

# **DETECTING POWER GRID SYNCHRONISATION FAILURE ON SENSING FREQUENCY OR VOLTAGE BEYOND ACCEPTABLE RANGE**

## **ABSTRACT**

The project is designed to develop a system to detect the synchronization failure of any external supply source to the power grid on sensing the abnormalities in frequency and voltage.

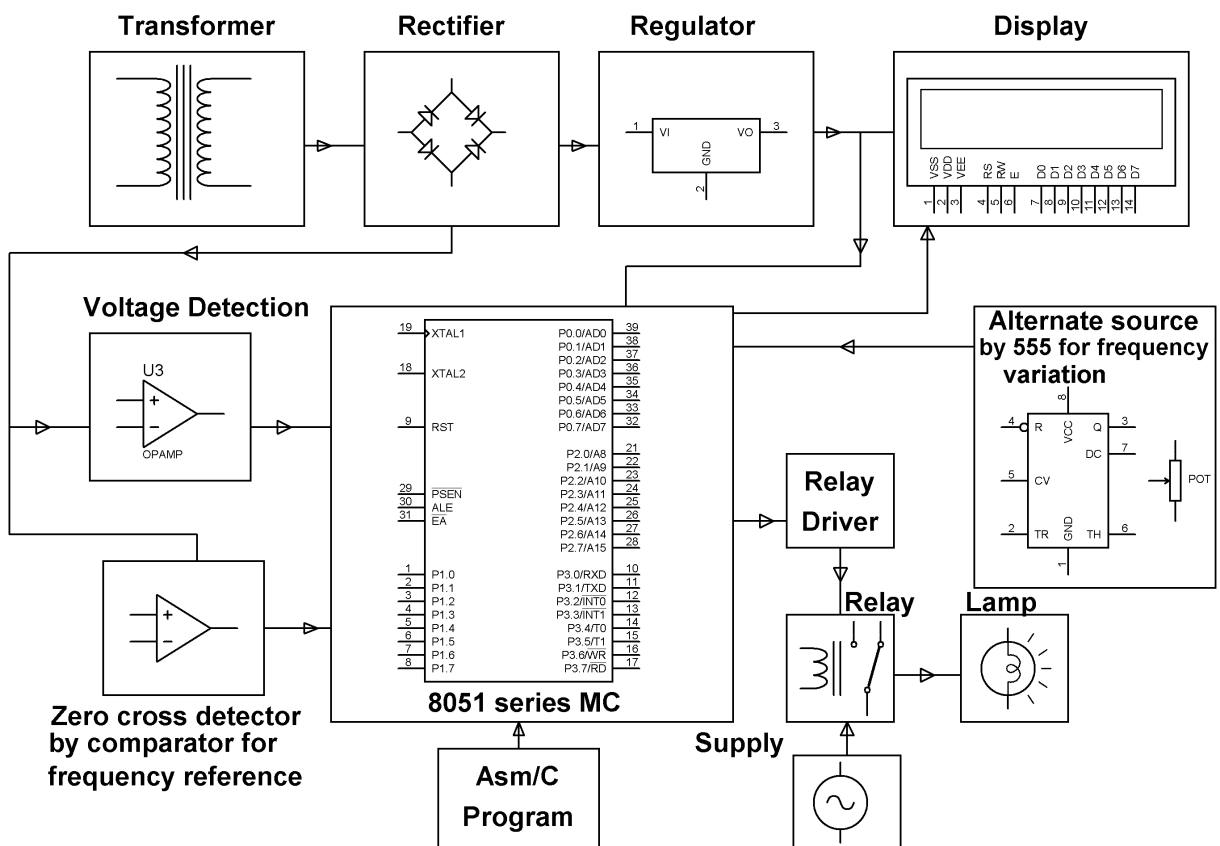
There are several power generation units connected to the grid such as hydel, thermal, solar etc to supply power to the load. These generating units need to supply power according to the rules of the grid. These rules involve maintaining a voltage variation within limits and also the frequency. If any deviation from the acceptable limit of the grid it is mandatory that the same feeder should automatically get disconnected from the grid which by effect is termed as islanding. This prevents in large scale brown out or black out of the grid power. So it is preferable to have a system which can warn the grid in advance so that alternate arrangements are kept on standby to avoid complete grid failure.

This system is based on a microcontroller of 8051 family. The microcontroller monitors the under/over voltage being derived from a set of comparators. As the frequency of the mains supply cannot be changed, the project uses a variable frequency generator (555-timer) for changing the frequency, while a standard variac is used to vary the input voltage to test the functioning of the project. A lamp load (indicating a predictable blackout, brownout) being driven from the microcontroller in case of voltage/frequency going out of acceptable range

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Further the project can be enhanced by using power electronic devices to isolate the grid from the erring supply source by sensing cycle by cycle deviation for more sophisticated means of detection.

