**PROJECT REPORT**

ON

**“INTRUDER ALARM CIRCUIT USING 555 TIMER AND LDR”**

Submitted in fulfilment of the requirements for the completion of

**SELF STUDY FOR ANALOG INTEGRATED CIRCUITS COURSE (15ES3GCAIC)**

IN

**ELECTRONICS AND COMMUNICATION ENGINEERING**

SUBMITTED BY:

**Students name USN**

Neha Sinha 1BM17EC160

Rege Om Milind 1BM17EC149

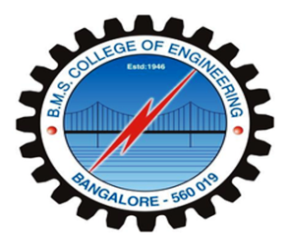
Rohit Patil 1BM18EC414

Sahil 1BM18EC415

Under the Guidance of

Dr. A Meera

**Jan.- April 2019**

****

Department of Electronics and Communication Engineering

**B.M.S COLLEGE OF ENGINEERING**

(Autonomous College Affiliated to Visvesvaraya Technological University, Belgaum)

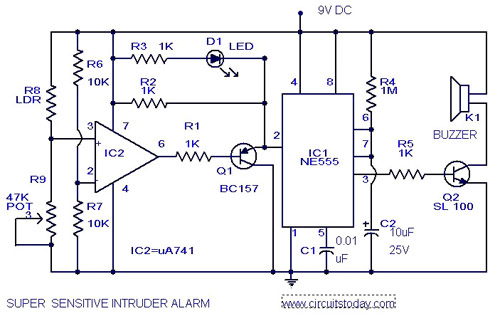
Bull Temple Road, Basavanagudi, Bangalore-560019

**INTRUDER ALARM CIRCUIT USING 555 TIMER AND LIGHT   
DEPENDENT RESISTOR (LDR)**

**INTRODUCTION**

Intruder Alarm are popular Devices used in high-security areas as well as civilian houses. There are different types of intruder detection alarms, some use lasers to detect movement, some use pressure variations. Our Alarm works using Light Dependent Resistor (LDR), whose resistance varies with the intensity of light falling on it. Our Intruder Alarm must be placed opposite to a light source because it detects movement by change in the light intensity falling on it.

**CIRCUIT DIAGRAM**

****

**WORKING**

Here IC2 UA 741 is wired as a sensitive comparator whose set point is set by R6 & R7. The voltage divide by LDR and R9 is given at non-inverting pin of IC2. At standby mode, these two voltages are set equal by adjusting R9. Now the output (pin6) of the comparator will be high. Transistor Q1 will be OFF. The voltage at trigger pin of IC1 will be positive and there will be no alarm. When there is an intruder near the LDR the shadow causes its resistance to increase. Now the voltages at the inputs of the comparator will be different and the output of IC2 will be low. This makes Q1 ON. This makes a negative going pulse to trigger the IC1 which is wired as a monostable multivibrator. The output of IC1 will be amplified by Q2 (SL 100) to produce an alarm.

**OBJECTIVE**

To design an Intruder Alarm Circuit using IC 555 Timer and Light Dependent Resistor to detect intruders, whenever a shadow fell on the LDR, its resistance increases and the alarm starts to ring.

**BILL OF THE MATERIAL**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl No.** | **Components** | **Quantity** | **Price** |
| 1 | NE 555 Timer | 1 | ₹ 5 |
| 2 | OP-Amp | 1 | ₹ 5 |
| 3 | SL100 NPN Transistor | 1 | ₹ 5 |
| 4 | BC157 PNP Transistor | 1 | ₹ 5 |
| 5 | LED | 1 | ₹ 1 |
| 6 | Buzzer | 1 | ₹ 20 |
| 7 | LDR | 1 | ₹ 5 |
| 8 | 1K Resistor | 4 | ₹ 1 |
| 9 | 10K Resistor | 2 | ₹ 1 |
| 10 | 1M Resistor | 1 | ₹ 1 |
| 11 | 0.01uF Capacitor | 1 | ₹ 1 |
| 12 | 10uF Capacitor | 1 | ₹ 1 |
| 13 | 47K Potentiometer | 1 | ₹ 5 |
| 14 | 9V DC Battery | 1 | ₹ 15 |
| 15 | Connecting Wires | 20 | ₹ 5 |
| 16 | Bread Board | 2 | ₹ 100 |
|  |  | **Total Cost** | ₹ 176 |
|  |  | **Estimated Cost** | ₹ 200 |

**RESULT**

Whenever a Shadow fell on the LDR, the resistance of the LDR increases and the Alarm starts to ring, notifying us about the intruder.

**PROBLEM ENCOUNTERED AND SOLUTION**

The problem we encountered was correctly calibrating the Alarm to efficiently react to any shadow falling on the LDR. We used the 47K potentiometer to change the resistance R9 given in the circuit and thus calibrate the sensitivity of the alarm by varying the resistance R9 using the potentiometer and thus making the alarm work only when the light intensity decreases below a certain value.

**FUTURE ENHANCEMENT**

There are many prospects in which the design can be improved:-

* As LDR depends on the intensity of light falling on it, it cannot be used in dark places, there we can use motion sensors to detect movement and hence detect the intruder.
* Due to LDR dependency on Light Intensity it cannot be solely trusted for an alarm as it might happen due to some other environmental condition there is a false alarm , so we can infuse it with other sensors like lasers and motion detector , so that when all the sensors are active then the alarm is rung. This will reject the case of any false alarm.

**CONCLUSION**

We successfully built an Intruder Alarm Circuit using LDR and IC555 timer which is capable of detecting any intruder , which is based on the concept of increase in the resistance of the LDR due to decrease in light intensity falling on it.

**REFERENCE**

* Linear Integrated Circuit Authored by DR. Rao Choudhary
* Op-Amp and Linear Integrated Circuits Authored by Ramakanth A. Gayakwad
* [www.circuitstoday.com](http://www.circuitstoday.com)
* [www.wikipedia.org](http://www.wikipedia.org)