

MULTI PURPOSE SECURITY SYSTEM USING GSM

Manjula B.M

Madhu Patil, Prasanna Paga, Naina Karkal
Department of Electronics and Communication Engineering,
Nitte Menakshi Institute of Technology Bangalore

Keywords: DTMF, GSM, sensor, Encoder

ABSTRACT

Security systems are necessary during any emergencies that occur at banks, houses etc. Hence in this project, a security system with a feature of motion and password detection is implemented.

Using GSM the administrator is informed about the people moving into the secured places, by sending an SMS to his mobile. At his work place, he can take a necessary action, which saves time during emergencies.

1. Introduction

Global System for Mobile Communications, or GSM (originally from Group Special Mobile), is the world's most popular standard for mobile telephone systems. GSM differs from its predecessor technologies in that both signaling and speech channels are digital, and thus GSM is considered a second generation (2G) mobile phone system[1]. This also facilitates the wide-spread implementation of data communication applications into the system.

The GSM standard has been an advantage to both consumers, who may benefit from the ability to roam and switch carriers without

replacing phones, and also to network operators, who can choose equipment from many GSM equipment Vendors.

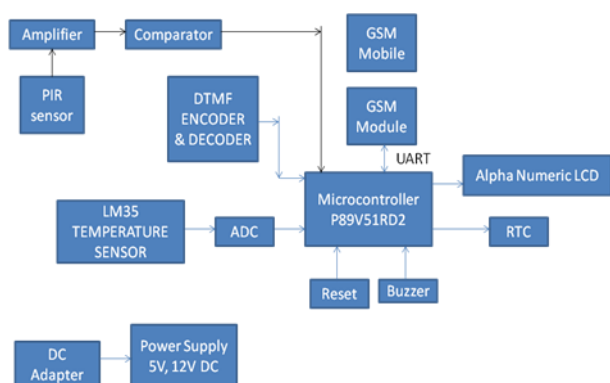
GSM also pioneered low-cost implementation of the short message service (SMS), also called text messaging, which has since been supported on other mobile phone standards as well. The standard includes a worldwide emergency telephone number feature[2-9].

The module developed will be placed on the main door of a building. The number keys and alpha numeric LCD display will be placed on entrance of main door where people entering the building can enter their secret code. The PIR sensor will placed at a suitable location near the door to sense human motion. Authorized person can enter by using the secret code. Once an authorized person enters a message will be sent to the GSM mobile with intimation of his entry with his name. For each known person, an individual secret code is given, which he needs to type while entering the door. Each individual is assigned a time slot when he is authorized to enter. If he stays in

that room more than the allotted time, then a message will be sent to the administrator and buzzer beeps. If the person wants to extend his time then, he needs to re-enter his password.

Second section in the paper gives details of various block in the block diagram. Third section gives details of the GSM module followed by the fourth section which talks about the encoding and decoding modules of the GSM section. Finally the conclusion is drawn.

2. BLOCK DIAGRAM



The main important block includes:

- **MICROCONTROLLER (P89V51RD2)**

The main centre part of the project is the micro controller. Here we are using the 8051 based Philips P89V51RD2 micro controller. This micro controller has

80C51 CPU with 5V operating voltage from 0 to 40 MHz, 64 kB of on-chip flash user code memory

with ISP and IAP.SPI and enhanced UART. Four 8-bit I/O ports with three high-current port 1 pin. Three 16-bit timers/counters. Programmable watchdog timer. Eight interrupt sources with four priority levels .Second DPTR register, Low EMI mode (ALE inhibit),TTL- and CMOS-compatible logic levels.

- **GSM MODULE**

Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication. SIM300 is a Tri-band GSM/GPRS engine that works on frequencies EGSM 900 MHz, DCS 1800 MHz and PCS 1900 MHz. SIM300 features GPRS multi-slot class 10/ class 8 (optional) and supports the GPRS coding schemes CS-1, CS-2, CS-3 and CS-4. You can use AT Command to get information in SIM card. The SIM interface supports the functionality of the GSM Phase 1 specification and also supports the functionality of the new GSM Phase 2+ specification for FAST 64 kbps SIM (intended for use with a SIM application Tool-kit).Both 1.8V and 3.0V SIM Cards are supported. The SIM interface is powered from an internal regulator in the module having nominal voltage 2.8V. All pins reset as outputs driving low.

The "AT" or "at" prefix must be set at the beginning of each command line. To terminate a command line enter <CR>.

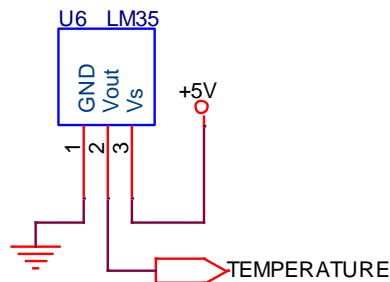
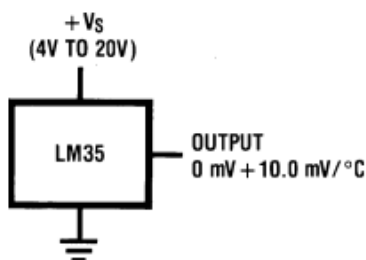
Commands are usually followed by a response that

includes.”<CR><LF><response><CR><LF>”.

Throughout this document, only the responses are presented, <CR><LF> are omitted intentionally.

