

# Security Alarm Using Tripwire Laser

**J. Gunalan, S. Hariram, P. Harish, M. Harsha Vardhan Reddy**

UG Scholar, Department of Electronics and Communication Engineering  
SRM Valliammai Engineering College, Chengalpattu, India

**Abstract:** *The abstract of this project is to design a Security Alarm using Laser Tripwire. This is based on the principle of voltage divider circuit. When the laser beam continuously falls on the LDR, the voltage drop across it is very low as the resistance of LDR becomes less. As the laser beam is interrupted or disturbed by any object or a barrier the voltage drop across it becomes high due to change in the LDR's resistance. This triggers the alarm in the circuit. In addition we have added Arduino UNO controller to control the system and act as an initiator of this system.*

**Keywords:** Security Alarm

## I. INTRODUCTION

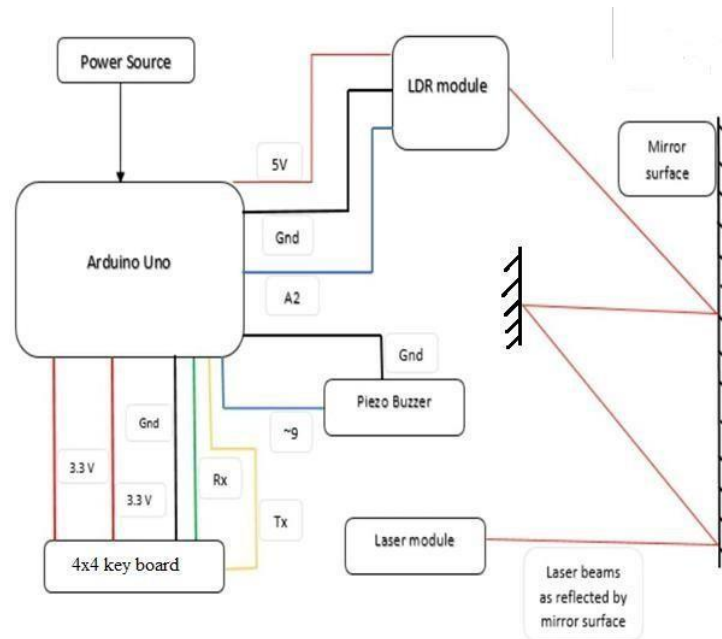
Technology develops day by day within the world. Nowadays the crime is also increasing and they too improve their technology to hold out their operation. Security is the most important factor in day to day life. The Security alarm using laser tripwire is a system used for security purposes. They once accustomed to being very expensive solutions for security needs. This type of security system is becoming pocket-friendly. So technology towards security should be modern with time to shield the planet from crime. The need for having a constant home protection has always been there. But in the recent times, considering a dramatic rise in petty crimes like robbery and theft, the need has been more strongly felt to have a fool proof protection of the belongings and the family members. Home security has come a long way in the last few decades. It was in the hands of a guard who manually provided surveillance during nights in the earlier days, but it was not fool proof as it was only normal for him to have momentary lapse of concentration. This device brought solution to this need. It ensures adequate protection against strangers.

## II. EXISTING SYSTEM

Laser Based Security System by Sudarshan.B proposed a Laser based security system that acts as an additional security layer which includes ESP32 CAM, LDR Module, Laser Module, Blink Application to view the capture image of the intruder. Laser Based Security System Using Wireless Sensor Network by Sopan. The most popular technologies in the field of wireless sensor network are Bluetooth, Wi-Fi and RF transceiver. The nRF24L01 provides 2Mbps data rate and 125 RF channel operations with very low power consumption. Low Cost Laser Light Security System In Smart Home by Ashis Rai. According to the other researchers, they had researched about the security of laser but in that case, they usually used to beep the buzzer until and unless the reset button is pushed. Develop Laser Security System Using Arduino by J.A. Dharne. In this project, they have designed Laser Light Security System Using Arduino with Alarm with the application of Laser Diode Module KY-008.

