

SZ909 Theory of Operation

The SZ909 chest belt is a one way wireless chest belt that operates in conjunction with SE833 or other compatible watches. It is worn on the chest and detects the user's heart rate and the distance the user walk or run. The microcontroller in the chest belt calculates the heart rate of the user as well as the distance the user walk or run and activate the nRF24AP1 2.4GHz transceiver IC to send encoded 2.457 GHz RF signal containing the heart rate and distance information to the watch and the watch display the heart rate, distance and speed reading on its LCD and may store the received heart rate, distance and speed information in its internal memory. The RF output of the nRF24AP1 2.4GHz transmitter IC is connected to the antenna via an Antenna matching network. This network is used to match the impedance of the antenna to the nRF240AP1 2.4GHz transmitter IC and suppress unwanted spurious transmission.

The SZ909 chest belt contains a pair of heart rate detection electrodes and an amplifier to detect and convert the ECG signal from the chest of the user into digital signal for the microcontroller (U1 MSP430F2232) to read. It also contains an accelerometer IC (U5 MMA7360L) that detects the walking/running motion of the user. The microcontroller calculates the heart rate and distance information then transmits the data to the watch via a radio link that operates at 2.457 GHz.

The data signal is transferred through matching network (L100, L101, L102, L103, C101, C109 and C10) fed to the antenna.