

Article

A Study on Control of Programmed Highway Light by means of Relay and LDR

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How to cite this article:

Bhargave S. A Study on Control of Programmed Highway Light by means of Relay and LDR. *J Adv Res Microelec VLSI* 2020; 2(1): 1-3.

Date of Submission: 2020-04-10

Date of Acceptance: 2020-05-05

A B S T R A C T

This system is aimed at implement intelligent light system to reduce power consumption dropping the power consumption during hour usage .control the street lights through manually, but it is a time taken the process was lagging due to this .The automatic Street Light Control System has the provision to control the street lighting/yard lighting/quarry lighting system automatically as per the intensity of light Here we also use a LDR so that we can control the lightning system with the help of its sensor LDR is a light dependent resister whose resistance varies with light. Its resistance diminution with increase in light. Thus it senses the light and it switches on the lightning system when there is no light. The system uses a LDR to sense the light. It doesn't need manual operator. The industrialized electronic device upsurges bulb life in result of the dimming effect. LDR and, Relay are the main components of the system. LDR sensor is like our eye which perceives the presence of an object and Relay is an electromagnetic device which is used to isolate two circuits electrically and connect them magnetically.

Keywords: BC547, Light Dependent Resistors (LDR), Relay, battery

Introduction

Street lighting gives safe night time for all road users. From survey indicates that night-time vehicular accidents are decreased by the provision of street lighting. It also helps to reduce the fear of Crime, by providing an environment in which people feel they can walk in darkness. Providing street lighting is one of the most important and responsibilities of a city. Energy efficient system and design can decrease street lighting costs We can control the street lights through manually, but it is a time taken and also time sheathing probabilities are there so, the procedure was lagging due to this. So this project i.e. The Electronic Street Light Control System has the provision to control the street lighting in the system.^{1,2}

Here we also expenditure a LDR so that we can control the lightning system with the help of its sensor. LDR is a light dependent resister whose resistance varies with light. Its



resistance decreases with increase in light. Thus it senses the light and it switches on the lightning system when there is no light.³⁻⁷

Related Work

The imperative contemplation in the present system is Automation, Power consumption and charge proficiency. Power saving is the main consideration forever as the foundations of the power are in receipt of persistent due to numerous clarifications. Automation is assistance to moderate man power with the backing of advance system. The imperative and demanding existence of humans has goes to precocious swapping of street lights. The consequence lot of power is unexploited.⁸⁻¹⁴

Proposed System

In this classification, suggest automatic streetlight control system as publicized in below figure comprises of relay, LDR, and BC547 transistor. By exhausting the LDR we can activate the lights, when the light is obtainable then it will be OFF and when it is dark the light will be in ON, it means LDR is inversely proportionate to light. When the light falls on the LDR it directs the commands to the relay that it should be in the OFF then it switch OFF the light. We use a relay to act as an ON/OFF switch.^{15,16}

In this circuit, we have used an LDR (Light Dependent Resistor) which is answerable for detecting light and darkness. The resistance of LDR intensifications in darkness and diminishes in occurrence of light. This circuit is similar as a Dark Detector or Light Detector Circuit, solitary at the present we have substituted simple LED with an AC load, using a Relay. Every time light falls over LDR its resistance get concentrated and transistor Q1 turns ON and gatherer of this transistor goes LOW, and this makes the second transistor turns OFF due to accomplishment a LOW signal at its base, consequently relay likewise persist turned OFF due to second transistor.

Presently every time LDR minds Darkness, uncaring no light, then transistor Q1 turned ON due to proliferation in the resistance of LDR which is accountable for voltage drop at the base of Q1. Outstanding to a LOW signal at the Q1 base, Q2 transistor gets a HIGH signal from the collector of Q1 and turns ON the relay. Relay turned ON the AC load that is associated to relay. Q1 and turns ON the relay. Relay turned ON the AC load that is associated to relay. A 10K pot is likewise castoff for background up the sensitivity of the circuit. Two BC547 NPN transistors are used to drive the relay.

Table I.Component Description

Component name	value	Quantity
BC547	-	2
Potentiometer	10K	1
Relay	12V	1
LDR	-	1
Resistor	1K	1
Battery	12V	1

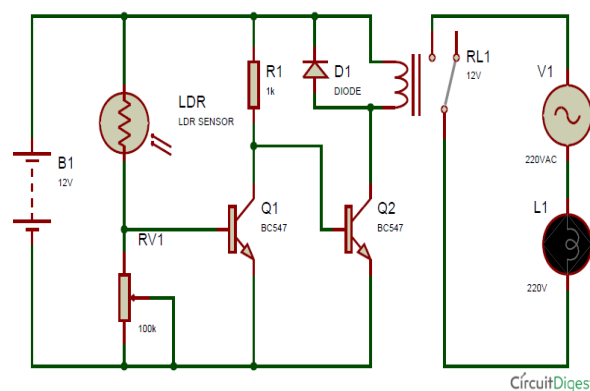


Table I.Component Description

Figures/Captions

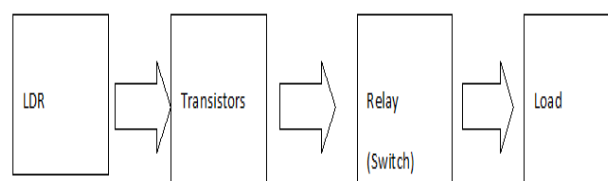


Figure I.Block Diagram of System

Conclusion

We have showed here a study about the construction and design unthinking system. The system shown is economical and avoid wastage of energy. It help us to make available suitable solution of manual switching of lights. The intensity of light is checked and lights are turned ON when it is dark and turned OFF during the day. Thus this system once implemented on a large amount can bring diminutions in the power consumption caused by street lights. Here saving lot of power without any wastage, by this advanced system. As the LED takes less energy with white light emanation and has an improved life associated to high energy consuming lamps. Stirring to the innovative & renewable energy sources, this system can be upgraded by replacing conservative LED modules with the solar-based LED modules. This system can be effortlessly employed in street lights, smart cities, home computerization, agriculture ground monitoring, apposite automated lights, parking lights of hospitals, malls, airport, conservatoires and productions etc.

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