

Defence Security System: Border Security

Ajay B Devkatte¹, Nitesh H Chavan², Manojkumar K Jha³

U.G. Students, Department of Electronics Engineering, ACE, Malad, Mumbai, Maharashtra, India¹²³

ABSTRACT: The main purpose of the project is to enhance the border security electronically with automation and with that to reduce the work load and responsibility of the soldiers that continuously take a look on border 24x7. This project will not fully remove the responsibility of soldiers but shares the maximum responsibility and will reduce human efforts on the border. Using this concept easily identify the how many strangers or terrorists entering the border. Real heroes of the any country are their soldiers.

KEYWORDS: IR transmitter, IR receiver, Microcontroller, Display, Alarm.

I. INTRODUCTION

The border length is very long hence soldiers are patrolling but soldiers are not present at every part of the border due to the long length. To overcome this we are going to implement a project called "Border security system with visitor counter". This project has 2 modules. First module is "Visitor counter" and the other module is "Border security system". Using this concept easily identify the terrorists entering the border and catch the terrorists easily. The basic problem faced by the soldiers is they don't know the how many terrorists enter? The main advantage of this system is soldiers knows the (number) how many terrorists enter or cross the border. Main concept behind this project is known as "Visitor counter" which measures the number of terrorists entering the border or cross the border. This function is implemented using a pair of Infrared sensors.

Following are the important component in this project:-

- 1) IR Transmitter
- 2) IR Receiver
- 3) Microcontroller
- 4) LCD display
- 5) Alarm system

II. REVIEW OF THE COMPONENT

Component Descriptions:-

1) IR Transmitter:- Implemented the Person counter module using 2 transmitters and 2 receivers and use of Infra-Red transmitters. Reason behind choosing IR LED is, infrared beams are not visible to human eyes and they are not easily triggered by other sources in the environment. Transmitters used are IR LEDs.

2) IR Receiver:- Use of IR sensor as an Infrared receiver. It is an active low device, which means it gives low output when it receives the Infrared rays. So when the IR rays are interrupted by any person then Microcontroller will receive a high pulse from the IR receiver.

3) Microcontroller:- This is the CPU (central processing unit) of the project. Microcontroller which is of 8051 family. A microcontroller is a complete microprocessor system built on a single IC. Microcontrollers were developed to meet a need for microprocessors to be put into low cost products. Building a complete microprocessor system on a single chip substantially reduces the cost of building simple products, which use the microprocessor's power to implement their

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function, because the microprocessor is a natural way to implement many products. This means the idea of using a microprocessor for low cost products comes up often. The various functions of Microcontroller are like:

A. Bidirectional Visitor counter section – It is bidirectional because we have used 2 sensors on a single door. Microcontroller does the function of Reading the digital input from two infrared receivers and calculates the number of persons from them.

B. Display – Microcontroller sends the person count to LCD, so that the person operating this project should read the number of terrorists cross the border.

4) LCD Display:-16×2 alphanumeric Liquid Crystal Display (LCD) which means it can display alphabets along with numbers on 2 lines each containing 16 characters. This display should be placed outside the room. It displays various messages like “Person Counter Incremented”, “Person Counter Decrementated”, “No of Person in Room = XYZ” here XYZ is the actual person count.

5) Alarm:- Used for notifying about the intrusion. When terrorists cross the border then alarm get on start buzzing at headquarter.

