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Intelligent System to Provide Immediate Actions on Rescue Operations

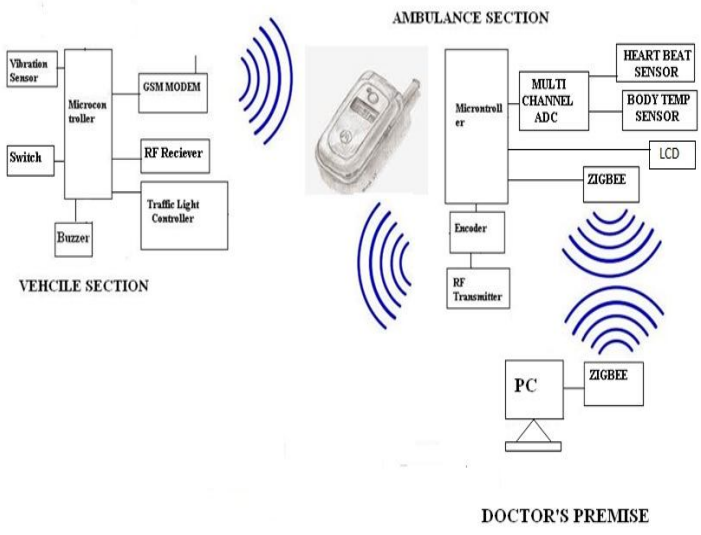
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Abstarct: ***Rescue time is very crucial for saving lives hurt in accidents. Generally when an accident happens, a person needs to make a call to the hospital or emergency services to get medical aid for the wounded.Not everyone would be lucky to get someone to do the needful, hence to increase life saving possibilities we need an automated system which calls up the emergency services when disaster strikes.This projects aims to design and implement ambulance rescue system using GSM, RF and zigbee during accident. In the vehicle section whenever an accident occurs a message will be forwarded using a GSM modem .A buzzer will be alert the passerby peoples to help the injured one. While receiving the data to the nearby ambulance, it replies through RF transmitter to clear the traffic. In the ambulance the heart beat and body temperature measured and forwarded to nearby doctors/hospitals using a zigbee module.***

I. INTRODUCTION

When an accident happens, a person needs to make a call to the hospital or emergency services to get medical aid.Due to the traffic issues ambulance service may be delayed.Due to the lack of knowledge immediate AID may not be a success.The project is designed using
AT89C51 microcontroller. On the passenger vehicle microcontroller is interfaced with collision sensor and a buzzer to sound an alarm and to communicate with an ambulance to indicate an emergency.As soon as the ambulance starts moving, RF transmitter interfaced with the microcontroller inside the ambulance keeps transmitting a signal, this signal when received by the other vehicles they clear the ambulances way.Body condition sensed and send to the nearby doctors using zigbee and upon response immediate actions can be taken.

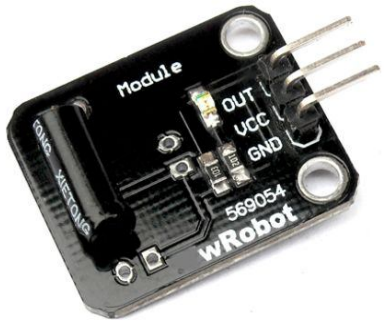
A. Block Diagram



VIBRATION SENSOR

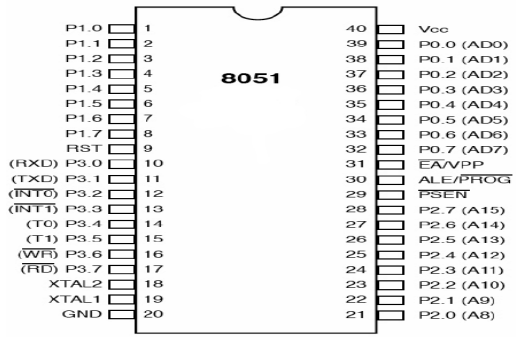
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When Vibration Sensor Alarm recognizes movement or vibration, it sends a signal to either control panel Developed a new type of omni-directional high sensitivity Security Vibration Detector with omni- directional detection Sensitivity: Height adjustable, Consistency and Interchangeability : Good, Reliability and Interference: Accurate triggering strong anti-interference, Automatic Reset: Automatic reset is strong, Signal Post-processing: Simple, Output Signal: Switch signal, No External Vibration Analysis of Plates: Product design vibration analysis of the internal amplifier circuit, Detection Direction: Omni-directional,Signal Output: Switch signals, Operating Voltage: 12VDC (red V + shield V-), Sensitivity: Greater than or equal 0.2g, Frequency Range: 0.5HZ ~ 20HZ, Operating Temperature Range: -10 ? ~ 50.

