

Rugged, Portable Telemedicine System for Armed Forces



Developed by:

Defence Bio_Engineering and Electromedical Laboratory (DEBEL)

Defence Research and Development Organisation

C.V.Raman Nagar, Bangalore-560093, India

Fax: 91-080-25282011 tel: 91-080-25280692

Email:debeldrdo@rocketmail.com



Introduction

DEBEL has developed the said telemedicine system with the main aim of providing a portable and rugged system which can assist an Armed Forces doctor who is seeking expert opinion during a triage operation at MI room in forward areas or onboard ship. The system consists of rugged hardware to acquire vital parameters of patients such as ECG, Blood Pressure, Respiration Rate, Heart Rate, SaO₂, body temperature through the Data Acquisition System (DAS) & a MIL grade laptop which houses the software to operate the system, store acquired data and facilitate interfacing communication device for exchange of data. The system has facility to capture images e.g. ; pictures of wound using a high resolution digital camera. The acquired patient image data clip along with doctor's comments in audio can also be transmitted. The salient feature of the system is its ability to communicate data on the S-band portable SATCOM terminal, which is presently being used in armed forces for voice communication. It also supports other communication media such as VSAT, PSTN, ISDN and INMARSAT which would find use when the system is operated in a different scenario other than field.. The operating software takes care of archival and maintenance of the data through usage of robust & secure database.

Features

To broaden the reach of medical expertise beyond physical boundaries.

Aiming at providing expert medical advise to armed force personnel, at a field hospital or onboard ship, as an aid to paramedics treating them.

Easy to carry and install at remote locations.

Capable of transmitting data on various communication channel.

Rugged hardware for acquiring biomedical data

Easy to operate software for acquiring, storing and transmitting data.

Salient Features

Form: Portability and ruggedness.

Capabilities: The system can acquire the following physiological parameters

- 12 Lead ECG (Electrocardiogram)
- BP (Blood Pressure)
- SPO2
- Respiratory Rate
- Heart Rate
- Body Temperature
- MAP (Mean Arterial Pressure)
- Facility to acquire and attach digital images from any digital imaging source like HD camera, Ultra sound, X-ray, Otoscope, Dermascope, Ophthalmoscope, CT scan, MRI etc can be attached to the file and then transmitted.
- Annotating of the images is possible
- Audio can be recorded and then transmitted.

Modes of operation: Real –time monitoring, store & forward

Communication modalities supported:

INMARSAT, INTERNET, ISDN, PSTN, SATCOM, VSAT

Certifications :

- IEC 60601 (Patient safety standard for medical devices)
- MIL-STD 461-E (Environmental standards for MIL grade equipments- Vibration, low and high operational and storage temperature, bump, drop, high altitude and relative humidity)
- JSS 55555 (EMI/EMC standards for conducted/radiated emission and immunity tests)

Video Conferencing:

High quality video conferencing facility is provided.

Status :

- Successful demonstration carried out.