



MAKE EVERYTHING SMART

# SMART TECHNOLOGT

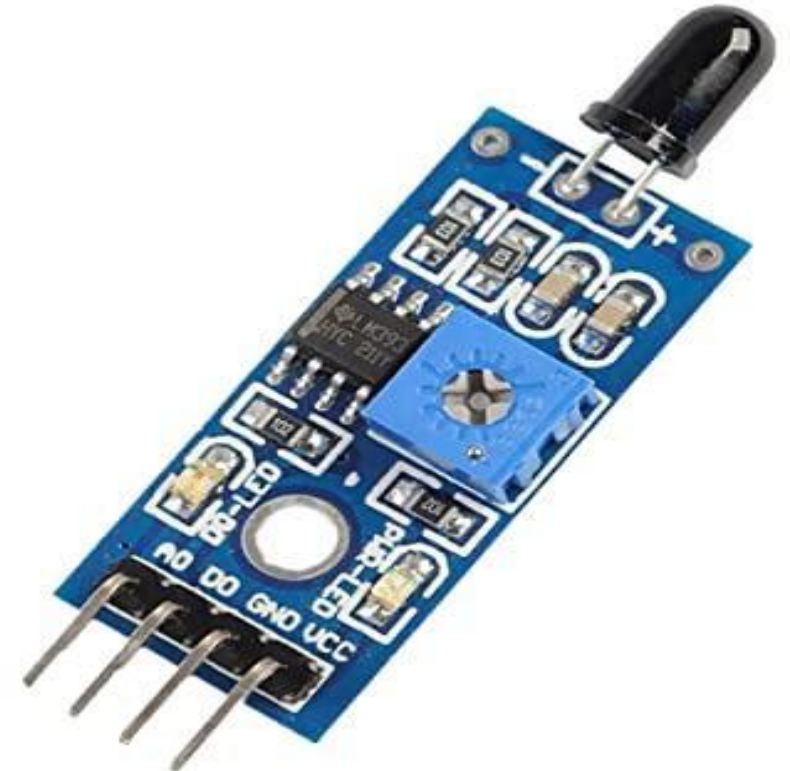


# LECTURE

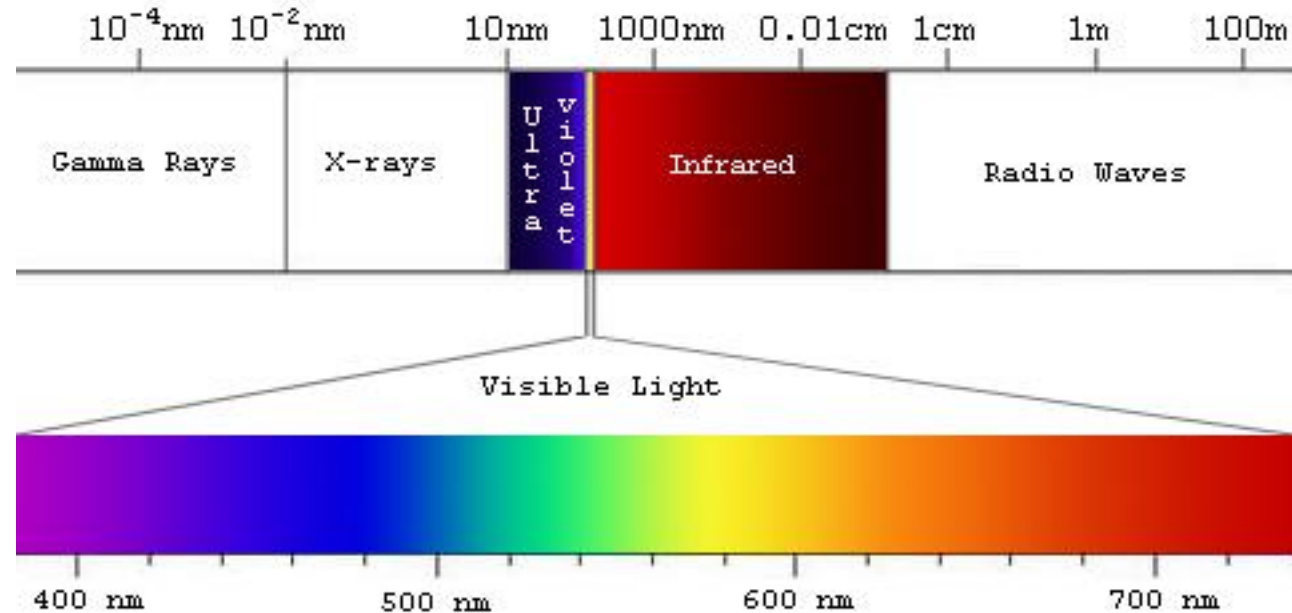
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# • Flame sensor

