

MICROCONTROLLER BASED DISTURBANCE DETECTOR

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

**FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
MALAYSIA**



AIMAN BIN ZAIDAN

2011828738

Faculty of Electrical Engineering

UNIVERSITI TEKNOLOGI MARA

40450 SHAH ALAM, SELANGOR DARUL EHSAN

ACKNOWLEDGEMENT

Alhamdulillah. Thank to the almighty Allah S.W.T. for giving me the opportunity to live until now and also for His kindness for giving me the opportunity to complete this project progression as required to complete my study in UiTM Shah Alam for Bachelor of Engineering (Hons.) Electrical (EE221).

I would like to thank and acknowledge to Dr Ahmad Farid Abidin, lecturer in Faculty of Electrical Engineering as my supervisor for sharing his experiences, knowledges, valuable comments and advices to finish my project completely. I also would like to thank him for his suggestion, encouragement, ideas and supports to complete this project.

In addition, thanks to everyone that involved directly or indirectly in finishing this project progression either advice, opinion, criticize, knowledge or helping hands. I especially thank all lecturers, technicians and all staffs throughout my time period during the progress days. Finally, I am deeply grateful to my parents and siblings for their noble and finance support and loving kindness that they had given to me. Lastly, I also want to thank all my friends that gave me supports and ideas in order to finish this final year project completely.

ABSTRACT

This paper discussed on the development of a disturbance detector. This disturbance detector can helps to identify the types of disturbances such as voltage sag and voltage swell that occur in an electrical power system. The detector has been with LCD screen to perform the type power disturbance. The detector has been developed by combining the hardware and software. It involves the use of microcontroller for detection of disturbances with appropriate use of programming. The test verification has been conducted and it is proven that this simples devices can produce a promising result.

TABLE OF CONTENTS

DECLARATION	
APPROVAL	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
TABLE OF CONTENTS	v
LIST OF FIGURES	vii
LIST OF TABLES	viii
LIST OF SYMBOLS OF ABBREVIATIONS	ix
INTRODUCTION	1
1.1 BACKGROUND OF STUDY	
1.1.1 Overview	1
1.1.2 The Electrical Power Quality	2
1.2 PROBLEM STATEMENT	3
1.3 OBJECTIVES	4
1.4 SCOPE OF WORK	4
1.5 THESIS ORGANIZATION	5
LITERATURE REVIEW	7
2.1 OVERVIEW	7
2.2 VOLTAGE SAG	9
2.3 VOLTAGE SWELL	10
2.4 MICROCONTROLLER	11
2.5 FAULT DETECTOR	12
2.6 DISTURBANCE DETECTOR	14

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

1.1.1 Overview

Power System is a system dedicated to the business of electric power comprises of Generation (Production), Transmission (Transportation), and Distribution (Retailing). Power System can also be define as a system that provides a vital service to the society and should be operated with the goal of achieving:

- I. Highest reliability standards;
- II. Minimum environmental impacts;
- III. Lowest operation cost.

Identification and classification of voltage and current disturbances in power systems are important tasks in protecting the power system [1].