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Interfacing a PIR Sensor with FireBird V Robot

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Specifications

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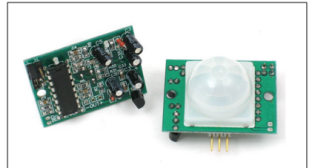Specifications

Introduction

- Passive Infrared Sensor measures Infrared light coming from objects in its field of view

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Introduction

- Passive Infrared Sensor measures Infrared light coming from objects in its field of view
- Everything emits some low level radiation and hotter something is, the more radiation is emitted.

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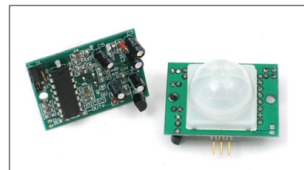Applications using PIR Sensor

Specifications

Introduction

- Passive Infrared Sensor measures Infrared light coming from objects in its field of view

- Everything emits some low level radiation and hotter something is, the more radiation is emitted.

- The pyroelectric sensor in the PIR is split into two slots. When a body moves in its field of view, one slot experiences more IR than the other, and a differential voltage is created, which indicates the motion of a human.

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- Single bit output

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- Single bit output
- Small size makes it easy to conceal

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- Single bit output
- Small size makes it easy to conceal
- Sensitivity: Pre-settable

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Specifications

Specifications

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

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Illustration of Working Principle

Working Principle

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Illustration of Working Principle

Working Principle

- PIR Sensor has two slots in it

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Working Principle

- PIR Sensor has two slots in it
- When idle, both slots detect the same amount of IR

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Working Principle

- PIR Sensor has two slots in it
- When idle, both slots detect the same amount of IR
- When a warm body like a human or animal passes by, it first intercepts one half of the PIR sensor, which causes a positive differential change between the two halves of the PIR Sensor.

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Illustration of Working Principle
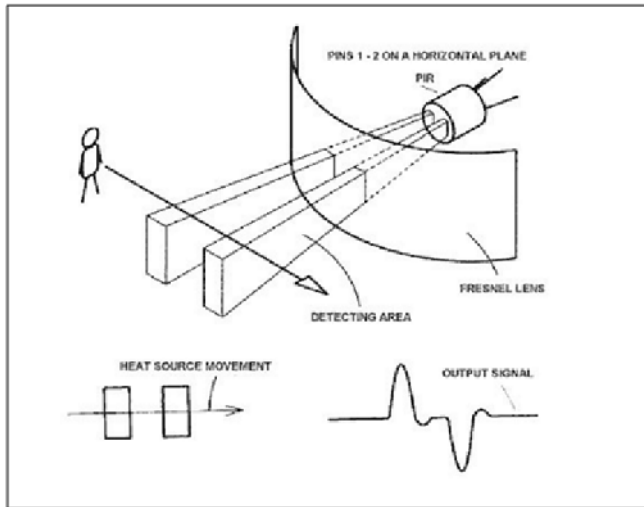
Working Principle

- PIR Sensor has two slots in it
- When idle, both slots detect the same amount of IR
- When a warm body like a human or animal passes by, it first intercepts one half of the PIR sensor, which causes a positive differential change between the two halves of the PIR Sensor.
- When the warm body leaves the sensing area, the reverse happens, whereby the sensor generates a negative differential change.

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Working Principle

- PIR Sensor has two slots in it
- When idle, both slots detect the same amount of IR
- When a warm body like a human or animal passes by, it first intercepts one half of the PIR sensor, which causes a positive differential change between the two halves of the PIR Sensor.
- When the warm body leaves the sensing area, the reverse happens, whereby the sensor generates a negative differential change.
- These change pulses are what is detected

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Connections of a PIR Sensor

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Connections of a PIR Sensor
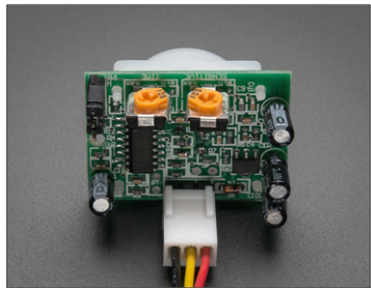Pin Connections between PIR Sensor and FireBird V Robot
Jumper Settings

Connections of a PIR Sensor

- **+V :** This pin of the PIR sensor should be connected to an external 5V supply.

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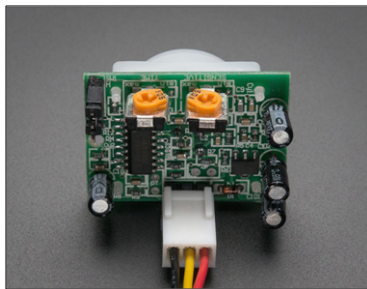Jumper Settings

Connections of a PIR Sensor

- **+V :** This pin of the PIR sensor should be connected to an external 5V supply.
- **GND :** This pin of the PIR sensor should be connected to Ground.

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Connections of a PIR Sensor

- **+V :** This pin of the PIR sensor should be connected to an external 5V supply.

- **GND :** This pin of the PIR sensor should be connected to Ground.

- **OUT :** This pin of the PIR sensor is the digital output. This pin is to be read by the microcontroller to detect the movement and decide the appropriate action that should be taken

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Pin Connections between PIR Sensor and FireBird V Robot

Pins of PIR Sensor	PinsofATmega2560Microcontroller BoardExpansionSocket
GND	Pin 23/24 (or any Ground pin)
+V	Pin 21/22 (or any 5 Volts pin)
Digital Output	Any GPIO Port Pin

Table: Pin Connections between PIR Sensor and FireBird V Robot

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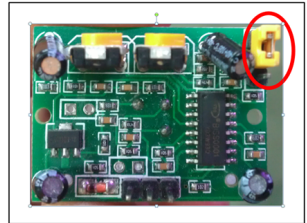Connection Details
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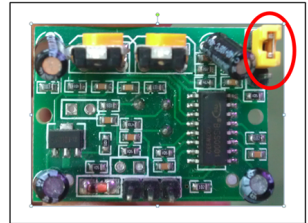
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- **H Retrigger Mode:** Output remains HIGH when sensor is retriggered repeatedly. Output is LOW when idle ie not triggered

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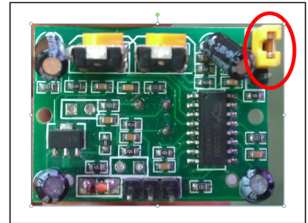
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- **Normal Mode:** Output goes HIGH then LOW when triggered. Continuous motion results in repeated HIGH/ LOW pulses. Output is LOW when idle

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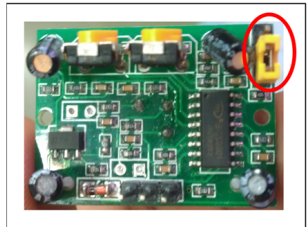
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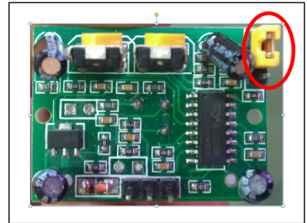
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- Human Detection Applications
- Thermal Imaging

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Thank You!!

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