

**PORTABLE RESPIRATION MONITORING SYSTEM  
(PRMS)**

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## ABSTRACT

*Portable respiration monitoring system (PRMS) is a biomedical instrument which is used to sense the respiration rate of an infant or sickly adult . PRMS are designed to sense breathing and to trigger visual and sound alarms when certain length of time elapses without the detection of a breath. In this project the respiration rate is detected using a thermistor placed in front of nostril. As the patient breathes, cool air enters the lungs, is warmed by the body, and is expelled. When air passes over the thermistor, changes in temperature affect its electrical resistance and register as breaths. This signal is amplified for the first stage by using a preamplifier and the unwanted signal is then filtered. The clean signal is amplified again. The amplified signal is compared to a certain reference voltage at the input of a comparator. The output of this comparator is now in pulse form which is fed to the counter and alarm circuit. The main advantage of using this method is that, there is no motion artifacts. In this design PRMS also provides a digital display for the respiration rate.*

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## **1.0 Introduction**

Bioengineering have been revolutionised by electronic devices. Bioengineering is the application of engineering principles and design for the solution of medical problems. The area of biomedical engineering is concerned with bioactivity, which encompasses the nervous system that regulates most life process. A biomedical engineer assists the regulation and uses of bioelectric signals for diagnostics purpose.

Some of the biomedical instruments are unique to the field of the medicine but many are the adaptation of widely used physical measurements. A thermistor for example changes its electrical resistance with temperature, regardless of whether the temperature is of an engine or the human body. The principles of the devices are the same, the only different might be on shape and size.

Development in the area of bioengineering led to the invention of the pacemaker, the defibrillator, the electrocardiograph (ECG) and portable respiration monitoring system, amongst other devices (Khandpur,1990). The portable respiration monitoring system is designed to give an alarm if no respiration is detected within a certain interval, while displaying the respiration rate per minute. This respiration monitoring system is highly needed by the Intensive Care Unit (ICU) and Cardiac Care Unit (CCU) in hospitals.