- Detects a **flame** or a **light source** of a wavelength in the range of 760nm-1100 nm.
- Detection range: up to **80** cm.
- Operating temp: **-25° - 85°**
- Adjustable detection range.
- Detection angle about **60 degrees**, it is sensitive to the flame spectrum.
- Operating voltage 3.3V-**5V**.
- Digital and Analog Output.



# • Basic principle

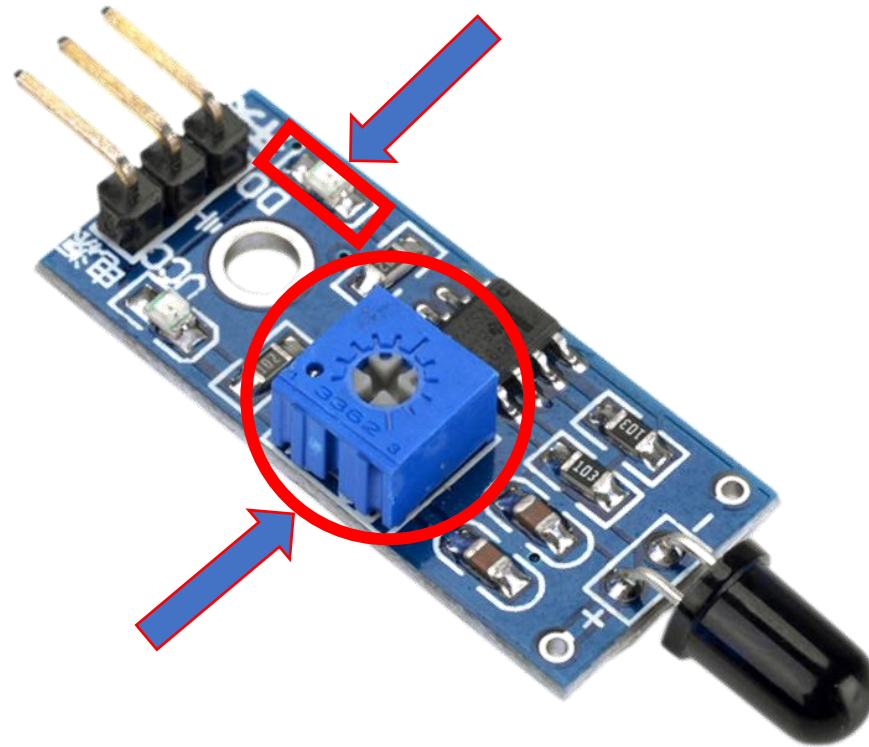


principle that the infrared ray is sensitive to flame. It uses the photo diode to detect flame and converts the brightness of flame to the variable level signal.



