Research Paper

SECURED ATM TRANSACTION USING GSM

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Secure ATM transactions provide a foundation for the ATM industry. To maximize ATMs' effectiveness and profitability, card users must feel safe and the ATM's vault must be secure from theft. Now a days by swiping the card which we are having and by entering the password, we are accessing our bank account. If card is missing means there is a chance for malfunction. To overcome this we are proposing a new method in this project. After swiping and entering the password, if the password matches means the ATM machine will send alert message to the corresponding account holder. When the machine receives acceptance message from respective account holder it will allow accessing the account. If the acceptance message not received the access will be denied. To achieve this we are using Global System for Mobile Communication (GSM) technology. The microcontroller which we are using is a mid range PIC microcontroller. For scanning we are using IR based sensor setup. If any miss use of card, the system automatically informs both user and the bank manager by sending the SMS to the user and buzzer alert system to the manager through wireless communication called RF.

Keywords: ATM transactions, GSM technology, PIC microcontroller

INTRODUCTION

Secure ATM transactions provide a foundation for the ATM industry. To maximize ATMs' effectiveness and profitability, card users must feel safe and the ATM's vault must be secure from theft. Now a days by swiping the card which we are having and by entering the password, we are accessing our bank account. If card misses means there is a chance for malfunction. To overcome this we are proposing a new method in this project. The logical structure of this project is divided in to three part One is INPUT PIC (PIC 16FA877A) in which there is five I/O port and UART. I/O port is connected with RF transmitter LCD Card Scanner, 4*4 key pad Control circuit connected with wireless video camera And UART is connected with GSM Modem.

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Figure 1: Transmitting Section

Figure 2: Receiving Section
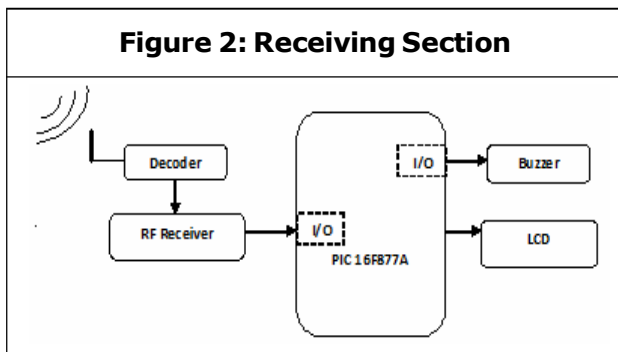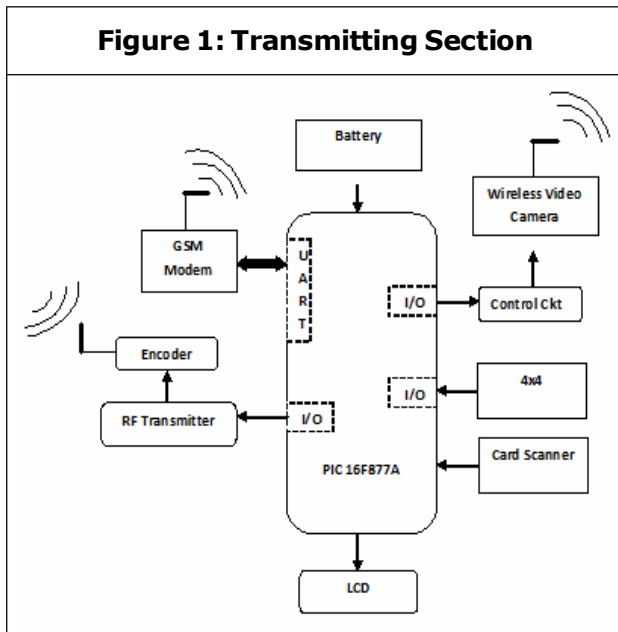
SPECIFICATION

GSM

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. In addition to the standard AT commands, GSM modems support an extended set of AT commands. These extended AT commands are defined in the GSM standards. With the extended AT commands, you can do things like:

• Reading, writing and deleting SMS messages.

