

I would like to use the STREAM IT! RZ-V2 kit to build a Personal Health Monitor.

This device is used for continuous analysis of the patient's health condition. It can be used by people with cardiac diseases and elderly patients.

Basic life parameters such as pulse, blood saturation, cardiac electrical activity (ECG), body temperature, and daily activity are monitored.

Long-term ECG recording during daily could provide important information about patient health situation. Continuous heart rate monitoring helps prevent sudden heart attacks. I'm going to record an electrical activity of patient's heart, pulse oximetry, temperature and daily activity patterns.

Biopotential signals can be acquired with a multi-channel ECG analog front end with respiration measurement (Texas Instruments ADS1298).

Heart rate and pulse oximetry can be measured through an optical pulse oximeter and Heart-Rate Sensor IC with two LEDs and a photodetector.

I plan to use TI AFE4400 to measure pulse oximetry. The AFE4400 is an integrated analog front-end optimized for Pulse Oximeter applications and consist of low noise receiver with ADC, the LED transmitter and diagnostic circuits for sensor and LED fault detection.

Body temperature can be measured by a precision temperature sensor TI LMT70.

A high precision 9-axis motion coprocessor (MM7150 Sensor Fusion Hub) may be used to measure device position and to obtain activity patterns.

The 4.3" TFT display module with a touchpanel can be used to control the device and to show information about the patient's health in real time.

This device should be equipped with a low-power and high performance microprocessor.

The STREAM IT! RZ-V2 board board is a good choice for this purpose because it has 400MHz high-performance ARM Cortex-A9 CPU with Floating-Point Unit and contains enough memory to store captured data.

The RZ/A1-LU CPU has been optimized for low power operation. It have low power modes that enable to extend battery life in portable medical applications.

A Wireless connection will be used to send measurement results to a mobile device or a WiFi router and then to a web server through the Internet or a cellular network.

A program for RZ/A1 CPU will perform real-time analysis based on selected indicators and parameters (e.g. heart rate interval variation).

The detection of an abnormal symptom is indicated on the display and a report is sent to the medical center through the connection.