

Automation of Remote Areas in Emergency Using Smart Card Or UID Cards

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Abstract: -- In the age of electronic system it is important to be able to control and acquire information from anywhere. Although many methods for automation system have been developed limitations in the range of device is main problem faced by all these devices. We developed an electronic system consist of four buttons namely police, fire, ambulance and NMC and a card reader. This system will be known as UID station which will be available at every square like ATM stations. Whenever anybody needs to contact any one of the above mentioned departments, he or she will go to the UID station nearer to him or her will swap the card in card reader then will press the required button. In this way the information will be sent to the particular station indicating the information of complainer and number of times the complain received. At every station there will be a button which will be pressed by the station in charge to show that the complain is received. And the complainer will get the confirmation. In this way information is sent at nearest station and problems are solved at fast rate.

Keywords:-- Smart Card or UID Cards, uc 89c51, Antenna, Card Holder & Card Reader, GSM System.

I. INTRODUCTION

Today's world running towards automation i.e. making the system more reliable and self dependent. Automation (ancient Greek means self dictated or industrial automation or numerical control) is the use of management systems like computers to regulate industrial machinery and processes, exchange human operators i.e. on another side automation means saves man power , energy. In the scope of industrialization, it is a step beyond mechanization. Using this technology processes and systems can also be automated.

Automation plays an increasingly important role in the global economy and in daily experience. This project can be seen as prototype model of an automated plant (continuous process) going on in the plants. Currently, for producing firms, the aim of automation has shifted from increasing productivity and reducing prices, to broader problems, like increasing quality and adaptability within the producing method. This automation process is brought about in practice by use of three fields namely Electrical, Instrumentation & Electronics. In this project, strength of GSM network plays a very important role. GSM module SIMCOM GSM300 is employed with micro controller 8051. This project is given opposed stealing system. Battery of the project gets ceaselessly provide from the solar array. This project is totally supported strength of GSM network[1].

Electrical is associated with providing ac, dc supply to the network components. The basic purpose of

instrumentation in a process is to obtain the requisite information pertaining to the successful completion of the process. The basic purpose of electronics in the process is to obtain control over network components via use of integrated circuits .

Future growth in automation based plants- This process will lead to more technological advancement in the field of automation bringing about more efficient working condition and town safety. This also would lead to economical using of the invested capital into work. Using this process engineers would be able to design more complex process controllers which would be user friendly, have lower initial cost and would be simpler in construction. Since in this system main focus is on the operation that is achieved by controlling the functionality of the open loop, laser transmitting line control and closed loop control. Further advancement in feedback control would enable the efficient working of the processes.

In Today's life the combination of all the fields like electrical, electronics and instrumentation have become a major part of human life in educational as well as industrial fields. The area of application of all these fields is being increasing every day. In past years technology was not much advanced to combine all possible fields so expected outputs were rarely obtained. But now these technologies have helped to develop systems w the project report is about *Automation of remote areas in emergency using UID cards* which have the great importance in today's world running towards automation.

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In the age of electronic system it is important to be able to control and acquire information from anywhere. Although many methods for automation system have been developed limitations in the range of device is main problem faced by all these devices.

II. LITERATURE REVIEW:-

Smart card was fictional at the top of the seventies by Michel Ugon (Guillou, 1992). The French cluster of bankcards CB (Carte Bancaire) was created in 1985 and has allowed the diffusion of twenty four million devices (Fancher, 1997). For the physical characteristics the primary draft proposal was registered in 1983. an extended discussion resulted within the standardization of the contact location. Next was the standardization of signals and protocols that resulted in standards ISO/IEC 7816/1-4. Logical security came next, because it was clear from the beginning that there was a requirement for cryptographic capabilities, although this was a bit troublesome as a result of the restricted computing power and also the few bytes of RAM accessible at that point (Quisquater, 1997). Nowadays, smart cards area unit employed in many applications. A survey completed by Card Technology Magazine indicated that the industry had shipped over on. 5 billion smart cards world wide in 1999. Overthenext5years,the business can expertise steady growth, notably in card sand devices to conduct electronic commerce and to alter secure access to computer networks. A study by Dataquestin March, 2000, predicts virtually twenty eight million revolving credit shipments (microprocessor and memory) in the U.S. in step with this study, an annual growth rate of hour is anticipated for U.S. smartcardshipmentsbetween1998and2003, revolving credit Forum shopper research, revealed in early 1999, provides additional insights into shopper attitudes towards application and use of good cards. The market of revolving credit is growing chop-chop due to its wide selection of applications. The unique Identification Authority of India Bharat Asian country Asian nation} (UIDAI) may be a central federal agency of India.[2] Its objective is to gate the biometric and demographic information of residents, store them in a very centralization, and issue a 12-digit distinctive identity variety known as Aadhaar to every resident.[3][4] it's thought-about the world's largest national number project.[5][6]

