



(<https://www.dfrobot.com/product-1653.html>)

## Introduction

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A photoelectric switch is frequently used to detect the presence or absence of a detected object using light. This is an Arduino digital infrared distance sensor with an adjustable detection range from 0cm - 200cm. It only has a size of 75×18mm(2.95×0.71"), but easy to use and assemble.

Infrared photoelectric switch module can be widely used in all sorts of fields such as, mechanical, textile, light industry etc. When using the Diffuse Reflection Infrared Switch, we have to pay close attention to the working environment of the sensor. Although the sensor can work properly in conditions with high environmental illumination, still, please avoid putting the sensor optical axis right in front of intense light source like sunlight, incandescent lamp and so on.

To ease the difficult of using this sensor, a Gravity Interface is adapted to allow plug & play. The IO expansion shield is the best match for connecting the sensor to your Arduino controller.

**The principle of IR photoelectric switch:** Light is a kind of electromagnetic ray, similar with radio and X-ray. Its transmission speed can reach up to 300000 Km/s, but light can be absorbed just at its emission instant. Infrared photoelectric switch can be used to detect objects through near-infrared ray or infrared ray that is invisible to human eyes. The main point of IR photoelectric switch is that it can process the variations in the intensity of light: use optical elements to make light beam change in its transmission media; light beam will be reflected by objects; light beam returns instantly after going for a long distance. Photoelectric switch usually includes a light emission head for emitting light to an object to be detected, a light reception head for receiving light from the object, and a main unit for processing the received light from the light reception head.

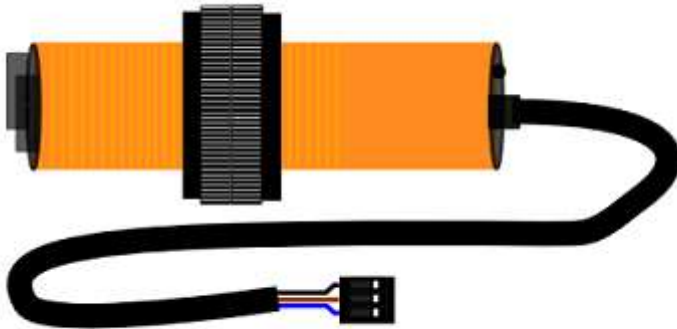
## Specification

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- Output Form: PNP normally open
- Signal Type: Digital output
- Operating Voltage: 3~5V
- Interface: XH2.54-3Pin
- Detection range: 0~200 cm
- Switch Level: 0, No obstacles in the area; 1, There are obstacles in the area.
- Operating Temperature: -15~60 °C
- Temperature Effect: Within -15 °C to + 60 °C, the detection distance is below 10% at + 25 °C
- Storage Temperature: -25~75 °C
- Humidity: 35% ~ 95% RH
- Size: 75 \*  $\Phi$ 18 mm

## Pinout

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Label	Name	Description
Blue	D	Switch Signal
Isabellinus	VCC	3V or 5V
Black	GND	Ground

## Tutorial

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### Requirements

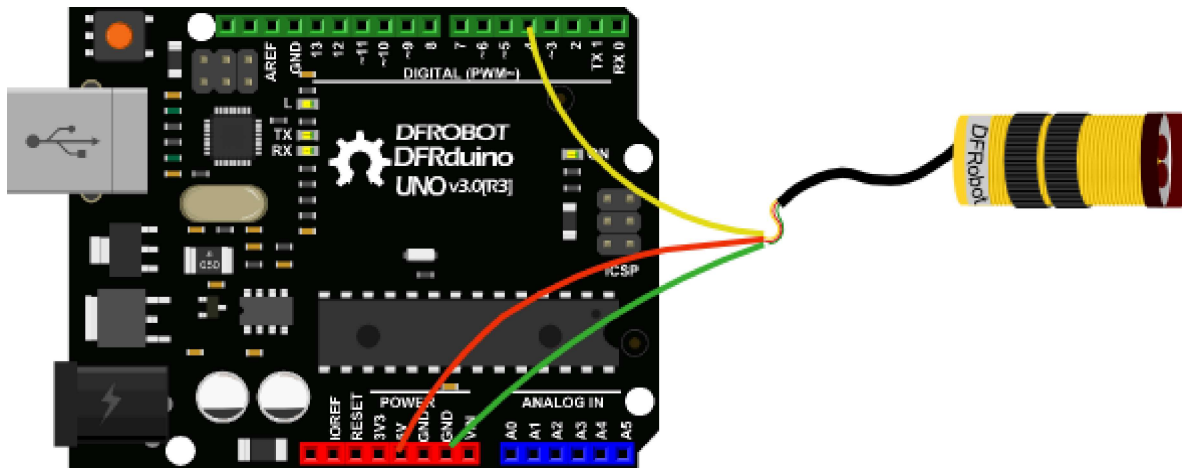
- Hardware
  - DFRduino UNO R3 (<https://www.dfrobot.com/product-838.html>) (or similar) x 1

