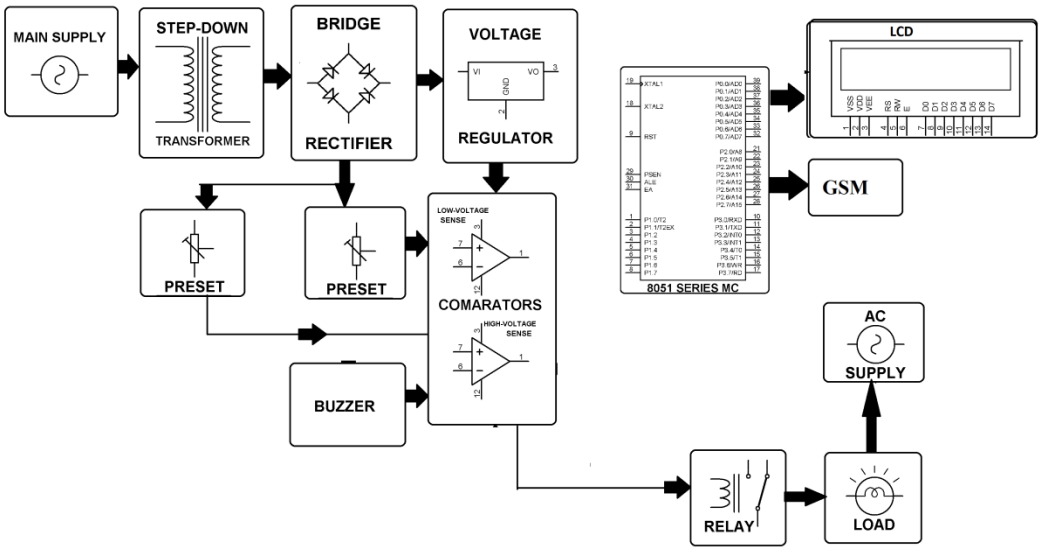
Over Voltage/Under Voltage Load Protection with GSM Alert

This project aims to build a system that monitors voltage and provides a breakpoint based low and high voltage tripping mechanism that avoids any damage to the load. Various industrial and domestic systems consist of fluctuation in the AC mains supply. There is a chance of damaging electronic devices that are quite sensitive to these fluctuations. So there needs to be a tripping system that avoids any damage to these loads. This system also includes 8051 microcontroller which finds out the voltage level which is displayed on the LCD screen. This microcontroller not only finds out the voltage level but also send SMS via GSM modem which alerts the user whenever the voltage level is crosses the limits.
Our system consists of a tripping mechanism that monitors the input voltage and trips according to limits provides. Here we use a quad comparator IC with two more comparators to be used as window comparators to it. Well the system delivers an error as soon as the input voltage falls out of the window range. This trigger then operates a relay that cuts off the load to avoid any damage to it. We here use a lamp to demonstrate as a load. Well the system is also configured with an alarm that goes on as soon as tripping takes place.

Block Diagram:



Hardware Specifications

- 8051 Microcontroller

- LM 339 quad comparator
- Transformer
- Crystal
- Voltage Regulator
- Lamp
- Potentiometer
- Capacitors
- Diodes
- Resistors
- Relay
- LED
- GSM modem

Software Specifications

- Keil µVision IDE
- MC Programming Language: Embedded C

GSM Modem

The SIM900 is a complete Quad-band GSM/GPRS solution in a SMT module which can be embedded in the customer applications. Featuring an industry-standard interface, the SIM900 delivers GSM/GPRS 850/900/1800/1900MHz performance for voice, SMS, Data, and Fax in a small form factor and with low

power consumption. With a tiny configuration of 24mm x 24mm x 3 mm, SIM900 can fit almost all the space requirements in your M2M application, especially for slim and compact demand of design.