• Sending SMS messages.

• Monitoring the signal strength.

• Monitoring the charging status and charge level of the battery.

• Reading, writing and searching phone book entries.

The number of SMS messages that can be processed by a GSM modem per minute is very low—only about six to ten SMS messages per minute.

**Figure 3: SIMCOM GSM Based Modem**

Power Supply

A power supply provides a constant output regardless of voltage variations. "Fixed" three-terminal linear regulators are commonly available to generate fixed voltages of plus 3 V, and plus or minus 5 V, 9 V, 12 V, or 15 V when the load is less than about 7 amperes.

Figure 4: Components of a Typical Linear Power Supply

Figure 5: The Basic Power Supply Schematic
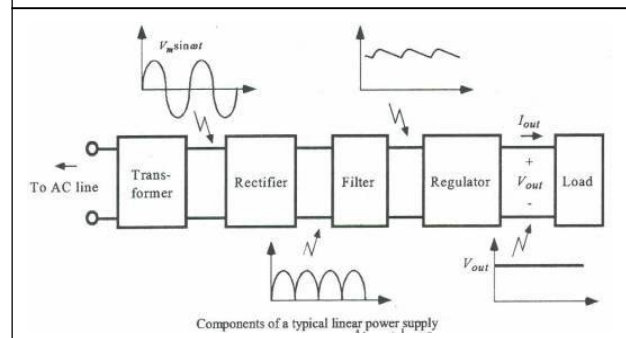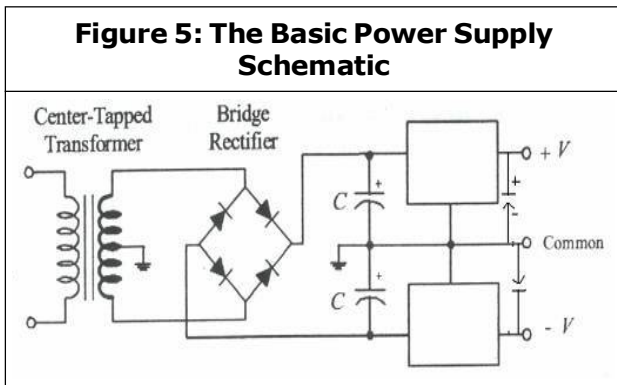
The basic power supply schematic.

WIRELESS VIDEO CAMERA

## Features

- Transmitting unit

    – 1/3" or 1/4" image sensor

    – System: PAL, CCIR, NTSC, EIA

    – Horizontal resolution: 380 TV lines

    – Output frequency: 1.2 G, 2.4 G

    – Transmission signal: video/audio

    – Linear transmission distance: 50-100 m

- Receiving unit

    – Wireless audio/video receiver

    – Receiving frequency: 1.2G, 2.4G

    – Receiving signal: video/audio

    Specifications of WS309AS Wireless Video Camera Module

Card Scanner

There will be 4 IR transmitters which are in line of sight with 4 photo diodes. With respect to this, holes will be placed in cards. When we are showing the card in front of the sensor, the only photo diodes which are in front of the hole, receive IR rays from IR transmitter. At this time sensor will give 4 digit output. This output determines the card number.

Figure 6: Specifications of WS309AS Wireless Video Camera Module
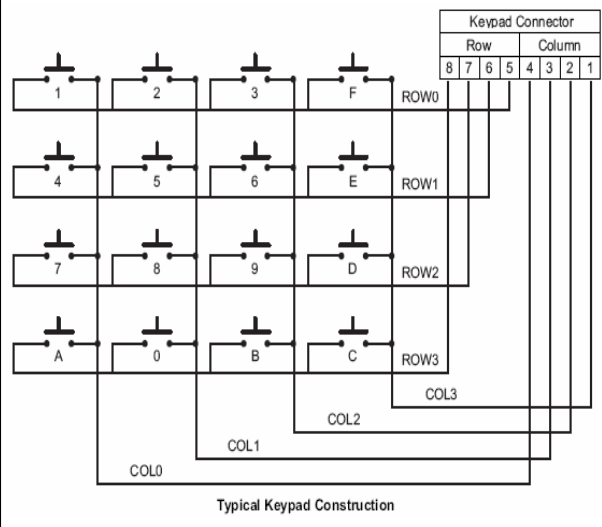
Example

O/P	Card Number
1101	D
1001	9

4*4 Keypad

The 4 x 4 matrix keypad is a general-purpose keypad. It consists of 16 switches arranged in 4 rows and 4 columns. It can connect to the MCU 8-bit port directly.