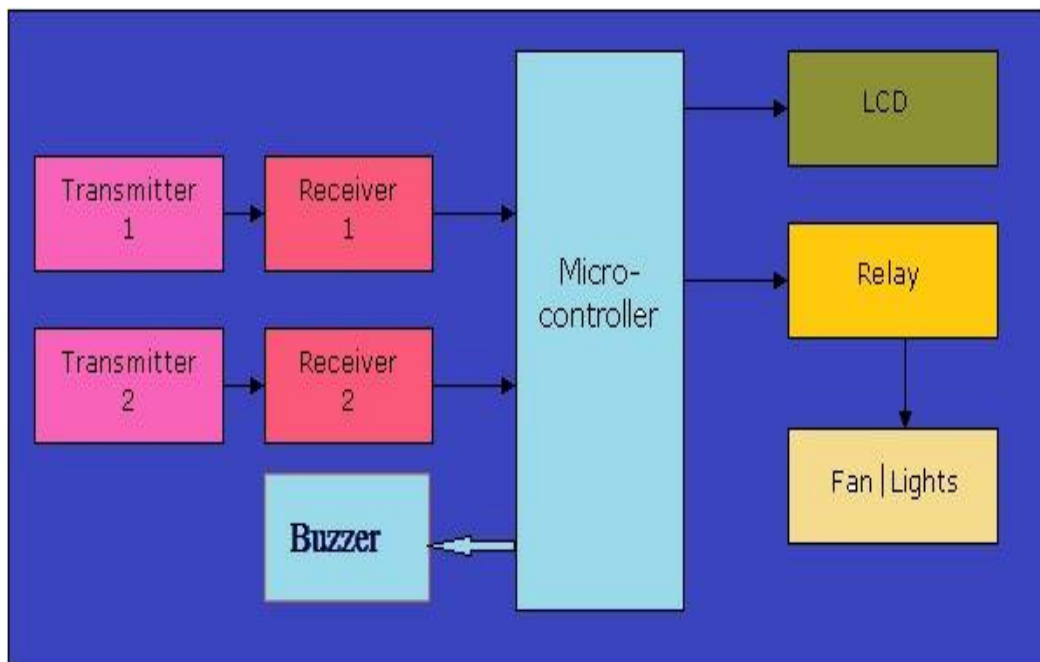


Fig.1 Block Diagram

III. VISITOR COUNTER

In this system or project two option are present one is use microcontroller and second is microcontroller can be replaced by the Arduino UNO. The outputs of IR Sensor Modules are directly connected to arduino digital pin number 14(A0) and 19(A5). And Relay driver transistor at digital pin 2. LCD is connected in 4 bit mode. RS and EN pin of

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LCD is directly connected at 13 and 12. Data pin of LCD D4-D7 is also directly connected to arduino at D11-D8 respectively. Remaining connections are present in the above circuit diagram.

