

GSM BASED E-NOTICE BOARD

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ABSTRACT

The main aim of this project will be to design a SMS driven automatic display board which can replace the currently used programmable electronic display. It is proposed to design receiver cum display board which can be programmed from an authorized mobile phone. The message to be displayed is sent through a SMS from an authorized transmitter. The GSM modem receives the SMS. The AT commands are serially transferred to the modem through Rx-Tx connection. In return the modem transmits the stored message through the COM port. The microcontroller validates the SMS and then displays the message in the LED display board.

Keywords: GSM Modem, Microcontroller, Power supply or power adapter, LED Display board,

I. INTRODUCTION

Wireless communication has announced its arrival on big stage and the world is going mobile. This remote control of appliances is possible through Embedded Systems. The main aim of this project will be to design a SMS driven automatic display board which can replace the currently used programmable electronic display. It is proposed to design receiver cum display board which can be programmed from an authorized mobile phone. The message to be displayed is sent through a SMS from an authorized transmitter. The microcontroller receives the SMS, validates the sending Mobile Identification Number (MIN) and displays the desired information. The GSM modem receives the SMS. The AT commands are serially transferred to the modem through Rx-Tx connection. The microcontroller validates the SMS and then displays the message in the LED display board.

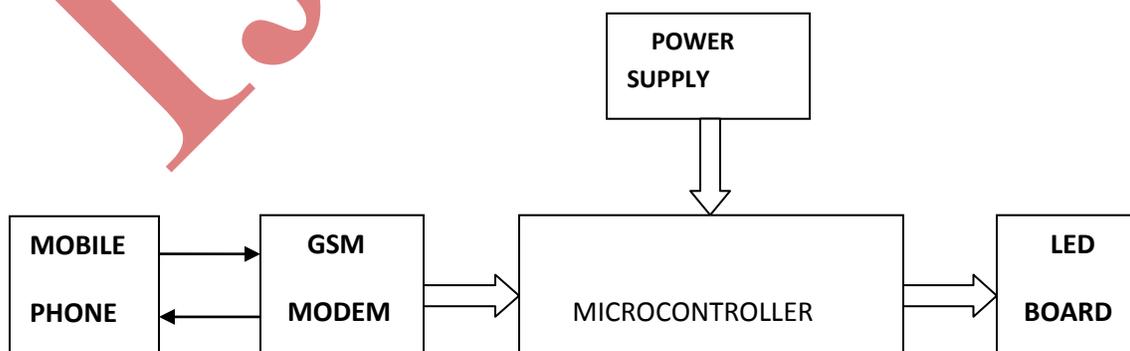


Fig-1 Block diagram of GSM Based E-Notice Board.

II.GSM MODEM

Global system for mobile communication (GSM) is a wide area wireless communications system that uses digital radio transmission to provide voice, data, and multimedia communication services. A GSM system coordinates the communication between a mobile telephones (mobile stations), base stations (cell sites), and switching systems. This diagram shows that the GSM system uses a single type of radio channel. Each radio channel in the GSM system has a frequency bandwidth of 200 kHz and a data transmission rate of approximately 270 kbps. This example shows that each radio communication channel is divided into 8 time slots (0 through 7). This diagram shows that a simultaneous two-way voice communication session requires at least one radio channel communicates from the base station to the mobile station (called the forward channel) and one channel communicates from the mobile station to the base station (called the reverse channel).

III.MICROCONTROLLER

Microcontroller, as the name suggests, are small controllers. They are like single chip computers that are often embedded into other systems to function as processing/controlling unit. For example, the remote control you are using probably has microcontrollers inside that do decoding and other controlling functions. They are also used in automobiles, washing machines, microwave ovens, toys ... etc, where automation is needed.

