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Modern Security System With Message Transmitter

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Abstract: The main objective of this project is to provide security to places such as banks, museums, shops etc. during non working hours. Security of valuables at such places can be assured by installing this system during non business hours especially night hours when there is none to safeguard the property. This system senses the presence of a person who tends to loot and immediately activates the system which provokes the security station or a police station by initially transmitting an alarm tone and then immediately transmitting pre-recorded information stating where the theft has broken down. The control of this mechanism is provided by a microcontroller and transmission is done using FM techniques. Infrared sensors are used to detect the presence of a person who breaks the place during non working hours. For this purpose two sensors are used, namely signal generator and signal receiver. From the signal generator infrared rays are emitted through the infrared LED and these rays are detected by the receiver infrared LED. These two infrared LED's are arranged parallel to each other at the entrance. The distance between these two sensors can be increased to the required length, by increasing signal delivering power of the transmitter depending up on the area of the Room. The output of the signal receiver circuit is fed to microcontroller, such that whenever any person passes between the sensors, the controller gets high signal. On receipt of a high signal from the infrared sensor, the microcontroller energizes the relays, and the program is prepared such that one of the relays will be active for 20 seconds (relay-1) and the other for 70 seconds. The relay-1 contact is used to energize the alarm while the relay-2 contact is used to energize the cassette player mechanism, and the recorded information produced by the tape head amplifier is super imposed over the carrier and transmitted as a modulated wave using F.M transmitter. In the audiocassette, address of the system is recorded. In this project, condenser MIC amplifier is also used, and this is very sensitive MIC amplifier, which picks-up very low sounds also perfectly. The idea of using this MIC amplifier is, to transmit the voice or conversion of the intruders through the F.M. transmitter. The output of MIC amplifier, Tape head amplifier and 1 kHz signal generator is connected to the input of carrier generator. Two digits digital display system is designed with 7-segment displays and it is connected at the output of the microcontroller, therefore whenever the controller receives interrupted signal, the display shows 90 and starts counting in decrementing mode, finally when display shows zeros, controller de-energizes both the relays automatically. The receiving Module of the project work is, supposed to be installed at police station or security office, where the system alerts the police officials or security guards for taking the necessary action immediately. In the receiver the received signal is amplified using an Audio amplifier and the amplified signal is fed to the loud speaker.

Keywords: LED, MIC, IR, IC, RAM, DST, DPTR, NEMA, PCB, CCTV

I. INTRODUCTION

Now-a-days a lot of importance is growing for the security aspects as the crime rate is increasing. This project report describes about the design and development of 'Modern Security System with recorded Message transmitter' which can be used in Banks, industries, jewellery shops, Temples, Go-downs, Museum's and other places where the valuable material is stored. This kind of security system can be used for home security also. This type of security systems is quite suitable for the isolated colonies or remote houses. A house, which is far away from the town or city, must be equipped with this system. This system will guard the house when residents are out and automatically transmits the theft information to the nearest police station or security office where the receiver is installed. In order to check the un-authorized entry of persons into important places, many electronic security systems are developed and have become one of the important fields in the electronics. Many types of electronic systems are available in the market, such as, digital code locking system, Metal detectors, intruder alarms, touch detectors, fire alarms, closed circuit television systems, coded cards and magnetic cards for identifying the persons, scanners, burglar alarms, sound operated light switches, etc; These type of security systems are readily available in the Market, but the one which is mentioned in this report is designed using latest techniques and is not available in the Market. In this project work, the control circuit is designed with microcontroller and the program is prepared such that, whenever the controller receives interrupted signal from the IR sensors, the controller energizes the relay and remains active for a specific time. The relays get deactivated once the display shows 00. The time for relay to remain in active state can be programmed according to the requirement. The idea of providing time delay is, during this time, the recoded information can be transmitted to the nearest Police station. In this project work cassette player mechanism is used, and supply is provided to the player

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through the relay contact. The pre-recorded message that contains the address of the system is super imposed over the carrier and transmitted as a modulated wave. In this project work, microcontroller chip is playing a major role, the controller used in this project is ATMEL 89C51, and this is 40pin IC having 32 I/O lines. Nowadays with the advancement of technology in the field of micro-controllers, all the activities in our day-to-day living have become part of information technology and we find micro-controllers in each and every application. Thus, the trend is directing towards controller based project works. However in this project work, the basic signal processing of information gathering from the sensors is done with analog circuit, for this purpose IR sensors are used. These sensors can be called as optical sensors, the detailed descriptions of these sensors and microcontroller are provided in the subsequent chapters.

