



**NEW HORIZON
COLLEGE OF ENGINEERING**

Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC
Accredited by **NAAC** with '**A**' Grade.

**BURGLAR
ALARM**

**MINI
PROJECT
REPORT**

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*In partial fulfillment for the award of the degree
of*

BACHELOR OF ENGINEERING

IN

ELECTRONICS AND COMMUNICATION

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION
ENGINEERING**



CERTIFICATE

Certified that the mini project work entitled “**Burglar Alarm**” carried out by **Guna Pradeep (1NH17EC0421), Shakthi A (1NH17EC088), Sai Mani Teja (1NH17EC111)** bonafide students of Electronics and Communication Department, New Horizon College of Engineering, Bangalore.

The mini project report has been approved as it satisfies the academic requirements in respect of mini project work prescribed for the said degree.

Project Guide

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Name of Examiner

Signature with Date

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Abstract

In this project, we have implemented a burglar alarm. This is a device is used to protect important things from burglary. We have used IR LED, transistor BC557, photo diode L14F1 and a buzzer to implement this circuit. This circuit is operating using a 9V DC supply.

The circuit of this invisible burglar alarm was built with a photo transistor and an IR led, which makes noise when there is an obstacle in the path of IR radiations when the IR radiations are within the range of 1 meter

This circuit works well when the light in the surroundings if the circuit is bright enough, which increases the precision for the photo transistor.

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Introduction

A Burglar alarm is a system designed to detect unauthorised entry into buildings or access of things. These security alarms could be used in houses, residential areas, shops, industrial areas, military bases etc. These devices help us in protecting things and properties from theft and damage.

Security systems play an vital role in today's world, something necessary from house to a large scale industries. This project is based on such security system, we here are using IR radiations as medium or means to protect our valuables. This circuit gives us an idea over how a security system could work in simpler and easier way.

Literature Survey

The components were purchased individually by our team members and were assembled on a bread board, which is easier and efficient for us to understand the circuit and the working of each component and on the combinations and also made it possible for us to construct the circuit, which helped us in knowing the basics of electronic circuit connections, their requirements and the characteristics and the behaviour of the components used in the circuit, in order to achieve the required output.

Each component was tested and verified with their values, made sure they were placed at the correct positions with correct terminals when required in case of transistors and diodes, checked under different conditions, like intensity of light, density of the obstacle, by varying the distance between the IR LED and the photo transistor.

Proposed Methodology

To study the characteristics of the transistor, IR led and the photo transistor used in the circuit. On constructing the circuit, when there is disturbance between the IR led and the photo transistor, the npn-photo transistor (L14F1) goes off, transistor BC557 is turned on and making the buzzer give alter by buzzing.

When there is 9V DC input voltage given, there is emission of IR radiations rom the IR led, when these radiations fall on the photo transistor L14F1is on, under normal conditions with no objections to the IR radiations then transistor BC557 remains off and the buzzer doesn't make any sound.

When there is an obstacle in the path where the radiations traveling then photo transistor L14F1 goes off and the transistor BC557 is turned on. Thereby making the buzzer sound.

Technology Used

This project is intended to replicate and study the working of a burglar alarm using IR led by means of simple and basic electronic components. We have used BJT, diode and resistors in the construction of the circuit. This project is making use of IR led which when placed along with the photo transistor and when disturbed makes the buzzer buzz to give an alert to the user.

We are using photo diode (IR diode) that emits IR radiations, a photo transistor L14F1 which is a NPN transistor which is used to controls BC557, a PNP transistor BC557 is used to control the buzzer. We make us of a variable resistance of 50k ohms, which in turn manages the biasing of the PNP transistor

Many other types of photo transistors could be used but, photo transistor L14F1 is much more sensitive when compared to other photo transistors and this photo transistor goes well with our requirements too.

Results Obtained

Under normal conditions, when we give 9V DC supply to the circuit and there is no obstacle in flow of IR radiations between the IR led and the photo transistor, transistor BC557 is off and the buzzer doesn't make any sound.

When we give 9V DC supply to the circuit and there is something that disturbs the flow of IR radiations, the photo transistor goes off and that turns on the pnp transistor and the buzzer makes sound

When there is low intensity of light there is mild noise produce by the buzzer when there is a 9V DC supply in circuit and on increasing the light intensity the buzzing noise was cancelled.

Future Scope

Security systems is one of the very important thing to be looked in today's scenario to protect and safe guard out things. This circuit will help us in constructing a burglar alarm at a cheap cost and in simpler way. Which will in turn help us to protect things on a smaller scale .

Could be used in avoiding trespassing, having a check over the cattle, used in jewellery stores and museums etc.

There could development in the precision and accuracy with the quality of input depending on the light intensity, could improve the range of working of the circuit and the quality and life of the device.

There could be many other components used in place of IR led and photo transistors, like proximity sensor, vibration sensor, sound sensor etc.