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PIR Motion Sensor Interface with PIC18F4550

Overview of PIR Motion Sensor

PIR sensor detects infrared heat radiations. It can be used to detect the presence of living objects that emit infrared heat radiation.

The PIR sensor is split into two slots. The two slots are connected to a differential amplifier.

Whenever a stationary object is in front of the sensor, the two slots receive the same amount of radiation and the output is zero.

Whenever a moving object is in front of the sensor, one of the slots receives more radiation than the other slot. This makes the output swing high or low.
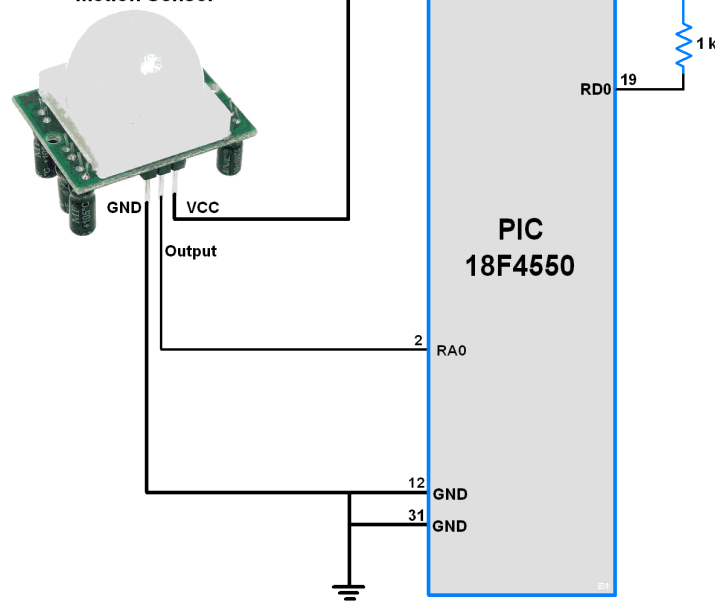
This change in output voltage is the result of the detection of motion.

For more information on the PIR sensor and how to use it, refer to the topic PIR sensor (http://electronicwings.com/sensors-modules/pir-sensor) in the sensors and modules section.

PIR Motion Sensor

Connection Diagram of PIR Motion Sensor to PIC18F4550

PIR Motion Sensor Interfacing with PIC18F4550

> ## Note:
>
> - **PIR sensor:** Never keep PIR Sensor close to the Wi-Fi antenna, ESP32, or NodeMCU.
> - PIR (Passive Infrared) sensor close to a WiFi antenna impacts the sensor's performance.
> - PIR sensors detect changes in infrared radiation for motion detection.
> - WiFi signals emit electromagnetic radiation that can interfere with the PIR sensor. Which causes false detection.
> - So always keep the PIR sensor and WiFi antenna as far apart as possible.
> - Also, you can try to shield the PIR sensor from the WiFi signal. This can be done by using metal shields or Faraday cages around the PIR sensor.

Detect Motion Using PIR Sensor with PIC18F4550

Let's design a small application in which LED will turn ON when motion is detected.

To do this, interface the PIR motion sensor with PIC18F4550.

As shown in the Circuit Diagram, the output pin of the PIR motion Sensor connected to the PORTA.0 pin.

If this pin goes HIGH, then the motion is detected and LED will turn ON.

According to the mode of Operation, If LOW on this pin detected, which means either motion is absent or Period of Trigger is over and will Turn OFF the LED.

Here we configure the module in repeatable trigger mode.

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Note: After powering the module it needs about 30-50 secs to warm up in order to function properly.

