International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 04 | April - 2021 ISSN: 2582-3930

Soldier Position Tracking and Health Monitoring System

Dr .S. Selvakumar[1], B.YUVANAGA SAIKISHORE[2], CH. RAKESH SAI BABU[3] and D.VENKATESH BABU[4]

[1]Assistant Professor, Department of Electronics & Communication Engineering, SCSVMV, Kanchipuram, India

[2,3,4]UG Scholar, Department of Electronics & Communication Engineering, SCSVMV, Kanchipuram, India

---

ABSTARCT - The soldier Health and Position Tracking System allows military to track the current GPS position of soldier and also checks the health status including body temperature and heartbeat of soldier.The System also consists extra feature with the help of that soldier can ask for help manually or send a distress signal to military if he is in need.The GPS modem sends the latitude and longitude position with link pattern with the help of that military can track the current position of the soldier.The system is very helpful for getting health status information of soldier and providing them instant help.

Key Words: Aurdino Uno,GSM module,GPS module,Sensors

INTRODUCTION

The nation's security is monitored and kept by army, navy and air-force. The important and vital role is of soldiers who sacrifice their life for their country. There are many concerns regarding the safety of the soldier. Soldiers entering the enemy lines often lose their lives due to lack of connectivity, it is very vital for the army base station to known the location as well as health status of all soldiers.All must be really concerned about the safety of the soldiers, so we have decided to build a project which will efficiently keep a check on the health status of the soldier, and his precise location to equip him with necessary medical treatments as soon as possible.Soldier's tracking is done using GPS and GSM is used to provide wireless communication system. For monitoring the health parameters of soldier we are using bio medical sensors such as temperature sensor and heart beat sensor. An oxygen level sensor is used to monitor atmospheric oxygen so if there are any climatic changes the soldiers will be equipped accordingly. The infantry soldier of tomorrow promises to be one of the most technologically advanced modern warfare has ever seen. Around the world, various research programs are currently being conducted, such as the United States' Future Force Warrior (FFW) and the United Kingdom's Future Infantry Soldier Technology (FIST), with the aim of creating fully integrated combat systems.Along side vast improvements in protective and weaponry subsystems, another major aspect of this technology will be the ability to provide information superiority at the operational edge of military networks by equipping the dismounted soldier with advanced visual, voice, and data communications.

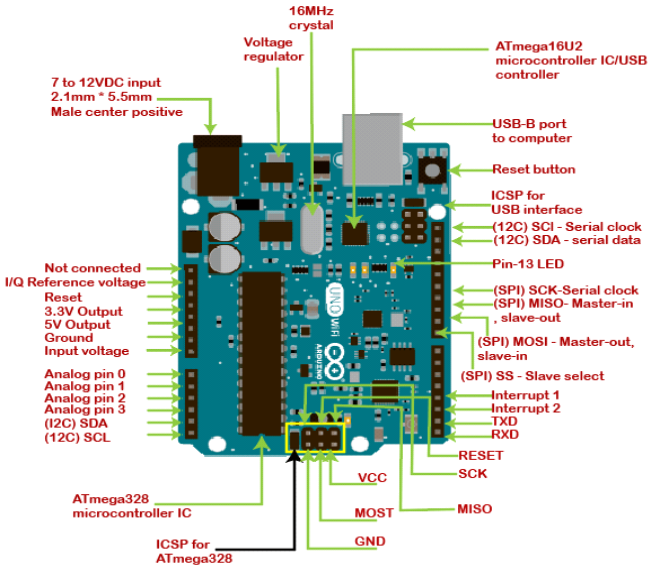
LITERATURE SURVEY:

a. An integrated navigation system for the soldiers. Author:Richard B. Marth and et.al.:-Abstract:DRM (Dead Reckoning Modules) and GPS constitute the main components of this integrated system. For decades, the soldiers have used all the conventional basic tools such as compass and other navigation tools while they are on their mission. DRM replaces the need for a compass as it allows reliable and hands-free navigation. DRM consists of an analog circuit and a digital circuit. Analog board has magnetometers, accelerometer, temperature sensor and a barometric altimeter. These components are useful to determine the horizontal component of magnetic field, number of steps taken by soldiers, temperature etc. RS232 serial interface ports are used by DRM for communication. Kalman filter is used in integration mode that makes use of both GPS and DRM. This filter can adjust the step size, body offset as well as spurious jumps in GPS position. Thus, the integrated navigation system allows soldiers to focus on the mission because of automatic pace count and indication of the direction and distance to waypoints which helps soldiers to avoid obstacles in their path.

b. An idea of tracking the location of soldiers and their health status to ensure safety of soldiers when they are in the battlefield. Author: R. Archana and et.al.:-Abstract:For implementing the project they used PIC microcontroller view X (PIC 16F877A) whose function is to collect data from various sensors (heart rate sensor, temperature sensor) bomb detection unit, GPS unit. All the information sent to the base unit (control room). Paper sensor is used to detect bombs and this sensor has inbuilt communication system. At the base unit, GSM modem is used to receive information which is sent by the main army station. Video camera was also used in this project to display real time videos to base unit.

