

Automatic Street Lights

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Abstract

This project is all about to control the power consumptions at the streets and eliminating manpower. This includes controlling a circuit of street lights with specific Sensors, LDR and Microcontrollers during day and night.

Keywords: Introduction-block diagram, Sections-required hardware/software, circuit diagram and proposed model, advantages, applications, future aspects, Conclusions.

1. Introduction

Street lights are the major requirement in today's life of transportation for safety purposes and avoiding accidents during night. Despite that in today's busy life no one bothers to switch it off/on when not required. The project introduced here gives solution to this by eliminating manpower and reducing power consumption.

This requires three basic components i.e. LDR, Sensors and microcontroller. During daytime there is no requirement of street lights so the LDR keeps the street light off until the light level is low or the frequency of light is low the resistance of the LDR is high. This prevents current from flowing to the base of the transistors. Thus the street lights do not glow. As soon as the light level goes high or if light falling on the device is of high enough frequency, photons absorbed by the semiconductor give bound electrons enough energy to jump into the conduction band. The resulting free electron (and its hole partner) conduct electricity, thereby lowering resistance. Now the circuitry goes in on condition and the block diagram represented here starts working.

1.1 Block Diagram

When LDR allows the current to flow this block diagram of circuitry goes into working condition. IR sensors start emitting IR rays via IR transmitters. As soon as

2.2 Circuit Diagram and Proposed Model

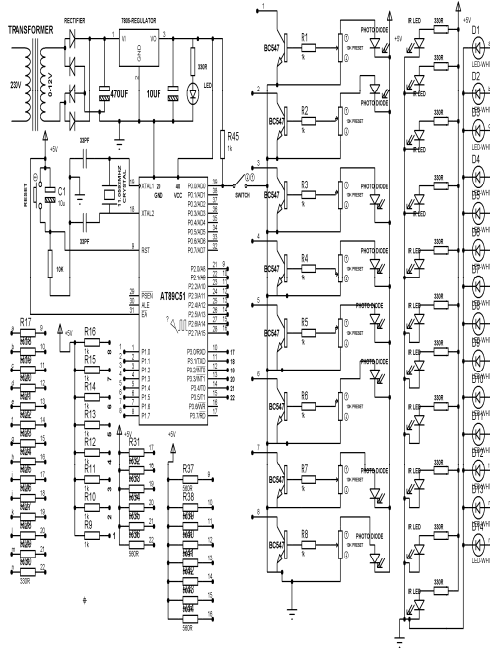


Figure 2.2.1: Circuit Diagram

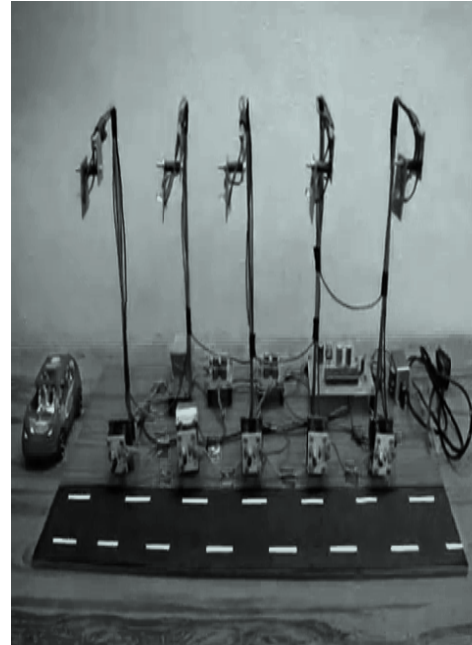


Figure 2.2.2: Proposed Model of Automatic Street Lights

2.3 Advantages

- Complete elimination of manpower
- Reduced energy costs
- Reduced green house gas emissions
- Reduced maintenance costs
- Higher community satisfaction
- Fast payback

2.4 Applications

- Balcony / stair case / parking Lightings
- Street lights
- Garden Lights

2.5 Future Aspects

- Pole damage detection with the addition of a suitable sensor.
- Taxi call buttons on lamp posts to signal to the network management centre to generate a Taxi call to the appropriate location.
- If the system has traffic speed sensors then this information could be used to manage traffic speed via the dimming of the streetlights. If the average traffic

speed is too fast during evening and night hours, this could be used to trigger a slight dimming of the streetlights. The level of dimming would be imperceptible to motorists but they would slow down, regardless, in response to the slightly diminished lighting. A five percent light reduction slows traffic but is not noticeable to motorists.

- With the added intelligence in the lamp, you can add further features to increase HID lamp life, such as softer start-up and protection against re-igniting an already hot HID lamp, since this shortens the lamp life.
- Information management

3. Conclusions

This project of AUTOMATIC STREET LIGHTS is a cost effective, practical, ecofriendly and the safest way to save energy. It clearly tackles the two problems that world is facing today, saving of energy and also disposal of incandescent lamps, very efficiently. According to statistical data we can save more that 40 % of electrical energy that is now consumed by the highways. Initial cost and maintenance can be the draw backs of this project. With the advances in technology and good resource planning the cost of the project can be cut down and also with the use of good equipment the maintenance can also be reduced in terms of periodic checks. The LEDs have long life, emit cool light, donor have any toxic material and can be used for fast switching. For these reasons our project presents far more advantages which can over shadow the present limitations. Keeping in view the long term benefits and the initial cost would never be a problem as the investment return time is very less.

The project has scope in various other applications like for providing lighting in industries, campuses and parking lots of huge shopping malls. This can also be used for surveillance in corporate campuses and industries.

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