MICROCONTROLLER



The microcontroller is the heart of this system.The microcontroller used here is 8051 family (AT89C51).It is a 40 pin, 8bit

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microcontroller.RAM 128 bytes, ROM 4 KB.It has 4 ports, and one serial communication.

ALPHANUMERIC LCD



In this project the LCD is used to display the results.It is the used as the interface between the human and the MCU.All results and functions are displayed in the LCD.

The three control lines are referred to as **EN**, **RS**, and **RW**.

The **EN** line is called "Enable." This control line is used to tell the LCD that you are sending it data. To send data to the LCD, your program should make sure this line is low (0) and then set the other two control lines and/or put data on the data bus. When the other lines are completely ready, bring **EN** high (1) and wait for the minimum amount of time required by the LCD datasheet (this varies from LCD to LCD), and end by bringing it low (0) again.

The **RS** line is the "Register Select" line. When RS is low (0), the data is to be treated as a command or special instruction (such as clear screen, position cursor, etc.). When RS is high (1), the data being sent is text data which sould be displayed on the screen. For example, to display the letter "T" on the screen you would set RS high.

The **RW** line is the "Read/Write" control line. When RW is low (0), the information on the data bus is being written to the LCD. When RW is high (1), the program is effectively querying (or reading) the LCD. Only one instruction ("Get LCD status") is a read command. All others are write commands--so RW will almost always be low

BUZZER
The Buzzer is the device used to produce sound of alarm.It is controlled by the microcontroller, and made to alarm when ever needed.It alerts the pass by people.

GSM MODEM

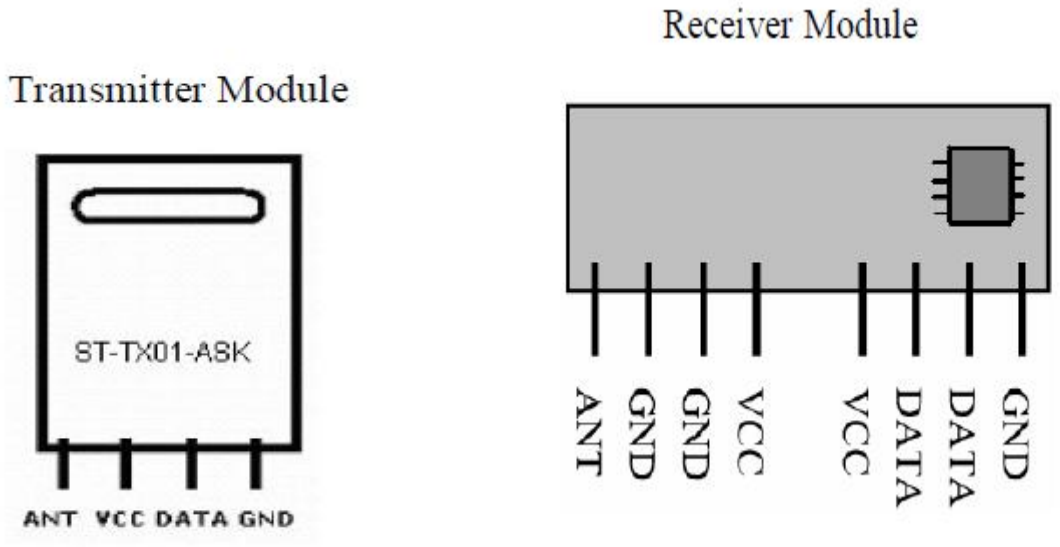


GSM MODEM is a class of wireless MODEM devices that are designed for communication of a computer with the GSM and GPRS

