FINAL PROJECT OF DIPLOMA PROJECT

AC - DC POWER SUPPLY

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In the name of ALLAH, the Beneficent, the Merciful. The most excellent names belong to ALLAH: so call Him by them; and shun the company (and the blasphemies) of those who use profanity in His names. They will be requited what they do.

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ABSTRACT

Nowadays, AC to DC power supply is very important in our lifestyle and used widely in many commercial sectors especially in industrial, laboratory and public consumer. We also used the AC-DC power supply everyday. Hand phone charger and notebook some of application of AC-DC power supply.

Power supply introduces the operation of power supply circuits that consists of transformer, filters, rectifiers and voltage regulator. In our project, we decrease the voltage using step-down transformer. After that, a steady dc voltage is obtained by rectifying the ac voltage using the full wave bridge rectifier. The process also known as pulsating dc. In other words, it converts the ac signal to a dc signal which is unidirectional waveform (full wave waveform). Then, we filter the dc voltage to a dc level using the simple capacitor. This resulting dc voltage usually has some ripple or ac voltage variation. Finally, the dc voltage is regulated to obtain a desired fixed dc voltage. The regulation is usually obtained from an integrated circuit (IC) voltage regulator unit, which takes a dc voltage and provides somewhat lower dc voltages which remain the same even if the input dc voltage varies or the output load connected to the dc voltage changes. In other words, a voltage regulator is used to maintain a constant output voltage.

The significant advantages of this project are almost all application of electronics devices used dc voltage. For example, walkman, radio, torchlight etc.

TABLE OF CONTENT PAGE

Abstract i

Acknowledgement ii

CHAPTER

1 INTRODUCTION

1.1 Background 1

1.2 Scope of work 3

1.3 Objective of the project 5

1.4 Methodology 5

1.5 Report outline 6

2 COMPONENTS DESCRIPTION

2.1 Transformer 7

2.1.1 Step down transformer 8

2.2 Diode 9

2.2.1 Diode as rectifier 9

2.2.2 The bridge rectifier 10

2.3 Capacitor 11

2.3.1 Filter 11

2.3.2 The capacitor filter 12

2.4 Voltage regulator 15

2.5 List of the components and price 17

CHAPTER 1

INTRODUCTION

1.1 Background

Generally AC to DC power supply is used to convert voltage source (AC) to voltage (DC) source. AC source is alternating current source that the current changes direction cyclically. For example the current changes alternating flow in one direction, then in the other in a circuit. In other hand, DC source is direct source. In AC to DC power supply there are four major of parts. There are as transformer, rectifier, filter, and voltage regulator.

Transformers convert AC electricity from one level voltage to another level with little loss of power. Transformers work only with AC and this is one of the reasons why mains electricity is AC.

There are several ways of connecting diodes to make a rectifier to convert AC to DC. The bridge rectifier is the most important and it produces full-wave varying DC. Filtering is performed by a large value electrolytic capacitor connected across the DC supply to act as a reservoir, supplying current to the output when the varying DC voltage from the rectifier is falling.

A voltage regulator (or voltage regulator IC units, LM7805) is used to maintain a constant output voltage. A voltage regulator also can use DC input to provide a DC voltage that not only has much less ripple voltage but remain the same DC value even if the input DC voltage varies somewhat, or the load connected to the output DC voltage changes.