

STEPPER MOTOR CONTROL USING PIC
MICROCONTROLLER BASED ON LIGHT INTENSITY

LAU AIK LENG

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SCHOOL OF ELECTRICAL SYSTEM ENGINEERING
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STEPPER MOTOR CONTROL USING PIC MICROCONTROLLER
BASED ON LIGHT INTENSITY

by

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DECLARATION SHEET

I hereby declare that my Final Year Project Thesis is the result of my research work under supervision of Mr. Engku Ahmad Rafiqi bin Engku Ariff. All literature sources used for the writing of this thesis have been adequately referenced.

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APPROVAL AND DECLARATION SHEET

This project report titled Stepper Motor Control Using PIC Microcontroller Based On Light Intensity was prepared and submitted by LAU AIK LENG (Matrix Number: 071090294) and has been found satisfactory in terms of scope, quality and presentation as partial fulfillment of the requirement for the Bachelor of Engineering (Electrical System Engineering) in University Malaysia Perlis (UniMAP).

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Stepper Motor Control Using PIC Microcontroller Based On Light Intensity

ABSTRAK

Pada masa kini, sistem kejuruteraan adalah bahagian yang amat penting bagi tempat pembangunan atau mesin untuk menjimatkan tenaga manusia. Pelbagai jenis mechine telah aplikasikan untuk menjimatkan masa, kos dan tenaga manusia. Salah satu daripadanya ialah system mesin automatik yang amat membantu manusia untuk mengangkat atau mengambil barang-barang berat. Stepper Motor Control Using PIC Microcontroller Based On Light Intensity ialah satu komponen yang sangat sesuai untuk projek ini. Projek ini direka dan dibina sistemnya ialah memusingkan stepper motor dengannya. Sistem ini menggunakan penyesuai AC kepada DC yang dapat menghidupkan dan mematikan litar elektrik. Idea utama projek ini adalah untuk mencipta satu sistem yang boleh memberi kesenangan kepada manusia untuk membuat kerja yang berat. Pengawal mikro PIC 16F628A digunakan sabagai otak di dalam sistem ini yang akan mengawal system melalui satu kod C (kod sumber) yang dibina menggunakan pekakas lembut PIC C Compiler atau nama lain ialah PIC kits. Di dalam projek ini ia boleh mengawal secara manual oleh manusia sendiri. Oleh itu, ini adalah selamat untuk menggunakan system stepper motor kepada industri berat dan industri kecil-sederhana.

Stepper Motor Control Using PIC Microcontroller Based On Light Intensity

ABSTRACT

These days the engineering system is an important part for a construction site and machinery to save the energy such as man-power. A lot of machinery types have been applied to saving times, money and power energy. One of the systems is automatic machinery systems which are really helpful for human beings especially to carrying the heavy things. Stepper Motor Control Using PIC Microcontroller Based on Light Intensity is a device that is suitable for this project. The output is the performance of rotating of the stepper motor to carry the object. The system is powered by using AC to DC adapter. The main idea in this project is to create a system which can provide a machinery for the human daily works. At the heart of the project is a PIC 16F876A microcontroller which will be used as a brain of the system and control the system through a source code (C code) built using PIC C Compiler software or called PIC kits. In this project, it can be controlled manually by human. So, it is really safe to use the stepper motor system for any industries.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENT	II
DECLARATION SHEET	III
APPROVAL AND DECLARATION SHEET	IV
ABSTRAK	V
ABSTRACT	VI
TABLE OF CONTENTS	VII
LIST OF ABBREVIATIONS	X
LIST OF SYMBOLS	X
LIST OF FIGURES	XI
CHAPTER 1: INTRODUCTION	
1.1 Project Background	1-2
1.2 Project Objective	2
1.3 Project Scope	2
CHAPTER 2: LITERATURE REVIEW	
2.1 Introduction	3
2.2 Solar System Background	3-4
2.2.1 the Solar Resource and Solar Spectrum	5
2.3 Stepper motor	6
2.3.1 Fundamentals of Operation	6
2.3.2 Stepper motor characteristics	6-7
2.3.3 Open-loop versus closed-loop commutation	7-8
2.3.4 Two-phase stepper motors	8
2.3.4.1 Unipolar motors	8-9
2.3.4.2 Bipolar motor	9-10
2.3.5 Higher-phase count stepper motors	10

