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LOAD CONTROL BY VB APPLICATION POWERED BY AUTO POWER SUPPLY FROM FOUR DIFFERENT SOURCES

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Abstract: The main purpose of this project is to control parameters of load by VB application powered by continuous power supply, by selecting the supply from any of the four sources namely solar, inverter, main and generator automatically in case if one the source is absent. The need of electricity is increasing day by day and the frequent power cuts of electricity are causing many problems in different areas like banks, colleges/schools, hospitals, houses and industries. Thus there is requirement for an alternate arrangement of power supply. This arrangement can be designed by using ARM7 microcontroller and relays. When mains supply fails automatically it shifts to next source generator by priority and so on. LEDs (Light emitting diodes) can be used to show that which source is used to provide the supply. This work presents a simple control application for a DC motor and LED in laboratory use. The purpose of this application is to maintain the desired parameters on a device operating on the same processor. Two small laboratory DC motor and pairs of LED of nominal power have been used for testing the controller. The controller functions as a DC chopper and PWM signal is produced by an Arduino UNO controller. A detailed analysis is provided on the equipment and the techniques that have been used for the control of the power electronic device is by “visual Basic”. The scope of this work was to plan and test the controller, in terms of energy efficiency and economical operation. This study presents the critical results of the tests focusing on the best operational point and discusses the related conclusions. The both controller’s operation was efficient that were tested.

Keywords: LED, VB, ARM7, DC, PWM, UNO, M.S.E.B

I INTRODUCTION

The Auto Power Supply Control System from 4 Different Sources Using Nuvoton Microcontroller. The auto power supply control system is very convenient system for that consumers who want to attain uninterrupted power supply from different sources such as solar, main, generator and inverter. If we see it at commercial level, then we can estimate that there are so many consumers or customers which have the equipment or machines whose requirements is only uninterrupted power supply. Such as the data base companies whose all work is done on computer then it is required an uninterrupted power supply all the time for successful work, otherwise their computer could be turned off during the time when the load is shifting on other source, similarly the companies which have the data base machines then it also could be also off, and their production can be

stop or damage. Considering above problems we came to know the importance of this auto power supply control system in this industrial area and IT parks. Different companies are working on this auto power supply control system which are making this system with the help of magnetic contactors and power relays but their system is so much costly and uninterrupted power supply. In this project we are designing this auto power supply system with the help of Nuvoton W78E052DDG and electronic relays and other electronic component. An important requirement of electric power distribution systems is the need for automatic operation. In particular, the rapid and reliable transfer of the system from one power source to another during certain system events is important to achieving the reliability goals for such systems and the facility serves. In the system we designed, there are four switches to detect the corresponding failure of that power supply being used. By making ON any of the switch, failure of that particular source can be detected

easily and corresponding action taken. The switches are assumed as 4 different input signals i.e. power supplies to microcontroller. For this system Nuvoton microcontroller is used. The relay driver IC detects microcontroller's IC outputs, which are referred to adjust relay to maintain and switch continuous supply to the load. In this designed system, we made use of VB technology, which helps in operating the system from the different places. This VB technology is a technology, which is used to control different parameters of load connected through GUI and collect the information about the 4 sources either the switch is ON or OFF. In this system, we made use of Nuvoton W78E052DDG Microcontroller which has many advance features than PIC microcontroller.

In today's industrial world there is huge demand for automatic control system because of its various advantages over normal manual control system, automatic control systems are highly reliable, time flexible, accurate and perfect time saving systems, they provide features like accuracy, quick data storage, data transfer and data monitoring which help system to work in efficient manner. In this paper, automatic control system which will control various devices like Motor, Light, and buzzer etc. Designed a GUI (Graphical User Interface) on the PC and which helps to give command and action prompt to the system. Microcontroller is used in order to detect commands from PC and accordingly control the loads connected to it. In this way this system is completely controlled by automatically.

