



A.C Patil College of Engineering
Kharghar, Navi Mumbai

A Technical report on

LIGHT DEPENDENT RESISTOR (LDR) AS SECURITY
ALARM

Submitted to **Ms. Ranjana Mahajan**

Submitted by students of F.E, Computer Engineering – A
in partial fulfilment of the requirement of University of
Mumbai for the Academic Year

2022-2023

Certificate

*This is to certified that the project titled
‘LIGHT DEPENDENT RESISTOR (LDR) AS SECURITY
ALARM’ is duly Submitted by*

Comp-A-06-Sumit Bhadane

Comp-A-07-Mansvi Bhalerao

Comp-A-08-Aarya Bhave

Comp-A-09-Raj Bhosale

Comp-A-10-Ameya Bhujbal

*Has been completed under my supervision in satisfactory manner in
a partial fulfilment of the requirements for the award of*

Bachelor’s Degree in Semester 1 and 2 to

be conferred by

UNIVERSITY OF MUMBAI

In my opinion, the work embodied in this report is comprehensive and
fit for evaluation.

Ms. Ranjana Mahajan
(Assistant Professor)

Dr. Mahendra Deshmukh
(H.O.D)

PROJECT BY STUDENTS

<i>Name</i>	<i>Roll No.</i>
1. Sumit Bhadane	06
2. Mansvi Bhalerao	07
3. Aarya Bhave	08
4. Raj Bhosale	09
5. Ameya Bhujbal	10

INDEX

Sr.No	Content
1.	Significance
2.	What is LDR?
3.	Working and Principle
4.	How does the alarm work..?
5.	Materials
6.	Methodology
7.	Circuit Diagram
8.	Result
9.	Advantages and Disadvantages
10.	Bibliography
11.	Certificate

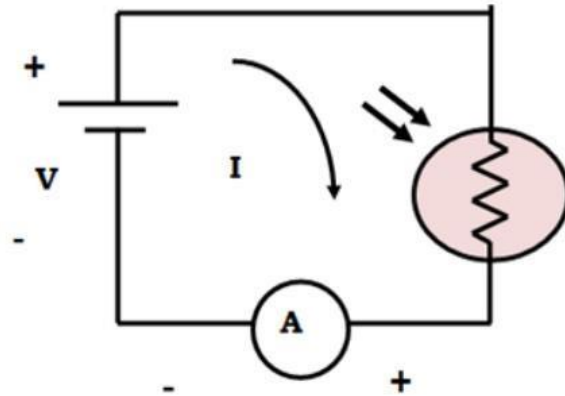
SIGNIFICANCE

- An LDR based alarm system can be used to protect lockers or locker rooms. In such a system, the LDR sensor is attached to an alarm mechanism and a light source or laser light source is fixed above the sensor in a closed casing. When a locker or locker room is tried to be accessed unethically, the laser light is activated and it in turns stimulates the LDR sensor to invoke alarm. This project illustrates similar alarm mechanism except that instead of building it on product style casing, the circuit has been made on a breadboard for demonstration purpose.

WHAT IS LDR?

- LDR (Light Dependent Resistor) as the name states is a special type of resistor that works on the photoconductivity principle means that resistance changes according to the intensity of light. Its resistance decreases with an increase in the intensity of light.
- It is often used as a light sensor, light meter, Automatic street lights, and in areas where we need to have light sensitivity. It is also called a Light Sensor.
- LDR are usually available in 5mm, 8mm, 12mm and 25mm dimensions.

WORKING AND PRINCIPLE



- It works on the principle of photoconductivity whenever the light falls on its photoconductive material, it absorbs its energy and the electrons of that photoconductive material that is in the valence band get excited and go to the conduction band and thus increasing the conductivity as per the increased in light intensity.
- Also, the energy in incident light should be greater than the bandgap gap energy so that the electrons from the valence band get excited and go to the conduction band.

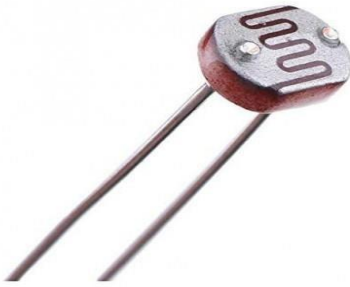
HOW DOES THE ALARM WORK..?

- In this circuit, we are using LDR (Light Dependent Resistor) which is actually a variable resistor. When laser falls on LDR has high resistance and when laser light don't falls on its surface, its resistance decreases this allows the transistor to conduct, and as a result of this change in resistance buzzer will be turned on. We are using a 4V battery for this circuit Sensitivity of this circuit will be adjusted by a 2.2K resistor.

