BORDER SECURITY SYSTEM

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ABSTRACT

Our paper provides the security in Indian military.Two sections are provided in the circuit.

1. Near the border which is totally controlled automated
2. security station which can be operated manually

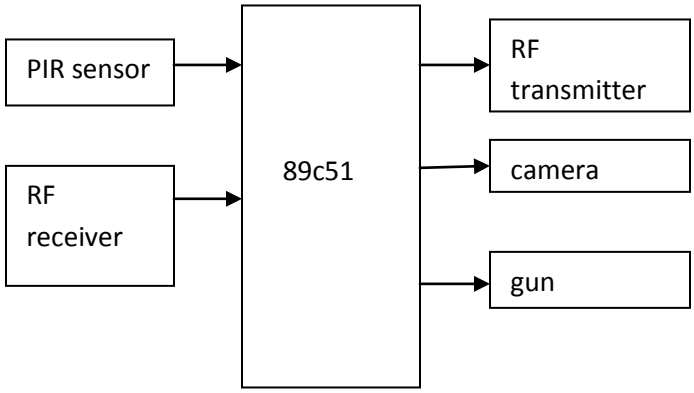
A special type of human sensor is PIR(passive infrared) used to detects the human being around 20 feet distance.This sensor uses the concept of Black Body Radiation.If anyone tries to cross the border means the sensor detects and it sends a signal to themicrocontroller switch on the camera which captures the image of the human beings and it transmit the signals to the near security station.In the receiver circuit is used which receives the signal from the border and displays the image captured on the monitor.After sensing the image,the official can send control signal received by the receiver circuit in the border side the micro controller activate the relay driver which drives the load such as automatic function guns ,voice alarm.Our paper is very advanced and good accuracy with other specifications.

KEYWORDS:

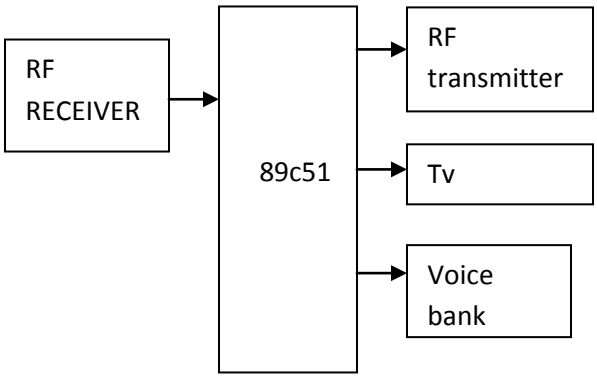
PIR,decoder,gun,voice alarm,camera.

BLOCKDIAGRAM

BORDER AREA:



CONTROL ROOM:



BLOCK DIAGRAM DESCRIPTION:

In our proposed method, there are two units,one is transmitter/remote unit which is placed at the border(unmanned area) and the second one is receiver/control section is at the control room.

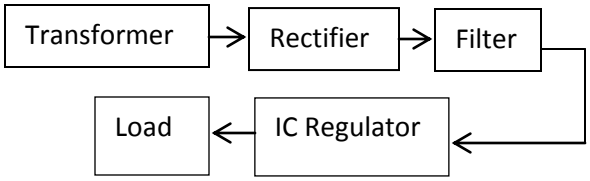
Transmitter unit consists of PIR(pyro electric IR) detector,which is nothing but a sensor which sense IR which is emitted from the human body.once it receives a human body IR signal it provides a high output in its output pin,which is an input to the microcontroller.Once the controller receives this particular input it transmits an alarm signal to the control room via RF transmitter and drives a relay such a way that it activates the cc tvcamera. Once this signal received at the receiver,the controller takes the received information as input and a voice bank unit also get enabled and it activate a warning of "Alert an enemy is detected" also its switch on a tv where the cc tv camera output is connected with the tv so that a person at the control room can take a vision of what actually going on the border.

