FINAL YEAR PROJECT REPORT
ATM Security system using GSM and MEMS Module

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Abstract

The Goal of this projects to enhance the security system of present existing ATM machine. The Project ‘Atm security system using gsm and mems module is designed using MEMS technology. According to this technology the communication takes place between two devices MEMS and microcontroller. This project makes best use of MEMS as a sensor device which identifies the tilt produced by the atm machine due to the irregular movement that occur

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The overview of this project is to design MEMS and GSM based ATM SECURITY system using AT89S52.

1.2 AIM OF THE PROJECT

To enhance the security system of present existing ATM machine.

1.3 METHODOLOGY

The Project *'Atm security system using gsm and mems module '* is designed using MEMS technology. According to this technology the communication takes place between two devices MEMS and microcontroller.

The MEMS is a sensor device which identifies the tilt produced by the atm machine due to the irregular movement that occur during theft.

This project makes best use of MEMS as a sensor device which identifies the tilt produced by the atm machine due to the irregular movement that occur..

The project basically consists of a MEMS sensor which identifies the tilt by the machine and activates the microcontroller to start the following sequence in which shutting the door using stepper motor and sending sms to vigilance system using gsm is involved.

1.4. SIGNIFICANCE

This System stops any sort of robbery by taking MEMS as its input functional bock. It's the MEMS that is activating the total project by identifying the tilt caused by the thief during breaking down the ATM machine. Once the micro controller is activated the following sequence is started which involves shutting of the door using stepper motor and alerting the vigilance system by a sms using GSM .