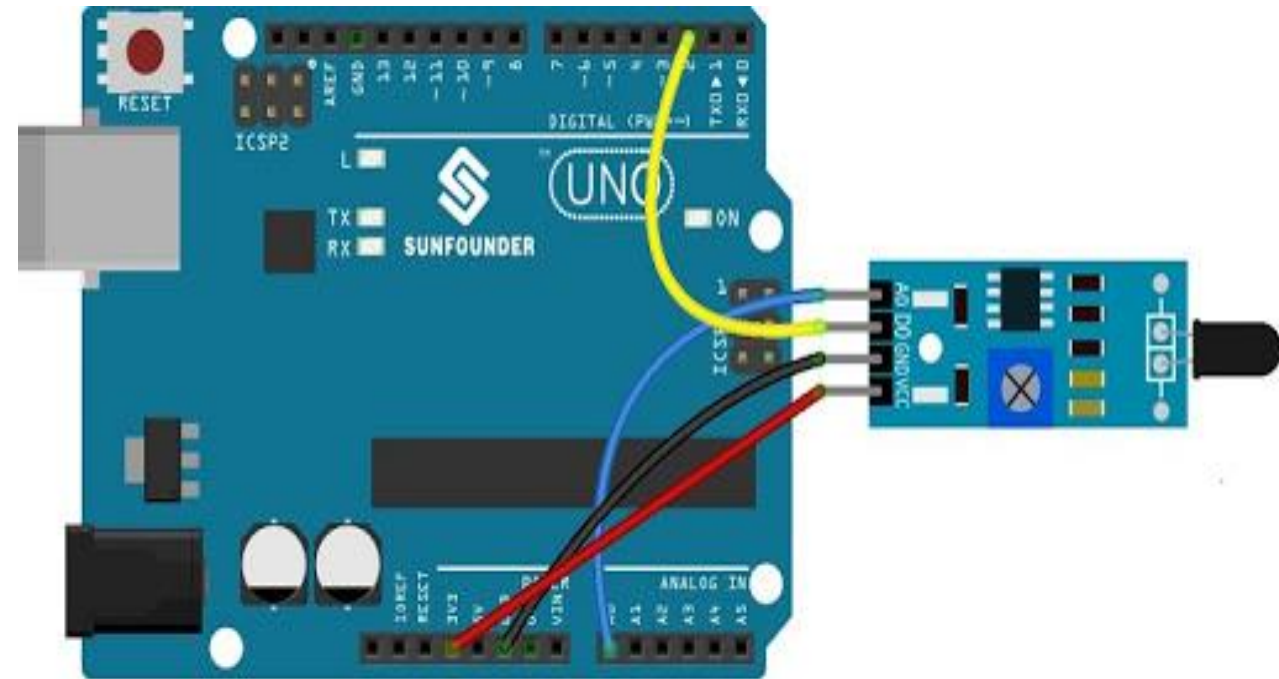
# • Calibrate Flame Sensor Module

Expose the module to flame or strong light and **turn the knob** of the potentiometer gently **till** the D0 **indicator** light is **on**