- **TEMPERATURE SENSOR(LM35)**

The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient Centigrade scaling. The LM35 does not require any external calibration or trimming to provide typical accuracies of $\pm 1/4^{\circ}\text{C}$ at room temperature and $\pm 3/4^{\circ}\text{C}$ over a full -55 to $+150^{\circ}\text{C}$ temperature range. Low cost is assured by trimming and calibration at the wafer level. The LM35’s low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry especially easy. It can be used with single power supplies, or with plus and minus supplies. As it draws only $60\ \mu\text{A}$ from its supply, it has very low self-heating, less than 0.1°C in still air. The LM35 is rated to operate over a -55° to $+150^{\circ}\text{C}$ temperature range.



- **ADC (ADC0809)**

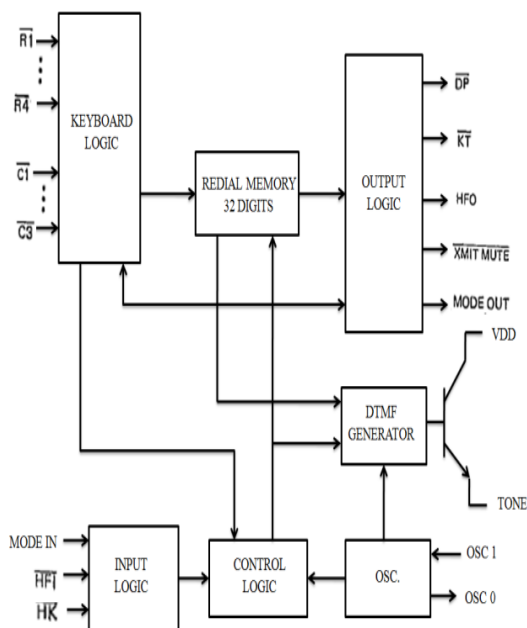
ADC0809 is an 8-bit analog to digital converter. It is used to convert the analog voltage of temperature sensor and battery circuit. The reference voltage of ADC0809 is 5V. It is an 8 channel ADC. The temperature sensor is connected to channel 0 and battery circuit is connected to channel 1. The 8-bit A/D converter uses successive approximation as the conversion technique. The converter features a high impedance chopper stabilized comparator, a 256R voltage divider with analog switch tree and a successive approximation register. The 8-channel multiplexer can directly access any of 8-single-ended analog signals.

3. DTMF ENCODER AND DECODER

UM91215 Encoder

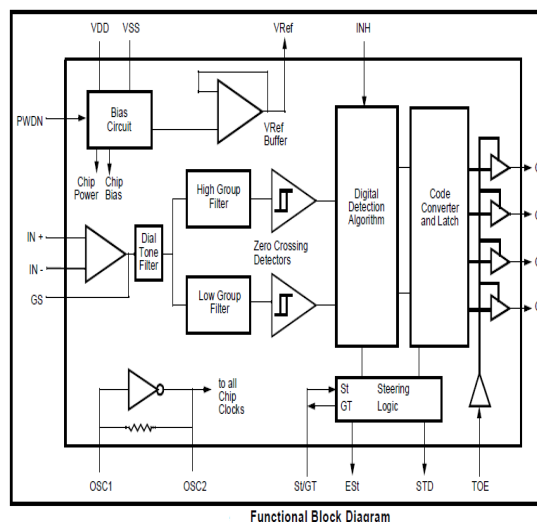
The UM91215 is a single chip, silicon gate, CMOS integrated circuit with an on chip oscillator for a 3.58 MHz crystal or ceramic resonator. It provides dialling pulse (DP) or dual tone multi frequency (DTMF) dialling. A standard 4 x 4 matrix keyboard can be used to support either DP or DTMF modes. Up to 32 digits can be saved in the on chip RAM for

redialling. In the DTMF mode, minimum tone duration and minimum intertone pause provide for rapid dialling. Maximum tone duration is dependent upon the key depression time in manual dialling.[10]



MT8870D DECODER

The MT8870D/MT8870D-1 is a complete DTMF receiver integrating both the band split filter and digital decoder functions. The filter section uses switched capacitor techniques for high and low group filters; the decoder uses digital counting techniques to detect and decode all 16 DTMF tone pairs into a 4-bit code. External component count is minimized by on chip provision of a differential input amplifier, clock oscillator and latched three-state bus interface.[11-12]



CONCLUSION

From the work carried out in this paper a module has been prepared to provide security to buildings from external intrusion. The security system developed helps the administrator of the building by saving his time to monitor every entry and exit point of the building. Since the module uses an existing GSM technology which is available to common man at a cheap rate, it is feasible to have this unit at every house hold and its working according to the given data.

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- Nitte Meenakshi Institute of Technology,
Bangalore-64
- Mr.Prasanna Paga
Asst.Prof.DEPT.ECE,
Nitte Meenakshi Institute of Technology,
Bangalore-64
 - Ms.Madhu Patil
Asst.Prof.DEPT.ECE,
Nitte Meenakshi Institute of Technology,
Bangalore-64
 - Ms.Naina Karkala
Asst.Prof.DEPT.ECE,
Nitte Meenakshi Institute of Technology,
Bangalore-64

Authors:

- Ms.Manjula BM
Asst.Prof.DEPT.ECE,