III. BLOCK DIAGRAM AND DESCRIPTION: TRANSMITTER SECTION

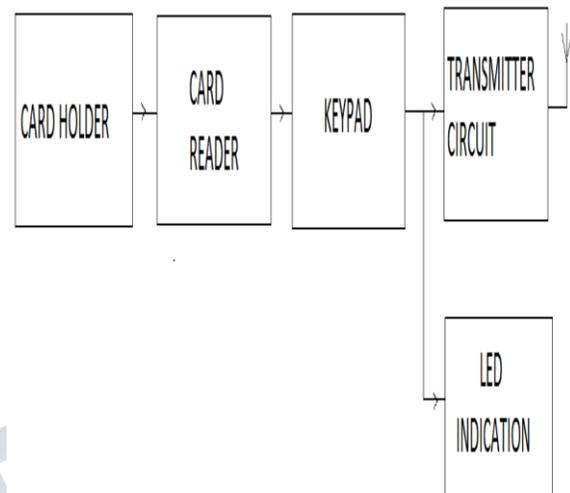


Fig 1- block diagram of Transmitter Section

MAIN COMPONENTS OF TRANSMITTER

- 1) fixed frequency oscillator
- 2) carrier frequency generator
- 3) modulator
- 4) transmitting tower
- 5) regulated supply

3.1 CFG

Signal conditioner is an amplification system for transducer, which brings the transducer output to a sufficient level to make it useful for conversion processing, indicating & recording. It performs the function of amplification, when the signal is amplified the overall magnitude of signal is increased converting a 0-10mv signal to 0-10v signal is an example of amplification. Signal conditioner includes

- Variable conversion element
- Variable manipulation element

3.1.1 VARIABLE CONVERSION ELEMENT

The output of primary sensing element may be electrical signal of any form. It may be a voltage, frequency or some other electrical parameter. Sometimes this output isn't suited to the system. For the instrument to perform the desired function, it may be necessary to convert this output to another suitable type whereas conserving the information content of

**International Journal of Engineering Research in Electronics and Communication
Engineering (IJERCE)
Vol 4, Issue 3, March 2017**

the initial signal.

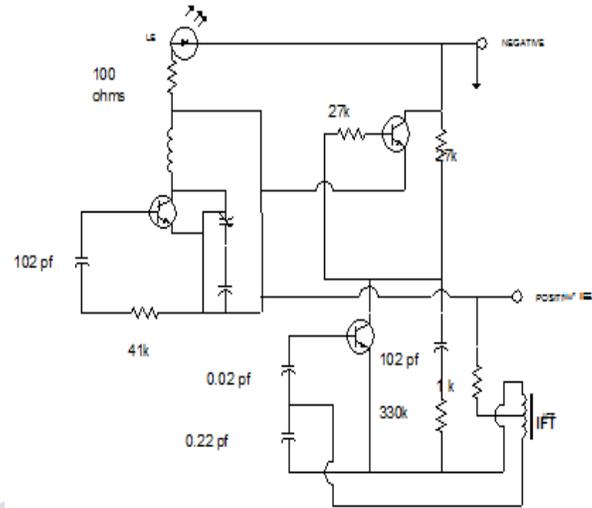
3.1.2 VARIABLE MANIPULATION ELEMENT

The function of this element is to manipulate the signal presented to it preserving the original nature of the signal. manipulation here means that only a change in numerical values of the signal. e.g. AN electronic amplifier accept a small voltage signal that is also voltage however of greater magnitude. the voltage amplifier act as a variable manipulation part .it may be precede the variable conversion part in several cases. just in case voltages is simply too high, attenuation are used which lower the voltage or power for the subsequent stages of the system.