## **BLOCK DIAGRAM**



### **HARDWARE REQUIREMENTS:**

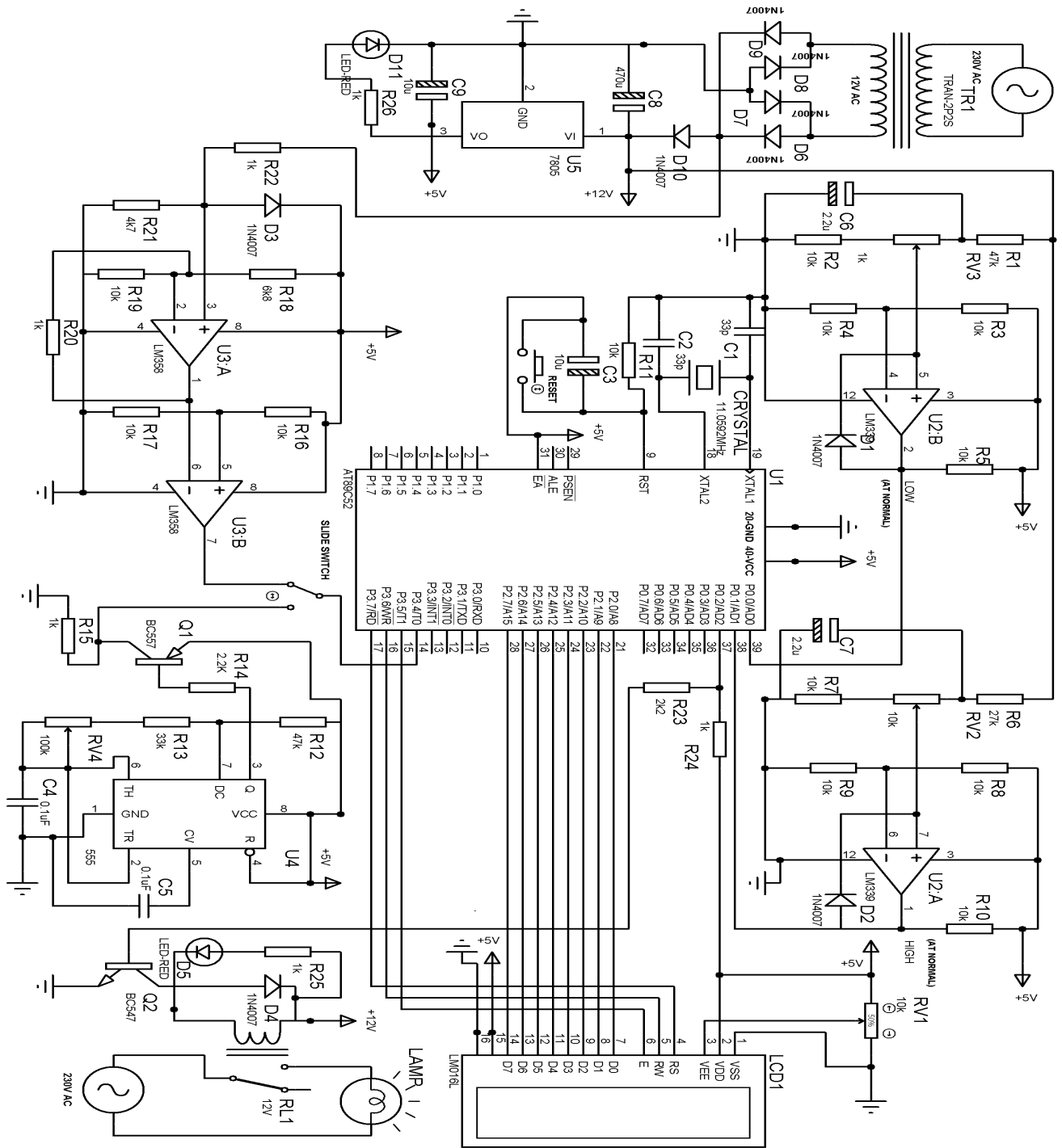
8051 series Microcontroller, LCD , Op-Amps, 555 timer, Crystal, Resistors, Capacitors, Diodes, Transformer, Voltage Regulator, Relay, Transistors, Slide Switch, Lamp.

### **SOFTWARE REQUIREMENTS:**

Keil compiler

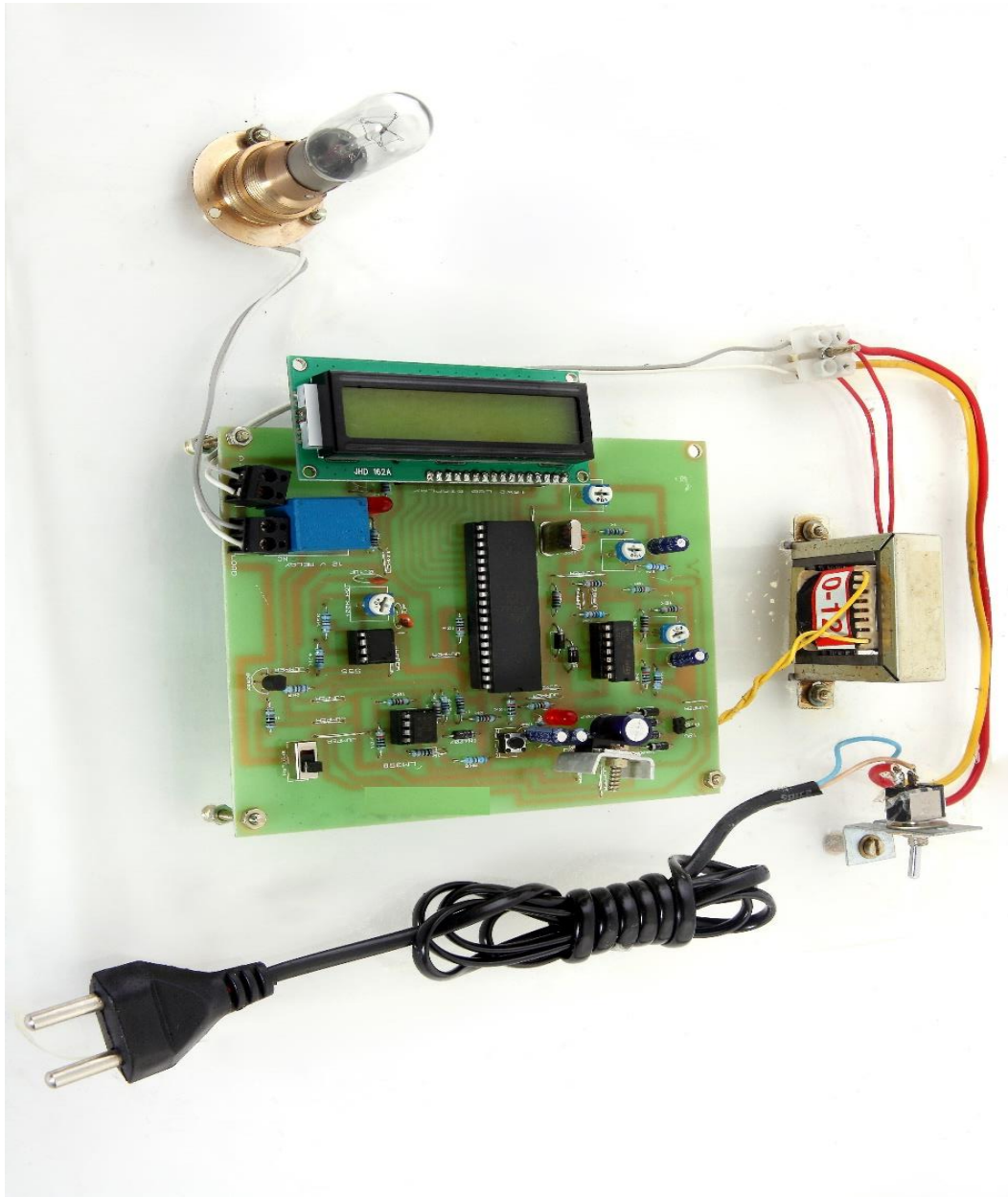
Language: Embedded C or Assembly.

# Circuit diagram



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We will mail you within 24hours from the time you mail us.**

Name of the student  
PROJECT NAME

Group member 1

Group member 3

Group member 2

Group member 4

Group member 5

College name

Branch

#### **Note to make your kit /project**

You need basic knowledge & logic of components /soldering /disordering /breadboard circuiting/PCB designing/etching.

1. You can download the projects from our website [makeitortakeit.in](http://makeitortakeit.in) and get started to build one, we help you with the basics of know & how.
2. You can purchase the complete do it yourself kit & assemble it.
3. At the last moment, If you are short on time /if your project is not giving output!!!!!! Readymade project kit is available.
4. **Training (optional)** available if you want us to help u in your projects, it includes.
  - 7 sessions, (timing mutually decided).
  - hands on training on breadboard circuiting ,soldering,desoldering,pcb making ,how to use instruments
  - Stepwise guidance you build your project right from the scratch \*\*.
  - complete documentation/references(hard & soft copy)
  - Plotting and Implementing Scale Model.
  - Troubleshooting.
  - Programming of Controllers
  - PCB Software tool, Hardware Cutting, Drilling and Etching

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