The key features of microcontrollers include:

1. High Integration of Functionality
2. Microcontrollers sometimes are called single-chip computers because they have on-chip memory and I/O circuitry and other circuitries that enable them to function as small standalone computers without other supporting circuitry.
3. Field Programmability, Flexibility
4. Microcontrollers often use EEPROM or EPROM as their storage device to allow field programmability so they are flexible to use. Once the program is tested to be correct then large quantities of microcontrollers can be programmed to be used in embedded systems.
5. Easy to Use

Most microcontrollers will also combine other devices such as:

1. A Timer module to allow the microcontroller to perform tasks for certain time periods.
2. A serial I/O port to allow data to flow between the microcontroller and other devices such as a PC or another microcontroller.
3. An ADC to allow the microcontroller to accept analogue input data for processing.

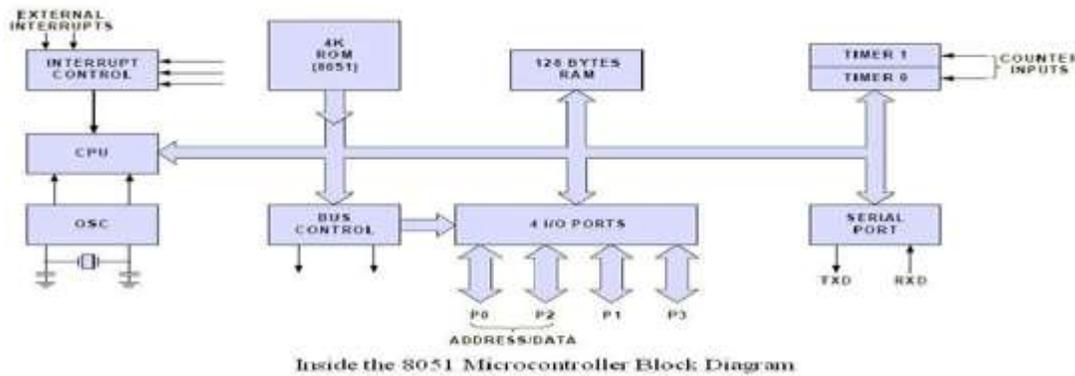


Fig-2 Block diagram of microcontroller.

1V. Power Supply

Power supply is a reference to a source of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others. Here in our application we need a 5v DC power supply for all electronics involved in the project. This requires step down transformer, rectifier, voltage regulator, and filter circuit for generation of 5v DC power

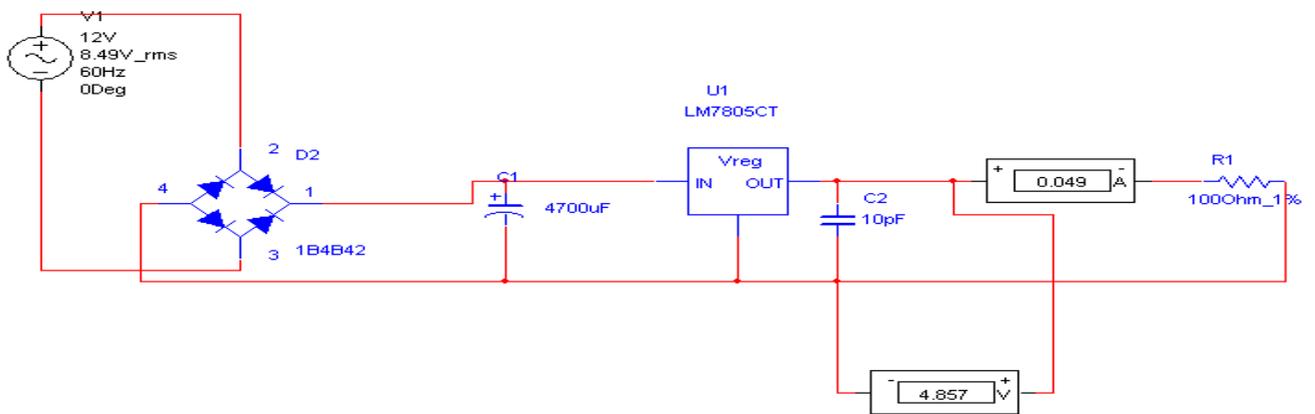


Fig (3) power supply

V. LED Display Board

Light emitting diode (LED) is basically a P-N junction semiconductor diode particularly designed to emit visible light. There are infrared emitting LEDs which emit invisible light. A normal LED emits at 2.4V and consumes MA of current. The LEDs are made in the form of flat tiny P-N junction enclosed in a semi-spherical dome made up of clear coloured epoxy resin. In this project, you will build an LED display driver board. The goal of the circuit is to

