PIR Motion Detection Sensor

Package Contains:
PIR Motion Detection Sensor

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Introduction

This Passive Infrared Sensor (PIR) module is used for motion detection. It can be uses as motion detector on your robot. It can work from 5V to 9V DC and gives digital output. It requires 60 seconds of settling time before starting its operation. It consists of pyroelectric sensor that detects motion by measuring change in the infrared levels emitted by the objects. It can detect motion up to 6 meters.

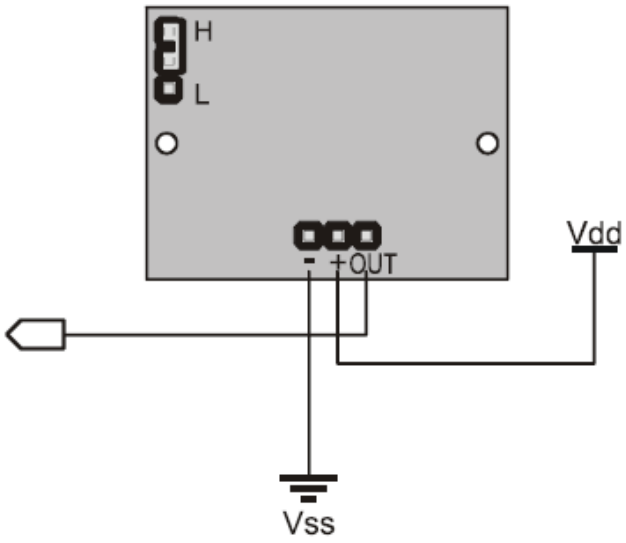
Specifications

- Single bit output
- Small size makes it easy to conceal
- Sensitivity: Presettable
- Size: Length 32mm, Width 24mm, Thickness 26mm

Application Ideas

- Alarm Systems
- Halloween Props

Quick Start Circuit



Note: The sensor is active high when the jumper (shown in the upper left) is in either position.

Theory of Operation

Pyroelectric devices, such as the PIR sensor, have elements made of a crystalline material that generates an electric charge when exposed to infrared radiation. The changes in the amount of infrared striking the element change the voltages generated, which are measured by an on-board amplifier. The device contains a special filter called a Fresnel lens, which focuses the infrared signals onto the element. As the ambient infrared signals change rapidly, the on-board amplifier trips the output to indicate motion.

Pin Definitions and Ratings

- GND Connects to Ground or Vss
+ V+ Connects to Vdd (5V to 9VDC)
OUT Output Connects to an I/O pin set to INPUT mode (or transistor/MOSFET)

Jumper Setting

H→ Retrigger Mode.
Output remains HIGH when sensor is retriggered repeatedly. Output is LOW when idle (not triggered).

L→ Normal Mode.
Output goes HIGH then LOW when triggered. Continuous motion results in repeated HIGH/LOW pulses. Output is LOW when idle.

Calibration

The PIR Sensor requires a ‘warm-up’ time in order to function properly. This is due to the settling time involved in ‘learning’ its environment. This could be anywhere from 10-60 seconds. During this time there should be as little motion as possible in the sensors field of view.

Sensitivity

The PIR Sensor has a range of approximately 20 feet. This can vary with environmental conditions. The sensor is designed to adjust to slowly changing conditions that would happen normally as the day progresses and the environmental conditions change, but responds by making its output high when sudden changes occur, such as when there is motion.