II. DESCRIPTION OF BLOCK DIAGRAM

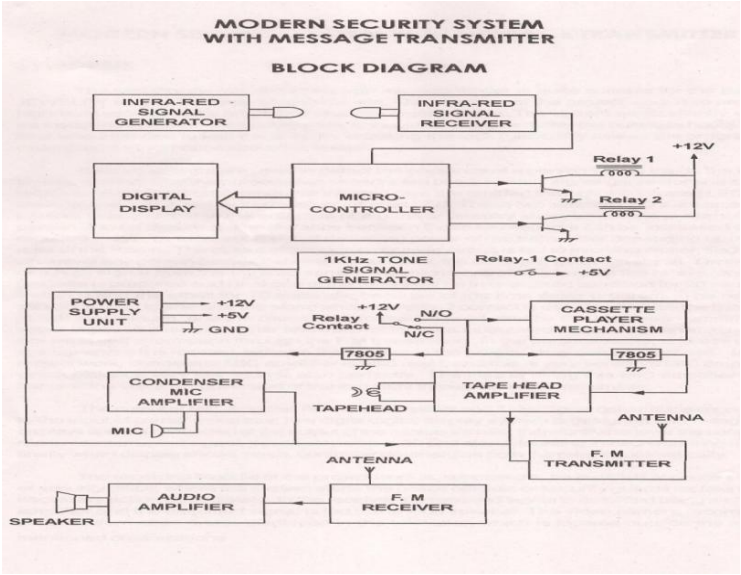

Fig 2.1 Block diagram of modern security system with message transmitter

III.CIRCUIT ANALYSIS

The detailed circuit description of the project work **"Modern Security System with Message Transmitter**" is explained in this section. The realization of the before mentioned blocks with complete circuit details are provided as following:

3.1. SENSORS The Applications And Advantages Of Infrared Sensors Are Plenty; Mostly These Devices Are Utilized For Various Types Of Security Systems By Implementing Proximity Detection Theme. Other Important Applications Are For Counting Objects**,** Or Counting Revolutions Of A Rotating Object. In Any Concept, The Proximity Detection Package Contains Two Devices, Namely Infrared Light Emitting Diode (Ir Led) And Infrared Light/Signal Detector (Ir Sensor). The Ir Led Is Always On, Meaning That This Device Is Constantly Emitting Light And The Sensor Is Detecting This Light. The Sensors Can Be Interfaced With Trigger Circuit To Generate Logic High/Low Pulses Depending Up On The Interruptions Created By Any Object. This Design Of The Circuit Is Suitable Many Applications. However This Design Is More Power Consuming And Is Not Optimized For High Ranges, In This Design, Range Can Be From 1 To 10 Cm.

3.2 MICROCONTROLLER AND DIGITAL DISPLAY A microcontroller is a small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals. Program memory in the form of NOR flash or OTP ROM is also often included on chip, as well as a typically small amount of RAM. Microcontrollers are designed for embedded applications, in contrast to the microprocessors used in personal computers or other general purpose applications. Microcontrollers are used in automatically controlled products and devices, such as automobile engine control systems, implantable medical devices, remote controls, office machines, appliances, power tools, and toys. By reducing the size and cost compared to a design that uses a separate microprocessor, memory, and input/output devices, microcontrollers make it economical to digitally control even more devices and processes. Mixed signal microcontrollers are common, integrating analog components needed to control non-digital electronic systems. Some microcontrollers may use four-bit words and operate at clock rate frequencies as low as 4 kHz, for low power consumption (mill watts or microwatts). They will generally have the ability to retain

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functionality while waiting for an event such as a button press or other interrupt; power consumption while sleeping (CPU clock and most peripherals off) may be just nano watts, making many of them well suited for long lasting battery applications. Other microcontrollers may serve performance-critical roles, where they may need to act more like a digital signal processor (DSP), with higher clock speeds and power consumption. A microcontroller can be considered a self-contained system with a processor, memory and peripherals and can be used as an embedded system. The majority of microcontrollers in use today are embedded in other machinery, such as automobiles, telephones, appliances, and peripherals for computer systems. These are called embedded systems. While some embedded systems are very sophisticated, many have minimal requirements for memory and program length, with no operating system, and low software complexity. Typical input and output devices include switches, relays, solenoids, LEDs, small or custom LCD displays, radio frequency devices, and sensors for data such as temperature, humidity, light level etc. Embedded systems usually have no keyboard, screen, disks, printers, or other recognizable I/O devices of a personal computer, and may lack human interaction devices of any kind.
The circuit diagram of the microcontroller part is as shown below:

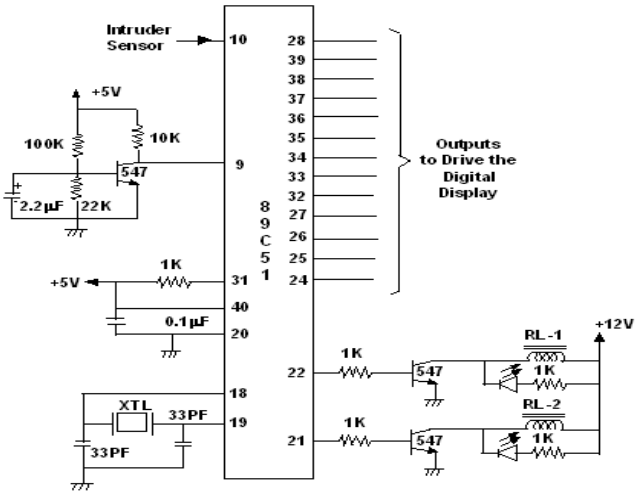

Fig 3.4 Microcontroller circuit

Atmel's AT89C51 is a 40 pin microcontroller of 8051 series. The complete pin diagram and signal description of the controller are provided in the later chapters. Here we see the basic controller block which takes the input from the intruder sensor at pin no. 10 which is actually P3.0 i.e. RXD terminal of the controller. The crystal oscillator is connected between the XTAL1 and XTAL2 pins of the controller which are pins 18 and 19 respectively. The EA/VPP pin i.e. pin 31 is made high in order for the execution of internal program as the controller is not accessing any external memory. If the controller accesses any external memory the pin must be grounded. The outputs from the ports 2.0 and 2.1 i.e. the pins 21 and 22 are connected to relay1 and relay2 which are respectively given to 1 KHz signal generator and to the cassette player mechanism. The two relays are activated according to the time delay program, the details of which are provided in the subsequent chapters. The pins from 24 to 28 from port2 and pins 32 to 38 from port0 are used to interface the digital display which counts in the decrementing mode from 90 to 00 to show the countdown of 90 seconds. The interfacing of the digital display is done using a latch 74x573 as shown below:

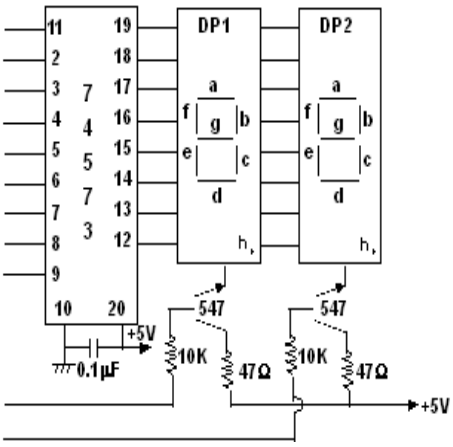

Fig 3.5 Digital display circuit

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In the above circuit diagram, two common anode 7-Segment displays are used for counting seconds. The output of the Micro-controller is fed to digital display through the latch, for this purpose IC 74573 is used, this is a octal transparent D-type latch IC. To drive the displays independently 547 transistors are used. A seven segment LED is a device for display of numbers and letters. It contains seven LED bars, which can be turned on by placing the appropriate signals on the appropriate pins. In order to produce a specific number, we must light the correct segments of the LED. For example, to display the number 3, we must light segments a, b, c, d and g. By which we understand that the pattern of lit and unlit segments can be formed into a binary number.

3.3 CONDENSER MIC AMPLIFIER The microphone is device, which converts the variations of sound pressure in a sound wave into corresponding electrical variations in an electrical circuit. The electrical variations so produced are in the AF range and are further amplified by means of an AF amplifier to make them suitable for feeding loud speakers, recording heads and for modulating carrier waves. Different types of Micro-phones are available for proper reproduction of various types of sounds like music, talks and drama and sports commentaries: but a microphone must fulfill certain general requirements to be really useful for the purpose for which it has been designed. The general requirements are;

i. The response of the microphone should be independent of frequency, i.e., the output should not vary much with frequency.
ii. The shape or body of the microphone should be such that the frequency response is reasonably independent of the angle of incidence of sound waves.
iii. It should be free from harmonics
iv. The output of the microphone should be high compared to the self generated and thermal noise
v. It should remain unaffected by adjacent electric and magnetic fields.
vi. The Mechanical construction should be robust to withstand handling in service.