visually display sensor voltage output(s). The board takes in two analog inputs and provides a linear analog display on two Bar LEDs proportional to the voltage level.

Since this is your first electronics class, we have already designed and fabricated the **Printed Circuit Board (PCB)**. Your job will be to solder the correct components onto the board.

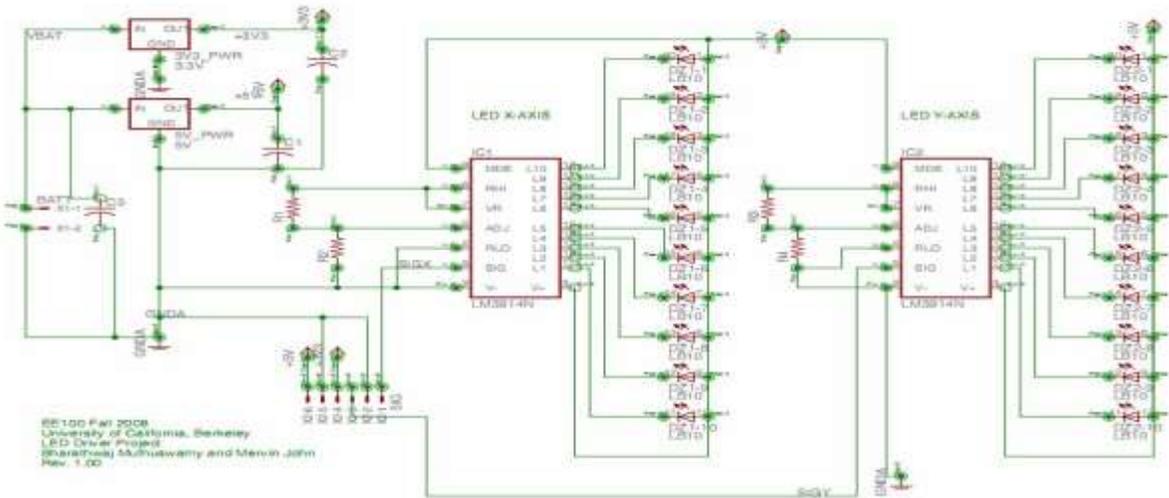


Fig (4) LED Board

VI. APPLICATION

- Educational Institutions and Organizations: Currently we rely on putting up papers on notice boards to inform people of events. This method can be discarded by using wireless notice boards to display information in real time.
- Crime Prevention: Display boards put up on roads will display tips on public security, accident prevention, information on criminals on the run.
- Managing Traffic: In metropolitan cities we frequently come across traffic jams. One way to avoid this would be inform people beforehand to take alternate routes. A wireless notice board serves well for this purpose.

- Advertisement: In shopping malls we get to hear the offers on various products from time to time. Instead we continuously display the information regarding the products and related offers on electronic display boards.
- Railway Station: Instead of announcing the delay in arrival of trains we can display the information

VII. CONCLUSION

GSM and GPRS based Designs have developed another innovative and Public utility product for mass communication. The project is aimed at developing the security of Home against Intruders, Gas Leak and Fire. In any of the above three cases any one met while you are out of your home than the device sends SMS to the emergency no provided to it. The report consists of a background into the area of 8051 microcontroller and mobile communication, how they are interfaced to each other and AT (Attention) commands set used in communication. The Microcontroller based system continuously watching the security issues of your house, if any mishap condition from above three is occur it will sense and send a message to your mobile.

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