

# Smart Electronic Parcel Lock Using GSM Module

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**ABSTRACT**-In recent times, people have grown interest on ecommerce. Online shopping has become a wider trend across the globe. Online shoppers across India are about more than one hundred and thirty million in the previous year and are constantly increasing. Due to the busy schedule in the day to day life, availability of the persons for receiving the goods is a little bit hard. To overcome this problem, we have provided the user with an independent smart electronic lock system. In the existing method, locks and keys are used to store the products; the key could be stolen or lost. The proposed system protects the privacy of the user by allowing the user to open the box through GSM, whenever the consignment reaches the home. This process includes an electronic lock that opens only by the user at any time for safer security, and when someone tries to open due to illegal authorization an alarm is turned on, then messages the concerned owner through GSM (Global System for Mobile communication).

**KEYWORDS:**Security, Electronic Lock, Ultrasonic Sensor, GSM, Consignment.

## I. INTRODUCTION

In latest years, the house environment has seen a rapid advent of community enabled digital era. This technology offers new and exciting opportunities to increase the security in residential communities. Online shopping has become a wider trend across the globe. Due to the busy schedule in the day to day life, availability of the persons for receiving the goods is a little bit hard. So, this work provides the user with an independent Smart Electronic Lock system. A central monitoring system for continuous indication of sensors. Transmitters were connected with sensors and receivers were connected with monitoring system for essential communication. A home security system with the GSM technology services to achieve controlling of lock through call. Microcontroller controls the whole driver unit. Ultrasonic sensor detects the distance of the consignment present. When the vibrator sensor senses the tilt, the buzzer is turned on with a long beep and through Bluetooth the alert message is sent to the owner. Liquid Crystal Display (LCD) displays the status of the consignment which makes the device person-friendly. SIM800C GSM module is connected with ATMEGA328 which allows only the owner number to access by using the relay module, the DC motor is turned on. GSM module is the most secured mode in which the owner has to call through his mobile to open or close the lock. Microcontroller programs are developed in embedded C. This result proves to be a social change in reducing the appeal of face-to-face deliveries.

## II. RELATED WORK

[1]To clear up troubles from ordinary keys and provides a dynamically works more than one usages at the numerous instances, digital lock depends at the countersign produce by low fee, ripping the countersign into 2 components gives a robust protection. The cabinet can entirely unencumber if the countersign matches, and can be erased from the memory routinely to use once more; otherwise, the alarm is on.

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[4] The door which may be remotely secured with the aid of a GSM telephone set appearing as transmitter, then another GSM phone set with a twin tone multi frequency linked to the door motor, that's interfaced with microcontroller unit

### III. BLOCK DIAGRAM

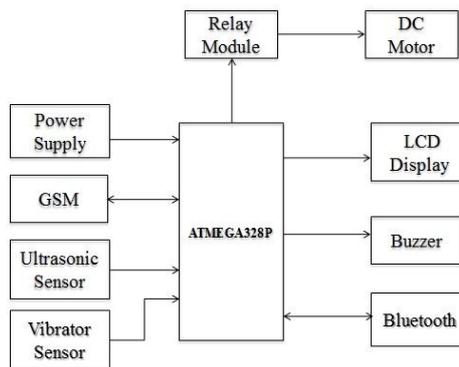


Fig.1 Block Diagram

SIM800C GSM module is connected with ATMEGA328P that permits solely the owner range to access by exploitation the relay module, the DC motor is turned on. Then the inaudible detector detects the consignment and also the alphanumeric display displays the standing of the consignment (present or not). once the vibrator detector senses the lean, the buzzer is turned on and thru Bluetooth the alert message is distributed to the owner.

#### A. ATMEGA328P:

The Atmega328 is likewise a enormously present day microcontroller chip made by way of Atmel. It's AN 8-bit microcontroller that has 32K of shop, 1K of EEPROM, and 2K of internal SRAM. The Atmega328 has twenty eight pins. It's fourteen virtual I/O pins, of that 1/2 dozen are usually used as PWM outputs and half dozen analog enter pins.

