

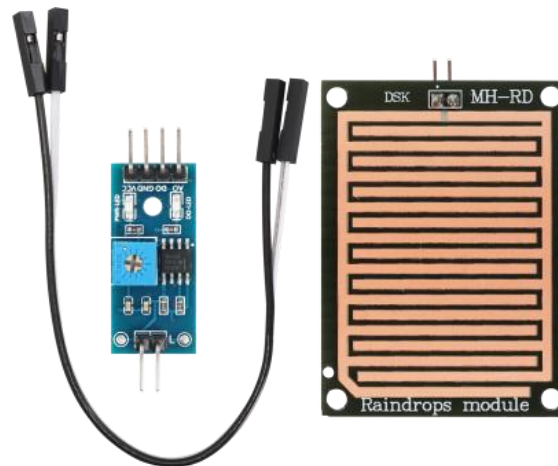
Project 20-Raindrop Sensor Control Window Servo

1. project description

By learning the raindrop sensor and servo motor, combine the two to do an experiment to automatically close the window when it rains.

2. Introduction to modules

2.1 Raindrop sensor

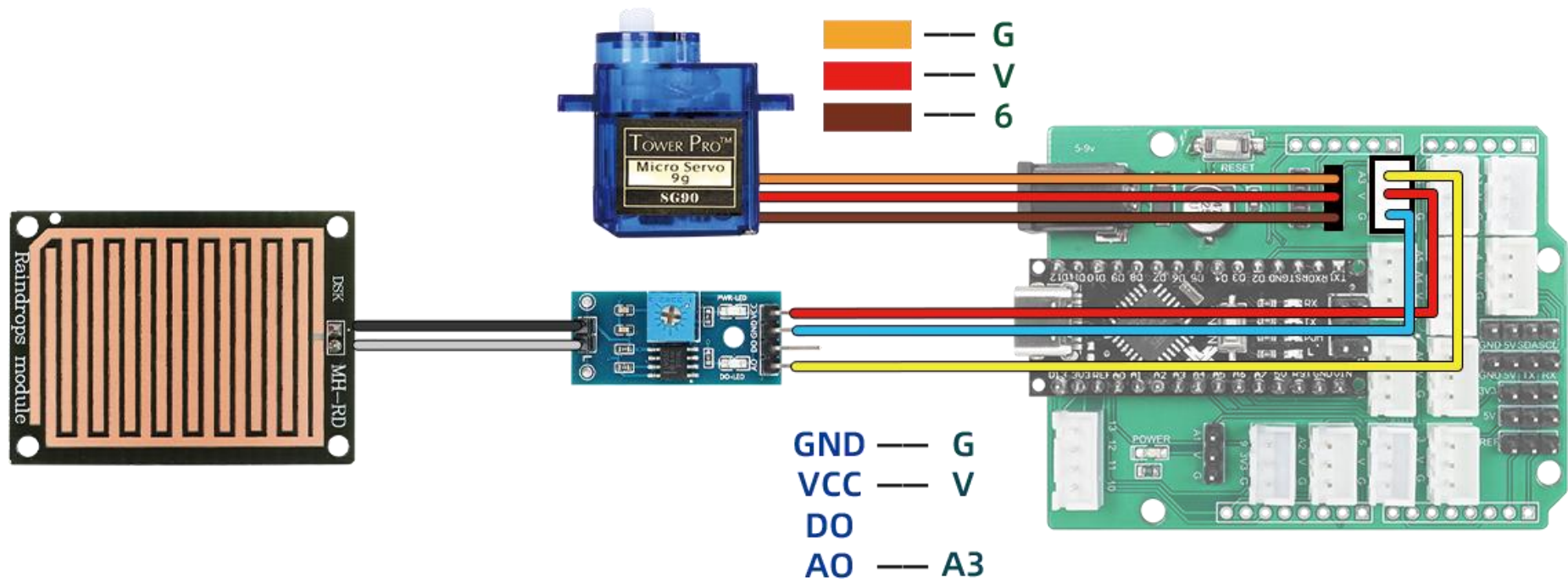


It is an analog (digital) input module, also called rain sensor or rain sensor.