1.5 BLOCK DIAGRAM

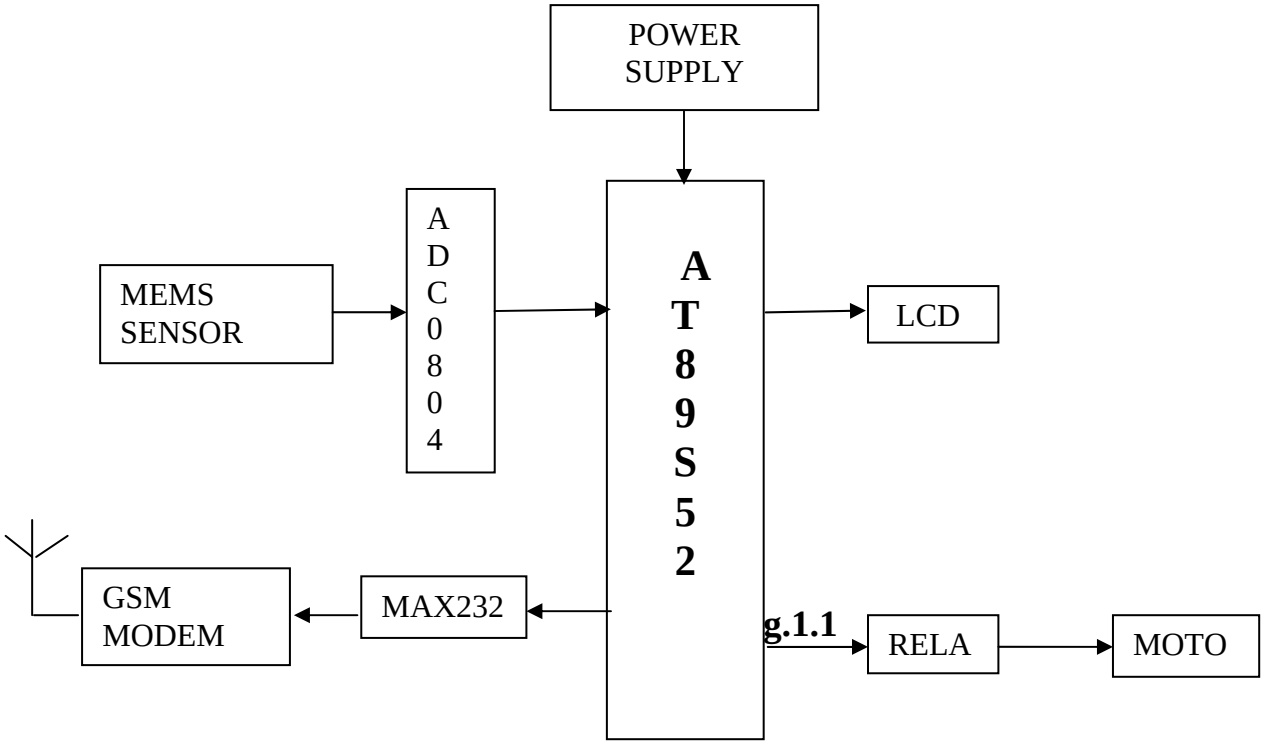

Fig 1.1 Block Diagram of the Project

1.6 BLOCK DIAGRAM DESCRIPTION

The hardware involved in this project is a Power Supply, a LCD to display the concerned information, a GSM is interfaced to the Microcontroller through MAX 232, MEMS is interfaced through ADC 0804.

While execution, the tilt identified by the mems activates the microcontroller. The microcontroller then starts the following sequence, it gives command to shut down the door in order to avoid the thief to run away and also a sms is sent to the vigilance system to alert them so that they can approach to the place as soon as possible to catch the burglar.

This Project mainly consists of Power Supply section, Microcontroller section, Mems section, GSM section, LCD display section, Max 232 serial driver section, ADC 0804 section, Motor section and Relay section.

1.6.1 Power Supply Section

This section is meant for supplying Power to all the sections mentioned above. It basically consists of a Transformer to step down the 230V ac to 9V ac followed by diodes. Here diodes are used to rectify the ac to dc. After rectification the obtained rippled dc is filtered using a capacitor Filter. A positive voltage regulator is used to regulate the obtained dc voltage.

1.6.2 Microcontroller Section

This section forms the control unit of the whole project. This section basically consists of a Microcontroller with its associated circuitry like Crystal with capacitors, Reset circuitry, Pull up resistors (if needed) 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.

1.6.3 MEMS Section

This is the input functional block which is used to identify the tilt that are occurred in the atm machine when a thief tries to break open the atm machine.

1.6.4 ADC 0804 Section

The ADC0808 data acquisition component is a monolithic CMOS device with an 8-bit analog-to-digital converter, 8-channel multiplexer and microprocessor compatible control logic. 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. The device eliminates the need for external zero and full-scale adjustments.

1.6.5 GSM Section

GSM (Global System for Mobile communications) is a cellular network, which means that mobile phones connect to it by searching for cells in the immediate vicinity. GSM networks operate in four different frequency ranges. Most GSM networks operate in the 900 MHz or 1800 MHz bands.

1.6.6 MAX 232 Section

The microcontroller can communicate with the serial devices using its single Serial Port. The logic levels at which this serial port operates is TTL logics. But some of the serial devices operate at RS 232 Logic levels. For example PC and Smart Card Reader etc. So in order to communicate the Microcontroller with either Smart Card Reader or PC, a mismatch between the Logic levels occurs. In order to avoid this mismatch, in other words to match the Logic levels, a Serial driver is used. And MAX 232 is a Serial Line Driver used to establish communication between microcontroller and PC (or Smart Card Reader)

1.6.7 LCD Display Section

This section is basically meant to show up the status of the project. This project makes use of Liquid Crystal Display to display / prompt for necessary information.

1.6.8 Motor Section

A stepper motor is an electromechanically device which converts electrical pulses into discrete mechanical movements. The shaft or spindle of a stepper motor rotates in discrete step increments when electrical command pulses are applied to it in the proper sequence. The motors rotation has several direct relationships to these applied pulses is directly related to the direction of motor shafts rotation. The speed of the motor shafts rotation is directly related to the frequency of the input pulses and the length of rotation is directly related to the number of input pulses applied.

1.6.9 Relay Section

A relay is an electrical switch that opens and closes under the control of another electrical circuit. In the original form, the switch is operated by an electromagnet to open or close one or many sets of contacts. A relay is able to control an output circuit of higher power than the input circuit, it can be considered to be, in a broad sense, a form of an electrical amplifier.