ABSTRACT

This world is full of different kinds of light sources of them natural ones others are man-made. As we know there is no intermediate level in the man-made to set according to the surrounding lighting condition. These leads to the wastage of electricity. In this paper we introduce an advance light control system which is implemented on an embedded platform & is described with a photo sensitive detector (LDR) which give input for operation. The working of this system is based on the amount of luminous energy.

1. Introduction

We are living in the world of automatics devices from your washing machine to the mobile phones. They are much important for us because they are time savers and also energy savers. The main objective of this paper is to work for auto-intensity control of LED based on LDR which is interfaced to an Arduino board. In this system as the surrounding lights starts go down from evening to night, the light intensity increases and starts decreases from night to early dawn as we can save energy. As describe earlier this application includes park lights, street light, head light in automobiles. Relay is used to provide isolation between Arduino and 220 volt AC supply. The is to reduce the amount of energy which is consumed and thus reduction in cost also occur.

2. PROPOSED SYSTEM

The main aim as describe earlier is to provide an efficient and energy saving system by implement the outside lighting system and then adjusting the lights accordingly. The device which is very important part of the circuit is a sensing element known as LDR, which is followed by processing unit Arduino which takes input for sensing element and gives its output to the LEDs (lighting units). There is also other units which are used to supply higher voltage such as relays, transistors etc. LDR units senses the light and sends the signals to Arduino. Then the Arduino device work on the data and gives its response to the LEDs through the relay mechanism. The programming of the Arduino in such a way that it automatically adjusts the light to represent the most accurate result as possible.

3. Architecture Design

The pictorial representation of our model is as follow:

4. CIRCUIT COMPONENT

Light Dependent Resistor (LDR)
Arduino UNO
Light Emitting Diodes
Relays

4.1 LDR

The full name of LDR is Light Dependent Resistors Sensors. As the name suggests the resistance is dependent upon the light incident on it. The resistance of the LDR is change according to the intensity of light. It work as the variable resistor. Its help in regulation of the lighting of our lighting system according.

4.2 ARDUINO UNO

Arduino is an open source electronics platform based on easy to use hardware and software. Arduino board is able to read input light on a sensor, a figure on a button or a twitter massage and turn it into an output activating a motor, turning on an LED, publishing something online. The contribution of Arduino have added up to an incredible amount of accessible knowledge that can be great help to novices and experts alike. It has been use in thousands of different type of operation, applications. It flexible enough for advance users.
Teachers and students are used it to prove their physics and chemistry problems.
The UNO is one of the more popular family member of the Arduino family.

4.3 RELAYS AND LEDS

In this project whenever high voltage supply has used then Relay is used to provide isolation between low voltage and high voltage circuitry. Arduino is also used to provide control signals to relay whenever the intensity of light falls below a certain level. Control signals is generated from pin 13 of Arduino board which is given to the light.

LEDs: These are the PN junction diodes, which emits light when activated. When we apply voltage across the LEDs, electron becomes active and recombine with holes and releasing much energy in the form of photons which give light. Thus we can say that these are two lead semiconductor

8. WORKING PRINCIPLE

In is give supply is given by the power jack. From the Arduino we take 5v supply and one terminal of the photo resistor is connected and other is connected to a resistor of 10k which acts as the voltage devider and then connect to ground. The output is given by output pin 13 which is connected to the LED through a 220 ohm resistor. The amount of sending data to the Arduino is dependent on the amount of light which senses through the LDR from the environment.

The arduino converts the received content to the discrete levels. We adjust the output voltage from 0 to 5 v. So when there is darkness the result is 5 v the LED is a brightest and for completely brightness the output is 0 v. when there is partially darkness than output is 2.5v. As a result the LED is half of the maximum brightness.

Thus LEDS not only work as a switch but also adjust the amount of light emitted according to the outside condition.

9. SCHEMATICS VIEW:

As given below:

![Schematic Diagram]

10. CONCLUSION

This Arduino project will provide a competent method for lighting system and make the whole process of energy easier and efficient. No doubt it is a great innovation with many future application such as head light, street light, industrial light etc. There is no doubt that SMART LIGHT system change the world that we can see around us.

11. References