NOVA LED ROOM LIGHTING CONTROLLER

Project report is presented in partial fulfillment for the award of the Bachelor of Electrical Engineering (Hons.)

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ACKNOWLEDGEMENTS

All praises be to Allah, Lord of the Universe, the Most Merciful who gives strength and ability to complete this thesis and Beneficent to Prophet Mohammad S.A.W on the members of his family and his companions.

First, I would like to express my sincerely gratitude and appreciation to my family for giving me support through my university years.

Secondly, I would like to special appreciation to my supervisor, Rosidah Sam, Asso. Prof. Ir Dr. Shah Rizam Mohd Shah Baki and Dr. Ahmad Maliki Omar, lecturers who devoted their time in giving me the guidance and sharing knowledge towards the completion of this thesis.

I am also indebted to the various help and discussion offered by Ahmad Muzaffar Mustapha, Mohd Rozilah Yusof, Mohd Hasemy Hassan, Mohd Muzakkir Abdul Latif and staffs of Power Electronic Laboratory, Faculty of Electrical Engineering.

Last but not least, to my best friends Yuhaida Daris, Saodah Omar and others my fellow friends, I am very grateful for your helps and supports.

Thank you

ABSTRACT

In the recent years, many lamps are already developed based on LED, and it is successful. But there are no lamps that are designed based on surface mount technology (SMT) LED and one of the existing SMT LED is the Nova LED. Several lamps prototypes based on this Nova LED had been developed, but without it controller.

Thus, this project will concerns with the design of lighting controller that compatible to the new technology of Nova LED lamp. Automatic and manual with presence detection lighting system that controls the Nova LED light level with considers to the room ambient level and user conveniences. This lighting control system provides an energy optimization and efficient with the developed software on the microcontroller. The used microcontroller to perform this controller is PIC16F873.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Among the use of energy, lighting spans all human activity. Nearly all forms of artificial lighting in the world today are met by electricity which happens to be the most expensive form of energy. Again, the production of lights is probably one of the least efficient uses of electricity. The efficiency of conversion from electricity to light energy ranges from only few percent for incandescent bulbs to less than 75 percent for even most efficient light sources.

As electricity demand continuous to grow in most countries this requirement for lighting has to be critically analyzed as one way to contain the rate of growth of electricity in particular and energy in general. Although it may account for a small portion of the total energy consumption of a country, its effects are nevertheless still significant [1].

However, a bigger potential to reduce energy for lighting in both developed and development countries is made possible by lighting technological advances.

1.2 Lighting Technologies

Technology improvements have been taking place in different areas over time. These can be classified as improvements in lamps, lamp ballasts and control equipment, lighting controls, and lighting fixture and luminaries.

1.2.1 Lighting Controls

Lighting controls are needed because; first, the actual lighting levels needed are lower than what are designed for. Change in use of space can also result in different levels needed. Second, variations in occupancy,