It can be used to monitor various weather conditions, detect whether it rains and the amount of rainfall, and convert it into a digital signal (DO) or an analog signal (AO) for output. It is widely used in Arduino robot kits, raindrops, and rainfall sensors. It can be used to monitor various weather conditions. status, and divided into several fixed signals and AO output, It can also be used in automobile automatic wiper systems, smart door and window systems, etc.

After connecting to the 5V power supply, the power indicator light turns on. When there are no water droplets on the sensing plate, the DO output is high level (AO analog output is about 1023). Add a drop of water. The DO output is low level (AO analog output is about 400) and can be connected to the AD port of the microcontroller to detect the amount of rain. The DO TTL digital output can also be connected to the microcontroller to detect whether it is raining .

3. Project wiring diagram



4. Download Arduino code

Confirm that the infrared remote control library file Servo.zip has been added successfully. If it has not been added, please go back to item 19 to see how to add the library.

| | | | |
|---------------------------|-----------------|-----------------|--------|
| project19 | 2023/10/9 15:50 | 文件夹 | |
| Infrared_control_servo.mp | 2023/9/27 10:18 | MP 文件 | 166 KB |
| Servo.zip | 2022/6/15 16:16 | WinRAR ZIP 压缩文件 | 20 KB |
| 项目 19 红外遥控舵机.docx | 2023/10/9 17:21 | DOCX 文档 | 577 KB |

Open the project Arduino code file (path: Project 20 Raindrop Sensor Control Servo\project20\project20.ino)

| | | | |
|------------------------|-----------------|---------|--|
| project20 | 2023/10/9 17:55 | 文件夹 | |
| RaindropSensor.mp | 2023/9/27 10:06 | MP 文件 | |
| 项目 20 雨滴传感器控制窗户舵机.docx | 2023/10/9 18:13 | DOCX 文档 | |

Connect the main control board to the computer using USB, select the board type as Nano, select the newly displayed COM number, click "Download" to start compiling and downloading the program to the main control board.

Code analysis:

```
1  #include <Servo.h>
2  #define rain_Pin A3
3  int rain;           //雨滴传感器数据采集变量    Raindrop sensor data acquisition variables
4  int pos = 0;        //变量来存储伺服位置        variable to store the servo position
5  bool windowFlag = 0; //窗户状态标志            Window status flag
6  Servo myservo;      //实例化舵机为myservo      create instance of 'myservo'

8  void setup()
9  {
10     pinMode(rain_Pin, INPUT); //设置雨滴传感器引脚A3为输入    set the raindrop sensor pin A3 as the input
11     myservo.attach(6);        //设置舵机引脚为6    attaches the servo on pin 6 to the servo object
12     Serial.begin(9600);       //设置波特率9600    Set the baud rate to 9600
13 }
```

```

15 void loop()
16 {
17     /*
18     *传感器数据采集 (0~1023)      Acquisition of sensor data
19     *下雨时0~800, 不下雨时大于800    0 to 800 when it rains and greater than 800 when it does not rain
20     */
21     rain = analogRead(rain_Pin);
22     Serial.print("RainData =");
23     Serial.println(rain);
24
25     if(rain < 800 && !windowFlag){           //下雨时，舵机驱动关闭窗口      The steering gear turns to close the window in the rain
26         for ( pos = 10; pos < 130; pos++){
27             myservo.write(pos);
28             delay(10);
29         }
30         windowFlag = 1;
31     }else if(rain > 800 && windowFlag){        //不下雨时，舵机驱动打开窗户      The steering gear turns without rain, open the window
32         for ( pos = 130; pos >= 10; pos--){
33             myservo.write(pos);
34             delay(10);
35         }
36         windowFlag = 0;

```

Project effect: The windows automatically close when it rains and open when it does not rain.

5. Download Mind+ graphical code

Open the project Mind+ code file (path: Project 20 Raindrop Sensor Control Servo\RaindropSensor.mp)

| | | |
|--|-----------------|---------|
| project20 | 2023/10/9 17:55 | 文件夹 |
|  RaindropSensor.mp | 2023/9/27 10:06 | MP 文件 |
|  项目 20 雨滴传感器控制窗户舵机.docx | 2023/10/9 18:13 | DOCX 文档 |

Connect the main control board to the computer with a USB cable and select the newly appeared CH340 serial port COM number. Click "Upload to Device" to complete the code upload.

Programming analysis:

