

# Priority based Supply Selection

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**Abstract:** The main objective of this project is to provide uninterrupted power supply to a load, by selecting the supply source automatically from any available one out of 4 such as: mains, generator, inverter and solar in the absence of power supply. The demand for electricity is increasing every day and frequent power cut is causing many problems in various areas like industries, hospitals and houses.

**Keywords:** rectifier, relay driver, microcontroller

## 1. Introduction

We know that the human activities are mostly dependent on electrical power supply. The main aim of electric power supply in the world to provide uninterrupted power supply at all the times to all its consumers. Auto power supply control system form four different sources using microcontroller. The auto power supply control system is very convenient system for that consumers who want to attains uninterruptable power supply from different sources such as solar,main generator and inverter. In the existing system, we. made four switches to demonstrate the corresponding failure of that power supply. By pressing any one of the switch, absences of that particular source can be found out. The switches are connected as input signals to microcontroller. In this system 8051 microcontroller is used. The relay driver IC collects output of microcontroller, which adjusts relay to maintain continuous supply to the load.

## 2. Working

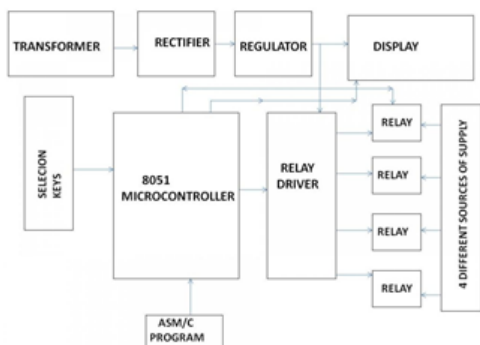


Fig. 1. Block diagram

This paper uses an arrangement of four different sources of supply and that are solar supply, main supply, generator supply and inverter supply which are represented by switches.

Switches are connected to the microcontroller as input signals. The output of the microcontroller is given to the relay driver IC, which switches appropriate relay to maintain uninterrupted supply to the load. On the failure of solar supply, the load gets supply from the next available source that is mains supply. If mains supply also fails, it switches over to the next available source, and so on. The current status, like which source is supplying power to the load is also displayed on the LCD.

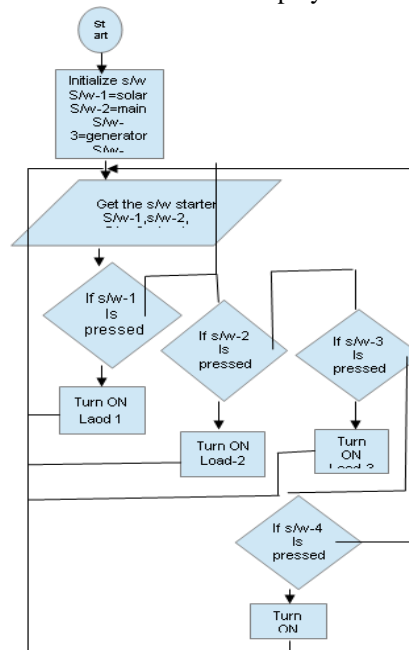


Fig. 2. Flow chart

## 3. Hardware requirements

- Step down transformer
- Voltage regulator
- 8051 microcontroller
- LCD display
- Relays
- Relay driver

### A. Step down transformer

A transformer is a static apparatus, with no moving parts, which transforms electrical power from one circuit to another with changes in voltage and current and no change in frequency. In this project step down transformer is used. A step

down transformer, steps down the input voltage. Input is 230V and output is 12V.

**B. Voltage regulator**

A voltage regulator is a system designed to automatically maintain a constant voltage level. In this paper voltage regulator IC 7805 and voltage regulator IC 7812 are used.

**C. Microcontroller**

The AT89C51 is a low power, high performance 8-bit microcontroller. The AT89C51 provides the following standard features: 4 kbytes of flash, 128 bytes of RAM 32 I/O lines, two 16-bit timer/counters, five vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator and clock circuitry.

**D. LCD display**

LCD (Liquid Crystal Display) screen is an electronic display module and find a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits.

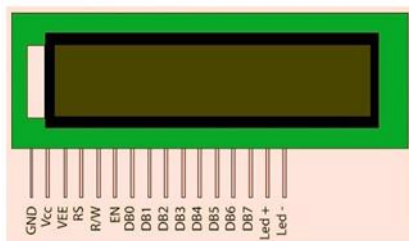


Fig. 3. LCD display

**E. Relays**

Relays are electromechanical devices or solid state device which operate in response to a signal which may be voltage, current, temperature, etc. Electromagnetic relays operate due to magnetic fields. They are composed basically two parts: 1. The operating coil and 2. The magnetic switch. When an input pulses is introduced into the coil, a magnetic field is produced in the core of the electromagnet. This action causes the switch to slide. Relays are either normally open or normally close. Relays are available for AC or DC excitation and coil voltages range from 5V to 230V.

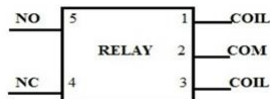


Fig. 4. Relay

**F. Relay driver**

The circuit used for driving a relay can be termed as a relay driver circuit and it can be designed using various integrated circuits. These relays are needed to be driven for activating or to turn ON. So, relays require some driver circuitry to turn ON or OFF.

IN1	1	18	OUT1
IN2	2	17	OUT2
IN3	3	16	OUT3
IN4	4	15	OUT4
IN5	5	14	OUT5
IN6	6	13	OUT6
IN7	7	12	OUT7
IN8	8	11	OUT8
GND	9	10	Common

Fig. 5. Relay driver

**4. Software requirements**

- Keil
- Flash magic

**5. Conclusion**

In the "Priority based supply selection" including four sources Solar, Main supply, Generator and Inverter, first priority is given to Solar because it free of cost. And other sources like mains, generator and inverter are also used. This project is useful for Residential, Commercial and Industrial application.

**Acknowledgement**

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**References**

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