Once the vigilance person who is control room finds any unauthorized entry of adjacent country terrorist ormilitant he can activate a gun which is located at the border side from the room itself.Which is done by pressing a command key which is nothing but a input from control unit to the remote unit.

All these transmission are taken over by a RF transmitter and a receiver which are placed at both the ends.The RF units is a 433MHZ transmitter receiver units.

POWERSUPPLY

BLOCK DIAGRAM:



The ac voltage, typically 220v rms,is connected to a transformer,which step the ac voltage down to the level of the desired dc output.A diode network provides a bridge circuit to provide a full wave rectified voltage that is initially filtered by a simple capacitor filter to produce a dc voltage.This resulting dc voltage usually has some ripple or ac voltage variation.

A regulator circuit removes the ripples and also remains a constant voltage output even if the input dc voltage varies,or the load connected to the output dc voltage changes.This voltage regulation is usually obtained using regulator IC's.

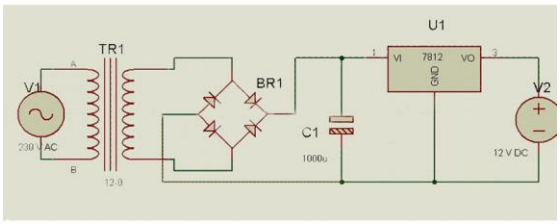
TRANSFORMER:

The potential transformer will step down the power supply voltage(0-230v)to(0-12v)level.Then the secondary of the potential transformer will be connected to the precision rectifier,which is constructed with the help of diode network.

A fixed three terminal voltage regulator has an unregulated dc voltage as its input, the secondary terminal is its ground and the third pin is the output pin where we get a constant +12v supply with 7812 regulator.The series 78 regulator provides fixed positive regulated voltages from 5 to24 volts.similarly 79 regulator series provide fixed negative voltage from 5 to 24 volts.Generally IC's,microcontroller,LCD needs 5v.Alarm,relay circuits makes use of 12v.

BRIDGE RECTIFIER:

When four diodes are connected the circuit is called as bridge rectifier.The input to the circuit is applied at the diagonally opposite corner of the network,and the output is



taken from the other two corners.Let us assume the transformer is working properly and there is a positive potential at the top point and negative potential at the bottom then,the positive potential at top makes the diode D3 forward bias and reverse bias D4.The negative potential at the bottom forward bias the D1 and reverse bias the D2.At this time D3 and D1 are forward biased and will allow current flow to pass through them.D4 and D2 are reversed biased and block the current flow.The path for current flow is from bottom through D1,up through R_L,through D3,through the secondary of the transformer back to bottom point.One half cycles later the polarity across the secondary of the transformer reverse,forward biasing the D2 and D4 and reverse bias the D1 and D3.Current flow is now from bottom point to top through D4 up through RL through D2 through the secondary of T1,and back top point.Since current flow through the load during both half cycles of the applied voltage,this bridge rectifier is a full wave rectifier

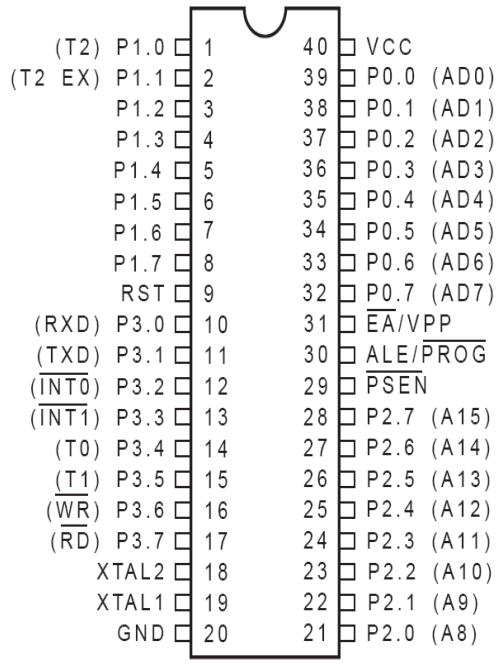
MAIN COMPONENTS OF THE CIRCUIT

DESCRIPTION:

A microcontroller is a complete microprocessor system built on a single IC. Microcontrollers were developed to meet a need for microprocessors to be put into low cost products. Building a complete microprocessor system on a single chip substantially reduces the cost of building simple products, which use the microprocessor's power to implement their function, because the microprocessor is a natural way to implement many products. This means the idea of using a microprocessor for low cost products comes up often.