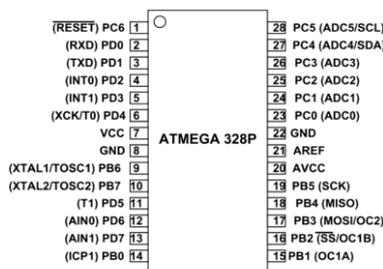


Fig.2 ATMEGA Pin Diagram

#### B. SIM800C GSM MODULE:

SIM800C can be a quad-band GSM/GPRS module that works on frequencies GSM850MHz, EGSM900MHz, DCS1800MHz and PCS1900MHz. With atiny low configuration of seventeen 6\*15.7\*2.3mm, SIM800C can

meet most of the world's desires in shopper applications, like sensible phone, personal organiser and various mobile devices. SIM800C can be a SMT package with forty 2 pads, and provides all hardware interfaces between the module and customer boards.



Fig.3 GSM Module

**C. ULTRASONIC SENSOR:**

Ultrasonic HC - SR04 will observe objects in a very distance of two cm - four hundred cm. The module embodies supersonic transmitters, receiver and feedback circuit. With 2.5V - 5.5V power the LV-Max instrument provides really short to long-range detection and go, in associate incredibly very little package. The LV-MaxSonarEZ1 detects objects from 0-inches to 254-inches.



Fig.4 HC SR04 Ultrasonic Sensor

**D. LCD:**

Liquid Crystal show (LCD) is also a flat panel show, electronic visual show, or monitor that uses the sunshine modulating properties of liquid crystals. LCD's are out there to indicate capricious photos (as throughout a general laptop computer display) or mounted photos which can be displayed or hidden, like planned words, digits, and 7-segment displays as throughout a digital clock. They use constant basic technology, except that capricious photos are created from AN oversized type of small pixels, whereas various displays have larger elements. LCD's are used in a very giant vary of applications at the side of laptop computer monitors, televisions, instrument panels, craft cockpit displays, and aggregation. they are common in shopper devices like video players, a liquid vice devices, clocks, watches, calculators, and telephones, and have replaced electromagnetic radiation tube (CRT) displays in most applications. they are out there throughout a wider vary of screen sizes than vacuum tube and plasma displays, and since they're doing not use phosphors, they're doing not suffer image burn-in. LCD's are, however, in danger of image persistence.

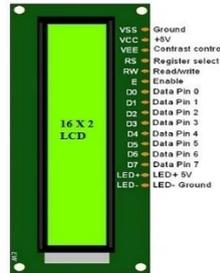


Fig.5 16x2 LCD

**E. VIBRATOR SENSOR:**

Vibration sensors are a unit flexible gear for the measure of diverse procedures. These sensors use the piezoelectric effect, that stay adjustments in pressure, acceleration, temperature, strain or pressure via ever-converting them to AN electrical rate. Vibration detector.



Fig.6 Vibration Sensor

**F. BUZZER:**

A buzzer or beeper may be a tool, commonly digital, generally utilized in cars. It most typically consists of kind of switches or sensors linked to a sway unit that determines if which button became pushed or a planned time has non-church going, and commonly illuminates a light-weight on the right button or panel, and sounds a caution in the form of limitless or intermittent droning or beeping sound. At the beginning this device turned into supported associate computer gadget that become much like AN electrical bell while no longer the metal gong (which makes the ringing noise).. Nowadays, it's in addition vast to apply a ceramic-primarily based power tool style of a Son alert that produces a excessive-pitched tone. Normally these were connected to "motive force" circuits that varied the pitch of the sound or periodical the sound on and stale.



Fig.7 Buzzer

**G. RELAY:**

This is a 4-Channel Relay interface board that lets in you to control varied appliances, and absolutely exceptional equipment's with massive modern. It is managed immediately via Micro-controller (AVR, PIC, DSP, ARM, ARM, MSP430, TTL common sense).



Fig.8 Relay

#### H. DC MOTOR:

Geared DC engines is made open as Associate in nursing expansion of DC engine that previously had its Insight subtleties demystified here. An equipped DC Motor contains an apparatus get together joined to the engine. The speed of engine is included as far as turns of the pole every moment and is named as unrest. The gear assembly helps in increasing the torsion and reducing the speed and exploitation the correct combination of gears terribly} very gear motor, its speed is reduced to any fascinating figure this idea where gears trim the speed of the vehicle but increase its torsion is known as gear reduction.



Figure 9 DC Motor

### IV. CONCLUSION

Smart Electronic Lock proves to be a social modification in reducing the charm of face-to-face deliveries. It helps the owner to receive the consignment albeit they are not accessible reception.

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