# • Code

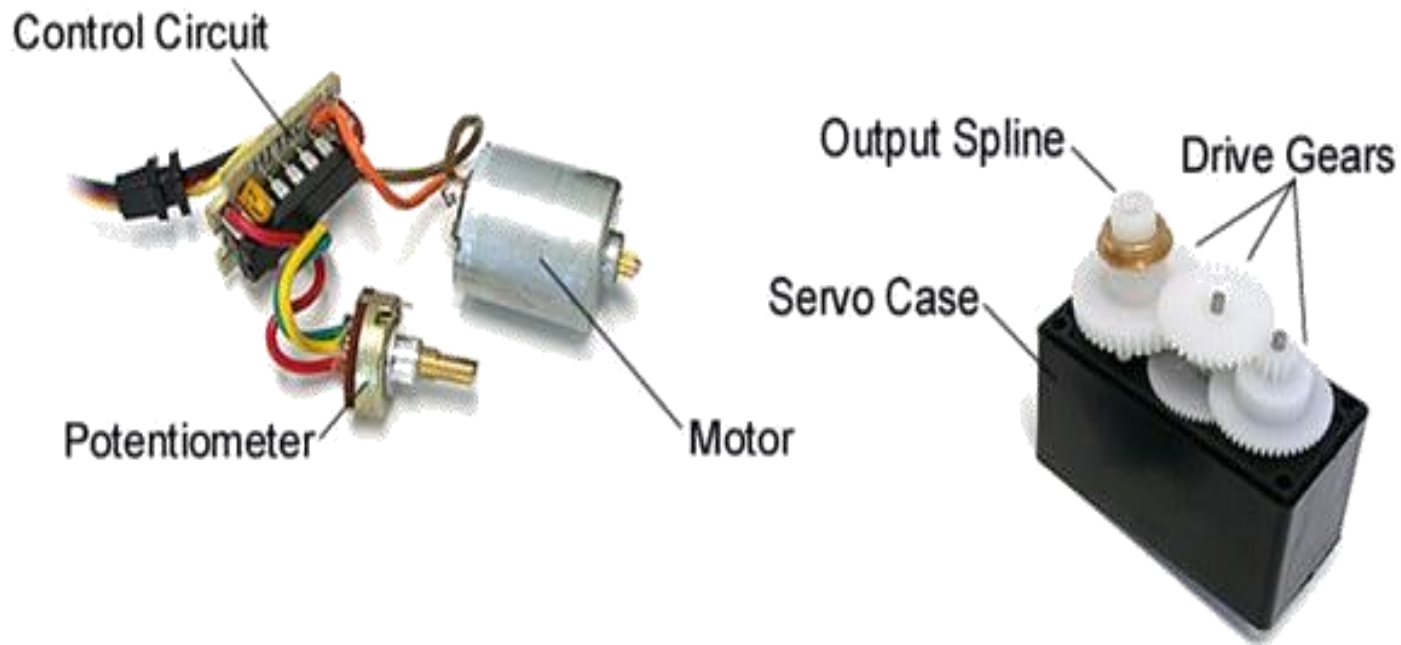
```
#define flame 3
#define buzzer 5
int Val = 0;
void setup()
{ Serial.begin(9600);
  pinMode(flame , INPUT);
  pinMode(buzzer,OUTPUT);
}
void loop()
{ Val = digitalRead(flame);
  Serial.print("value of flame:");
  Serial.println(Val);
  if (Val == LOW) { digitalWrite(buzzer, HIGH); }
  else {digitalWrite(buzzer, LOW);}
}
```





# • What is Servo Motor

The **servo motor** is most commonly used for high technology devices in the industrial application like automation technology. It is a self contained electrical device, that rotate parts of a machine with high efficiency and great precision. The output shaft of this motor can be moved to a particular angle. Servo motors are mainly used in home electronics, toys, cars, airplanes, etc. This article discusses about what is a servo motor, servo motor working, servo motor types and its applications



