DESIGN OF BURGLAR ALARM SYSTEM FOR

HOME SECURITY

MUHAMMAD RAZAK BIN ABDUL KARIM

MAY 2009

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DESIGN OF BURGLAR ALARM SYSTEM FOR HOME SECURITY

MUHAMMAD RAZAK BIN ABDUL KARIM

A Project Report Submitted In Partial Fulfilment Of The Requirements For Awarding The Degree Of Bachelor Of Electrical Engineering (Industrial Power)"

Fakulti Kejuruteraan Elektrik
Universiti Teknikal Malaysia Melaka (UTeM)

MAY 2009

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"I hereby declared that I have read through this report and found that it has comply the partial fulfillment for awarding the degree of Bachelor of Electrical Engineering

(Industrial Power)"

Signature : …….

Supervisor"s Name : P. M. Dr. Musse Mohamud Ahmed

Date : ……

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"Saya akui bahawa saya telah membaca karya ini pada pandangan saya karya ini adalah memadai dari skop dan kualiti untuk tujuan penanugerahan Ijazah Sarjana Muda Kejuruteraan Elektrik (Kuasa Industri)."

Tandatangan : …….

Nama Penyelia : P. M. Dr. Musse Mohamud Ahmed

Tarikh : ……

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"I hereby declared that this report is a result of my own work except for the excepts that have been cited clearly in the references"

Signature : ……

Name : Muhammad Razak Bin Abdul Karim

Matrix Number : B010510167

Date : 13 / 05 / 2009

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Tandatangan : ……

Nama : Muhammad Razak Bin Abdul Karim

No. Matrik : B010510167

Tarikh : 13 / 05 / 2009

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For my beloved father and mother

Abdul Karim Bin Mohamed Sultan and Faridah Binti Mat Noh

For all supported and understanding.

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بِسۡمِ ٱللَّهِ ٱلرَّحۡمَٰنِ ٱلرَّحِيمِ

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ABSTRACT

Propose of this project is to design a home security system with alarm system. This project was designed to secure at the residential and commercial areas. It was concerned about alarm system that will detect the intruder. As we know, nowadays there are a lot of robberies cases happen in everywhere. This is because of the lack of effective security system of their homes and premises. So, to solve this problem the Burglar Alarm System for Home Security is the good way to resolve. The project design includes the control circuit that uses to control all of the operations in the circuit. It has an integrated circuit (IC) that acts as control centre in the circuit. The IC will receive the signal from the sensor mechanism and then the relay will function to operate an alarm. To produce this security system, the better and good sensor is important because it will effect the circuit operation. Besides that, the quality of the components also must be ideal to make the circuit run smoothly. Finally, this project can be applied to improve home security system and the resident life will be protected

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ABSTRAK

Tujuan projek ini dijalankan adalah untuk menyediakan suatu sistem keselamatan rumah dengan menggunakan system penggera. Projek ini dihasilkan adalah untuk memastikan keadaan kawasan rumah berada dalam keadaan selamat untuk dihuni. Ianya lebih menitikberatkan terhadap penggunaan sistem penggera yang digunakan untuk mengesan sebarang pencerobohan. Sepertimana yang kita ketahui, sekarang ini terdapat banyak kes pencerobohan di setiap rumah. Hal ini mungkin disebabkan oleh kelemahan sistem keselamatan rumah tersebut. Oleh itu, bagi mengatasi masalah ini penghasilan „Burglar Alarm System for home security" merupakan langkah terbaik dalam mencari jalan penyelesaian. Di dalam projek ini, ianya mengandungi litar kawalan yang mana ianya digunakan untuk mengawal secara keseluruhan pergerakan dan penghasilan keputusan yang berlaku di dalm litar. Ianya mengandungi IC yang akan bertindak sebagai pusat kawalan di dalam litar. Apabila terdapat sebarang isyarat yang dihasilkan daripada mekanisma sensor, IC akan memperolehinya terlebih dahulu sebelum dihantar kepada penggera untuk berfungsi. Bagi menghasilkan system keselamatan penggera ini, penggunaan dan pemilihan sensor amat penting kerana ianya akan mempengaruhi operasi litar tersebut. Selain itu, komponen yang berkualiti perlu digunakan supaya operasi litar berjalan dengan lancar. Akhir sekali, dengan penghasilan projek ini, ianya akan dapat diaplikasi untuk menjamin keselamatan rumah dan penghuninya akan hidup dalam keadaan tenang dan aman tanpa sebarang gangguan.

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LIST OF ABBREVIATIONS

AC	Alternating Current
DC	Direct Current
LDR	Light Dependent Resistor
NC	Normally Close
NO	Normally Open
IC	Integrated Circuit

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CHAPTER 1

INTRODUCTION

1.1 Project Overview

The main objective of this project is to design Burglar Alarm System for Home Security. For this system, the alarm will be switched on under the following different conditions. First, when light falls on the LDR1 (at back door of the premises). Secondly, when laser that focus on LDR2 is obstructed from the intruder's shadow. Third is, the alarm will operate when the door, windows and step detector that acts as a switch is open.

This project is concerned about designing alarm system that detects the intruder. It is to control the system with Integrated circuit (IC) that is included in the circuit. IC will receive the signal from the sensors mechanism and then a relay will be energized to operate the alarm system. This project will be used IC NE 556. In addition, it will be used voltage regulator, sensors, alarm and other components.

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Multisim software is used to test the connection of all components. In this project, the sensors mechanism will be related with the control circuit to produce a good result in the alarm system.

The circuit development also included during the implementation of this project, in this part the components is assembled and soldered into one circuit. Then, the result is obtained when the operation of circuit testing has been done. To make this project more interesting, the model of the house was built and the circuit was wired with it. In overall, from this system, it can make the homes more secure and more safely.

1.2 Objectives of the Project

The following objectives will be based as security system to protect the homes and residential premises:

- To detect an intrusion.
- To deter crime.
- To protect life and properties.
- To activate a warning device upon detection of an intrusion.
- To bring an appropriate response to the security emergency situations.
- To enhance the apprehension of criminals.

1.3 Probem Statement

Nowadays, the alarm system for home security is very important to every house because there are have a lot of robbery cases happen in everywhere. This alarm system actually can alert a resident from any intruder. It is important to safeguard the homes on everyday basis, especially when resident travels or away for certain period of time. So, before

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making any travel, residents must make sure that their homes are save to leave. That why is a security system was created to solve of this problem. In another word, this system is an investment for the peace of the residents. The security means the life of the people is being protected against danger, loss, and criminals. In the general sense, security is a concept similar to safety. So, when using this system, it will make the home and life of the residents more safely from any intruders.

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1.4 Project Scope

- To study the better system for home security method.
- To design and simulate the circuit by using software Multisim.
- To do analysis and experiment on the circuit.
- To make the circuit operational.
- To make a full report.

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