Infrared Object Detection Sensor

IR-TR-10

INTRODUCTION AND OVERVIEW

This Medium Range Infrared sensor offers simple, user friendly and fast obstacle detection using infrared; it is non contact detection. The implementations of modulated IR signal immune the sensor to the interferences caused by the normal light of a light bulb or the sun light.

The sensing distance can be adjusted manually. The product features include:

- 5V powered, low current consumption, less than 10mA.
- 3 pin interface which are signal, GND and 5V.
- Small LED as indicator for detection status.
- Obstacle detection up to 8 cm
- Adjustable sensing range (2cm – 8cm).
- Small size makes it easy to assembly.
- Single bit output
- Compatible with all types of microcontrollers and Arduino

Dimension: 2.6cm x 2cm
PRODUCT SPECIFICATION AND LIMITATIONS

Infrared sensor uses special sensor to modulate IR signal emitted from 2 IR transmitters and detects the modulated IR signal reflected back from a nearby object.

This sensor has a built-in IR LED driver to modulate the IR signal at 38KHz to match the built-in detector. The modulated IR signal immunes the sensor from the interferences caused by the normal light of a light bulb or the sun light. The module will output a HIGH if no object is detected and a LOW if an object is detected.

Pin Definitions and Ratings

<table>
<thead>
<tr>
<th>Pin</th>
<th>Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>VCC</td>
<td>Connects to Vcc (+4V to +6V)</td>
</tr>
<tr>
<td>-</td>
<td>Ground</td>
<td>Connects to Ground</td>
</tr>
<tr>
<td>s</td>
<td>Output signal</td>
<td>Connects to an I/O pin of microcontroller which set to INPUT mode (or transistor/MOSFET).</td>
</tr>
</tbody>
</table>

Absolute Maximum Rating

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>4</td>
<td>6</td>
<td>V</td>
</tr>
<tr>
<td>Sensing range</td>
<td>2</td>
<td>8</td>
<td>cm</td>
</tr>
</tbody>
</table>
**Sensitivity**

The Medium Range Infrared Sensor has a sensing range of approximately 2cm to 8cm. The sensitivity can vary with the reflectivity of the object and the ambient lighting. The modulated IR signal will reflect more on white surface and reflect less on black surface.

The sensor is designed to adjustable sensing range. User may adjust sensing range by using the preset on infrared sensor for different application.

**PRODUCT DIMENSIONS AND LAYOUT**
A – is a signal indicators LED for infrared sensor. The LED will turn ON when signal is detected on IR sensor.

B – are 2 IR transmitters, the output IR signal is modulated at 38Khz.

C – is IR sensor. This sensor modulates IR signal emitted from 2 IR transmitters and detects the modulated IR signal reflected back from a nearby object.
D – is a 1K Ohm preset for user to adjust the sensing range. The sensing range is 2cm – 8cm. (Performance of the sensor will vary with the reflectivity of the object and the ambient lighting.)

E – is a hole to solder and connect the power supply to IR. User may supply 4V-6V to IR, the typical voltage is 5V.

F – is a hole to solder and connect Ground to IR. User may connect the GND(-) of IR to the Ground (0V) of the control board.

G – is a hole to solder and connect the output signal from IR. User may connect the signal pin(s) from IR to an I/O pin of microcontroller which set to INPUT mode. The output signal of IR is LOW or 0V when an object detected.