Besides these general requirements, the microphone is sometimes specially designed to be either Omni-directional or to discriminate between sounds coming from different directions. For broad casts from industrial plants, sports meetings, races and boxing matches, the micro phones used are meant to keep off the unwanted strong voices from remote sources to avoid drowning of the voice of the commentator. For the conversion of sound energy into electrical energy, the sound waves set up mechanical vibrations in some moving element to generate small AF voltages. The voltages generated by the vibrating element may be either proportional to the velocity or the amplitude of the moving element. Microphones are, accordingly, classified as constant velocity microphones or constant amplitude microphones of the five types of commonly used microphones, the carbon microphone, the crystal microphone and the capacitor (condenser) microphone are constant amplitude type where as the moving coil and ribbon type of microphones are constant velocity micro-phones.
In this project work condenser microphone is used and constructional details and characteristics of this condenser microphone is as follows:

3.4 CASSETTE PLAYER MECHANISM This Mechanism is used to re-produce the sound, which is recorded in the magnetic tape. Sound recording is essentially a process of storage of sound. In sound recording, the acoustical signals are converted into some form of permanent or semi-permanent record from which these can be reconverted into sound. It was in 1877-78 that the earliest sound recording was made by 'EDISON' who found a means of converting sound pressure waves into mechanical motion to cut a varying groove on a soft wax cylinder. Reproduction was effected by allowing a needle to retrace the path along the groove and to make a diaphragm vibrate, thereby creating sound waves again. This was the beginning of gramophone disc recording as we know it today. Various methods of sound recording has reached a very high degree of perfection in the modern magnetic recording, popularly known as tape recording. The process of magnetic recording is based on the principle of electromagnetic induction. In magnetic recording, a magnetic material is magnetized to varying degrees of magnetization along its length when moved in front of a coil carrying AF currents from an audio amplifier. The magnetic variations so recorded can be reconverted in to electrical currents when the varying magnetic flux emitted by the magnetized material is linked with an electrical circuit. This completes the magnetic recording and playback process.

3.5. TRANSMITTER AND RECEIVER Radio Communication is the process of sending information from one place and receiving it in another place without using any connecting wires. It is also called "wireless" communication. Perhaps, the most important form of radio communication is radio broadcasting Radio broadcasting not only provides home entertainment but also serves as a valuable educational aid. Other important applications of radio communication are Radio telephone, Radio telegraph, Police wireless, Radio aids to Navigation (both air and sea), walkie-talkie and satellite communication is based on the properties of a special type of radiation called radio waves. Radio waves are produced by rapidly changing currents flowing through a conductor. These radio waves spread out in space like ripples produced on the surface of a pond when a stone is dropped into the water. When these fast moving radio waves

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strike some other conductor placed in their path at a distant point, they produce in the second conductor weak currents of the same nature as the original current which produced these radio waves. Thus a communication called radio communication is established between two distant points. Radio waves belong to a particular type of waves called electromagnetic waves, a from of energy resulting from a combination of electrical and magnetic effects of rapidly changing electric currents. Although not visible to the eye, radio waves travel with the velocity of light waves, which is 1,86,000 miles per second. In fact, both light waves and radio waves are electromagnetic waves. Other examples of electromagnetic waves are X-Rays, Cosmic Rays and gamma rays produced by radioactive substances. Radio waves generally possess a frequency of thousands and millions of Hertz and are thus represented by larger units called kilohertz and mega hertz. The wavelength of a radio wave is the distance traveled by the wave during one complete cycle. Wavelength is usually expressed in meters. Every radio broadcasting station is allocated a fixed frequency for operation, which is required to be maintained constant within prescribed limits to avoid interference with neighboring stations. Radio waves of different frequencies are used for different purposes. Radio broadcast stations normally operate at frequencies from a few hundred KHz to 30 MHz but television stations use frequencies above 40 MHz. Every transmitting station is assigned a radio frequency (RF) called the carrier, which can travel, over long distances in free space with the speed of light. However, the human ear cannot respond to these high frequencies. If the radio waves are to carry a message or information, some feature of the radio wave must be varied in accordance with the information to be communicated. The process by which the information is super imposed on the carrier is called modulation. In the case of radio broadcasts the information or the message generally consists of low frequencies in the range of 20Hz to 20,000Hz. These low frequencies are called audio frequencies because the human ear can respond to corresponding sound frequencies in the same range. Audio frequencies by themselves cannot travel long distances but when super imposed on the carrier frequency, they cover the same distance as the carrier wave itself. A modulated wave is like an aero plane carrying passengers who could not have reached their destination without the help of the aero plane. In the case of television broadcasts the modulation frequencies are called video frequencies, which correspond to the visual information in the picture to be transmitted. For modulating radio wave, the two important characteristics of the radio wave that can be varied are the amplitude and the frequency of the carrier wave. When the amplitude of the carrier is varied in accordance with the variation in the amplitude of the modulating signal (Audio frequency), the modulation is called amplitude modulation (AM). If, however, the frequency of the carrier is varied in accordance with the variation in the amplitude of the modulating signal, the modulation is called frequency modulation (F.M). Both amplitude modulation and frequency modulation are used in radio broadcasting.