- Gravity: Digital Adjustable Infrared Proximity Sensor

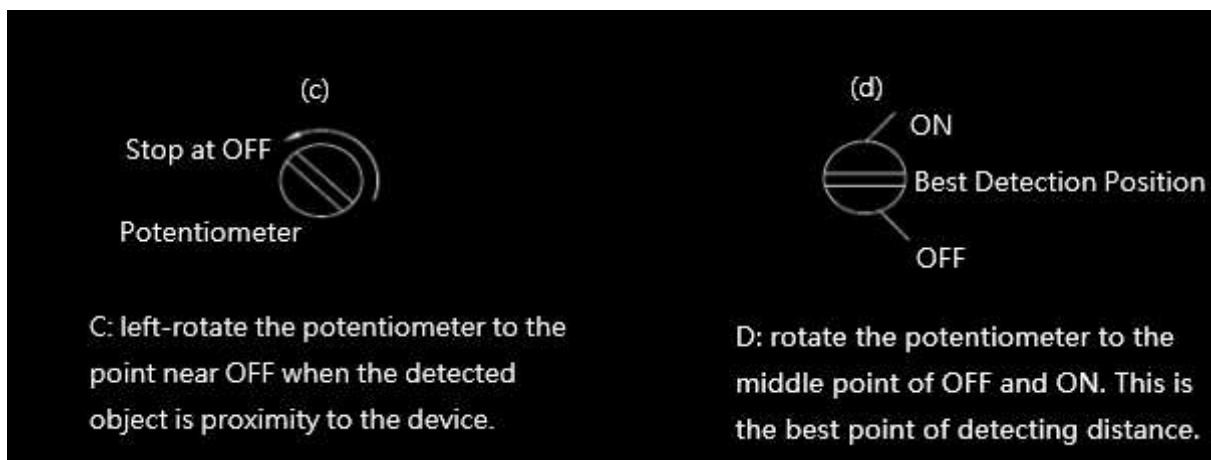
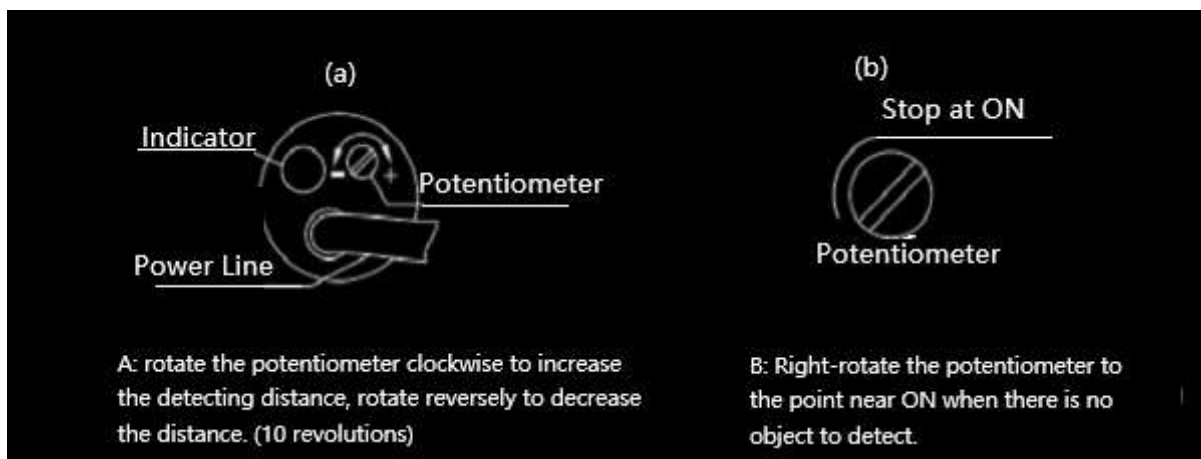
- Software

- Arduino IDE (<https://www.arduino.cc/en/Main/Software>)

## Connection Diagram



## Detection Distance Adjustment



## Sample Code

Serialport band rate 9600bps, display in ASCII.

```
/*!
  @file SEN0239.ino
  @brief Gravity Digital Adjustable Infrared Proximity Sensor for Arduino
  @n [Get the module here]()
  @n This example is a test sample.
  @n [Connection and Diagram](http://wiki.dfrobot.com.cn/index.php?title=(SKU:SEN0239)%E6
  @copyright [DFRobot](https://www.dfrobot.com), 2017
  @copyright GNU Lesser General Public License
  @author [lijun](ju.li@dfrobot.com)
  @version V1.0
  @date 2017-05-15
*/
#define IR 9

void setup()
{
  Serial.begin(9600);
  Serial.print("switch: ");
  pinMode(IR,INPUT);
}

void loop()
{
  Serial.println("-----RF-----");
  if(digitalRead(IR) == 1)
    Serial.println("Switch: YES");
  else
    Serial.println("Switch: NO ");
  Serial.println();
}
```

## Expected Results

```
COM5
-----RF
Switch: NO
-----RF
Switch: NO
-----RF
Switch: NO
-----RF
Switch: NO
-----RF
Switch: NO
-----RF
Switch: YES
-----RF
Switch: YES
-----RF
Switch: YES
```

### Note:

1. Use constant voltage transformer when using DC power supply, and make sure the power ripple  $V_{PP} \leq 10\%$ .
2. It is not allowed to connect wires with power on. Please do exactly as the connection diagram indicates.

## FAQ

For any questions, advice or cool ideas to share, please visit the **DFRobot Forum** (<https://www.dfrobot.com/forum>)

## More Documents



Get **Gravity: Digital Adjustable Infrared Proximity Sensor**

(<https://www.dfrobot.com/product-1653.html>) from DFRobot Store or **DFRobot Distributor**.

(<https://www.dfrobot.com/index.php?route=information/distributorslogo>)

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