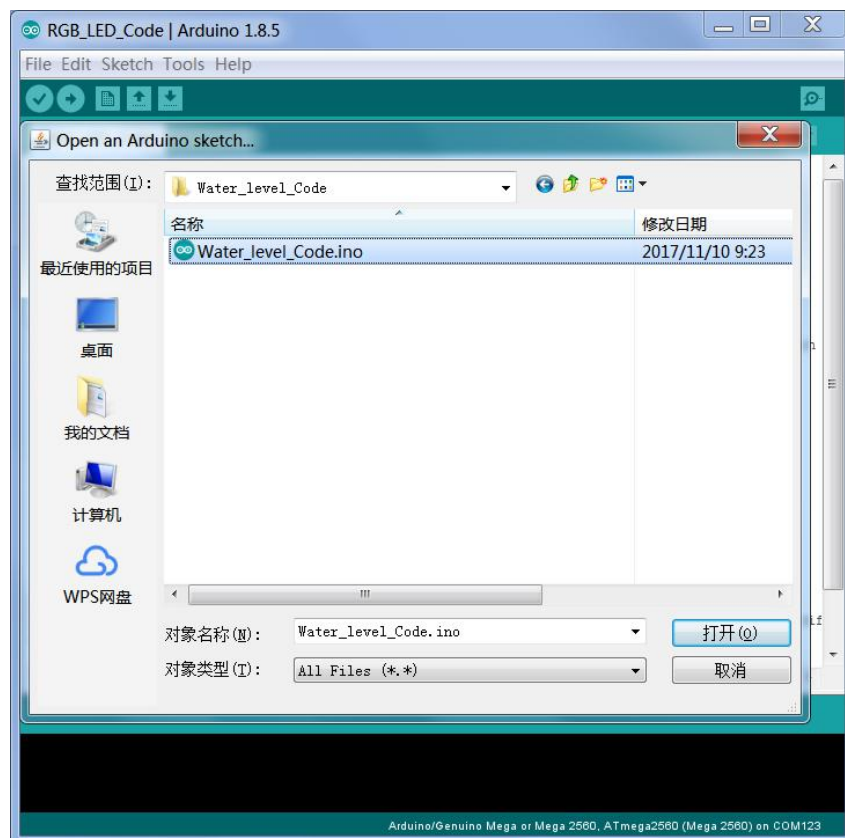
Experimental Procedures

Step 1:Build the circui

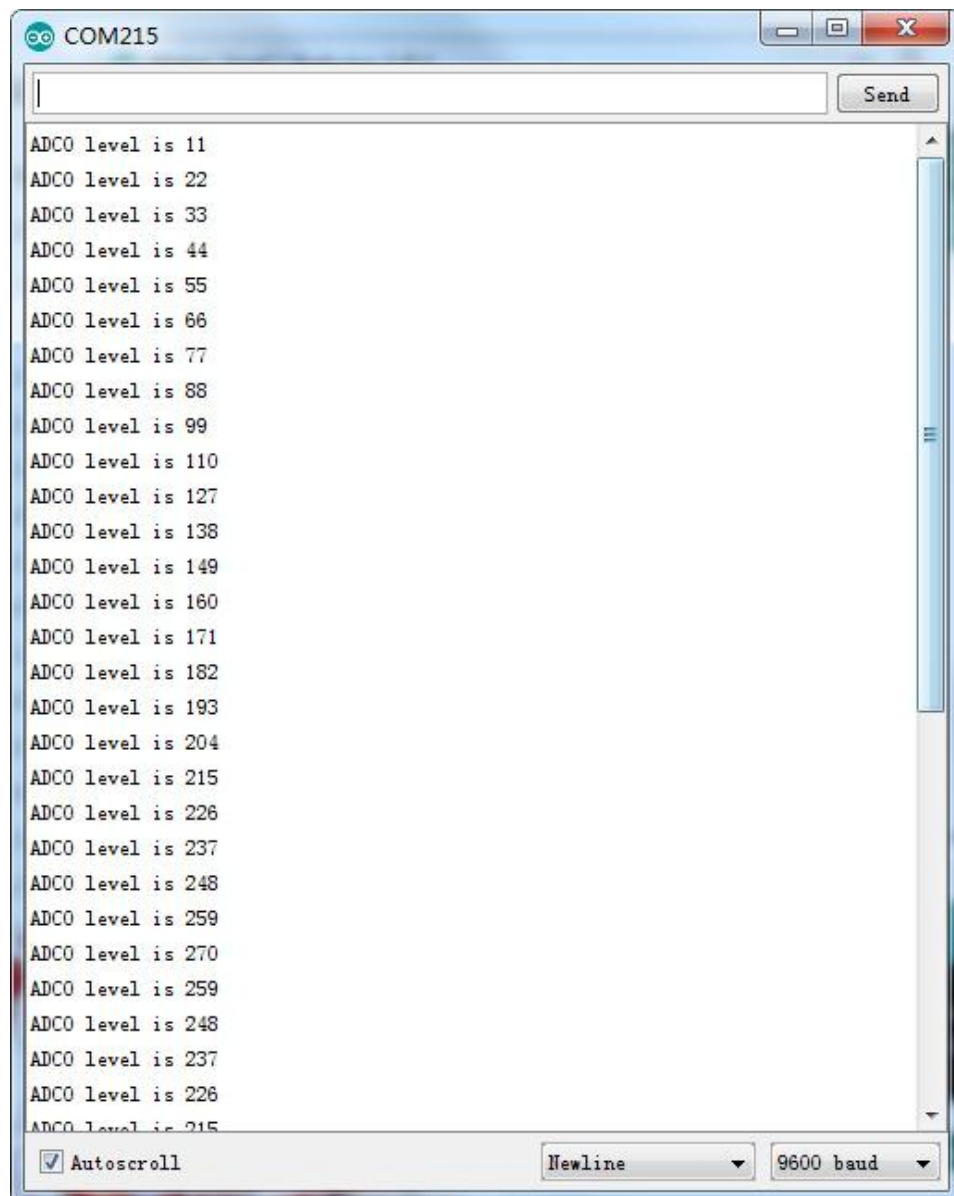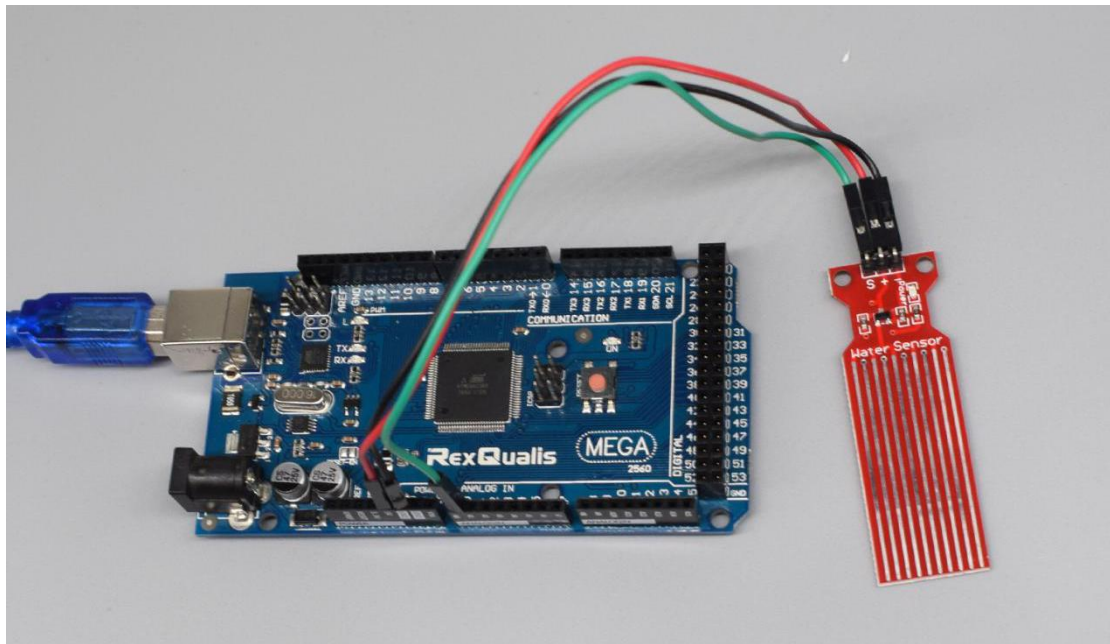## Schematic Diagram

Step 2:Open the code:Water_level_Code

Step 3:Attach Arduino Mega 2560 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 Mega 2560 board.

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

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

```
COM215                                              □ ▣ ✕

|                                              [ Send ]

ADC0 level is 11
ADC0 level is 22
ADC0 level is 33
ADC0 level is 44
ADC0 level is 55
ADC0 level is 66
ADC0 level is 77
ADC0 level is 88
ADC0 level is 99
ADC0 level is 110
ADC0 level is 127
ADC0 level is 138
ADC0 level is 149
ADC0 level is 160
ADC0 level is 171
ADC0 level is 182
ADC0 level is 193
ADC0 level is 204
ADC0 level is 215
ADC0 level is 226
ADC0 level is 237
ADC0 level is 248
ADC0 level is 259
ADC0 level is 270
ADC0 level is 259
ADC0 level is 248
ADC0 level is 237
ADC0 level is 226
ADC0 level is 215

☑ Autoscroll                Newline  ▼   9600 baud  ▼
```

You can see the video of the experiment results on YouTube:

https://youtu.be/gFjRtMbB740

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.