Water sensor module

Summary and find:

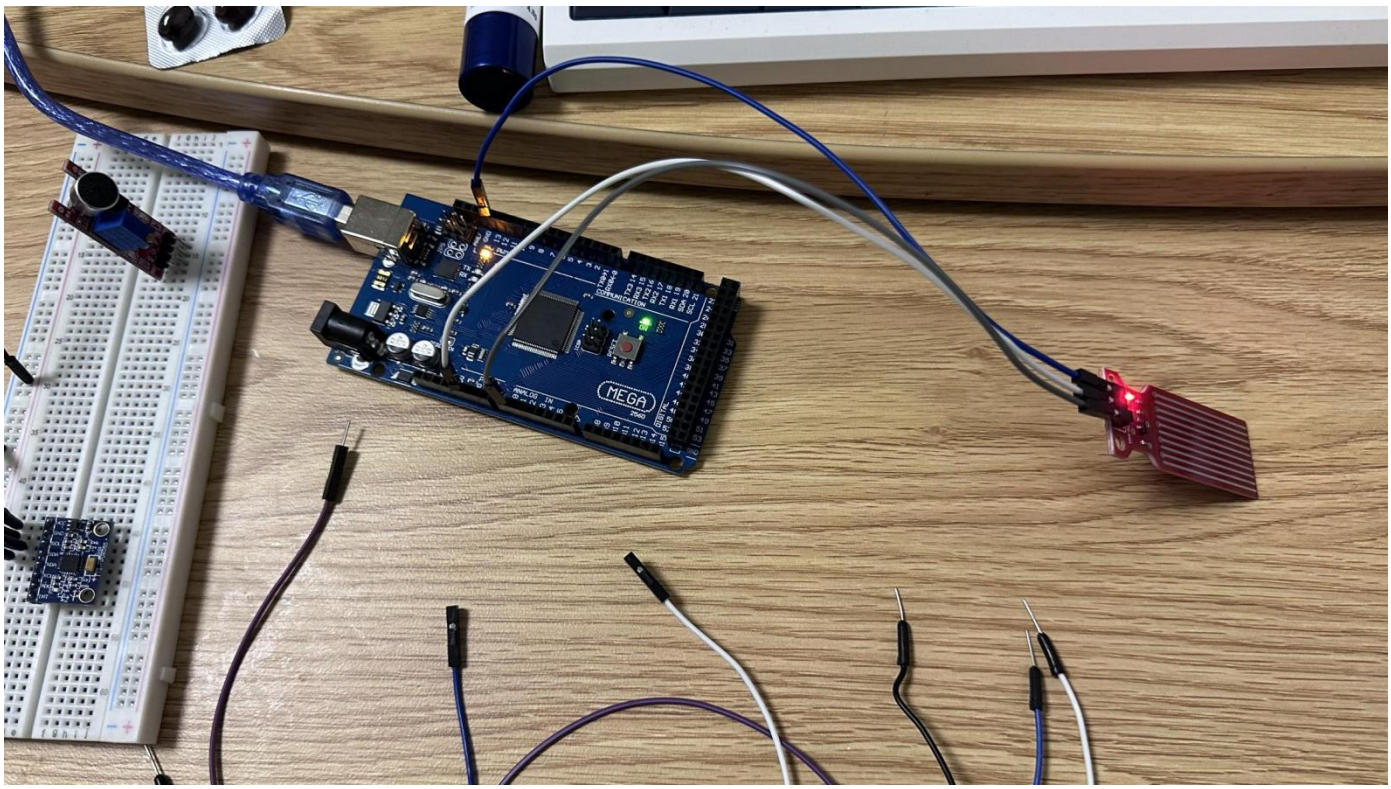
The working principle of the water sensor is very simple, that is, the rise or fall of the water level causes the conductivity between the plates to change, and the change in water level is obtained by measuring the change. It measure the resistance change base in the length of the metal material.

They involve volume conductivity and area conductivity respectively. After my testing, I found that this water sensor uses area conductivity, because when I use different volumes of water but the same water level on the sensor, the output data is approximate Same, because there are some errors. For accuracy, I pressed different places with my little finger, but because the pressed area is approximately the same, the output value is also approximately the same. Based on this principle, this water sensor can be used for different purposes.

