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Abstract
This paper is concerned with design of a shirt of wireless monitoring of vital signs. The vital signs of ECG, blood pressure, pulsation, and body temperature will be measured. The clothing structure can facilitate the attachment of the measuring device. The physiological signs are measured by the embedded sensors in the shirt. The electrical signals are digitized by a single chip micro-computer and are recorded in flash ROM. The biomedical information is automatically sent to a personal digital assistant(PDA) by a bluetooth device, which is stored on the memory of the PDA. The information will be transmitted to medical center or the patient's doctor by wireless networks. A single chip micro-computer, MSP430F149, is adopted as the controller. The MSP430 family of ultra-low-power 16-bit RISC mixed-signal processors from Texas Instruments provides the ultimate solution for battery-powered measurement applications. The key features of the MSP430 family include: operating over a voltage range of 1.8V~3.6V, 5 power modes reducing power consumption. The long term measurement device requires a lot of memory. In this paper a L251602 flash ROM, provided by Macronix, is used as the memory. A serial peripheral interface operates, over a voltage range of 3.0V to 3.6V. A pocket pc HP iPAQ H5550 which is embedded with bluetooth and wireless local network 802.11 and the WINCE operation system is selected as the platform of this research. A expansion pack is used for the General Packet Radio Services(GPRS) application. Three kinds of wireless networks are served in this system. The switching among these networks is a feature of this study.

The program for the database, interaction and communication to PDA is written in Deliph. The shirt is also a radio frequency identification device. The patient's ID is also transmitted in every information packet. The patient's chart will be automatically displayed in the doctor's screen with the property of the short communication distance of the blue tooth. The proposed wireless device prorides various communication methodology for monitoring the vital signs of patients with critical ill.

Keywords:ECG, Blood Pressure, Pulsation, Wireless Network, RFID.
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