

“MCU Based Programmable AC Socket”

A Project Study

Presented to the Faculty of

College of Engineering, Architecture and Technology

DE LA SALLE UNIVERSITY DASMARÑAS

Dasmariñas, Cavite

In Partial Fulfillment

Of the Requirements for the degree

Bachelor of Science

Major in Electronics and Communications Engineering



DE LARA, FRANSEN ORVILLE

CAGUIAT, JOEY ALBERT

DELOS REYES, JOHN MIKHAIL

October 2008

Table of Contents

TITLE PAGE.....	i
APPROVAL SHEET.....	ii
ACKNOWLEDGEMENT.....	iii
TABLE OF CONTENTS.....	iv
LIST OF FIGURES AND TABLES.....	viii
LIST OF APPENDICES.....	ix
ABSTRACT.....	xi
CHAPTER I	
The Problem and its Background	
Introduction.....	1
Background of the Study.....	2
Conceptual Framework.....	3
Statement of the Problem.....	5
Scope and Limitations.....	6
Significance of the Study.....	7
Definition of Terms.....	7

CHAPTER II

Review of Related Literature

Conceptual Literature.....	9
Related Studies.....	12

CHAPTER III

Methodology and Procedures

Research Method.....	15
Research Instruments and Techniques.....	15
Project Design and Development.....	17

CHAPTER IV

Data and Results

Project Description.....	24
Process Flow.....	25
Prototype Testing.....	26
TRIAC, Contactor and SSR Data.....	29

CHAPTER V

Conclusion and Recommendation

Conclusion.....	30
Recommendation.....	31
Bibliography.....	31



List of Figures and Tables

Table 1.1 Research Plan.....	4
Figure 2.1 Image of an ETS (Electronic Timer Switch).....	9
Figure 2.2 Schematic of ETS.....	10
Table 2.1 Parts List of ETS.....	11
Figure 2.3 Picture of the APO3.....	12
Table 2.2 Voltage threshold and Shutdown delay.....	14
Figure 3.1 Power Supply Interface.....	17
Figure 3.2 Power Supply PCB.....	18
Figure 3.3 MCU PCB.....	19
Figure 3.4 TRIAC.....	19
Figure 3.5 Relay PCB.....	20
Figure 3.6 A researcher programming the prototype.....	21
Figure 3.7 Researcher programming the prototype.....	22
Figure 3.8 The proponents programming the prototype.....	23
Figure 4.1 MCU BASED PROGRAMMABLE AC SOCKET.....	24
Table 4.1 Data and Results of testing the prototype.....	28
Table 4.2 Triac, Contactor and SSR.....	29

List of Appendices

Appendix A

User Manual.....	33
------------------	----

Appendix B

Price List.....	35
-----------------	----

Appendix C

Specification Sheet	
PIC16f877.....	37
PN2222A.....	41
1N4001.....	43
1N5400.....	44
LCD 20X4 and KEYPAD.....	45
LM7805.....	50
SSR.....	52
TRIAC.....	53

Appendix D

Program List.....	54
-------------------	----

Appendix E

Program Flowchart.....	71
------------------------	----

Appendix F
Certification.....98

Appendix G
Gant Chart.....100



ABSTRACT

Name of institution: De La Salle University – Dasmariñas

Title: MCU BASED PROGRAMMABLE AC SOCKET

Proponents: Fransen Orville T. de Lara

Joey Albert Caguiat

John Mikhail delos Reyes

Funding Source: Parents and Proponents own

Date Started: June 2008

Date Finished: October 2008

Degree: Bachelor of Science in Electronics and Communications
Engineering

This paper presents the adaptation and design of a socket capable of turning off appliances automatically. It is entitled "**MCU BASED PROGRAMMABLE AC SOCKET**". The study is a prototype that automatically turns off an appliance at desired time, depending on the input time of the user. This paper shall cover the process of development, its features, its limitations and capabilities. However, it does not include a thorough explanation on the theory and design, rather more on application and modification of already working models.