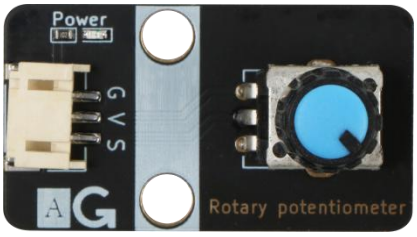
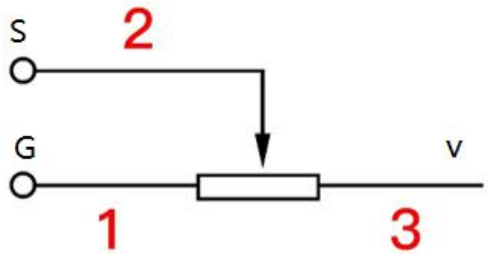
Rotary Potentiometer Module Experiment

Module Introduction

Rotary potentiometer is actually a variable resistor. Its role in the circuit is to obtain and input voltage (external voltage) into a certain relationship between the output voltage, so it is called potentiometer. As shown in the schematic diagram below, the resistance value of the conventional pin (or trimming resistor, etc.) of the potentiometer (just for example, the potentiometer with three pins) is fixed, and the resistance value of the middle pin to any one end pin is variable. It is usually manufactured to maintain the original characteristics no matter how long it is used. If the position sensor is used, the potentiometer can be a linear or rotary position sensor. The potentiometer outputs a voltage value proportional to the position of the slider along the variable resistor. Because temperature change, wear and dirt between the slider and the variable resistor will cause resistance changes, affecting the accuracy of the potentiometer.



Physical Picture



Schematic Figure

Purpose of the Experiment

Understand the realization principle of rotary potentiometer and obtain the analog voltage value.

Device List

- BLE-UNO Main Board: 1
- Expansion Board of H2.0 Sensor :1
- USB Data Wire: 1
- Rotary Potentiometer Module: 1
- 3PIN Wire Jumper: 1

Physical Wiring Diagram

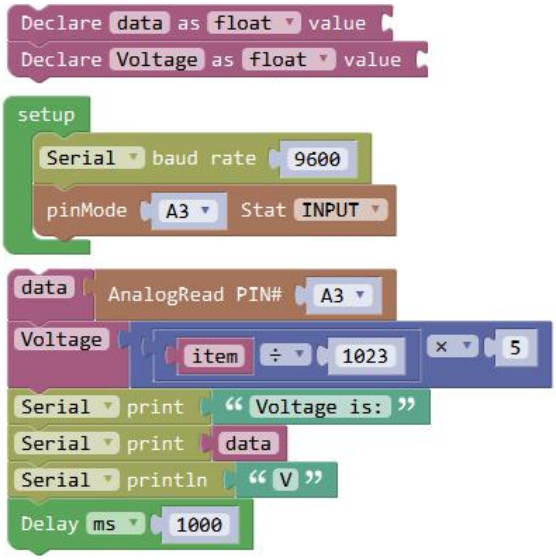
Arduino Program Code

```
float Voltage=0,data;     //Define voltage and analog value variables
int analogPin = A3;     //Define potentiometer interface to receive voltage analog value
void setup()
{
   pinMode(analogPin, INPUT);    //Voltage output interface
   Serial.begin(9600);    // set bpm
}

void loop() {
      data=analogRead(analogPin);       //Get voltage analog value
      Voltage=(data/1023)*5;     //Analog value and digital value conversion * Voltage Get the current voltage
      Serial.print("Voltage is: ");
      Serial.print(Voltage);     //Print the obtained voltage
      Serial.println("V");
      delay(200);
}
```

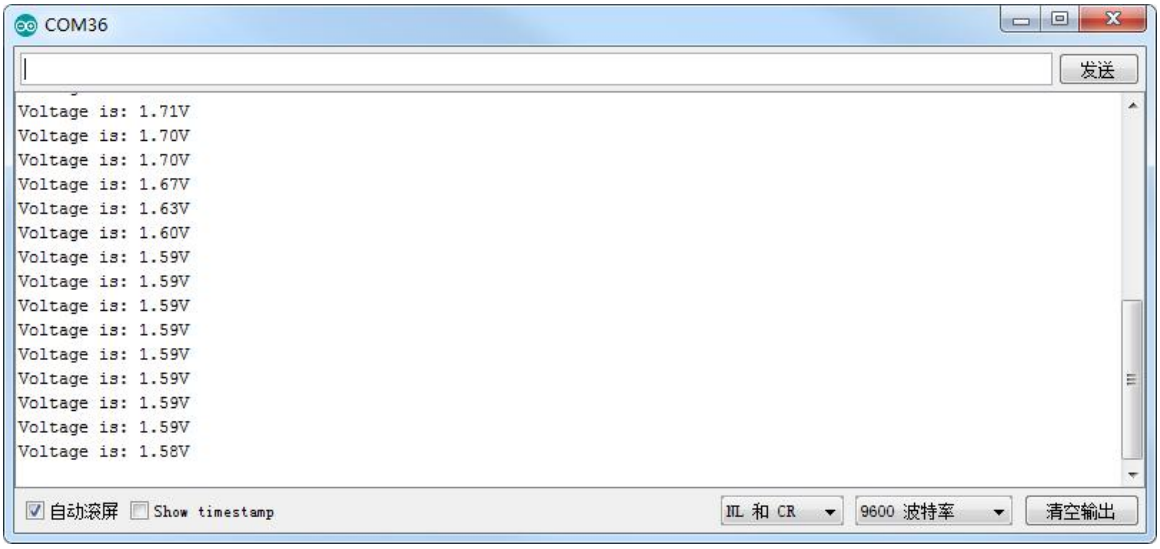
MagicBlock Program

Mixly Program



Experimental Effect

After the device is wired, burn the above program to the arduino UNO board, turn on the serial port monitor, and set the baud rate to 9600.



Experimental Conclusion

The rotary potentiometer acts as an adjustable resistor, so we can get the analog value of the potentiometer, divide it by 1023, and multiply it by our corresponding voltage (5V), which is the voltage value we want.