3.2 SIGNAL TRANSMITTER

Frequency modulation is a system in which the amplitude of the modulated carrier is kept constant, its frequencies is varied by modulating signal. The modulator consist of a tank and transistor or in other words, this modulator works as an oscillator as well as mixer. In several cases the signal have a frequency spectrum that's not appropriate for transmission mechanism particularly once atmosphere is employed as a channel. In many cases the frequency spectra of the signal may be translated by modulating the high frequency carrier wave with the signal.

Modulation may be defined as the process by which some parameter of the high frequency signal, termed carrier, is varied in accordance with the signal to be transmitted. Now in this case it is difficult to transmit the tone frequency directly in the air. So we need some high frequency. For this the carrier frequency generator is used. The tank circuit generate the frequency .the inductor L and the capacitor c forms this tank circuit. This tank circuit generate the carrier frequency just by wiring the values of inductance. Hartley type oscillator is used for generating the carrier frequency. Here the frequency can be varied by varying capacitor C in tank circuit.



1.Fig 2-Schematic diagram of transmitter

3.3 TRANSMITTING TOWER

Transmitting tower is required for the purpose of coupling the output of transmitter and input of receiver to the space link. An electromagnetic waves travels from the transmitter to the receiver through space, which is received at the receiver. Their main function is to tune out the reactive component of the antenna impedance, to transform the resulting resistive component to a suitable value and help to tune out unwanted frequencies, in transmitting frequencies.

Antenna includes a quick review of impedance matching and resonant circuits. The maximum power can be transferred only when source matches the load.

When an RF signal voltage is applied at some purpose of an antenna, voltage and current can result at that point. Traveling waves area unit then initiated ,and standing waves may be established, which means that voltage and current on the antenna are out of phase. To connect a transmission line to this antenna, we must observe the impedance at the connection point. The impedance varies along the length of the antenna, being highest where the current is lowest, and lowest where the current is highest.

3.4 REGULATED SUPPLY

Certain electronic circuits require constant supply voltage for their stable operation, but voltage of an ordinary power supply may change slightly with changes in load or changes in input voltage .This can be avoided if we use regulated power supply The output voltage of regulated power supply

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Vol 4, Issue 3, March 2017

depends upon input unregulated voltage, load current and temperature.

It operates generally by selecting the appropriate tap on a transformer with multiple taps . If the output voltage is low, the tap changer switches connections to provide a better voltage. If the output voltage is too height he tap changer switches connections to produce a lower voltage. The control provides a dead band where in controller will not act, preventing the controller from constantly adjusting the voltage to reach the desired voltage.

IV. RECIEVER SECTION

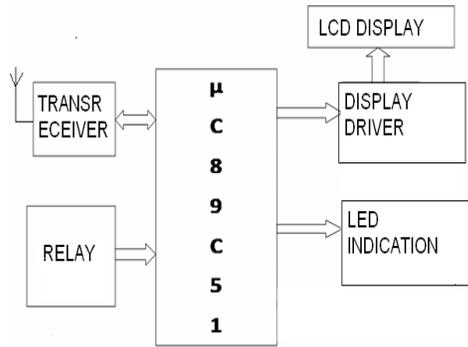


Fig 3- Block Diagram of Receiver Section

There are a great variety of receivers in communication systems, since the exact form of a selected receiver is influenced by an excellent several requirements. Among the more important requirement are the modulation system used, the operating frequency and its vary and also the variety of display requires, which in turn depends on the destination of the intelligence received . A radio receiver must perform the number of function:

1. The receiver must separate a wanted radio signal from all other radio- signal that may be picked up by the antenna and reject the unwanted ones. The receiver must amplify the desired signal to a unstable level.The receiver must recover the information signal from the radio carrier and pass it on to the user.

