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GSM BASED SOLDIER TRACKING SYSTEM

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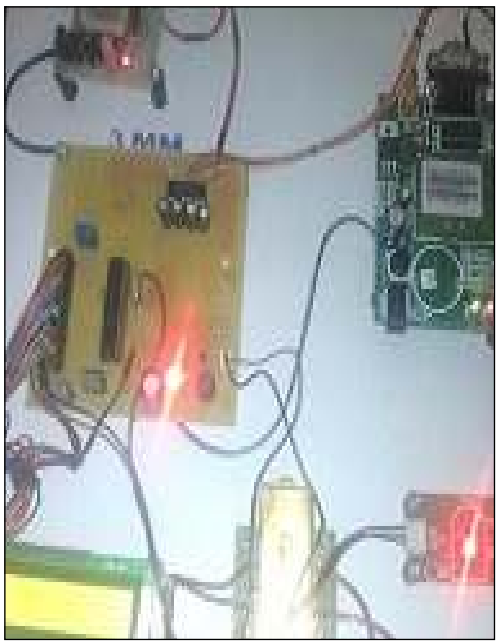
ABSTRACT:

In today's era enemy fighting is an important factor in any nation's security. The national security mainly depends on army , navy , air-force . The important and essential role is played by the soldiers. There are many concerns regarding the safety of these soldiers. The defense department of country must be effective for the security of that country. This system will be helpful for soldiers, who involve in missions or in special operations. This system enables GPS (Global positioning systems) tracking of these soldiers. It is possible by M-Health. The M-health can be defined as mobile computing, medical sensors and communication technologies for health care. In this system, smart sensors are attached to the body of soldiers. This is implemented with a personal server for complete mobility. This personal server will provide the connectivity to the server at the base station using a wireless connection. Each soldier also has a GSM (Global system for Mobile communication) module which enables the communication with the base station in case of injuries. As soon as any other soldier enters the enemy lines it is very tough for the army base station to know about the location as well as the health status of all soldiers. In our project we have come up with an idea of tracking soldier as well as to give status of the soldier during the war & panic situation.



KEYWORDS:

GPS Tracking, GSM Module, M-Health, Nations Security.

INTRODUCTION:

Soldier is always facing death. He never shirks responsibility. He fights in most difficult terrains, on hills and mountain, in plains and forest. The defense of the country is his main mission. The role of soldier in safeguarding the frontiers of his modest land is unique. He lives and dies for the NATION. It is our responsibility to help our soldier. That's why we are introducing this project which will be very useful for providing health status of the soldiers and provide medical help to them at serious situation in battlefield. In our system we are basically focusing on Soldier's health in terms of his heartbeats and his body temperature. If soldier gets injured and becomes unconscious by gunshot or due to any other reason, then his heart beats start increasing or

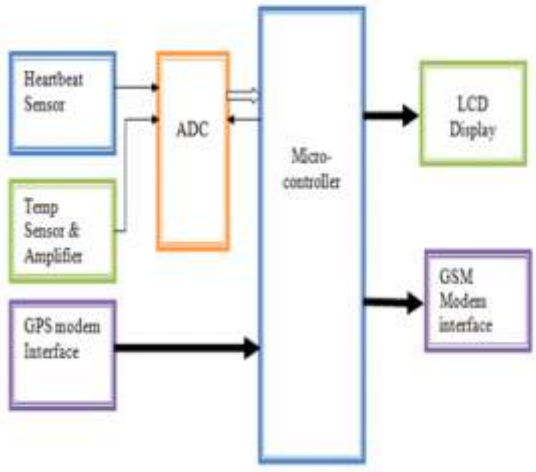
decreasing gradually. In this type of situation where the information about current heart rate becomes the necessary part of soldier, this project emerges out as best to admit the doctors at server site with the correct and fast information. If heart beat either increases above critical level or decreases below the critical level, a message is automatically sent to server with the help of GSM modem.GPS tracker will give the present location of the soldier which will be useful for locating

soldier's location and providing medical help as early as possible. In case if soldier is injured then by using the GSM modem attached to the device an SMS will be sent to hospitals in the surrounding area or to the base station to provide help. The goal of this project is to develop a low cost, low power, reliable, non-intrusive and non-invasive signs of health status. To track the location of the soldier i.e. longitudes and latitudes. The methodology adopted for this project is to use non-invasive sensors to measure heart rate and body temperature. Signal conditioning circuits are designed to filter and amplify signals to provide desired output .All the components used in the circuit are low powered and cheap. The acquired data is real time and is sent through ADC and into Micro controller.

