

Article

Automatic Lights On/ Off using PIR Sensor

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A B S T R A C T

This paper presents the automatic lights ON OFF using PIR sensor. Often there is large number of electricity usage in many places, unwanted lights on, working of cooling fans continuously this leads to the wastage of electricity. If the electricity is saved automatically the money will be saved. The PIR (Passive Infrared Sensor) is a round metal with a rectangular crystal in center which detects the different levels (i.e. 0&1). This sensor detects the human with this the lights gets ON or OFF. Components used in this system are power supply, PIR sensor, Relay. This system helps in saving the electricity.

Keywords: PIR (Passive Infrared Sensor), Relay

Introduction

Electricity is one of the basic necessities today's world is highly dependent on. In recent time automation is used in large number. By introducing automation it has reduced the human efforts in every field and saved resources. With the invension of new technology sensors have being used. Now-a-days, the technology has reduced the size of sensors and efforts of working. System automatically turns on if any warm body comes in its vicinity. System deals with automation of lights ON OFF using PIR sensor. The system works, as the PIR sensor sense the human being the particular device or application may turn ON or OFF. Specially areas like colleges, offices where there is a large number of croud there specially more electricity is used. To stop over use of electricity this system is beign involved. The PIR sensor is used to sense the absence and presence of a human in particular place. If the system is used in pubic places more electricity would be conserved.

Related Work

Karthikeyan R.A, saran sriram. K, Piyush.D "Automatic lighting system using Arduino and PIR sensor." Sep-oct 2018 This project has use arduino as a heart of a system. It is implemented for automatic lights ON of garages, bathroom, staircases.¹

Syedamouri, Syed Sakib, Zannatulferdous, Md. Ab Ther. "Automatic lighting and security system design using PIR motion sensor." January 2016. In this paper automatic

lighting and security system microcontroller is the heart of system. IR sensor is used to radiate radious of object and to minimize electicity bill of offices.²

Vinutharani A, C.K Vanamala. Sensorsr Based smart Lighting."e-ISSN:2395-0056,p-ISSN:23950072. 2016; 3(4). This paper is the review on the available smart lighting system with LED and wireless.⁴

Proposed System

A complete block diagram is shown in fig.1. The PIR sensor detects the warm human when it detect the warm body the it input is high. The PIR detects the the lights turn ON , till the presence of human the light will remain ON, as the warm human at distance upto 6meter and 108 degree. As soon as the human is detected Body moves away from the PIR sensor the light atomatically turns OFF. This helps us in conserving electricity.

The fig.2 shows the complete circuit diagram of automatic lights ON OFF using PTR sensor. The 12 volt ac is given to the input terminal of the PIR sensor as soon as the warm body is detected by it. The output becomes high which is given as a trigger pulse to the base of transistor, transistor gets ON and current starts flowing throw the coil. Coil of relay get energies and create the electromagnetic filed and NO of relay gets connected to the com of the relay. This allow the large current i.e. 230v to flow, this will turn ON the BULB.

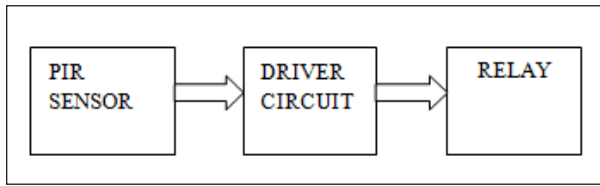


Figure 1. block diagram of automatic light ON/ OFF using PIR Sensor

PIR Sensor

PIR (Passive infrared sensor) it has the input of 5-12volts ac, 3-5 volts dc and at output get is 3.3volts TTL. It has two levels high level and low level. When input is high that time human is detected. This sensor is made up of the rectangular crystal at the center of it. The sensor senses the human till 108.4 degree and upto 6meter long distance. This distance can be extended upto 7meters long and the delay time is upto 0.3sec upto 5min. when the 2 point connected with jumper it goes to repeated mode and other is non repeatable mode in that once the sensor works but next time it will not repeat the same process.

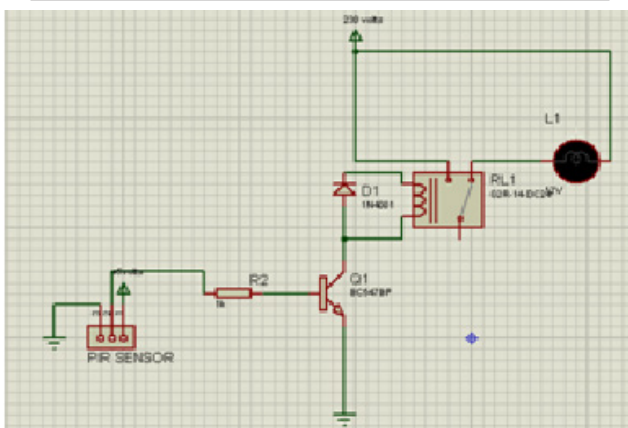


Figure 2. Circuit Diagram of automatic lights ON/OFF using PIR sensor

Relay

Relay is an electromagnetic switch, which is controlled by small current and used to switch ON and OFF relatively much larger current. Means by applying small current we can switch ON the relay which allows much larger

current to flow. Relay is a good example of controlling the AC (Alternating Current) devices, using a much smaller DC current. Commonly used relay is Single Pole Double Throw (SPDT) relay. It has five terminals as shown below.

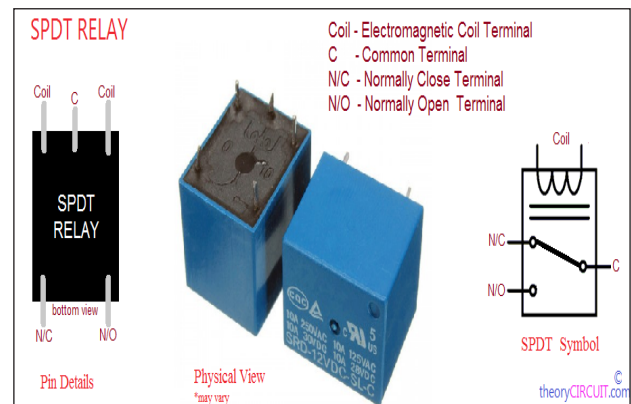


Figure 3

Conclusion

In this real world there is a necessity of a large need of electricity. Because of automation the human work has been reduced. This system will automatically ON OFF of light in presence of a warm body. The PIR sensor is used for the detection of the warm body with the help of relay the switching is done. The cost of project is much less as compared to the electricity conserved.

References

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