Receiver runs the whole range of complexity from a very simple crystal receiver, with headphones, to a far mare complex radar receiver, with its involved antenna arrangements and visual display system. Whatever the receiver, its main function is demodulation and sometimes also decoding. Both these process are the reverse of the

corresponding transmitter process.

As stated initially, the purpose of receiver and the form of its output influence its construction as much as the type of modulation system used. Thus the output of a receiver may be variously fed to a loudspeaker, video display unit, teletypewriter, various radar display, television picture tube, pen recorder or computer: in each instant different arrangement must be made, each affecting the receiver design.

It is apparent that a receiver has the perform of selecting the desired signal from all the opposite unwanted signals, amplifying and demodulating it, and displaying it at intervals the specified vary. This outline of function that must be performed shows that the major difference between receivers of varied types is probably going to be within the way within which they pull up the received signal. In turn,this can depend on the type of modulation used, be it AM, FM, SSB or any of the form.

V. SCHEMATIC DIAGRAM OF RECEIVER

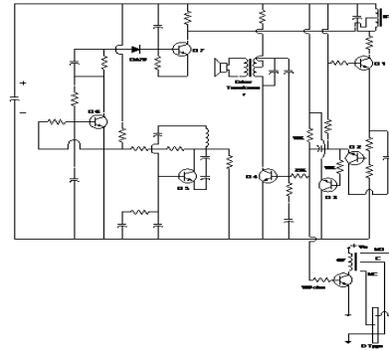


Fig 4.- Receiver section circuit diagram

COMPONENT OF RECEIVER

1. Receiving antenna
2. Demodulator
- 3.Signal Conditioner
4. Display Driver
- 5.Liquid crystal display

4.1 RECEIVING ANTENNA

In a radio system, an electromagnetic wave travel from the transmitter to the receiver through space, and antennas (or aerials) are required at both ends for the purpose of coupling the transmitter and the receiver to the space link. Many of the important characteristic of a given antenna are identical for both transmitting and receiving functions, and

**International Journal of Engineering Research in Electronics and Communication
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Vol 4, Issue 3, March 2017**

the same antenna is often used for both.

Antennas may be constructed from conducting wires or rods, as, for example, the ordinary domestic TV antenna. At microwave frequencies apertures coupled to waveguide may be used; such antennas are naturally called aperture antennas. A horn antenna is an example of an aperture antenna. Antennas may be further classified as resonant antennas, in which the current distribution exists as a standing wave pattern, and non-resonant antennas, in which the current exists as a traveling wave. Again, the ordinary TV antenna is an example of a resonant antenna, usually cut to one-half wave length, which give it its resonant properties. Non-resonant antennas are used mainly for short-wave communications links.

The word antenna was even mentioned on a number of occasions. Thus it is no secret that, in order to couple to space the output of transmitter or the input of receiver, some sort of interface is essential. A structure must be provided that is capable of radiating electromagnetic waves or receiving them, as the case may be. An antenna is such a structure. It is generally a metallic object, often a wire or a collection of wires, used to convert high frequency current into electromagnetic waves, and vice versa. Apart from their different functions, transmitting and receiving antennas behaves identically. Thus is, their behavior is reciprocal.

The types of structure used for antennas are many and varied, ranging from a simple length of wire suspended above the ground to the curtain arrays used for very low-frequency broadcasting, from the insignificant looking lens antenna on a traffic policeman's radar apparatus to the huge parabolic dish antennas of the astronomer's radio telescope.

4.2 DEMODULATOR

The function of a frequency-to-amplitude changer, or FM demodulator, is to change the frequency deviation of the incoming carrier into an FM amplitude variation (identical to the one that originally caused the frequency variation). This conversion ought to be done expeditiously and linearly. Additionally, the detection circuit ought to (if in the least possible) be insensitive to amplitude changes and should not be too vital in its adjustment and operation. Usually speaking, this kind of circuit converts the frequency-modulated IF voltage of constant amplitude into a voltage that is both frequency and amplitude-modulated. This latter voltage is then applied to a detector which reacts to the amplitude change but ignores the frequency variation.

