REVIEW ONSMS BASED HOME AUTOMATION SYSTEM

Arth Chandra[1], Sanket Patil[2],Dhiraj Shetty[3], Riddhik Pankhania[4]

[1,2,3,4]*Student, Department of Electronics and Telecommunication Engineering*

Shah & Anchor Kutchhi Engineering College

Abstract—*The rapidly advancing mobile communication technology and the decrease in costs make it possible to incorporate mobile technology into home automation systems.*
Based on an SMS/GPRS (Short Message Service/General Packet Radio Service) mobile cell module and a microcontroller, a home automation server can be established, allowing a user to control and monitor any variables related to the home by using any java capable cell phone.

Keywords-AT89C52, SIM-300,ULN 2003.

I. INTRODUCTION

The aim of the project is to investigate a cost-effective solution that will provide controlling of home or industrial appliances remotely and will also enable security against intrusion in the absence of owner. The system provides availability due to development of a low-cost system. The home and industrial appliances control system with an affordable cost was thought to be built that should be mobile providing remote access to the appliances and allowing security.In addition there was a need to automate industry and home so that user can take advantage of the technological advancement in such a way that a person getting off the office does not get melted with the hot climate. Therefore, this paper proposes a system that allows user to be control machines ubiquitously and also provide security on detection of intrusion via Short Message Service (SMS) using Global System for Mobile Communication (GSM) Technology.SMART Home' referred to as 'Intelligent Home' or 'Automated Home', indicates the automation of daily tasks with electrical devices used in homes.It is system that can be used to remote control devices using a mobile phone. Short messaging service (SMS) is used here to send triggering commands. The main attractive feature of this system is that the user can control the desired device from any part of the world.

II. The Hardware System Micro controller:

This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like ULN 2003, GSM module and so on. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

A. AT89C52:

The AT89C52 is a low-power, high-performance CMOS 8-bit microcontroller with 8Kbytes of in system programmable Flash memory. The device is manufactured using Atmel's high-density non-volatile memory technology and is compatible with the industry standard 80C51 instruction set and pinot. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer. By combining a versatile 8-bit CPU with in-system programmable Flash one monolithic chip, the Atmel AT89C52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications.The AT89C52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, three 16-bit timer/counters, axis-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry. In addition, the AT89C52 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The Power-down mode saves the RAM contents but freezes the oscillator, disabling all other chip functions until the next interrupter hardware reset.

B. Liquid-crystal display (LCD):

It is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images or fixed images which can be displayed or

hidden, such as preset words, digits, and 7-segment displays as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements

C.GSM MODEM:

SIM300 module that connects to the specific application and the air interface. This GSM Modem can accept any GSM network operator SIM card and act just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. Applications like SMS Control, data transfer, remote control and logging can be developed easily. The modem can either be connected to PC serial port directly or to any microcontroller. It can be used to send and receive SMS or make/receive voice calls. It can also be used in GPRS mode to connect to internet and do many applications for data logging and control. In GPRS mode you can also connect to any remote FTP server and upload files for data logging. This GSM modem is a highly flexible plug and play quad band GSM modem for direct and easy integration to RS232 applications. Supports features like Voice, SMS, Data/Fax, GPRS and integrated TCP/IP stack.

C. Working

Block Diagram of Home Automation The objective of this project is to develop a device that allows for a user to remotely control and monitor multiple home /office appliances using a cellular phone. This system will be a powerful and flexible tool that will offer service at any time, and from anywhere with the constraints of the technologies being applied. The application of our system comes into handy when people who forget to do simple things such as turn ON/OFF devices at their home or in their office they can now do so without their presence by the transmission of a simple text message from their mobile phone. This development, we believe, will ultimately save a lot of time especially when people don't have to come back for simple things such as to turn ON/OFF switches at home or at their office once they set out for their respective work. How we have implemented our project and the various parts involved in it, from the above representation the first mobile station is used as a transmitting section from which the subscriber sends a text message that contain command and instructions to the second mobile station which is based on a specific area where our control system is located. The mobile phone indicated in the block diagram is a Siemens GSM modem set. The received SMS message is stored in the SIM memory of the phone and then extracted by the microcontroller and processed accordingly to carry out specific operations. The LCD is used to indicate the status of the operation performed by the microcontroller and also its inclusion makes the overall system user-friendly. GSM receiver receives message sent from the user call phone, microcontroller issues commands to the appliances and the devices connected will switch ON/OFF

III. Board Hardware Resources Features

A.ULN 2003:

The ULN2001A, ULN2002A, ULN2003 and ULN2004A are high voltage, high current Darlington arrays each containing seven open collector Darlington pairs with common emitters.
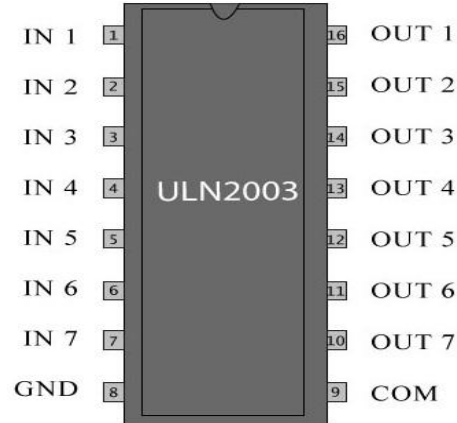
```
IN 1  [1]              [16]  OUT 1
IN 2  [2]              [15]  OUT 2
IN 3  [3]              [14]  OUT 3
IN 4  [4]   ULN2003    [13]  OUT 4
IN 5  [5]              [12]  OUT 5
IN 6  [6]              [11]  OUT 6
IN 7  [7]              [10]  OUT 7
GND   [8]              [9]   COM
```