MICROCONTROLLER:

AT89C52



The microcontroller contains full implementation of a standard MICROPROCESSOR, ROM, RAM, I/0, CLOCK, TIMERS, and also SERIAL PORTS. Microcontroller also called "system on a chip" or "single chip microprocessor system" or "computer on a chip"

A microcontroller is a Computer-On-A-Chip, or, if you prefer, a single-chip computer. Micro suggests that the device is small, and controller tells you that the device' might be used to control objects, processes, or events. Another term to describe a microcontroller is embedded controller, because the microcontroller and its support circuits are often built into, or embedded in, the devices they control.

The AT89C52 is a low power, high performance CMOS 8 bit microcomputer with 8kB of flash programmable and erasable read only memory (EPROM). The device is manufactured using Atmel's high density non-volatile memory technology and is compatible with the industry standard 80C51 and 80C52 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer. By combining a versatile a 8 bit CPU with flash on a monolithic chip, the Atmel AT89C52 is a powerful microcomputer which provides a highly flexible and cost effective solution to many embedded control applications.

Port 0

Port 0 is an 8-bit open drain bidirectional I/O port. As an output port, each pin can sink eight TTL inputs.

Port 1

Port 1 is an 8-bit bidirectional I/O port with internal pullups. The Port 1 output buffers can sink/source four TTL inputs.

Port 2

Port 2 is an 8-bit bidirectional I/O port with internal pullups. The Port 2 output buffers can sink/source four TTL inputs.

Port 3

Port 3 is an 8-bit bidirectional I/O port with internal pull-ups. The Port 3 output buffers can sink/source four TTL input

PIR SENSOR

GENERAL DESCRIPTION

The PIR(passive infrared)sensor is a pyro electric device that detects motion by measuring changes in the infrared levels emitted by surrounding objects.This motion can be detected by checking for a high signal on a signal I/O pin.

FEATURES:

Single bit output.

Small size makes it easy to conceal.

Compatible with all parallax microcontrollers

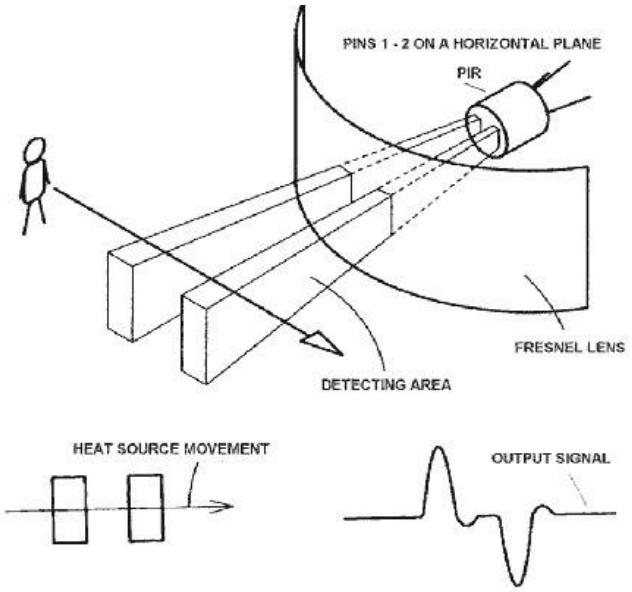
APPLICATIONS:

Alarm system

Halloween props

Robotics

THEORY OF OPERATION:



Pyro electric devices, such as the PIR sensor, have elements made of a crystalline material that generates an electric charge when exposed to IR radiation. The changes in the amount of IR striking the element change the voltages generated,which are measured by an on-board amplifier.The device contains a special filter called a Fresnel lens,which focuses the infrared signal on to the element.As the ambient infrared signal changes rapidly,the on-board amplifier trips the output to indicate motion

RF TRANSMITTER SST-433:

The SST-433 is ideal for remote control application where low cost and longer range is required.The transmitter operates from a 1.5-12v supply making it

ideal for battery-powered applications.The transmitter employs a stabilized oscillator,ensuring accurate frequency control for best range performance.Output power and harmonic emissions are easy to control,making FCC and ETSI compliance easy.The manufacturing-friendly SIP style package and low-cost make the STT_433 suitable for high volume applications.

FEATURES:

433.9 MHZ frequency.

Low cost.

1.5-12v operation.

APPLICATIONS:

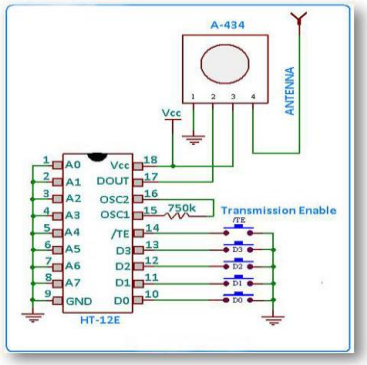
Remote keyless entry (RKE).

On-site paging.

Asset tracking

Long range RFID.

RF CIRCUIT:



RF RECEIVER STR-433:

The STR-433 is a idle for short-range remote control applications where cost is a primary where cost is a primary concern.The receiver module requires no external RF components except for the antenna.It generates virtually no emission,making FCC and ETSI approval easy.The super-regenerative design exhibits exceptional sensitivity at a very low cost.

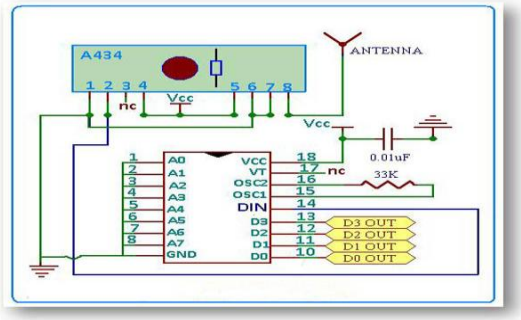
FEATURES:

Low cost.

5v Operation.

3.5ma Current drain.

RF RECEIVER CIRCUIT:



VOICE INFORMER:

The APR9600 block diagram is included in order to give understanding of the APR9600 internal architecture. At the left hand side of the diagram are the analog inputs. A differential microphone amplifier, including integrated AGC, is included on-chip for applications requiring its use. The amplified microphone signal is fed into the device by connecting the Ana_Out pin tothe Ana_In pin through and external DC blocking capacitor. Recording can be fed directly into the Ana_In pin through a DC blocking capacitor, however, the connection between Ana_In and Ana_Out is still required for playback. The next block encountered by the input signal is the internal anti-aliasing filter. The filter automatically adjusts its response according to the sampling frequency selected so Shannon's Theorem is satisfied. After anti-aliasing filtering is accomplished the signal is ready to be clocked in to the memory array. This storage is accomplished through a combination of the sample and hold circuit and the Analog Write/Read circuit. The circuits are clocked by either the internal oscillator or an external clock source. When play-back is desired the previously stored recording is retrieved from memory, low pass filtered, and amplified. The signal can be heard by connecting a speaker to the SP+ and SP- pins. Chip-wide

management is accomplished through a combination of the sample and hold circuit and the analog Write/Read circuit are clocked by either the internal oscillator or an external clock source. When play-back is desired the previously stored recording is retrieved from memory, low pass filtered, and amplified as shown on the right hand side of the diagram. The signal can be heard by connecting a speaker to the SP+ and SP- pins. Chip-wide management is accomplished through the device control block. Message management is controlled through the message control block represented in the lower center. More detail on actual device application can be found in the sample Applications section. More detail on sampling control can be found in the sample rate and voice quality section. More detail on message management and device control can be found in the message management section.