The aim of this project is to control load parameters by using visual application through ArduinoUno controller. For example, theatre lighting can be centrally controlled for a better stage management. Presently, these are manually managed which makes it difficult to coordinate the lighting with respective scene. With this system, one can control electrical appliances on/off by automatically. This system is integrated with the electrical loads and also connected to the PC where in centralized control takes place. It uses an RS-232 protocol from PC to communicate with the controller. To turn on/off the appliances, we use VB simulation (software) which is loaded on the computer; and, a window apparently shows the loads on and off buttons – by using which, one can easily operate / control loads through relays interfaced to the microcontroller. This project can be further enhanced by implementing a GUI based control panel on the PC with appropriate embedded software. The intensity control can also be incorporated using power electronics devices.

II STUDY AREAS

The conventional electrical system in Maharashtra by M.S.E.B. is based on only one source placed at consumers end. This system demands to appoint a person to note the continuity. This is an exhaustive procedure, which involves a

lot of human time efforts but still does not produce accurate result there are a lot of complaints regarding continuation of supply. Our aim is to solve this problem by using other non conventional energy sources so maximum natural power can be utilized. The electrical parameters supplied by various state electricity board for domestic use as well as industrial sector is of great importance from point view of proper monitoring of the power generated on one end and power consumed on other end. Also another important factor is revenue generated through cell of electric power, which has to be in tuned with investments made for proper generations and distribution. These factors have been great concern, not only in meeting with every day power in demands.

Electricity consumption, currently at some 600TWh annually, is estimated to double by next few years, by then it would have surpassed Indian levels in the process. Global Advisory Practice released a power industry research published under the title 'Think BRIC!' estimated that in order to supply this extra requirement of electricity, total generating capacity of power should jump by 90 GW, to 244GW, with an increased emphasis on nuclear, coal and renewable energy sources, including solar and small-hydro power sources.

The observations and survey finds that while the federal governments have initiated reforms, necessity to design supply electricity to all consumer and other company groups, conservative elements, social programs and functions, systemic weaknesses and contradictions within frequently combine to stifle and develop progress. Also factors like increasing economic changes, wealth and population increasing, an improved standard of living and infrastructure developments are also expected to underline a continuous increase in demand for power in the next few years.

III METHODOLOGY

The four different sources are provided so as to simultaneous switching of supplies as per conditions. Switching should be such a way that there should not be any flicker of single second in switching time. The PIC micro-controller is used where the reference dc voltages from four supplies is rectified and given to input port pins so as to check whether any of the supply is available or not. The sources can be renewable sources like solar, wind and sea waves. But inverter or board electricity as a backup power supply.

If one of the supply fails to power then load is automatically switched to another power supply that is available by a controller. Accordingly relay switches are turned ON and OFF. This Continuous supply is used to power output load.

As per part I load is powered by continuous power supply but parameters of load can be changed by using VB application.

For VB application one more controller is there that is 8051. Two loads can be simultaneously handled by this application. GUI is provided in accordance to fix parameters to be changed. Switching of parameters is also by using relay and level shifter. Because of continuous supply to load it is continuously powered along with parameters can be handled. Whole process is controlled automatically this circuitry.

