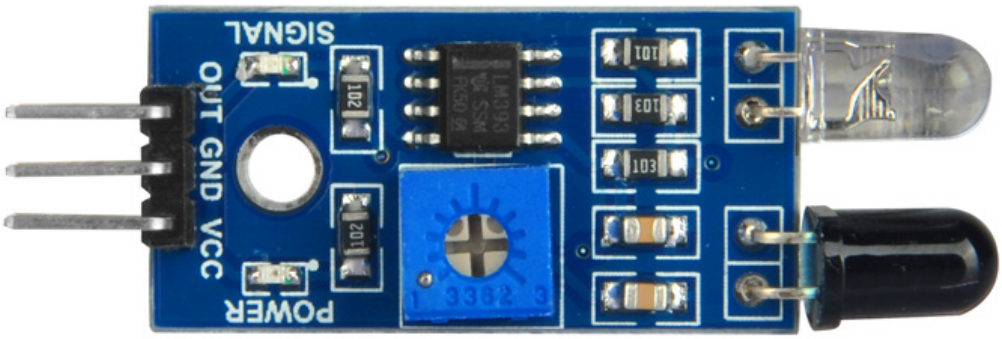
IR Obstacle Avoidance Module

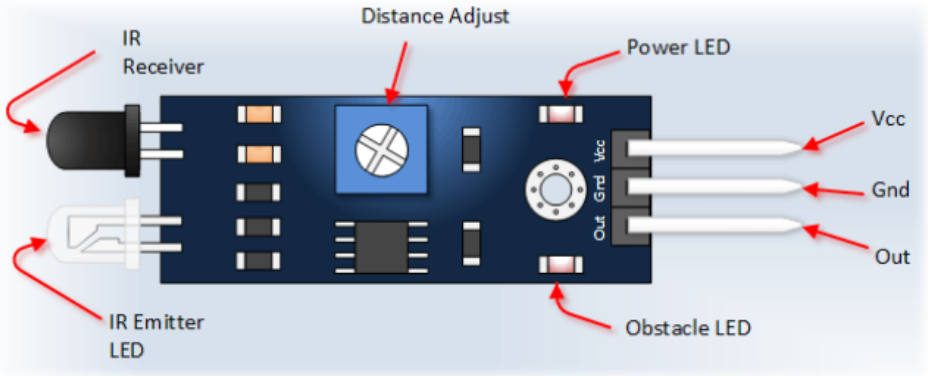
Introduction

This is yet another one of those modules with cool possibilities. You could for example, sound an alarm when something got too close or you could change the direction of a robot or vehicle.
The device consists of an Infrared Transmitter, an Infrared Detector, and support circuitry. It only requires three connections. When it detects an obstacle within range it will send an output low.

About Obstacle Avoidance Sensor



IR OBSTACLE DETECTION MODULE PIN OUTS



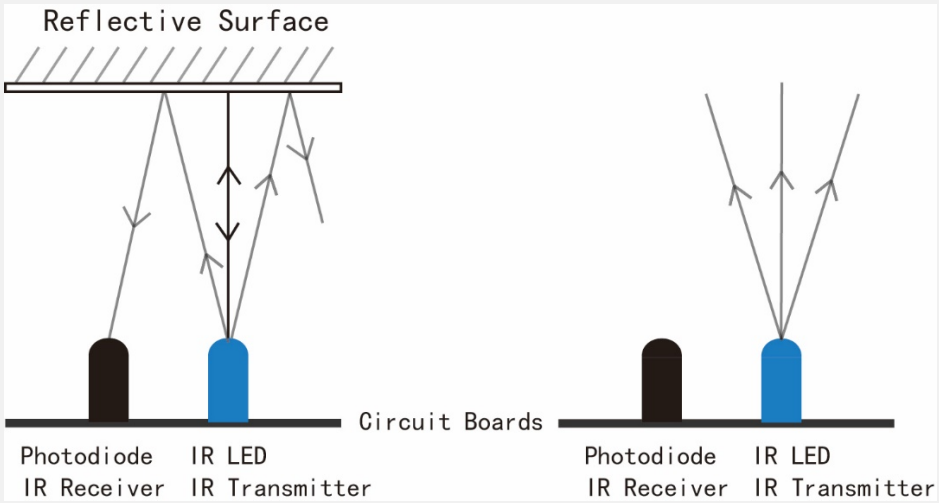
Pin, Control Indicator	Description
Vcc	3.3 to 5 Vdc Supply Input
Gnd	Ground Input
Out	Output that goes low when obstacle is in range
Power LED	Illuminates when power is applied
Obstacle LED	Illuminates when obstacle is detected
Distance Adjust	Adjust detection distance. CCW decreases distance. CW increases distance.
IR Emitter	Infrared emitter LED
IR Receiver	Infrared receiver that receives signal transmitted by Infrared emitter.

SPECIFICATION

- The output port OUT sensor module can be directly connected to the microcontroller IO port , you can directly drive a 5V relay ;
- the module detects the distance 2 ~ 30cm, detection angle 35 °, the distance can detect potential is adjusted
- Can be used for 3-5V DC power supply modules
- When the power is turned on, the red power indicator light
- Using the comparator LM393
- Interface :
  1. VCC: External 3.3V-5V voltage (can be directly connected to 5v MCU and 3.3v MCU)
  2. GND: GND External
  3. OUT: Small board digital output interfaces (0 and 1)
- Connection : VCC-VCC; GND-GND; OUT-IO
- With the screw holes of 3mm , easy fixed installation
- Board Size : 3.1CM * 1.5CM / 1.22 * 0.59″

WORKING PRINCIPLE

The IR transmitter sends an infrared signal that, in case of a reflecting surface (e.g. white color), bounces off in some directions including that of the IR receiver that captures the signal detecting the object.



When the surface is absorbent (e.g. black color) the IR signal isn't reflected and the object cannot be detected by the sensor. This result would occur even if the object is absent.

Circuit Diagram