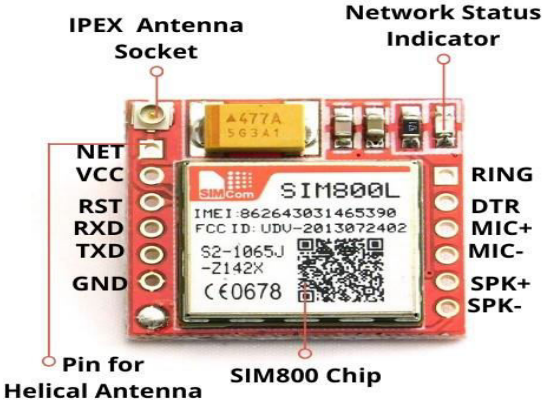
AURDINO UNO:-

The Aurdino Uno is a microcontroller board based on the atmega328.It has 14 digital input/output pins(of which 6 can be used as PWM outputs),6 analog inputs,a 16MHZ creamic resonator,a USB connection,a power jack,an ICSP header,and a reset button.



SIM 800L GSM Module :-

SIM800L is a miniature cellular **module** which allows for GPRS transmission, sending and receiving SMS and making and receiving voice calls. Low cost and small footprint and quad band frequency support make this **module** perfect solution for any project that require long range connectivity.

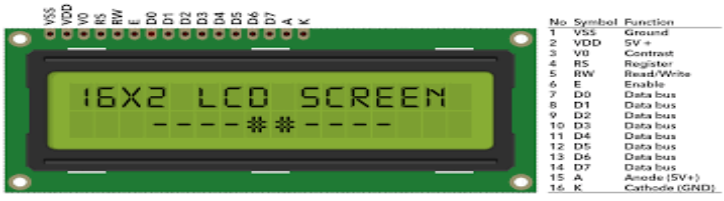


Neo6mv2 GPS MODULE:-

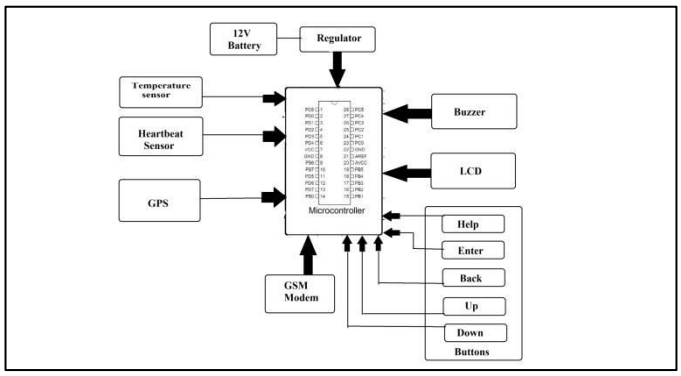
The **NEO-6MV2** is a **GPS** (Global Positioning System) module and is used for navigation. The module simply checks its location on earth and provides output data which is longitude and latitude of its position.It is from a family of stand-alone GPS receivers featuring the high performance u-blox 6 positioning engine. These flexible and cost effective receivers offer numerous connectivity options in a miniature (16 x 12.2 x 2.4 mm) package. The compact architecture, power and memory options make **NEO-6 modules** ideal for **battery operated mobile devices** with very strict cost and space constraints. Its Innovative gives **NEO6MV2** excellent navigation performance even in themost challenging environments.

16x2 LCD Display:-

An LCD (Liquid Crystal Display) screen is an electronic display module and has a wide range of applications. A 16x2 LCD display is very basic module and is very commonly used in various devices and circuits. A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. The 16 x 2 intelligent alphanumeric dot matrix display is capable of displaying 224 different characters and symbols. This LCD has two registers, namely, Command and Data.



BLOCK DIAGRAM OF THE PROJECT:-



HARDWARE REQUIREMENTS:-

- Aurdino Uno
- SIM 800 GSM Module
- Neo6mv2 GPS Module
- Heartbeat Sensor
- Temperature Sensor
- LCD Display
- Buzzer
- Crystal Oscillator
- Resistors
- Capacitors
- Transistors
- Cables and Connectors
- Diodes
- PCB and Breadboards
- LED
- Push Buttons
- Switch
- IC
- IC Sockets

SOFTWARE REQUIREMENTS:-

- MC Programming Language: C
- Arduino Compiler

APPLICATIONS OF THE PROJECT:-

- Health Monitor
- Security Monitor
- Position Tracking

CONCLUSIONS:-

Above system when completed would help in determining health status of soldier with measures of heartbeats and bodytemperature.It would also help in tracking his position by using GPS modem and with GSM modem it can send all information to base station so that further necessaary action would be taken.

REFERENCES:-

1. P.chakravarth, S.Natarajan, M.Anto Bennete "GSM based soldier tracking system and monitoring using wireless communication" Department of Electronics and Communication, published in September 1st ,2017.
2. Akshita v.Armarkar, Deepika J, Punekar, Mrunali, p.Kapse, Shweta Kumari, Jayshree Shelka "Soldier health and position tracking system" Department of ETC engineering , volume 7 issue no..3
3. Patil Akshay , Shelake Balaji, Pinjari Raju, Mirajkar P.P "GPS based soldier tracking and health monitoring", Department of ETC engineering, volume 40 issue:03 March 2017.
4. Shruthi Nikam, Supriya Patil, Prajkata Powar, V.S.Bendre "GPS based soldier tracking and health indication system", Department of E&TC , PIMPRI CHINCHWA COLLEGE OF ENGINEERING, volume 2, issue 3, March 2013.
5. Govindiraj A, Dr.S.Sindhurja Banu "GPS based soldier tracking and health indication system with environmental analysis", Department of Electronics and Communicaton Engineering volume 2, issue 12, Decemember 2013.