

**UNINTERRUPTIBLE POWER SUPPLY (UPS)
SYSTEM OF 600VA**

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ABSTRACT

This project is concerned on the development of a '600VA Uninterruptible Power Supply (UPS) System'. The work is based on improvements made on existing UPS manufactured in the industry with the objective of studying existing design and improvements made to be more commercially competitive. Improvements made in this project are emphasized in terms of making the design more compact through the use of double sided PCB arrangement as against the existing single sided PCB. This could later be used for further improvements through continuous development.

The project begins with a study on the existing UPS sample and comparisons are made in terms of theoretical design requirements; relating to the type of UPS system that exist, major subsystem, its function and operation. This follows with descriptive on the implementation of double sided PCB and studies that have been made on each subsystem that have been used on the board.

Operation procedures and relevant information that should be possessed by any design that are initially obtained. These includes the type of system being used, characteristic of the system, the components that were being used, the operation of each major subsystem and protection scheme that have been applied.

CHAPTER 1.0 : INTRODUCTION

In recent years, due to the increasing number of nonlinear loads and the decreasing availability of utility power, the problem of protecting computers and other sensitive equipments from the fluctuations of utility power source has assumed great importance. Methods have been used to provide power conditioning of the utility, ranging from simple filters and surge arrestors to full uninterruptible power supply (UPS) system [1]. In applying power conditioning equipment, understanding of the difference between the two types of power is essential :

i) Standby Power System (SPS)

SPS is the power which is available but it is not necessarily immediately useable. In some instances, SPS may actually be running idle but it must be switched into the system. This operation requires a time interval resulting with an interruption of power. Most SPS are idle and must receive a signal to start and run with proper voltage, frequency and phase before being connected to the load ; generally used for essential loads.

ii) Uninterruptible Power Supply (UPS)

By definition an uninterruptible power system is one that will display no loss of power to the load when nprmal AC input power is loss. The output voltage is uninterruptible.

Chapter 2 : UNINTERRUPTIBLE POWER SUPPLY (UPS) SYSTEMS

UPS systems are intended to improve the quality of ac power in order to provide an uninterruptible operation for ac powered equipments [2]. Basically UPS system can be characterised into four major system. The systems namely are ;

- a. Motor Generator Set UPS System
- b. Static UPS System
- c. Rotary UPS System
- d. Hybrid UPS System

These system are as illustrated in Table 1.0 [3]. In this work solid-state (static) UPS system will be the main focus. The power quality defects which may be improved by the UPS includes surges, noise, sags and harmonics.

To accomplish solutions to those problem an UPS takes in utility ac input and improves the power quality . A redundant power source is also provided so that the load will be interfaced to the utility directly in the case of failure of any subsystem. A block diagram of a solid-state UPS is as shown in Figure 2.0.