

THREE PHASE IGBT INVERTER DRIVE INDUCTION MOTOR

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Most Gracious Most Merciful**

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ABSTRACT

This project involves the design, development and operation of Three-Phase IGBT (Insulated Gate Bipolar Transistor) Inverter Drive Induction Motor. This inverter receives direct current (dc) supply of 220 volt and deliver six-step voltage. The output is used to drive three-phase induction motor. To produce a six step output proper switching using C language is implemented. The design is implemented after the simulation using Pspice has been done. By varying the input frequency the three-phase induction motor can also be controlled.

TABLE OF CONTENTS

CHAPTER		PAGE
1	INTRODUCTION	
	1.1 Introduction	1
	1.2 Scope of the Project Report	1
2	THE SYSTEM OVERVIEW	
	2.1 Introduction	3
	2.2 DC Supply	3
	2.3 Personal Computer	4
	2.4 Gate Driver Circuit	4
	2.5 IGBT Circuit	4
	2.6 Three-Phase Induction Motor	4
3	HARDWARE DESIGN	
	3.1 Introduction	5
	3.2 IGBT Inverter	5
	3.2.1 Operation of IGBT Inverter	6
	3.2.2 Operation Mode 1,2,3 and 2,3,4 of IGBT Circuit	7
	3.2.4 Operation Mode 3,4,5 and 4,5,6 of IGBT circuit	9
	3.2.5 Operation Mode 5,6,1 and 6,1,2 of IGBT Circuit	12
	3.3 Protection	
	3.3.1 Snubber	16
	3.3.2 Anti-Parallel Diode	17
	3.3.3 Heat Sink	18
	3.3.4 Fusing	19
	3.4 Gate Drive Circuit	20
	3.5 PC Parallel Printer Port	23

CHAPTER 1

INTRODUCTION

1.1 Introduction

Over the last few year the number and variety of inverter motor control application has increased tremendously. An inverter converts direct current (dc) power to alternating current (ac) power at a desired output voltage or current and frequency [1]. The output voltage could be fixed or varied depending on the input frequency. Inverters are widely used in industrial applications e.g., variable-speed ac motor drives, induction heating, standby power supplies, uninterruptible power supplies [2].

For an ideal inverter the output voltage should be a sinusoidal waveform, however in practice inverter output are non-sinusoidal and contain harmonics. For an application in low or medium power, a square-wave voltage is acceptable; and for high-power applications, only low distorted sinusoidal waveforms is acceptable [2]. To reduced or minimized harmonics in the output voltage switching techniques with high speed power semiconductor devices are used.

Generally, there are two types of inverter; voltage source inverter (VSI) and current source inverter (CSI). For VSI the input voltage remains constant while for CSI the input Current is maintained constant [2]. For this project VSI is used.

1.2 Scope of the Project Report

The purpose of the project report is to design, develop and build a three-phase IGBT inverter drive induction motor. The C language has been developed to generate signal for the switching strategy. The scope of the work for this project can be divided into three parts, as follow: