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Article

# IoT Based Dimmable Driver

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## I N F O

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## A B S T R A C T

In this contemporary era where energy is the main apprehension worldwide, it is our prior responsibility and accountability to save energy efficiently. With the growth of technology, where automation system plays a vital role in daily life knowledge and also it is being favourite over the outmoded manual system today. The main determination of this project is to discover an intelligent system which can make decisions for luminous control (ON/ OFF/ DIM) considering the light intensity 30 percent of a city's electricity is expended by lighting the streets. The contemporary situation is like, the street lights will be on in the evening before the sun sets and they are switched o_ the next day morning after there is enough light on the roads, occasionally the street light remains on in daylight. Being an energy saving age, it is accountability to save energy effectively. This project gives the best solution for the wastage of electricity. If the traffic decreases significantly say between 1:00 AM and 6:00 AM, then dimming the lights is the best solution. It will reduce the illumination of the street lights to 20 percent whenever no vehicle was noticed. The Internet of Things can also be considered as a global network which allows the communication amid human-to-human, human-to-things and things-to-things, which is whatever in the world by providing unique identity to each and every object. IoT describes a world where just about anything can be linked and communicates in an intelligent fashion that ever before.

**Keywords:** Arduino, ESP8266, IC LM358, LED Panel

## Introduction

Internet of Things is actually playing a vital and important role in our everyday life, after its showing up. It shows a remarkable change over traditional system and other traditional and general household equipment to make our life better. IoT is basically a combination of Operational Technology (OT) and Information Technology (IT) which allows unstructured machine-generated data to be analyzed for insights that will drive improvements. IoT is actually the internetworking physical devices, embedded with electronics, software, sensors which enable these objects to collect and exchange data from an ecosystem. Here why we mention IoT? Because all these mentioned components are used here to make an effective ecosystem. Drivers with dimming capability can dim the LED light output over the full range from 100% to 0%. There is no unique definition available for Internet of Things that is acceptable by the world community of users. IoT is having the potential to change the lifestyle of peoples. In day todays life, people prefer more of automatic systems rather than any manual systems. In fact, there are many different groups including academicians, researchers, practitioners, innovators, developers and corporate people that have defined the term, although its initial use has been attributed to Kevin Ashton, an expert on digital innovation. What all of the definitions have in common is the idea that the first version of the Internet was about data created by people, while the next version is about data created by things. The best

definition for the Internet of Things would be: An open and comprehensive network of intelligent objects that have the capacity to auto-organize, share information, data and resources, reacting and acting in face of situations and changes in the environment Compared to incandescent and fluorescent lighting, LEDs offer many advantages including long lifetime, higher energy efficiency, lower life cycle costs, and enhanced light quality. But LEDs are additional than just substitutes for traditional lighting solutions. They are also integrally electronic devices, and when controlled with smart dimming modules and power supplies used for smart home lighting and building lighting, LED luminaires can effortlessly be combined into the smart networks and digital control systems that are commencement to include the Internet of Things(IoT).

## Literature Review

Pavithra.D[1] The project proposes an efficient execution for IoT (Internet of Things) used for monitoring and controlling the home applications via World Wide Web. Home automation system uses the portable devices as a user interface. They can interconnect with home automation network through an Internet gateway, by means of low power communication protocols like Zigbee, Wi-Fi etc. This article purposes at controlling home appliances via smart phone using Wi-Fi as communication protocol and raspberry pi as server system.

Wei Song, Ning Feng, Yifei Tian[2] the largest power is expended by heating and cooling air conditioners, which are widely used in residential and commercial buildings. Hence, reducing energy consumption of air conditioners is vitally important for improving power utilization efficiency in global energy perspective. To save electricity consumption of air conditioners, this paper proposes an Internet of Things (IoT)-based smart controlling system including smart meter, smart gateway, cloud computing modules. We manufacture a smart meter to control the compressor operation of air conditioners based on the specified temperature.

Wen-Chung Tsai[3] In the network and communication generation, smart-phone is carried by almost every persons. As such, IoT (Internet of Things) device controlled by smartphone over wireless and telecommunication network such as WiFi and LTE (Long Term Evolution) is a promising technology. Accordingly, this paper implemented a PWM (Pulse Width Modulation) signal generation module and integrated it in a FPGA (Field Programmable Gate Array) embedded system to realize an IoT type electric fan that can be remote controlled by smart-phone. Furthermore, the implemented remote controlled framework can be utilized to control other household electric appliances such as refrigerator, washing machine, and air conditioning to achieve the purpose of convenient and smart appliances control.

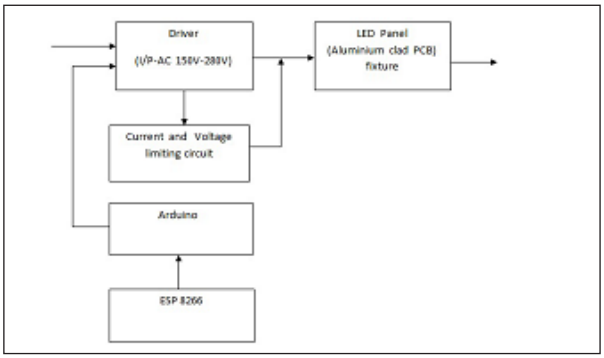
Somayya Madakam, R. Ramaswamy, Siddharth Tripathi[4] The forthcoming is Internet of Things, which will transmute the real-world objects into intelligent virtual objects. The IoT aims to unify everything in our world under a common infrastructure, giving us not only control of things around us, but also keeping us knowledgeable of the state of the things. In Light of this, present study addresses IoT concepts through methodical review of scholarly study papers, business white papers, professional deliberations with experts and online databases. Additionally, this investigation artefact focuses on definitions, origins, basic supplies, appearances and aliases of Internet of Things. The chief purpose of this paper is to provide an overview of Internet of Things, architectures, and vital knowledges and their usages in our daily life.

## Proposed System

The objectives of this system include:

- To design dimmable driver based on concept of IOT.
- To control the light from remote location using IOT.

### Block Diagram




### Description

**LED Driver:** It is an electronic circuit used to power LED. The circuit must provide sufficient current to light the LED at required brightness, but must limit the current to prevent damaging the LED. The voltage drop across an LED is approximately constant over a wide range of operating current. The simplest circuit to drive an LED consists of a voltage source and two components connected in series: a current preventive resistor and LED. An LED has a voltage drop at operating current. Ohms law and Kirchho's law are used to calculate the resistor value to obtain desired current. The value is calculated by subtracting the LED voltage drop from supply voltage and dividing by desired operating current.

**LED Panel:** Clighting industry, LED panel light, as one popular back light LED lamp, is well-known for its streamlined structure design, uniform light output and no glare problem. Nowadays, LED panel light has become one of the most popular LED lamps in modern interior lighting.

**Controlling Circuit:** In this we control the current and voltage of circuit. It is also known sensing circuit. There are 2 operational amplifier used to sense voltage and current error.

## Conclusion

The planned system provides solution for old age and disable peoples. It also decreases the human efforts. In, this system, we used IoT concept to control the lights from any position. LDR is castoff to detect status of light and this data is send to the cloud.

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