IV. HARDWARE EQUIPMENTS USED

During the realization of this project various hardware equipments had been used as seen in the circuit analysis section. Here we discuss the details of the various hardware components used in this project. The following are the various components used along with their description:

4.1. MICROCONTROLLER-AT89C51 Intel Corporation introduces 89c51; it is an 8-bit microcontroller. This microcontroller has 128 bytes of RAM, 4K of on-chip ROM, two timers, one serial port, and four ports of 8-bits each all on a single chip. 89c51 is basically Flash ROM version of 8051 families. 89c51 is basically a 40 pin Dual-in-package. Block diagram of 89c51 is as shown in chapter-10, i.e., hardware details. The main features of 89c51 Hardware can be labeled as below:

1. It has 8-bit CPU with registers A (the accumulator) and B.
2. Sixteen-bit program counter (PC) and data pointer (DPTR).
3. Eight-bit program status word (PSW).
4. Eight-bit stack pointer (SP).
5. Internal ROM of 0 to 4K.
6. Internal RAM of 128 bytes.
7. 32 I/0 pins arranged as four 8-bit ports: P0-P3
8. Two 16-bit Timer/Counters: T0 and T1
9. Full duplex serial data receiver/transmitter: SBUF
10. Control registers: TCON, TMOD, SCON, PCON, IP, and IE.
11. Two external and three internal interrupt sources.
12. Oscillator and Clock circuits.

