Gravity: Digital Adjustable Infrared Proximity Sensor for Arduino (0~200 cm)

This is an Arduino digital infrared distance sensor. It has an adjustable detection range, 0cm - 200cm. It is small, easy to use, assemble, and inexpensive.

Useful for robotics, interactive media, industrial assembly line, etc. Infrared wave length is part of the Sun's natural light spectrum. While is a nice fit for indoor projects, outdoors with plenty of sun light and reflective surfaces on it's sight is not adviced. It's incredibly repurposable and can be used for a lot of different projects. The adjustable screw on it's back makes it very convenient for different purposes. Digital read on your Arduino pin and you are ready to go. Good sensor choice for quick prototyping.

Use it on a robot for wall detection and wall follower, or as some of the projects listed below as a trigger system. It's round shape with the screwable holders make it a good choice for a home made assembled robot, with a hole of it's diameter and the holders you can place it aiming at different positions on a robot. Or even place it near your PC to turn on and off your monitor.

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 this sound senor connecting to your Arduino.

principle

Light is an electromagnetic radiation that behaves like radio waves and X-rays at speeds of about 300,000 km / s so that it can be received by the moment it is launched. Infrared photoelectric switch is the use of human invisible (wavelength 780nm-1mm) near infrared and infrared to detect, determine the object. A feeble beam that is instantaneously transmitted by the optoelectronic device can be transmitted and received safely and reliably.

Infrared photoelectric switch is important to be able to handle the intensity of light changes: it use optical components in the media to make changes in the beam; the use of light to reflect objects; make the beam emission after a long distance back instantly. Infrared photoelectric switch is composed of transmitter, receiver and detection circuit of three parts. The emitter is aimed at the target emission beam and the emitted beam is typically derived from a light emitting diode (LED) and a laser diode. The light beam is emitted continuously or the pulse width is changed. The intensity of the pulsed beam of radiation is selected multiple times during launch, running indirectly toward the target. The receiver has a photodiode or a phototriode. In front of the receiver, it is equipped with optical components such as lenses and apertures. Connecting downstream is the detection circuit, which filters out the valid signal and applies the signal.

Specification

- Output Form: PNP normally open
- Signal Type: Digital signal
- 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 ℃
- Temperature Effect: Within -15 ℃ to + 60 ℃, the detection distance is below 10% at + 25 ℃
- Storage Temperature: -25~75 ℃
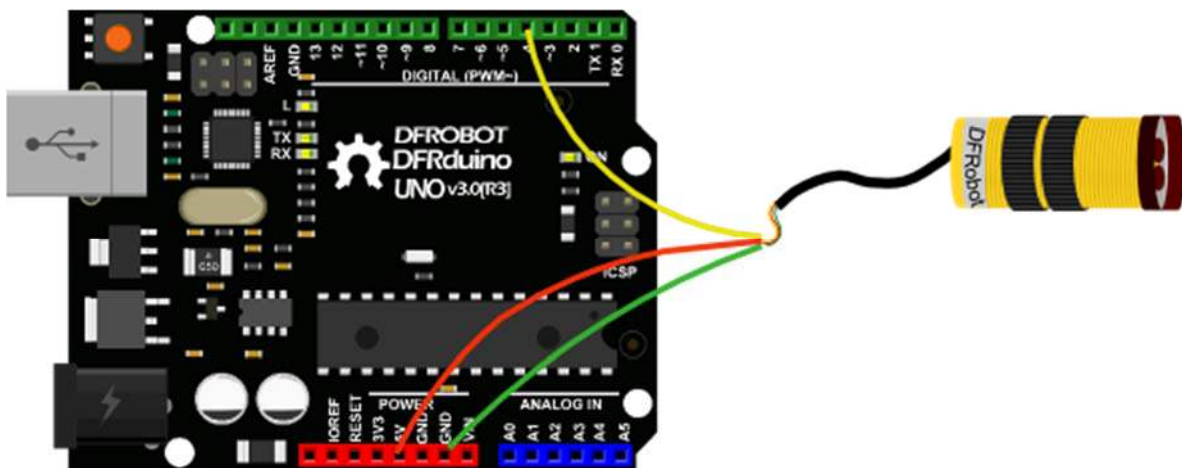- Humidity: 35% ~ 95% RH
- Size: 75 * Φ18 mm