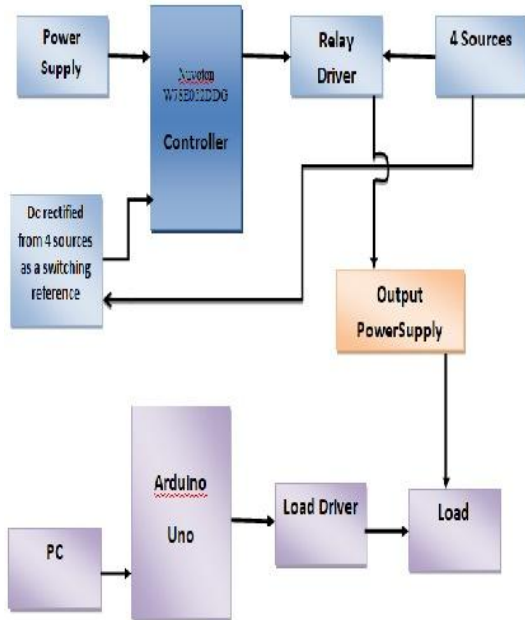


Figure 1 .Block Diagram

Flow Chart

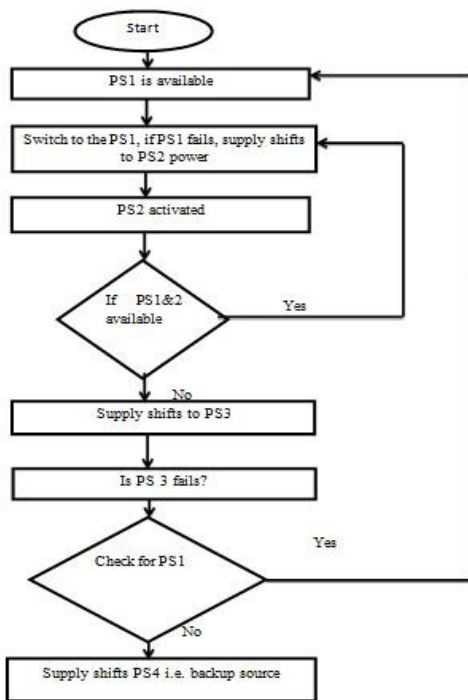


Figure 2-Flow Chart

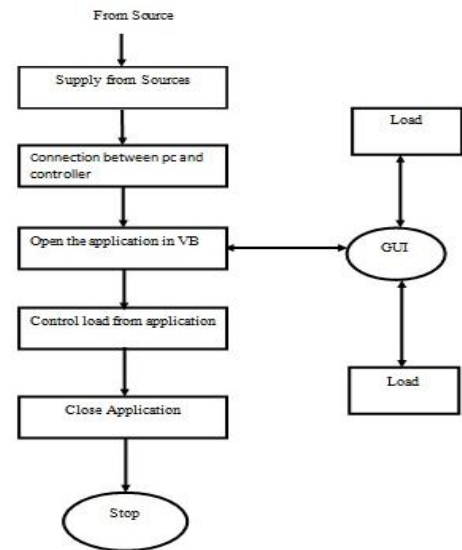


Figure 3-Flow Chart

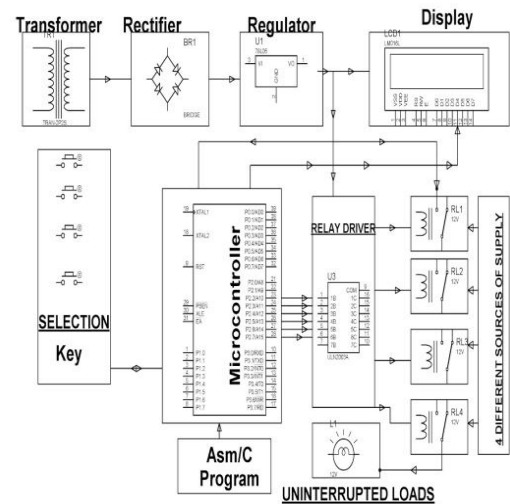


Figure 4 Simulation of power supply

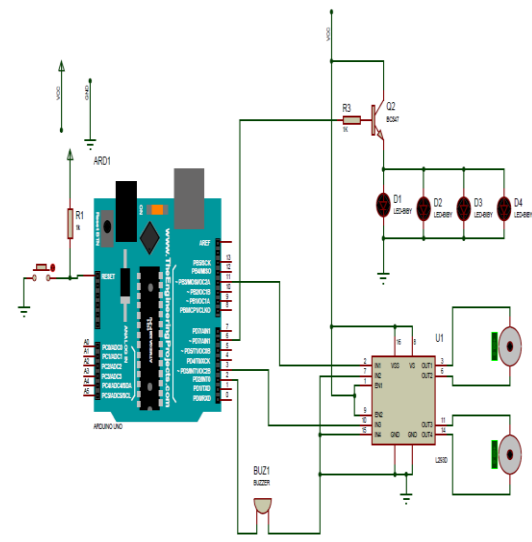


Figure 5 Simulation of VB application

IV CONCLUSION

In the “Power supply from four different sources: Solar, Inverter, Main and Generator” has been explained in this project with all its features and details. The significance of this project lies in its various advantages and wide places of applications such as Industries, Hospitals, Banks; etc. It has been developed by integrating Colleges/Schools, etc. It has been developed by integrating features of all the hardware components used. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit.

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