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4.2. TEA5591A-FM RECEIVER

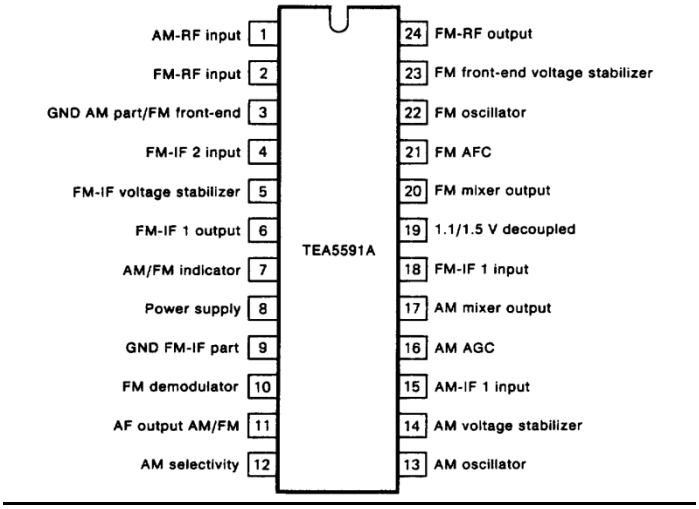

Fig 4.2 TEA5591A

4.3. TBA810-AUDIO AMPLIFIER

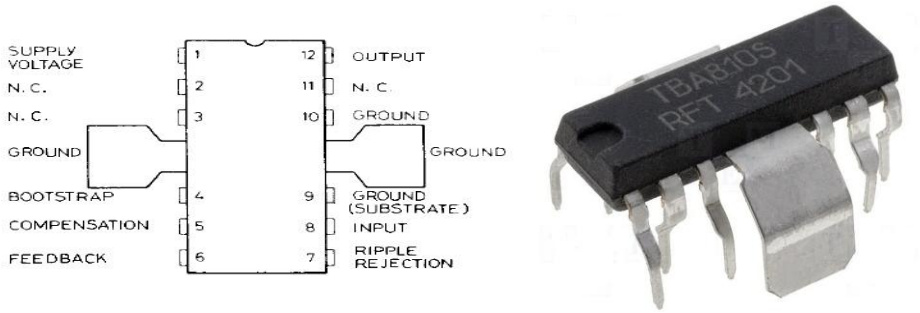

Fig 4.3 TBA810

The TBA810 is a monolithic integrated circuit in a 12-lead quad in-line plastic package, intended for use as a low frequency class B amplifier. The TBA810 provides 7W output power at 16V/4Ω; 7W at 14.4/2Ω. It gives high output current (up to 3A), high efficiency (75% at 60W) output very low harmonic and crossover distortion. The circuit is provided with a thermal limiting circuit and can withstand a short circuit on the load for supply voltages up to 15V.
It offers:

- Higher output power (R_L=4Ω and 2Ω).
- Low noise.
- Polarity inversion protection.
- Fortuitous open ground protection.
- High supply voltage rejection (40dB min.)

In this project TBA810 audio amplifier circuit has been used in the tape head amplifier circuit as seen in the circuit analysis section.

4.4. LM567 TONE DECODER

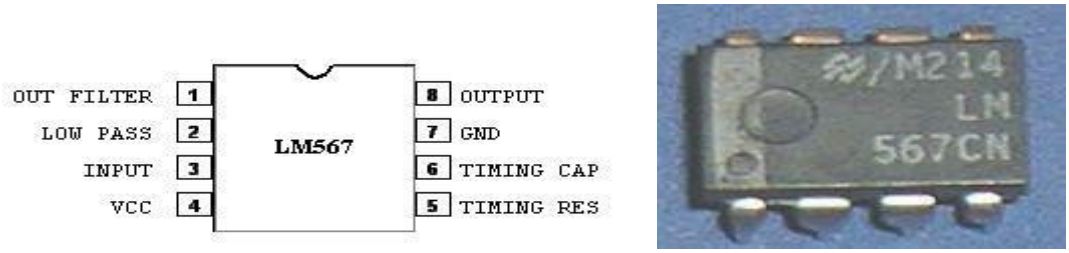

Fig 4.4 LM567

4.5. 547 TRANSISTORS

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Fig 4.5 BC547 Transistor

BC547 is a npn epitaxial silicon transistor which has been used at several places as seen in circuit analysis section. At these places it has been used for switching purposes. The switching property of the transistor from cut-off to saturation region has been used to make it ON and OFF according to the need and situation. BC547 provides higher working voltages and more immune to noise. It also provides higher switching speed as well which makes it efficient for use in this project.

4.6 RELAY A Relay is a device that opens or closes an auxiliary circuit under some pre-determined condition in the Main circuit. The object of a Relay is generally to act as a sort of electric magnifier, that is to say, it enables a comparatively week current to bring in to operation on a much stronger current. It also provides complete electrical isolation between the controlling circuit and the controlled circuit. Relay is used in this project to interface the cassette player mechanism as well as alarm tone generator to the microcontroller. Two relays of below mentioned specifications have been used, one relay with operating voltage of 5V is used to interface the 555 timer circuit which generates the alarm tone, the other relay with a operating voltage of 12V is used to interface the cassette player mechanism.

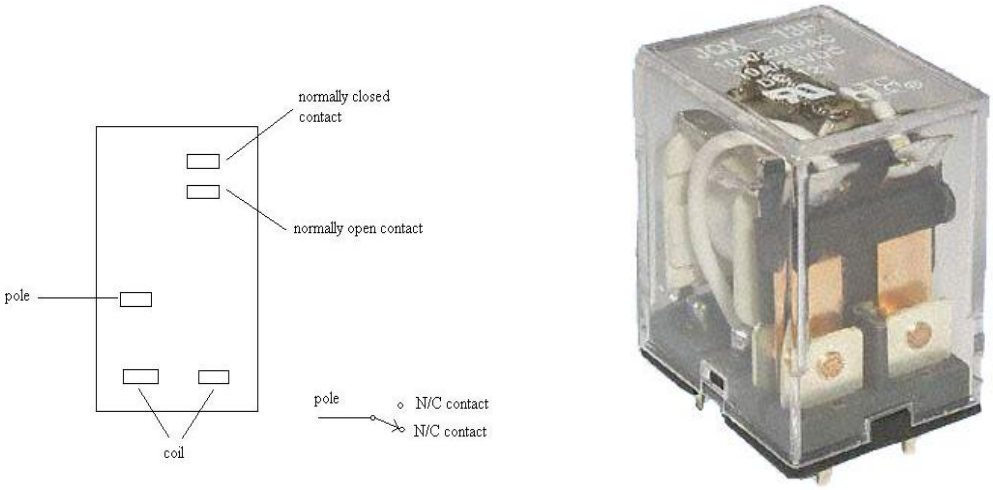

Fig 4.6 Relay

Specifications:
(1) Coil resistance : 100Ω to 500Ω
(2) Operating voltage : 6V to 24V DC
(3) No. of contacts : 1 to 4 change over
(4) Contact current Rating : 1.5 to 25 Amps