# • Servo Motor Types

1) DC Servo Motor



2) AC Servo Motor



3) Positional Rotation Servo Motor



4) Continuous Rotation Servo Motor





# • Positional Vs Continuous Servo

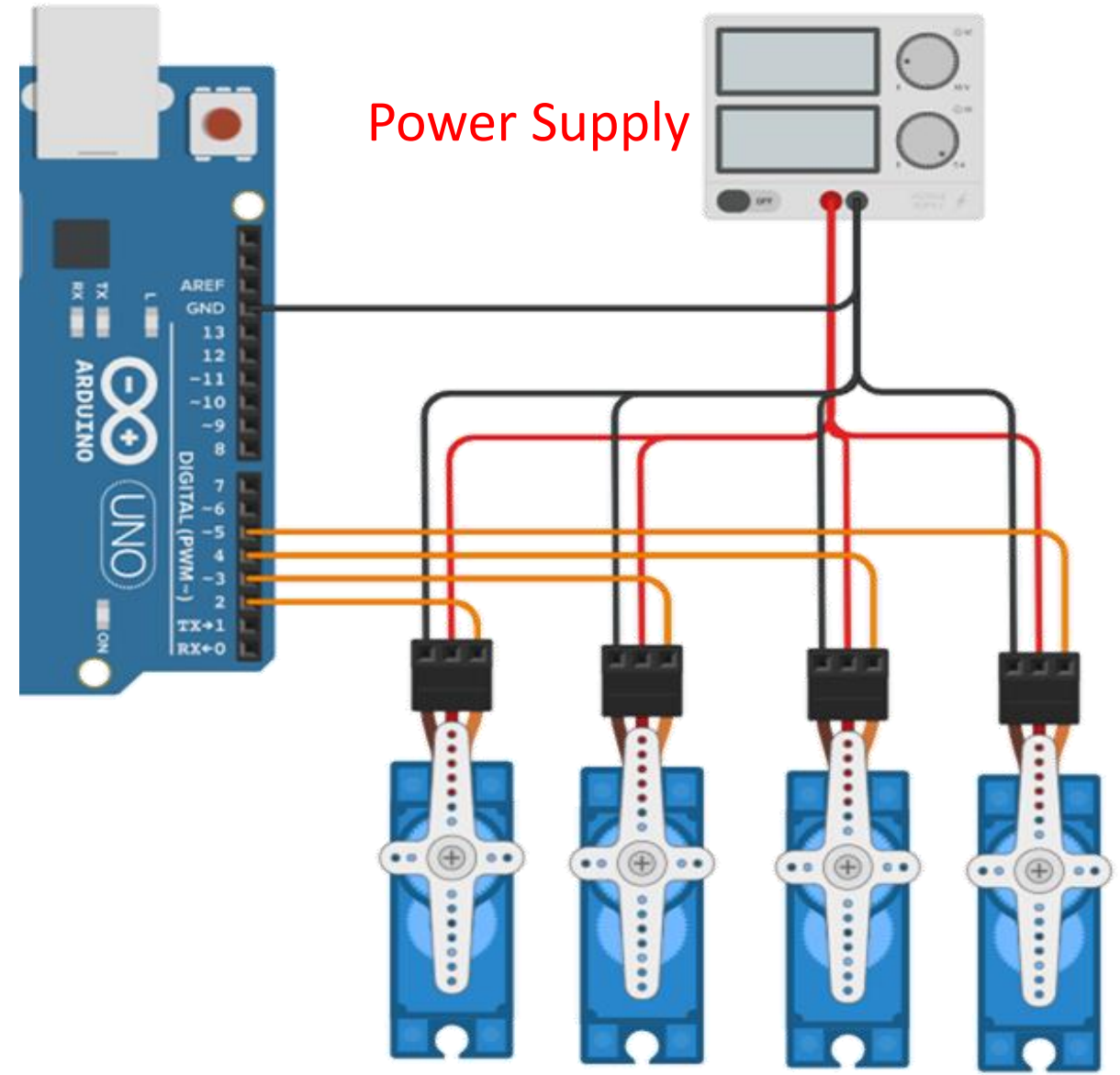
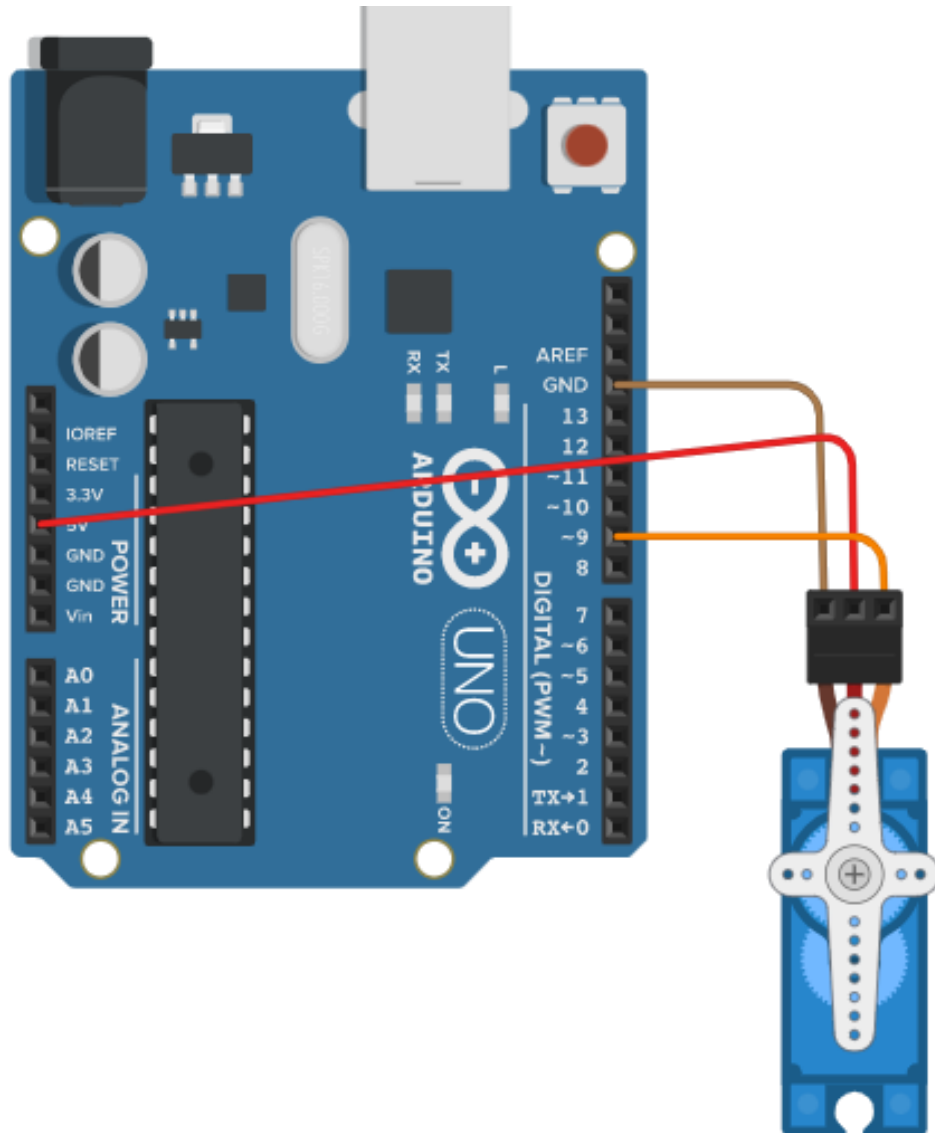
- **Positional Rotation Servo Motor**