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PIR Motion Sensor Code for PIC18F4550

```c
/*
 * PIR Motion sensor interface with PIC18F4550
 * http://www.electronicwings.com
 */


#include <pic18f4550.h>
#include "Configuration_Header_File.h"

#define Motion_detection PORTAbits.RA0  /* Read PIR sensor's data on this pin
#define PORT_Dir TRISAbits.RA0        /* define for setting direction */
#define LED LATD0                /* connect LED to the PORT pin */
#define LED_Dir TRISDbits.RD0         /* define for setting direction */

void MSdelay(unsigned int val);

void main(void)
{
    ADCON1=0x0F;          /* this makes all pins as a digital I/O pins */
    PORT_Dir = 1;         /* set as input port */
    LED_Dir = 0;          /* set as output port */
    LED = 0;              /* initially turned OFF LED */
```

Video of PIR Motion Detect using PIC18F4550

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PIR Sensor

PIR motion sensors sense the Infrared signal ra...

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LED 5mm

LED 5mm

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📄 Datasheet (/components/led-5mm/1/datasheet)

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Breadboard

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📄Datasheet (/components/breadboard/1/datasheet)

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🖥	PIC18F4550 PIR Motion Detection Project File	Download (/api/download/platform-attachment/112)

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mamtadc80
(/users/mamtadc80/profile)
2017-09-22 00:25:11

Sir...I am doing project PIC 18F4550 PIR Motion Detection [FIRST TIME] and no idea about PIC Programming so i referencing your project file that u provided on your website but i am not able to solve errors in ur source code and i running it in MikroC PRO for PIC v.6.6.1...I mailed u my errors pics on contact@electronicWings.com...so plz help me and it's urgent as i have only this week to complete this project...plz reply me as soon as possible....

Reply   Like

> **lokeshc**
> (/users/lokeshc/profile)
> 2017-09-22 01:08:51
>
> > @Mamta chaudhari:
> > The above example is tested on MPLABX IDE with XC8 compiler.
> > Please refer : http://www.electronicwings.com/pic/getting-started-with-pic18f4550-and-mplabx-ide
> > refer this link for getting started with MPLABX IDE. And then try to execute above example with MPLABX IDE.
> > still, if you face any problem then you can ask your query here.
> > Reply   Like

> **mamtadc80**
> (/users/mamtadc80/profile)
> 2017-09-22 02:09:28
>
> > @Lokesh Chandak: OK Sir...and thank u for your response...
> > Reply   Like

mamtadc80
(/users/mamtadc80/profile)
2017-09-23 04:32:48

Sir...can u help me to solve simulation errors in PROTEUS 8 Professional software (its version is 8.6) ...i am interfacing DHT11 and PIR Motion sensors with PIC 18f4550......plz reply as it's very urgent....

Reply   Like

> **ganeshk**
> (/users/ganeshk/profile)
> 2017-09-23 05:25:22
>
> > @Mamta chaudhari: you can directly interface this in hardware.
> > It will work..
> > Reply   Like

> **mamtadc80**
> (/users/mamtadc80/profile)
> 2017-09-23 05:40:45
>
> > @Ganesh K: But Sir, i designed my own (some changes i made) and i getting 20 message errors....will you see if i sent u my schematic design and simulation errors pics to confirm my design is correct or not...
> > Reply   Like

> **ganeshk**
> (/users/ganeshk/profile)
> 2017-09-23 07:43:55
>
> > @Mamta chaudhari: email me on ganeshk2525@gmail.com.
> > Reply   Like

> **mamtadc80**
> (/users/mamtadc80/profile)
> 2017-09-23 10:05:05 • Edited
>
> > @Ganesh K: Sir...i just mailed u now...plz check it...and u can do the necessary changes in my proteus design file...plz help me to remove those message errors...
> > Reply   Like

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mamtadc80
(/users/mamtadc80/profile)
2017-09-25 05:21:16

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@MamtaChaturvedi: I again mailed u...plz check ur mail and let me know that files are opening or not..

Reply   Like

TUSHARDAMBHARE
(/users/TUSHARDAMBHARE/profile)
2021-05-07 22:18:32

same here i too got error in the proteus simulation. can you shame me your proteus design

Reply   Like

KalidasPillai
(/users/KalidasPillai/profile)
2021-05-27 21:28:35

sir how can i incorporate pwm with this. instead of on and off we need brightness control can you help me with that i am new to pic programming and have no idea

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