4.7. LOUD SPEAKER A loud speaker is a device, which converts electrical energy into sound energy. Audio frequency currents from an amplifier are converted into sound waves of corresponding frequency and amplitude by the loud speaker. In principle, a loud speaker is the converse of a Microphone and the two instruments perform complementary functions in a sound reproducing system. The constructional details in the two cases are so much similar that a loud speaker can be regarded as a loud speaking microphone. A loud speaker is the voice of any electronic entertainment equipment and, as such, it should be able to reproduce, as faithfully as possible, the original sound from the broad casting studios. A good loud speaker should be able to reproduce all sounds equally well irrespective of their amplitude, frequency and waveform. Sound waves are produced in air by a vibrating body. In the case of a loud speaker, the vibrating body is a cone or a diaphragm, which is attached to a driving unit, which converts electrical currents into Mechanical motion for the diaphragm to vibrate and produce sound waves containing the acoustical energy.

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4.8. OTHER COMPONENTS Apart from above mentioned equipments there are several other components used which are as following:

1. 12-0-12 centre tapped step down transformer to provide the circuit with required power supply by deriving from mains.
2. 7805 IC for providing regulated power supply of +5V wherever required.
3. 2 common anode seven segment displays.
4. 555 timer to generate 1KHz signal used as alarm tone.
5.

V. FLOWCHART

The microcontroller AT89C51 is programmed in this project using assembly language program and the program is written in 'KEIL uVision 3.0' software. The generated hex file by the software is written to the microcontroller using flash program burner.

FIG 5.1 FLOWCHART

The algorithm of the code is as shown in the above flow chart which states the microcontroller checks for interruption of IR sensing circuit, once the sensor gets interrupted the microcontroller activates the relay-1 for 20 sec. The reverse countdown of twenty seconds display is provided by the digital display, for that variable is declared to be 21 and then continuously and decremented and displayed until the count becomes 0. After twenty seconds the controller activates the second relay and display countdown begins from 70 to 00 i.e. 70 sec. The display programming is done by seven segment display coding. The complete code used in this project is as below:

VI. CIRCUIT FABRICATION

The fabrication of one demonstration unit is carried out in the following sequence:

1. Finalizing the total circuit diagram, listing out the components and their sources of procurement.
2. Procuring the components, testing the components and screening the components.
3. Making layout, preparing the inter connection diagram as per the circuit diagram, preparing the drilling details, cutting the laminate to the required size.
4. Drilling the holes on the board as per the component layout, painting the tracks on the board as per inter connection diagram.
5. Etching the board to remove the un-wanted copper other than track portion. Then cleaning the board with water, and solder coating the copper tracks to protect the tracks from rusting or oxidation due to moisture.
6. Assembling the components as per the component layout and circuit diagram and soldering components.
7. Integrating the total unit inter wiring the unit and final testing the unit.
8. Keeping the unit ready for demonstration