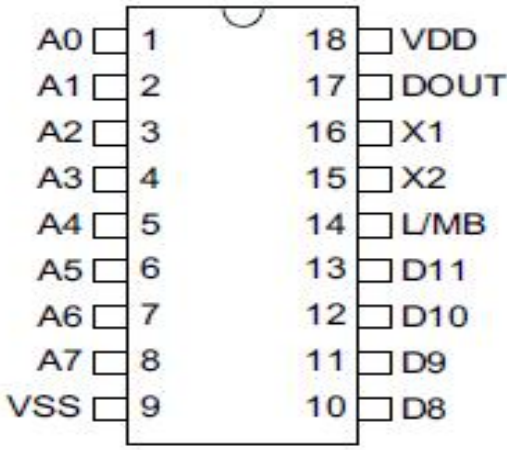
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network. It requires a **SIM (Subscriber Identity Module)** card just like mobile phones to activate communication with the network. Also they have **IMEI** (International Mobile Equipment Identity) number similar to mobile phones for their identification. A GSM MODEM can perform the following operations: 1.Receive, send or delete SMS messages in a SIM. 2. Read, add, search phonebook entries of the SIM. 3. Make, Receive, or reject a voice call.SMS based Remote Control & Alerts. Security Applications Sensor Monitoring. GPRS Mode Remote Data Logging .Highly Reliable for 24x7 operations with Matched Antenna .Status of Modem Indicated by LED. Simple to Use & Low Cos . Quad Band Modem supports all GSM operator SIM cards.

RF TRANSMITTER/RECEIVER



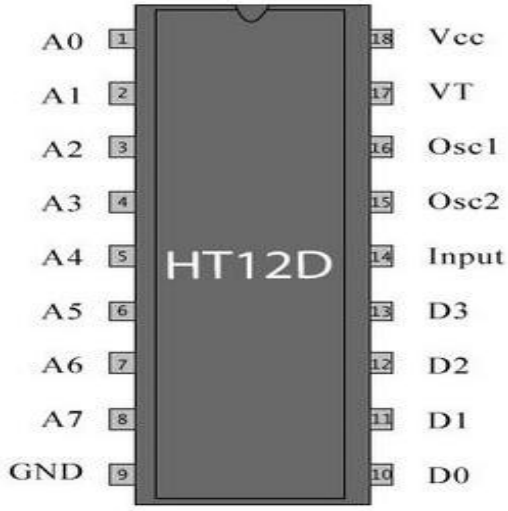
ENCODER



HT12E is an encoder integrated circuit of 2^12 series of encoders. They are paired with 2^12 series of decoders for use in remote control system applications. It is mainly used in interfacing RF and infrared circuits. The chosen pair of encoder/decoder should have same number of addresses and data format.

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DECODER



HT12D is a decoder integrated circuit that belongs to 212 series of decoders. This series of decoders are mainly used for remote control system applications, like burglar alarm, car door controller, security system etc. It is mainly provided to interface RF and infrared circuits. They are paired with 212 series of encoders. The chosen pair of encoder/decoder should have same number of addresses and data format.

HEART BEAT SENSOR

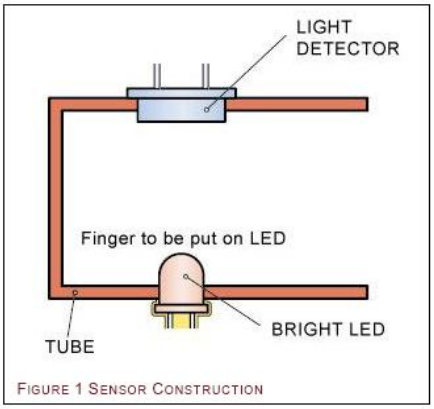
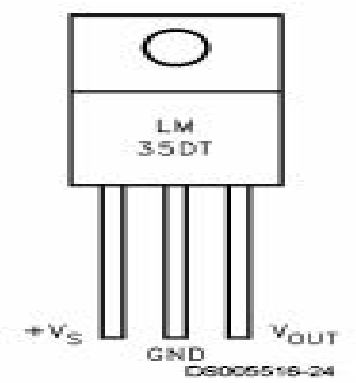


FIGURE 1 SENSOR CONSTRUCTION

This heart beat sensor is designed to give digital output of heat beat when a finger is placed inside it. When the heart detector is working, the top-most LED flashes in unison with each heart beat. This digital output can be connected to microcontroller directly to measure the Beats Per Minute (BPM) rate. It works on the principle of light modulation by blood flow through finger at each pulse.Heat beat indication by LED. Instant output digital signal for directly connecting to microcontroller. Compact Size. Working Voltage +5V.