It is now necessary to devise a circuit which has an output whose amplitude depends on the frequency deviation of the input voltage.

4.3 SIGNAL CONDITIONER

The output of the demodulator has to be modified before and become usable and satisfactory to drive the signal presentation stage which is the last stage of measurement system. The last stage of measuring system may consist of indicating; recording, displaying, data processing elements or may consist of control elements.

Measurement of dynamic physical quantities requires faithful representation of their analog or digital output obtained from the intermediate stage i.e. Signal conditioning stage and this places a severe strain on the signal conditioning equipment. The signal conditioning equipment may require to do linear process like amplification, attenuation integration, addition, differentiation and subtraction. They also require to do non-linear process like modulation, demodulation, sampling, filtering, clipping and clamping, squaring, linearizing or multiplication by another function etc. These tasks are by no means simple. They require ingenuity in proper selection of components and the selection of most faithful methods of reproduction of output signals for the final data presentation stage.

V. BLOCK DIAGRAM OF CARD READER

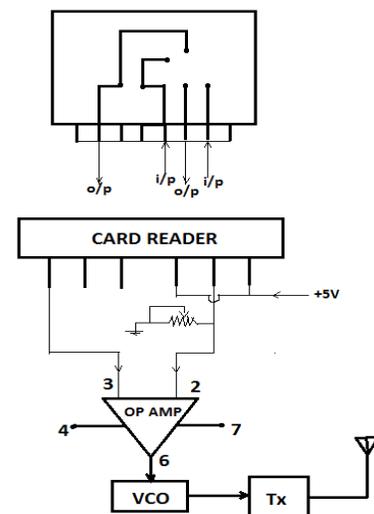


Fig 5- Block diagram of card reader

**International Journal of Engineering Research in Electronics and Communication
Engineering (IJERECE)
Vol 4, Issue 3, March 2017**



Card reader is useful for searching a particular candidate or certain people. In this project we did not use UID Card but simple PCB design UID card is used. But in future we can implement this system in future by UID cards. We made this card by simple PCB, if suppose person 1 data is different from person 2 so on card 1 having 10 lines are connected & card 2 having 9 lines so therefore we can identify the candidate data who are swapping this card in card reader.

VI. GSM

GSM is used for in this research work to sent a message to particular department such as if hospital example is taken here to complaints a patient to particular hospital.

ADVANTAGES

1. Reduces time.
2. Easy to use.
3. Security of data.
4. 24*7 service available.
5. Solution of multiple complaints

applications

1. In Automation Field: As our system is itself automatic and does not require any human effort hence it can be used in each kind of automation field.

2. Industrial Application: In industrial campus there will be four substations, these stations are directly connected with main station so that if any problem occurs at any one of the substations then the respective information will be sent to main station.

3. Biomedical Instrumentation: doctor is not available in hospital then also doctor can communicate with patient.

4. Interfacing with UID database: We can easily interface UID database with memory.

FUTURE APPLICATION

1. In future we can implement our project with UID card for various complaints.
2. We can implement our project in all over world in town planning.

REFERENCES

- [1] M. Silventoinen and T. Rantalainen, Mobile Station Locating in GSM. IEEE Wireless Communications System Symposium, Smithtown 28.-29-11.95. pp. 53-58.
- [2] ["Unique Identification project expenditure at Rs 3,062 crore as of July end".The Economic Times](#). 29 August 2013. Retrieve 29 May 2015.
- [3] ["Learning with the Times: What is Aadhaar?".The Times of India](#). 4 December 2010. Retrieved 29 May 2015.
- [4] Chin, Roger (June 2015). ["India's Aadhaar Project: The Unprecedented and Unique Partnership for Inclusion"](#) (PDF). Journal of Administrative Science.
- [5] ["UIDAI: Inside the World's Largest Data Management Project".Forbes\(India\)](#). 29 November 2010. Retrieved 26 May 2015.
- [6] ["Aadhaar world's largest biometric ID system".The Times of India](#). 27 April 2015. Retrieved 31 May 2015.