2.3.6 Stepper motor drive circuits	11
2.3.7 L/R drive circuits	11
2.3.8 Phase current waveforms	12
2.3.9 Full step drive (two phases on)	12
2.3.10 Wave drive	12
2.3.11 Half stepping	13
2.3.12 Micro-stepping	13
2.3.13 Theory of Stepper Motor	14
2.3.14 Static Torque/ Rotor Position Characteristic	14-15
2.3.15 Pull-in torque	15
2.3.16 Pull-out torque	16
2.3.17 Pull-out Torque/Speed Characteristic for the Hybrid Motor	16-18
2.3.18 Detent torque	19
2.3.19 Stepper motor ratings and specifications	19
2.3.20 Applications	19-20
2.4 Stepper motor controllers	20
2.4.1 Relevant circuits to motor control	21
2.5 Light Dependent Resistor (LDR)	21
2.5.1 Applications	22
2.6 PIC microcontroller	22-23
2.6.1 Performance	24
2.6.2 Advantages	24-25
2.6.3 Limitations	25
2.6.4 PIC 24 and ds-PIC 16-bit microcontrollers	25-26
2.7 Device programmers	27-28
 CHAPTER 3: METHODOLOGY	
3.1 Introduction	29
3.2 Thesis Overview	29-30
3.3 Flow Chart for programming PIC microcontroller	31
3.4 Program Description	32-35

3.5	Hardware Preparation	36-38
3.6	Formulae for Calculation Pull-out Torque	39-40

CHAPTER 4: RESULTS AND DISCUSSION

4.1	Introduction	41
4.2	Calculation Result	41-44
4.3	Discussion	44

CHAPTER 5: CONCLUSION

5.1	Summary	45
5.2	Recommendation for Future Project	46
5.3	Commercialization Potential	46

REFERENCES		46-47
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APPENDICES

Appendix A	C Source Code	49-55
Appendix B	Manual Using MPLab	56-65
Appendix C	PR7 Data Sheet	66-72
Appendix D	Stepper Motor Data Sheet	73-76
Appendix E	PIC 16F 876A Data Sheet	77-82

List of abbreviations

MAC	multiply-accumulate
ICSP	In Circuit Serial Programming
LVP	Low Voltage Programming

List of symbols

E_λ	The emissive power per unit area of a blackbody (W/m ² μm)
T	absolute temperature of the body (K)
λ	is the wavelength (μm)
ψ_M	Maximum flux linking each winding
e_A	rate of change of flux linkages
P	rotor teeth
T_{pk}	<i>Peak static torque</i>
R	Resistance
V_{dc}	<i>Direct Current Voltage(DC voltage)</i>
ψ_M	<i>Phase winding</i>
V	Voltage
ω	<i>angular frequency</i>
f	<i>frequency</i>
L	inductance

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List of Figures	Page
Figure 2.1 Unipolar stepper motor coils	9
Figure 2.2 Different drive modes showing coil current on a 4-phase unipolar stepper motor	12
Figure 2.3 Circuit model for one phase of a hybrid motor	17
Figure 2.4 Light Dependent Resistors (LDR)	21
Figure 2.5 A development board for low pin-count MCU, from Microchip	27
Figure 2.6 Microchip PICSTART Plus programmers	28
Figure 2.7 One type of USB PIC programmer from Cytron Technologies	28
Figure 3.1 Project Flowchart	30
Figure 3.2: Flow Chart of PIC programming on stepper motor	31
Table 3.4.1: Listing program 1	32
Table 3.4.2: Listing program 2	32
Table 3.4.3: Listing program 3	33
Table 3.4.4: Listing program 4	33
Table 3.4.5: Listing program 5	34
Table 3.4.6: Listing program 6	34
Table 3.4.7: Listing program 7	35
Figure 3.5.1 Fix the stepper motor	36
Figure 3.5.2: Fix the rod and rear chain	36
Figure 3.5.3: Connection between stepper motor and PR7 board	36
Figure 3.5.4 Connection between stepper motor and driver	37
Figure 3.5.5: Fix holder	37
Figure 3.5.6: Fix the LDR to breadboard	37
Figure 3.5.7: Fix the ac to dc adapter	38
Figure 3.5.8: Fix the load	38
Figure 3.5.9: Complete connection	38