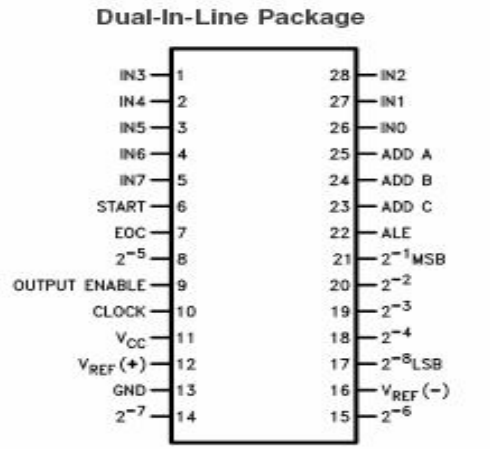
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TEMPERATURE SENSOR



Calibrated directly in ° Celsius (Centigrade). Linear + 10.0 mV/°C scale factor. 0.5°C accuracy guaranteable (at +25°C). Rated for full −55° to +150°C range.Suitable for remote applications.Low cost due to wafer-level trimming. Operates from 4 to 30 volts.Less than 60 μA current drain.Low self-heating, 0.08°C in still air.Nonlinearity only ±1⁄4°C typical.Low impedance output, 0.1 W for 1 mA load.

MADC



The ADC0808, ADC0809 data acquisition component is a monolithic CMOS device with an 8-bit analog-to-digital converter, 8-channel multiplexer and microprocessor compatible control logic. The 8-bit A/D converter uses successive approximation as the conversion technique.

ZIGBEE

XBee and XBee-PRO Modules were engineered to meet ZigBee/IEEE 802.15.4 standards and support the unique needs of low-cost, low-power wireless sensor networks. The modules require minimal power and provide reliable delivery of critical data between devices. The modules operate within the ISM 2.4 GHz frequency band and are pin-for-pin compatible with each other.

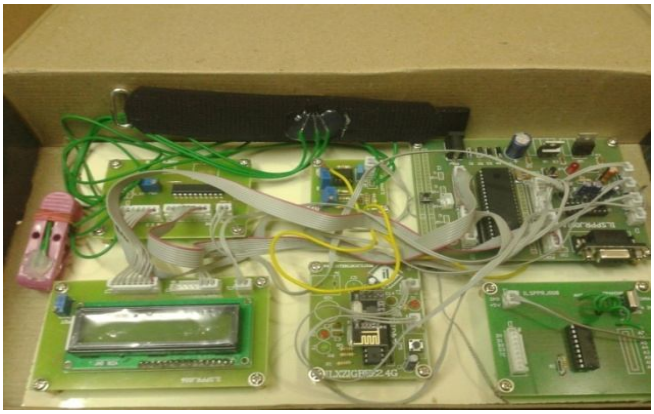
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HARDWARE MODULES

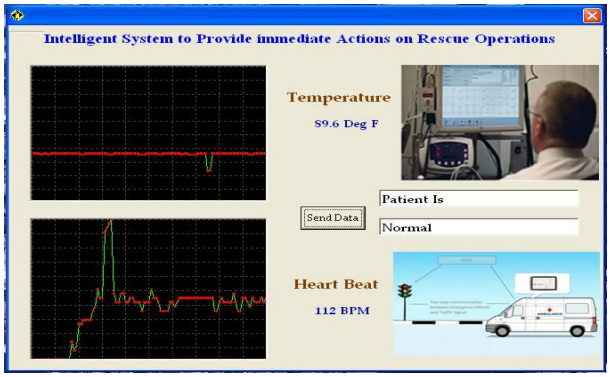
VEHICULAR SECTION



AMBULANCE SECTION



OUTPUT ON DOCTOR'S PC



II. CONCLUSION

Accident info would be sent directly to the ambulance, instead of following channel communication where a person would need to call emergency services and then they would dial up to an available ambulance. Independent signal clearance circuitry inside the