Board Overview
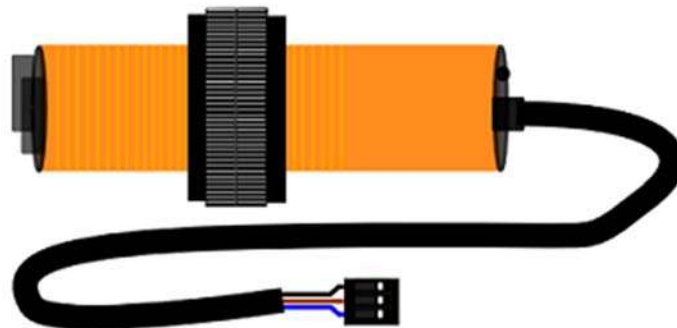
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Num	Label	Description
Blue	D	Digital signal
Yellow	VCC	3~5V
Black	GND	GND

Tutorial

Connection Diagram
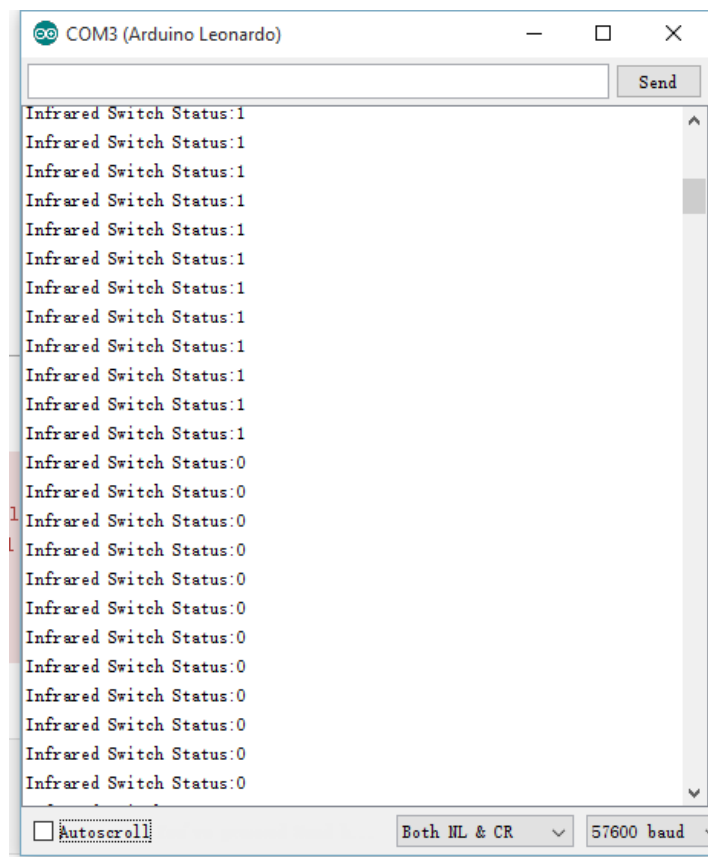

Sample Code

```
const int InfraredSensorPin = 4;//Connect the signal pin to the digital pin 4

const int LedDisp = 13;


void setup()

{

  Serial.begin(57600);

  Serial.println("Start!");

  pinMode(InfraredSensorPin,INPUT);

  pinMode(LedDisp,OUTPUT);

  digitalWrite(LedDisp,LOW);

}
```

```
void loop()

{

  if(digitalRead(InfraredSensorPin) == LOW)  digitalWrite(LedDisp,HIGH);

  else  digitalWrite(LedDisp,LOW);

  Serial.print("Infrared Switch Status:");

  Serial.println(digitalRead(InfraredSensorPin),BIN);

  delay(50);

}
```

Result

Cover the sensor head with your hand, the LED(Pin13) on board will light up, hold it toward an open area, the LED will be off. Open Arduino IDE serial monitor, you can also get the Infrared sensor status.