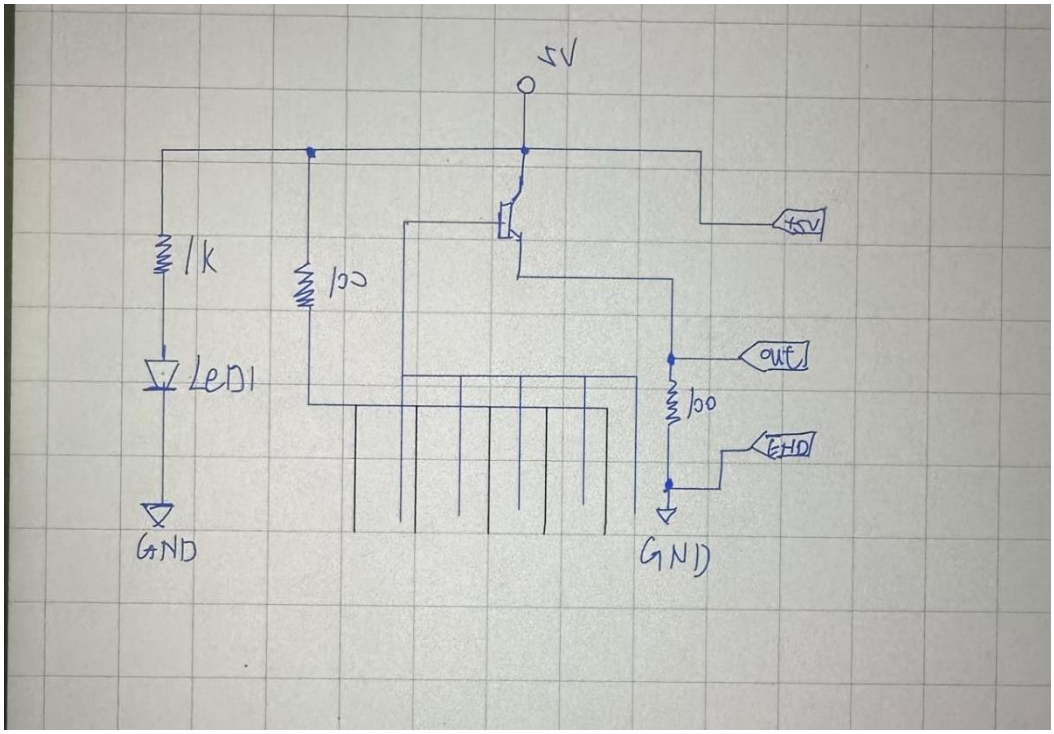
However, there are also some problems. For example, when switching the water level, there will be some delayed response, because some water will remain on the surface of the sensor, so when measuring the drop and change of the water level, there will be a large error and hysteresis.

Theoretically the maximum measured value is 1023, but after many measurements I found that the actual maximum measured is between 700 and 800, which is smaller than the theoretical range.

Connect the sensor to Arduino:



Circuit Diagram:



Arduino code

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

void loop() {
  int sensorValue = analogRead(A0);
  Serial.println(sensorValue);
  delay(500);
}
```

Screenshot of the sensor readings

Operating Voltage: +5V

Working Current : <20mA

Sensor Type : Analog or Digital

Water Detection Area :. 1.58in X .63in (40mm X 16mm)

Mounting Hole Size : 0.12in (3mm)

Operating Humidity: 10% to 90% (non-condensing)

Working Temperature: (-30 to 50 degrees C)

Range:

The water level sensor can only measure the corresponding water level change, and the actual data is smaller than the theoretical value. The minimum value is 0. Fix the sensor on the inner wall of the cup and keep adding water until the value is maximum and does not change, and the maximum measurement value and range are obtained.

Sensitivity:

Control the conditions, so that the temperature, pressure and horizontal position remain unchanged during each measurement, gradually increase the amount of water, and record the volume of water added each time with the measuring cylinder to record the output change of the sensor. The sensitivity of the water sensor is then calculated by dividing the output change by the input change.

Resolution:

Add a certain amount of water each time and slowly inject it close to the inner wall of the cup. When the sensor output value changes, stop adding water. After recording the current data, reduce the amount of water injected and inject slowly again. Repeat the operation until the sensor output data remains unchanged. Record the minimum amount of change the sensor begins to respond. This minimum change is the resolution of the sensor. Use a measuring cylinder to record the amount of water added each time.

Accuracy:

After filling the water, the value output by the sensor is regarded as the height of the water level. Theoretically speaking, the output value has a certain proportional relationship with the water level. Therefore, first measure a set of data to obtain the relationship between the output value and the water level, and then pour out the water. According to the first data The measured relationship is used to calculate a second volume of water, which is compared with the actual volume of water. Compare the measured results with the actual values. Expressed as percentage of error.