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6.1. PCB FABRICATION The Basic raw material in the manufacture of PCB is copper cladded laminate. The laminate consists of two or more layers insulating reinforced materials bonded together under heat and pressure by thermo setting resins used are phenolic or epoxy. The reinforced materials used are electrical grade paper or woven glass cloth. The laminates are manufactured by impregnating thin sheets of reinforced materials (woven glass cloth or electrical grade paper) with the required resin (Phenolic or epoxy). The laminates are divided into various grades by National Electrical Manufacturers association (NEMA). The nominal overall thickness of laminate normally used in PCB industry is 1.6mm with copper cladding on one or two sides. The copper foil thickness is 35 Microns (0.035mm) OR 70 Microns (0.070 mm). The next stage in PCB fabrication is artwork preparation. The artwork (Mater drawing) is essentially a manufacturing tool used in the fabrication of PCB's. It defines the pattern to be generated on the board. Since the artwork is the first of many process steps in the Fabrication of PCBs. It must be very accurately drawn. The accuracy of the finished board depends on the accuracy of artwork. Normally, in industrial applications the artwork is drawn on an enlarged scale and photographically reduced to required size. It is not only easy to draw the enlarged dimensions but also the errors in the artwork correspondingly get reduced during photo reduction. For ordinary application of simple single sided boards artwork is made on ivory art paper using drafting aids. After taping on an art paper and photography (Making the negitive) the image of the photo given is transformed on silkscreen for screen-printing. After drying the paint, the etching process is carried out. This is done after drilling of the holes on the laminate as per the components layout. The etching is the process of chemically removing un-wanted copper from the board. The next stage after PCB fabrication is solder masking the board to prevent the tracks from corrosion and rust formation. Then the components will be assembled on the board as per the component layout. The next stage after assembling is the soldering the components. The soldering may be defined as process where in joining between metal parts is produced by heating to suitable temperatures using non-ferrous filler metals has melting temperatures below the melting temperatures of the metals to be joined. This non-ferrous intermediate metal is called solder. The solders are the alloys of lead and tin.

VII. APPLICATIONS

Coming to the applications of this project it has been already stated that this type of security system can be applied in shops, museums, temples etc. during non-working hours so that complete safeguarding of the precious properties inside them. This system can replace conventional manual security. The surveillance in this system can also be extended by providing with video transmission if any intruder appears in the place where system is installed. This system can also be extended and made more personalized by interfacing it with GSM or Tel-Com network such that it can be installed in homes, and the owner can be intimated by sending a personalized message or call rather than general FM transmission used in the demo module. As the name itself implies this project has main application in the security aspects.

VIII. TRENDS IN SECURITY SYSTEMS

Traditionally, security dealt with personal aspects, equipment, information process and software in watertight compartments. The sept. 11 event has proved the inadequacy of such subcomponents functioning in isolation. These features need to function as an integrated process to meet present – day high-tech threats. Hackers, terrorists, thugs and thieves have as much access to the latest electronics, telecommunications and software technology as the genuine researchers who focus on developing new applications for productive purposes. This results in a battle of attrition between the two groups, one trying to break the security cordon and the other developing corresponding countermeasures. To counter the threat posed by the intruders, security technology is no longer bifurcated into hardware and software compartments. The present environment demands a unified security system, with hardware and software elements complementing each other. Chip manufacturers, software developers, telecom/It vendors, etc are directing their efforts to design and develop state-of the art security configurations for their products and services. It is much easier to ensure fool proof security in small-sized trouble-prone hotspots than in larger areas. Thought processes are in vogue to develop unified security installations to provide surveillance over big cities, where millions of people move around freely and unpredictably. In this context, Manhattan has already installed 2397 CCTV cameras to monitor trouble spots distributed over a wide area. State-of –the-art security complexes are being designed in the US, Japan, the UK, and Germany that integrate Web-based digital CCTV surveillance networks, firewalls, encryption/ decryption mechanisms, gamma ray scanners, portable radiation-detection equipment, motion detectors, eye-of-the-needle check points, GPS-based automatic locators, electronically-operated chemical weapon sensors, fire-detection gadgets, biometric smart cards with public key infrastructure facility, fibre-optic installations relaying installation CCTV pictures, sensor robots, and so on. The purpose of integrating so many safety measures, spanning physical access control to data security, is to develop an effective, efficient, and economical defensive system. Computer search engines have been designed to ferret out license plate numbers from scattered arrest records. Based on database record of fugitives, it I possible for digital surveillance CCTVS and computer monitor screens to detect criminals moving in guise, even in a big crowd.

IX. CONCLUSION AND FUTURE SCOPE

The project work "Modern Security System with Message Transmitter" is completed successfully. In this project, for the demonstration purpose only one transmitting module is used, but in practical many transmitting modules can be constructed and they can be installed at various important places like, banks, industries, Jewellery shops etc. All the transmitters can be tuned to a single receiver. In the receiver, the received information can be recorded if the tape recorder connected at the output of the receiver. Since it is a demonstration unit, the range between the transmitter and receiver is limited to 5o feet, because, in this project work, a low power transmitter is used and the limitation being the power transmitted by the transmitter and antenna. However the range can be increased by increasing the power radiating capacity of the transmitter. This project can be extended to the next level by connecting the module to a GSM network where a person using a GSM mobile would receive a text message regarding the address of the location where there was a theft. Connection with a telephone network is also possible where a call can be made to nearby police station.

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