

UNINTERRUPTIBLE POWER SUPPLY MONITORING SYSTEM WITH VISUAL BASIC

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ABSTRACT

In industrial process today, reliability of equipment is very important. Power supply must be able to cater the need of industrial process. In case of power failure, backup power supply system must be able to support the main process plant. This is to ensure smooth operation and product quality. In order to do this, uninterruptible power supply (UPS) system can be used as to ensure the reliability, stability and consistency of the entire system. These UPS system must be monitored in order to enable them to react accordingly in response to a fault or power failure.

In this project, UPS monitoring system using visual basic is designed to provide a safe and constant 12VDC supply in the case of power disruption. The main power supply, 240VAC is converted to 12VDC as output voltage and a battery will be used as part of the backup system. This system will be able to control the source of power which offers power from LIVE line or power from BATTERY line. The main output voltage is 12VDC and the battery level will be monitored using GUI software created using visual basic.

INTRODUCTION

Power back-up system is essential and has been used by industries all over the world to ensure their machines or equipments operation running smoothly without having the effect of power disruption. Therefore, the power back-up system is very important to make sure the system work properly. There are often cases that the power back-up system do not work properly when needed and this failure caused losses in term of time and money to industries. A system that be able to monitor this power back-up system can detect any abnormal activities occurred to the system. In addition, the system can prevent any fault that may affect the whole operations.

Uninterruptible power supply (UPS) systems have enabled the improvement of power source quality, providing clean and uninterruptible power to critical loads such as industrial process controls, computers, medical equipment, data communication systems and protection against power supply disturbances or interruptions [1-3]. UPS provides stable supply to the system in the present/absence of the input supply [4]. It is important for the UPS system to be able to take over immediately that full load in power outage or out-of-tolerance situation to avoid any data loss, uncontrolled system shut-down or malfunctioning of the device [5]. Commonly, the UPS topology can be classified as off-line UPS, line interactive UPS and on-line UPS. These three topologies were discussed details in [2-6].

This paper presented on-line UPS monitoring system with visual basic. The on-line consists of a rectifier, charger, battery and static transfer switch. Under normal line conditions, the load is directly supplied from the live line as shown in Figure 1. After power failure, a battery continues supplying power to the load. Batteries are charged, as necessary when line power is available. The monitoring system using Microsoft Visual Basic is designed to monitor the constant 12VDC supply from live line and from the battery when power failure is occurred. The prototype of on-line UPS is designed and output voltage is monitored using Graphical User Interface (GUI) software in order to monitor the overall system.

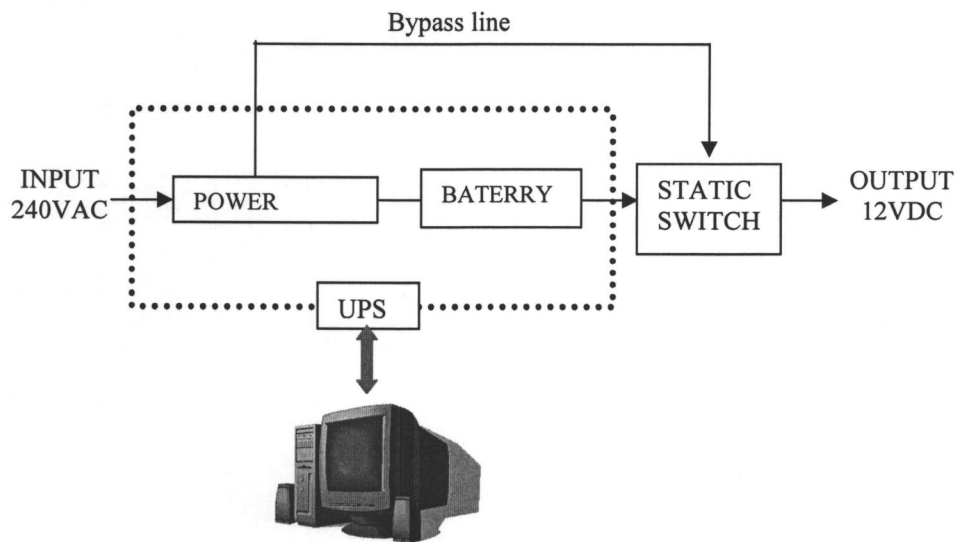


Figure 1. Block diagram of on-line UPS