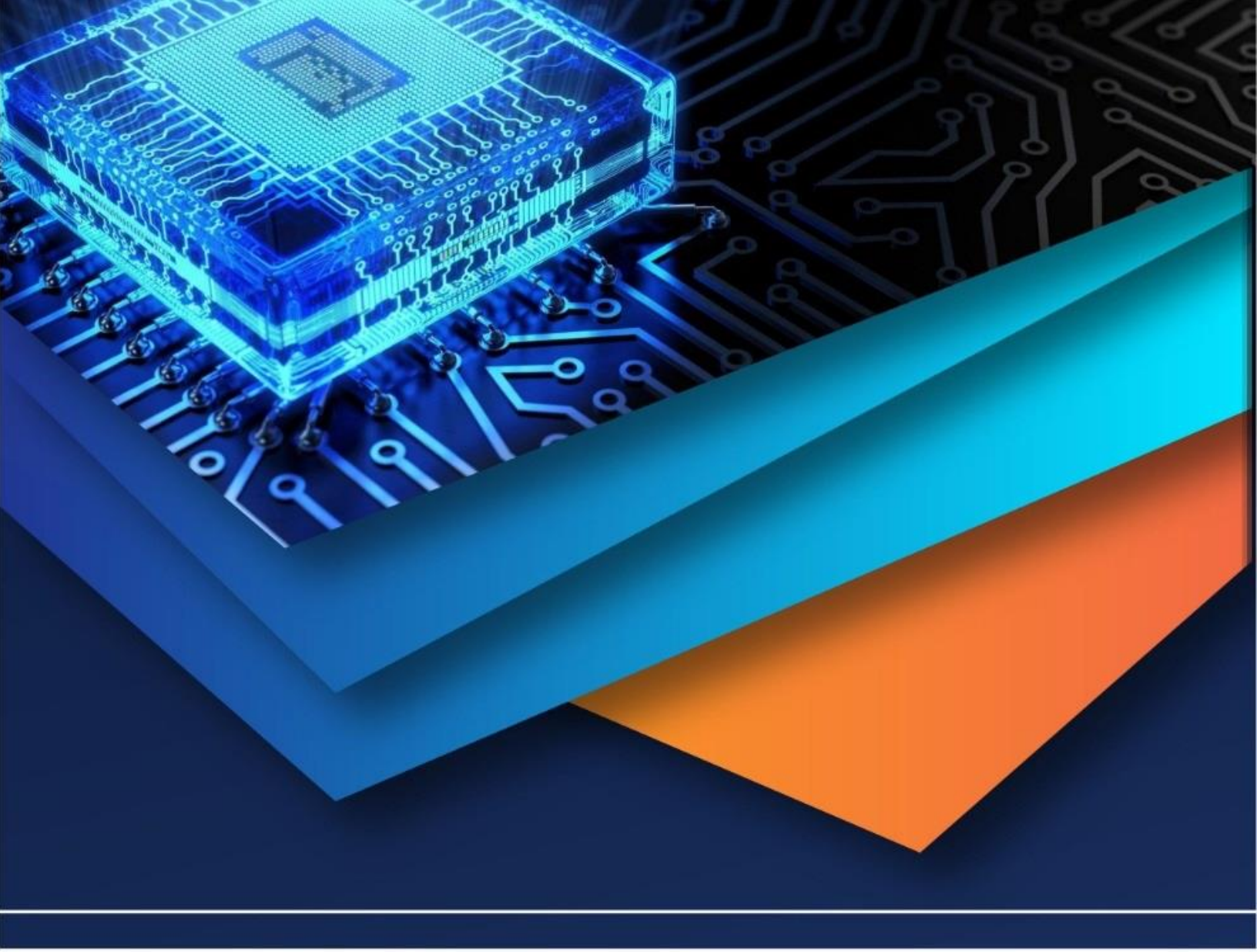
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ambulance makes its journey to recovery and on the way to hospital faster and safer.Circuit design is simple and highly effective.Cost effective.All type of medical emergency services.With little modification in the circuitry could also be used for fire emergencies.

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IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

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