Buzzer

A buzzer or beeper is a signaling device, usually electronic, typically used in automobiles, household appliances such as a microwave oven, or game shows.
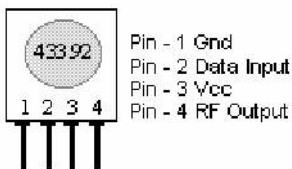
Figure 7: Buzzer

Project Kit

Hardware Requirement

- PIC Microcontroller
- GSM Modem
- 4*4 Keypad
- Card Scanner
- Buzzer
- Power Supply Uni

Figure 8: Project Kit

TWS-434ₐ RF Transmitter

433.92

1 2 3 4

Pin - 1 Gnd
Pin - 2 Data Input
Pin - 3 Vcc
Pin - 4 RF Output

Frequency: 433.92MHz
Modulation: AM
Operating Voltage: 2 – 12 VDC

Module size W = 0.418" H = 0.480" lead spacing 0.1"

UART–Protcol

In that UART having two pins R_x and T_x with the help of this we can transmit and receive the signals.This communication protocol exit in microcontroller GSM modem.

Description

PIC microcontroller (16f877A)

- High-performance RISC CPU
- Only 35 single word instructions
- All single cycle instructions except for program branches which are two cycle
- Operating speed: DC-20 MHz clock input DC-200 ns instruction cycle
- Up to 8 K x 14 words of FLASH Program Memory

  Up to 368 x 8 bytes of Data Memory (RAM)

  Up to 256 x 8 bytes of EEPROM data memory

- Interrupt capability (up to 14 sources)
- Eight level deep hardware stack

Figure 9: Pin Diagram

PIC16F877/874

PDIP
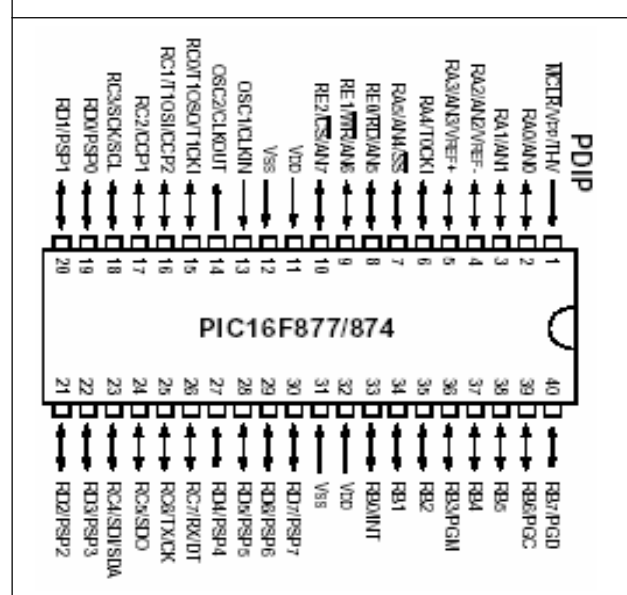
CONCLUSION

In this paper, we propose a secure ATM transaction using GSM modem. This will work with PIC Microcontroller 16F877A. This will be connected using USB cable with GSM Modem, wireless video camera, RF receiver and transmitter, card scanner. LCD is being used for displaying the password and ATM transaction by the use of 4*4 key pad. As the ATM is used then suddenly the message will go to the original card holder that ATM is being used, so transaction to be happened or delayed. As it is delayed or the transaction is delayed by the original user, then wireless video camera will take picture of the culprit and display on the bank manager PC. ✿

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