MATERIALS

Materials required for LDR as Security Alarm are:

- Light Dependent Resistor (LDR)
- BC547 Transistor
- 2.2K ohm Resistor
- 4V Battery
- Buzzer
- Breadboard ● Wires
- Laser Diode



LDR



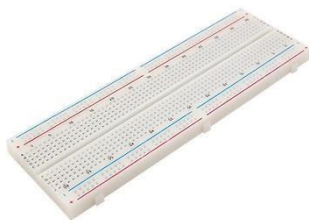
BC547 Transistor



Battery



Resistor



Breadboard



Buzzer



Wires

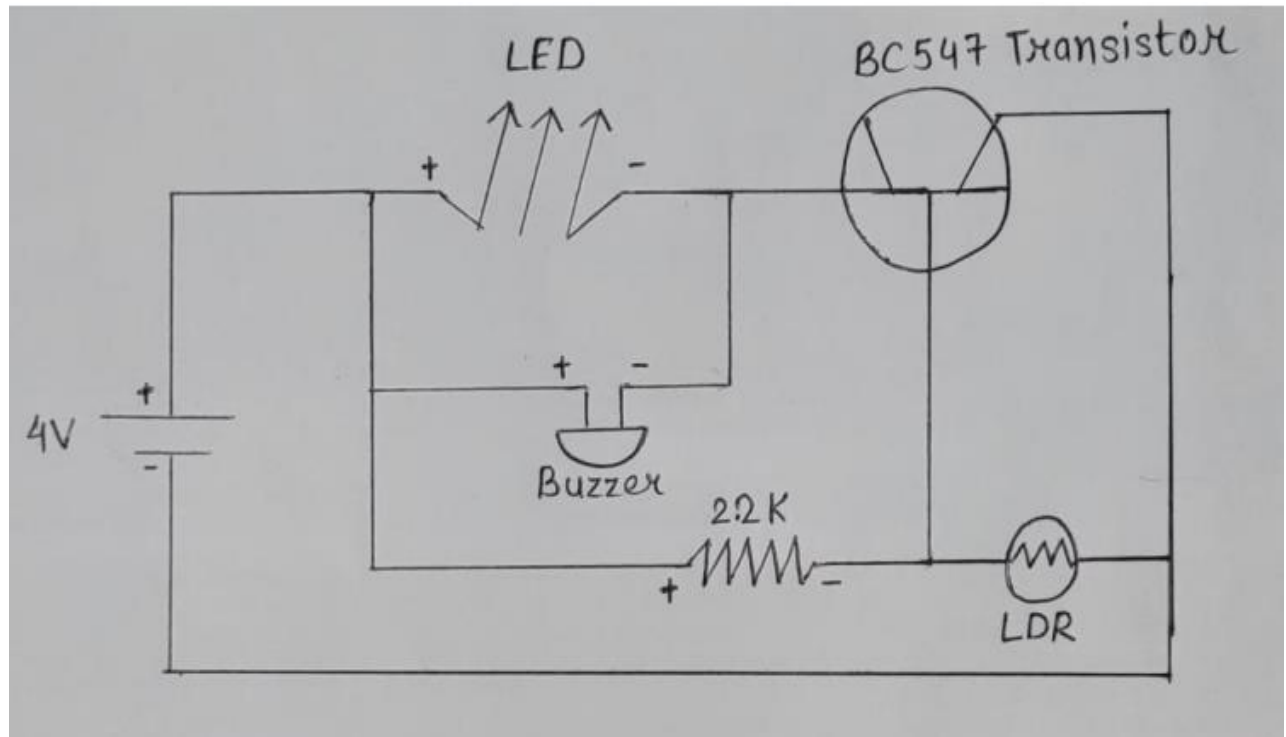


Laser Diode

METHODOLOGY

- Connect LDR positive terminal to emitter of transistor and negative terminal to base.
- Connect negative terminal of led to collector.
- Connect 2.2k ohms one terminal of resistor to base and one to positive terminal of LED.
- Connect a buzzer to positive and negative terminals of LED.
- Connect 4V battery positive terminal to positive terminal of LED and positive terminal to emitter of transistor

CIRCUIT DIAGRAM



Result

Since, the current flowing through the LDR is directly proportional to the intensity of incident light. Hence, by using enhanced circuit LDR can be used as security alarm.

ADVANTAGES AND DISADVANTAGES

Advantages :

- Low cost
- All Components are available in any Hardware
- Low power operation
- High sensitivity
- Easy to make Disadvantages :
- Large response time- The variation in resistance value is slow to the light action.

- Can't be used in day time or in night even it should be dark.

FINANCIAL BUDGET

SR NO.	MATERIAL	PRICE
1	BC547 transistor	10/-
2	LDR	20/-
3	2.2k ohm resistor	12/-
4	4V battery	40/-
5	Breadboard and wires	50/-
6	Buzzer	30/-
7	Laser Diode	40/-
Total		= 192/-

BIBLIOGRAPHY

[Light Dependent Resistor \(LDR\),
Construction, Working , Characteristics
and Applications
\(learnelectronicswithme.com\)](#)

[What Is LDR? | Fundamental of Light
Dependent Resistor or Photoresistor
\(electronicsforu.com\)](#)