II. PROBLEM FORMULATION

1. Due to the poor network the soldier was not tracked properly this will be over come by latest 4G network connection

III. BLOCK DIAGRAM AND EXPLANATION



Hardware description:

Microcontroller

The AT89S52 is a high-performance CMOS 8-bit microcontroller, low-power, with 8K bytes of EPROM. These are features of AT89S52 microcontroller: 256 bytes of RAM, 8K bytes of Flash,32 input/output pines, three 16-bit timer/counters, Watchdog timer, two data pointers, six interrupt of two level architecture, serial port, oscillator . the AT 89C52 is very powerful MC which provides a flexible and inexpensive result to many embedded system applications.[2]

LCD (Liquid Crystal Display) –

LCD which is normally known as Liquid Crystal Display & Alphanumeric Presentation it means that it can show Letters, Amounts as well as different codes thus LCD is a user kindly Show method which can be used for showing many communications different seven section show which can show only quantities and some of the letters

GSM (Global System for Mobile)-

GSM is an extra group cellular common advanced to provide opinion facilities and records transfer by arithmetical inflection.

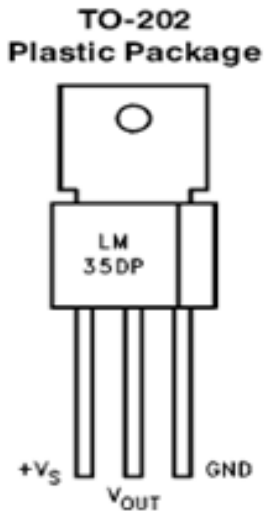
GSM Specifications-1RF Spectrum
GSM 900
Mobile to BTS (uplink): 890-915 MHZ
BTS to Mobile (downlink):935-960 MHZ
Bandwidth : 2* 25 MHZ

GPS (GLOBAL POSITIONING SYSTEM)

The Global Positioning System (GPS) is a space-based global navigation satellite system (GNSS) that provides reliable location and time information in all weather and at all times and anywhere on or near the Earth when and where there

is an unobstructed line of sight to four or more GPS satellites.

Temperature sensor and amplifier:-



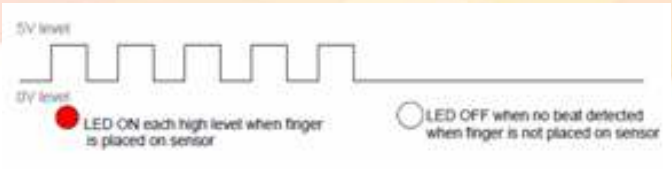
Temperature sensor is the sensor that measures the amount of heat that it observes. There are contact and non-contact type of temperature sensors. The commonly used contact type sensors are thermocouple RTDs, Thermister, thermometers IC's, diodes etc. The noncontact type sensors are radiation and optical pyrometers. As the output signal of sensor is smaller in amplitude the signal power is also low therefore amplifiers are used. The weak signals are amplified using amplifiers.

Features

- Calibrated directly in º Celsius (Centigrade)
- Linear a 10.0 mV/ºC scale factor
- 0.5ºC accuracy guarantee able (at a25ºC)
- Rated for full b55º to a150ºC range

HEART BEAT SENSOR

Heart beat output signal



This block is used to sense the heart beat with the help of an LED and an LDR. A continuous light from the LED should fall on the LDR and the finger of the patient is to be placed in between the LED and LDR. The slight variation in the skin due to the heart beat is read by the LDR. The LDR output is fed to an operational amplifier to the digital level (0 and 5) which is then fed in to the microcontroller

Features

- Microcontroller based SMD design
- Heat beat indication by LED
- Instant output digital signal for directly connecting to microcontroller
- Compact Size

ANALOG TO DIGITAL CONVERTER (ADC):-

ADC is used as a signal conditioner, which is given as an input to the micro controller.

Most of the information carrying signals such as voltage, current, temperature, pressure and time are available in analog form. However, for processing, transmission and storage purpose, it is often more convenient to express such signals in digital form. When expressed in digital form, they provide better accuracy and reduce noise.

Power supply

The 230A.C input is given to rectifier circuit and Output get from the rectifier is a pulsating D.C voltage. The output from the rectifier is given to a filter circuit to filter A.C components present constant later than rectification. Now, this voltage fed to voltage regulator to pure constant D.C voltage get.

IV. SOFTWARE DESCRIPTION

This project is implemented using following software's:

1.Express PCB – for designing circuit
2.PIC C compiler - for compilation part
3.Proteus 7 (Embedded C) – for simulation part.

V. APPLICATIONS

1.Main application of this project is in Military area. For the health monitoring of soldiers.
2.With little bit modification, this project can also be used for patient health monitoring and ambulance tracking.

VI. RESULT

VII. CONCLUSION

With the knowledge of new techniques in 'Electronics' we are able to make our life more comfortable. One such application of electronics is used in "GSM based Soldier Tracking system" The approach we followed and which is explained in this project report is novel and has achieved the target of "GSM based Soldier Tracking system" satisfying user needs and requirements.

VIII. REFERENCES

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