## III. PROPOSED SYSTEM

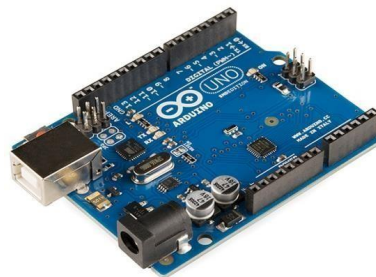
In this, we present the speculation on the security alarm using tripwire laser. In this proposed system block diagram several blocks like laser module, buzzer Alarm is connected to our controller. There are three main components to a laser security system: an LDR module, an Arduino, and a Laser diode module. The laser could be a source of light that puts out a straight line, pencil beam, of light of a single colour. The LDR is sensitive to light. The LDR is connected to the Arduino UNO. When the laser beam is interrupted and can't reach the LDR, its voltage output changes, and the circuit senses the change and puts out a warning in the code and then the buzzer starts alert signals. The project basically works on the principle of Laser light Intensity. If by any means the laser light is interrupted the alarm will start unless it is reset with the password that we interpreted in the source code.



#### IV. HARDWARE REQUIREMENTS

##### 4.1 ARDUINO UNO

The Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino. The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits.



##### 4.2. LASER MODULE

This KY-008 Laser transmitter module consists of a 650nm red laser diode head, a resistor and 3 male header pins. Handle with caution, do not point the laser beam directly to the eyes.



#### 4.3 LDR MODULE

Light Dependent Resistor is a device whose resistivity is a function of the incident electromagnetic radiation. It is often used to indicate the presence or absence of light, or to measure the light intensity.



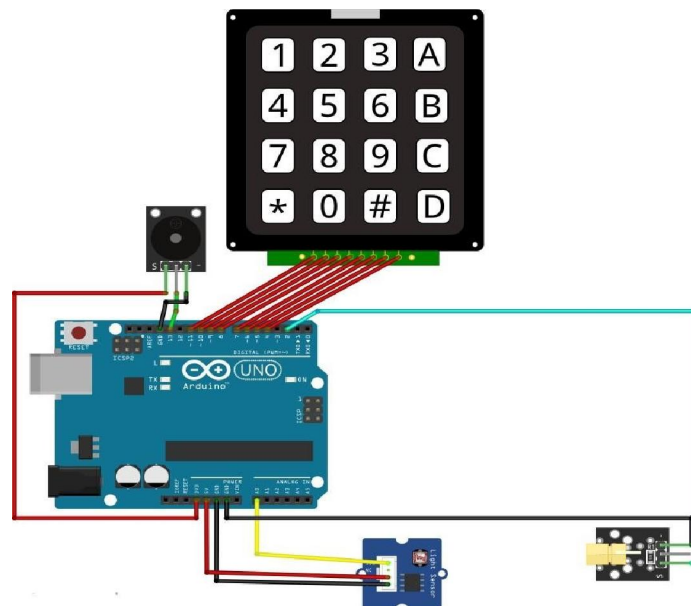
#### 4.4. BUZZER MODULE

Buzzer module produces a single tone audio when voltage drop is high. It generates an audio signal of approximately 2.5 kHz when voltage drop is high.



### V. IMPLEMENTATION

The assignment mainly works on the norm of interruption. If by any means the Laser light is interrupted the buzzer will start unless it is reset with push button. The laser is concentrated light source that puts out a straight beam of light of a single colour. The Arduino UNO has provided a power supply. Implement the program and upload it to the Arduino UNO with the help of cable. Then the laser is connected with the Arduino UNO and to the opposite side of the laser an LDR module is placed. The LDR is connected to the Arduino Uno. The buzzer is connected to the Arduino UNO as an output so that it can intimate to the owner.



## **VI. ADVANTAGES**

- Affordable
- It is good for environment.
- It is very simple to induct or fix.
- It cannot be tampered easily.
- It is easy to conceal.
- Not just for intruders also for objects and some other applications.

## **VII. CONCLUSION**

Security Alarm Using Tripwire Laser gives us the protection from any crime, theft in our everyday life thus individuals are installing them so as to remain sheltered, secure and sound. Various electronic security systems can be used at home and other important working places for security and safety purposes. It is one of the best opportunity and source of saving man power contributing no wastage of electricity. The “Security Alarm Using Tripwire Laser ” is an important and helping system.

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