Fig 2.1.5ULN2003

Each channel rated at 500mA and can withstand peak currents of600mA. Suppression diodes are included for inductive load driving and the inputs are pinned opposite the outputs to simplify board layout. In our project ULN 2003 is basically used to make the stepper motor work so that the curtain can open and close.

B.IC 7805:

This series of fixed-voltage integrated-circuit voltage regulators is designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators can deliver up to 1.5 A of output current. The internal current-limiting and thermal-shutdown features of these regulators essentially make them immune to overload. In addition to use as fixed-voltage regulators, these devices can be used with external components to obtain adjustable output voltages and currents, and also can be used as the power-pass element in precision regulators.
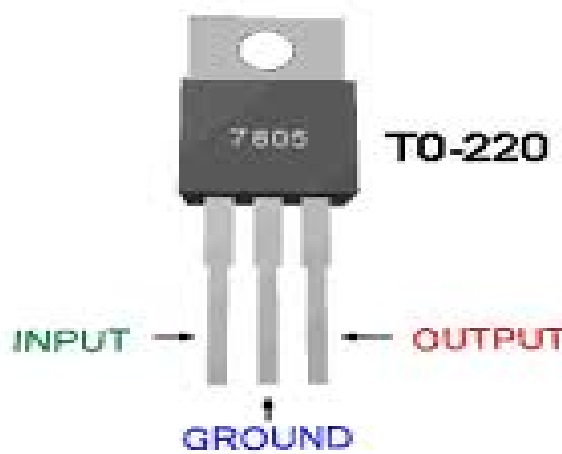
```
        7805    TO-220

INPUT  ->        <-  OUTPUT

          GROUND
```

Fig IC 7805

C.MAX232:

The MAX232 is a dual driver/receiver that includes a capacitive voltage generator to supply EIA-232 voltage levels from a single 5-V supply. Each receiver converts EIA-232 inputs to 5-V TTL/CMOS levels. These receivers have a typical threshold of 1.3 V and a typical hysteresis of 0.5 V, and can accept ☐30-V inputs. Each driver converts TTL/CMOS input levels into EIA-232 levels

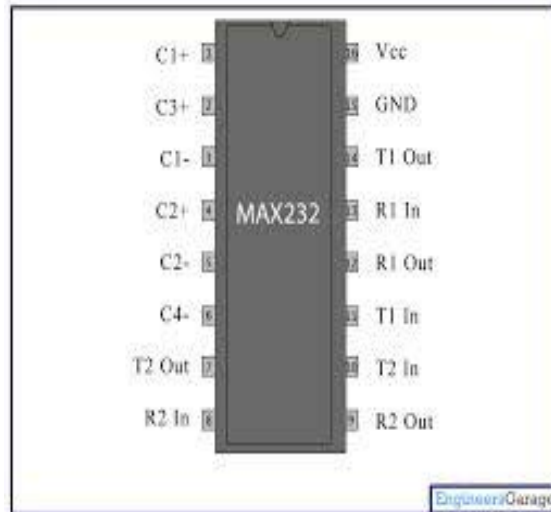**Fig. Max232**

IV. FUTURE SCOPE

➢ To ensure proper maintenance of machines

➢ For Security

➢ It can have more accurate digital sensors so that even the slightest error can be detected which can generate an alarm at the user end.

➢ The data can be transmitted to the mobile station i.e. handsets or satellites can be used to transmit data worldwide.

V. ADVANTAGES

➢ Remote access control

➢ 21st century advance wireless technology

➢ Security by allowing only preset numbers.

➢ Minimum Physical Labor.

VI. LIMITATIONS

➢ Complex Circuit

➢ Human Errors

➢ Equipment and installation Costs

➢ Reliability

➢ System crashes due to damage in interconnection.

VII.CONCLUSION

SMS based remote control for home appliances is beneficial for the human generation, because mobile is most recently used technology nowadays. The SMS based remote control for home appliances is easy to implement the system that ON/OFF the electrical device through remotely via SMS or it handled more and more electrical devices which are use in home.

REFERENCES

Website:
1. http://www.datasheetforu.com
2. http://www.electronicforu.com
3. http://www.atmel.com/products/microcontrollers/
4. http://books.google.co.in/
5. http://www.efymag.com
6. http://www.wikipedia.com

Books:
1. The 8051 Microcontroller and Embedded system – Muhammad Ali Mazidi
2. The 8051 Microcontroller – Kenneth Ayala
3. Applied Electronics – R.S. Sedha
4. Electronics For You magazine.