Positional rotation servo motor is a most common type of servo motor. The shaft's o/p rotates in about 180°. It includes physical stops located in the gear mechanism to stop turning outside these limits to guard the rotation sensor. These common servos involve in radio controlled water, radio controlled cars, aircraft, robots, toys and many other applications.

- **Continuous Rotation Servo Motor**

Continuous rotation servo motor is quite related to the common positional rotation servo motor, but it can go in any direction indefinitely. The control signal, rather than set the static position of the servo, is understood as the speed and direction of rotation. The range of potential commands sources the servo to rotate clockwise or anticlockwise as preferred, at changing speed, depending on the command signal. This type of motor is used in a radar dish if you are riding one on a robot or you can use one as a drive motor on a mobile robot.

- Servo Motor Connection



- Sweep code

```
#include <Servo.h>
Servo myservo;
int pos = 0;
void setup() {
    myservo.attach(9);
}

void loop() {
    for (pos = 0; pos <= 180; pos += 1) {
        // in steps of 1 degree
        myservo.write(pos);
        delay(15);
    }
    for (pos = 180; pos >= 0; pos -= 1) {
        myservo.write(pos);
        delay(15);
    }
}
```

# • Knop Code

```
#include <Servo.h>
Servo myservo;
int potpin = A0;
int val;

void setup() {
  myservo.attach(9);
}

void loop() {
  val = analogRead(potpin);
  val = map(val, 0, 1023, 0, 180);
  myservo.write(val);
  delay(15);
}
```

**THANKS**  
**FOR**  
**COMING**

