**SYNOPSIS**

**Year/Branch and Division and Batch : TE(E & TC) B T8 Group No :**

**TITLE :**  Vibration Sensor Based ATM Security System Using PIC18f4520.

**OBJECTIVE:**

* To implement an effective and improved ATM security system.
* To build a reliable system that reacts to breaking, stealing, or attachment of an external device to the ATM machine.
* To assist the Police force in prevention and detection of crime and hence maintaining public order.
* To ensure safety of pedestrians.

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**INTRODUCTION:**

ATM stands for Automated Teller Machine. They are developed with special computer software that provides an assortment of banking services often 24 hours a day 7 days a week. They offer a great deal of convenience to all by providing fast cash. ATMs have advanced over the years to offer more bank service options aside from cash transactions. While they offer convenient options there are issues they face regularly including security and fraud. Today, ATM security has become of utmost importance as more people rely on them on regular basis. To deal with this issue, an ATM security system has been implemented which, in the situation of a breach, will confine the breacher inside the ATM by closing the ATM shutter gate. It will set off an alarm while closing the shutter and also inform the police of that locality immediately regarding the situation. This will enable.

**BLOCLK DIAGRAM**

**POWER**

**SUPPLY**

**BUZZER**

**MOTOR**

**CONTROLLER**

**DC MOTOR**

**LIMIT**

**SWITCH**

**PIC**

**18F4520**

**GSM**

**MODULE**

**VIBRATION SENSOR**

**WEST SIDE**

**EAST SIDE**

**BLOCK DIAGRAM DESCRIPTION:**

* This ATM security system makes use of a microcontroller PIC18F4520, vibration sensor SW 420, SIM 900A GSM module, limit switch, buzzer,a DC motor, L293D IC.
* This PIC18f4520 microcontroller consists of a 40 pin IC containing Ports – A,B,C,D,E which have multiplexed functionality. We interface our different peripheral sensors and devices to this microcontroller. It’s operating voltage is 5.5V.
* Vibration sensor SW 420 module uses LM 393 comparator to detect the vibrations on the ATM machine above a particular threshold value and produces a digital signal of logic 1. It is connected to Port B, pin 5 of the controller. It operates on 3.3 - 5V.
* GSM stands for Global System for Mobile communications. This GSM SIM 900A module which operates on 3.4- 4.5 V enables us to send SMS via UART using AT commands to the Police station present in the locality. It’s receive pin is connected to the controller’s Port C pin 6 and transmit pin to Port C pin 7.
* Buzzer is an audio signalling device used to set of an alarm while the ATM shutter shuts down. It is connected to Port C pin 1 and it produces an alarm as soon as signal is provided across this pin.
* DC Motors requires 12V supply and 300mA current, moreover interfacing DC Motors directly with Microcontrollers may affect the working of Microcontroller due to the Back EMF of the DC Motor. Thus, it is not a good idea to interface DC Motor directly with Microcontrollers. The solution to above problems is to use H-bridge circuit.
* L293D is the most commonly used H bridge driver IC to interface a motor to a microcontroller. It consists of four switching elements. When these switches are turned on in pairs, motor changes it’s direction accordingly.
* A limit switch is an electromechanical device having an actuator attached to a set of contacts which make or break the circuit. The actuator will come in contact with the the shutter once it is completely closed. The set the contacts connected to this actuator will complete a circuit and a signal will be produced at Port D pin 0 of microcontroller.

**ADVANTAGES:**

* Potential reductions of thefts and frauds associated with ATMs.
* Provision to catch the burglar while the police officials reach the location.
* Facility to aware pedestrians about a potential threat through an alarm system.
* Provision to notify the Police officials regarding the situation.
* Time saving methodology

**APPLICATIONS:**

**CONCLUSIONS:**  
Fraud and related crime cases with ATMs have been on the rise all over the world. Designs of ATM machines have been changed a number of times over the years to deal with this issue however, there is always a loophole present. Allotment of security guards outside the ATM machines is also not a very efficient solution to this problem. In this ATM security system, using a vibration sensor, any type of extra vibration that may be associated with the attachment of an external device to the ATM machine, breaking it or stealing it will lead to a chain of events that will cease the theft from taking place. It will benefit the crime force to monitor the thefts and crime cases taking place and ensure law and order is maintained.

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