Random Access Mode:

The random access mode supports 2,4, or 8 messages of fixed durations. It allows easy indexing of messages as they can be recorded or played randomly. The length of each message is the total recording length available divided by the total number of memory segments/tracks enabled.

Recording of sound:

The circuit for recording of eight fixed duration messages in random access mode, pins 9(M8_option)24 (MSEL1) and 25(MSEL2)are pulled high through resistors r1,r6,r5, respectively, when switch s10 is close record pin 27(RE) goes low to enable recording of the message from the microphone. The maximum length of the eight sound track is 7.5 seconds each. Now to start recording the first message, press switch s1 and hold it in this position, a beep sound is heard and led 2 blinks . You can now speak into the condenser Mic. The recording will terminate it switch s1 is released or if the recording time exceeds the 7.5 seconds. Similarly, press switches s2 through s8 to record other sound tracks. For recording time exceeds the 7.5 seconds. Similarly, press switches s2 through s8 to record other sound tracks. For recording of two or four sound tracks of fixed duration, the status of pins 9, 24, 25

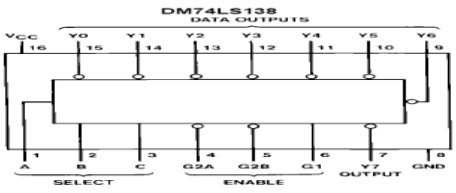
ENCODER:

GENERAL DESCRIPTION FOR HT-12E:

The 212 encoders are a series of CMOS LSI'S for remote control system applications. They are capable of encoding information which consists of N address bits and 12_N data bits. Each address/data input can be set to one of the two logic states. The programmed addresses/data are transmitted together with the header bits via an RF or an IR transmission medium upon receipt of a trigger signal. The capability to select a TE trigger on the HT12E or a DATA trigger on the HT12A further enhances the application flexibility of the 212 series of encoders. The HT12A additionally provides a 38KHz carrier for infrared systems.

GENERAL DESCRIPTION OF DECODER:

The 212 decoders are a series of CMOS LSI's for remote control system applications. They are paired with Holtex 212 series of encoders. For proper operation, a pair of encoder/decoder with the same number of addresses and data format should be chosen. The decoders receive serial addresses and data from a programmed 212 series of encoders that are transmitted by a carrier using an RF or an IR transmission medium.



They compare the serial input data three times continuously with their local addresses. If no error or unmatched codes are found; the input data codes are decoded and then transferred to the output pins. The VT pin also goes high to indicate a valid transmission. The 212 series of decoders are capable of decoding information's that consist of N bits of address and 12_Nbits of data. Of this series, the HT12D is arranged to provide 8 address bits and 4 data bits, and HT12F is used to decode 12 bits of address information.

FEATURES:

Operating voltage:2.4V~12V

Low power and high noise immunity CMOS technology

Low standby current

Capable of decoding 12 bits of information

Binary address setting

Received codes are checked 3 times

CONCLUSION:

The paper work has completed successfully and satisfactorily. From the beginning we conducted many block wise experiments and verified operation of all blocks individually and as a result we did not face much difficulty in the final integration of project.

In an attempt develop the project by the way we had the opportunity to learn MIC the concepts of mc based system design and we also learned the basic concepts of mc programming.

Since port control techniques are essential for construction any electrical control oriented mc based project. We can say we have done understand the port based control techniques.

Finally we can say the entire venture into the development of the project work was educated and interesting and we could see many theories that we have learned through class room lectures now work perfectly in a real application.

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