

基于温度传感器的睡眠呼吸暂停监测系统

摘 要

睡眠呼吸暂停综合征是我国发病率较高的疾病，容易导致高血压、心肌梗塞等症状。多导睡眠监测仪由于检测费用昂贵、多导联电极易影响睡眠等原因不易被普及，导致未被检测患的潜在人数较多。本设计将研究一款便于普及的可检测睡眠呼吸情况的便携性家用型呼吸检测仪。

用热敏电阻采集鼻腔的温度变化情况来获取呼吸信号，硬件电路和软件系统的双重滤波和计算处理后，在 LCD 显示屏上显示当前的呼吸速率和呼吸暂停次数，并可通过按键自定义呼吸速率的阈值范围，当超过阈值或长时间未检测到呼吸时进行报警。本设计只需将热敏电阻贴在鼻子下方采集人体呼吸信号，对受试者的睡眠影响较小，可较为真实的检测出受试者的睡眠呼吸情况。

关键词：睡眠呼吸暂停综合征；家用便携；热敏电阻；呼吸检测。

ABSTRACT

Sleep apnea syndrome is a higher incidence of the disease in our country, which can lead to hypertension, myocardial infarction and other symptoms. Polysomnography is not easy to be popularized due to the expensive detection cost and the fact that multi-lead electrode can easily affect sleep, resulting in a large number of potential undetected patients. This design will study a convenient and portable home-use respiratory monitor which can detect sleep breathing.

Use the thermistor to collect the temperature change of the nasal cavity to obtain the breathing signal. After the signal is double filtered and calculated by the hardware circuit and software system, the current breathing rate and number of apnea displays on the LCD display. we can press the set button to set the threshold range of respiration rate, and alarms when the respiration rate exceeds the threshold or no breath is detected for a long time. This design only needs to stick the thermistor under the nose to collect the human breathing signal, which has little effect on the subject's sleep, and can more realistically detect the subject's sleep breathing situation.

Key Words: Sleep apnea syndrome; Household portable; Thermistor; Breath detection

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