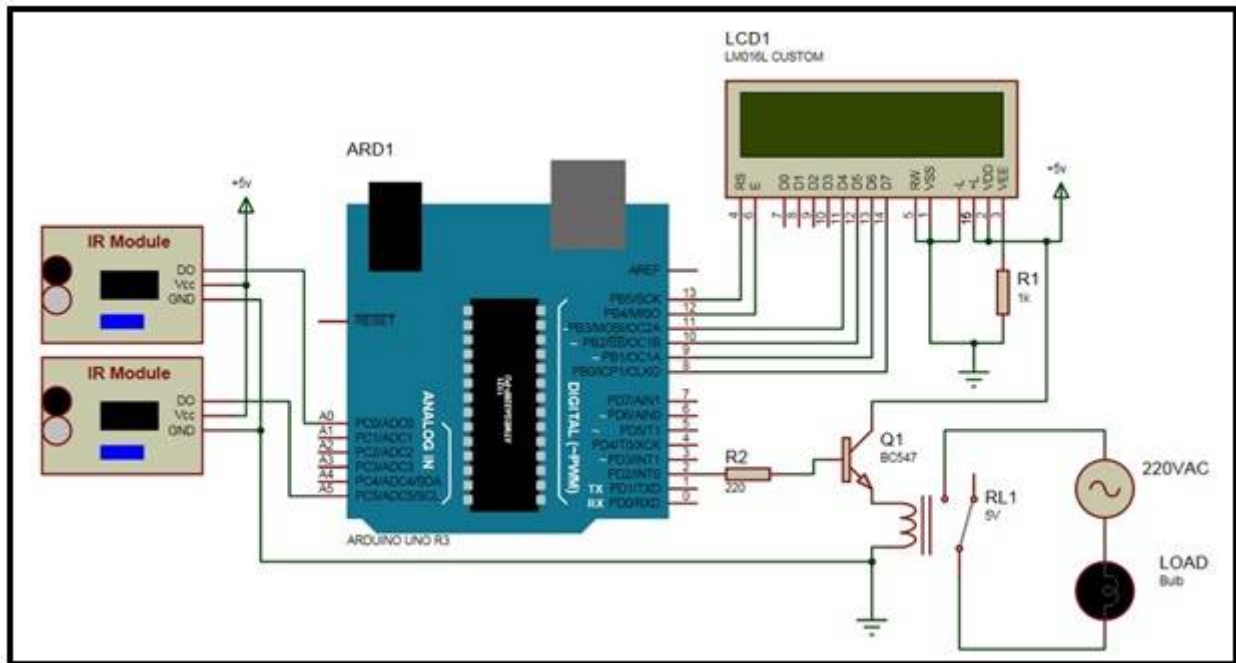


Fig.2 Circuit Diagram of Visitor Counter

IV. RESULTS

When any one enters in the border, IR sensor will get interrupted by the object then other sensor will not work because we have added a delay for a while. One of the basic requirements for the project is Accuracy. The Project is required because till today, border is protected by Iron Spike wires, and a watch tower containing a soldiers continuously flashing the light over the border area day and night. Those soldiers are fully responsible for any intrusion.

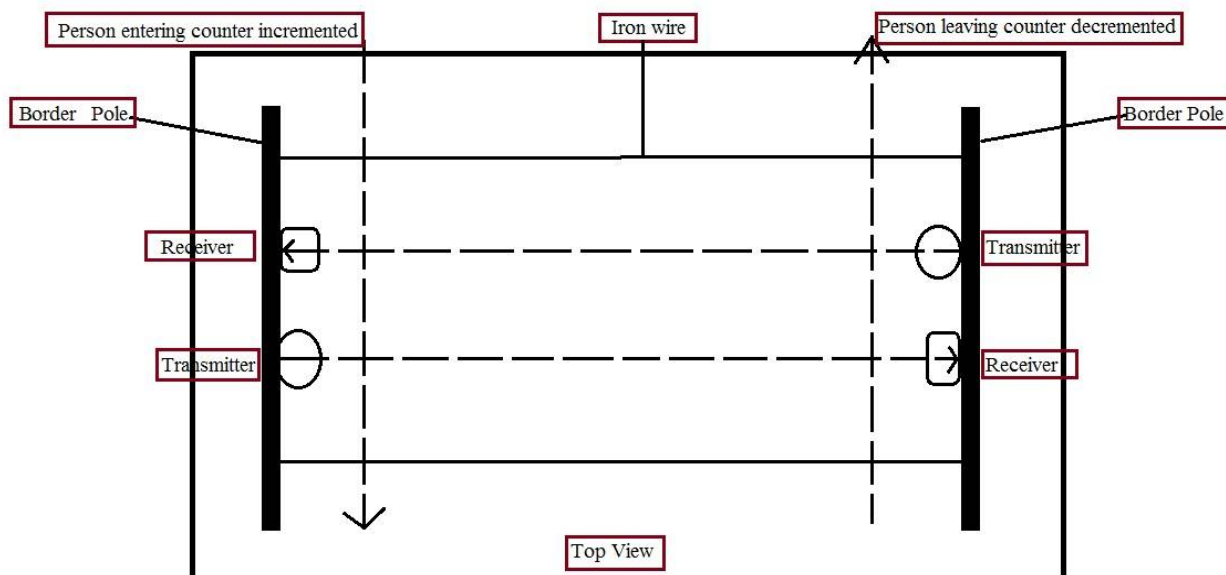


Fig. 3 Sensors on Two Poles of the Border

V. CONCLUSION

Soldier efforts to count the number of terrorists is eliminated. Since this project does the automatic terrorists counting with the help of two sensors installed on door frame. Real heroes of the any country are their Soldiers. The project also aims at providing peace at the borders and reduces the tensions between the two countries. The Proposed system prevents the entries of intruders or antisocial persons, in trying to cross the border without prior permission of military with some bad intension. Hence this system will reduces the cause of rioting as well as helps to prevent terrorist activities. So the given proposed system also provides safe and calm environment for the residents living near to military base and helps to create mutual harmony between military officers and civilians.

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