



Smart Crib

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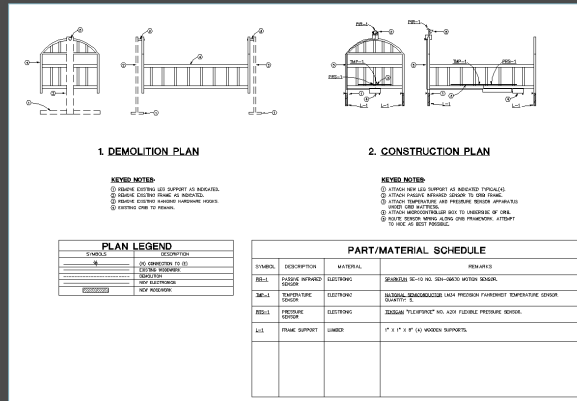
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Introduction

With research and design, modern technology has been used to help maintain the health of individuals. The most vulnerable of these are infants. As new parents begin to experience the reality, there are concerns. From leaving the hospital to two years of age, parents have questions about their infant's health. With a product that can be used at home to monitor the infant's vital signs as in the hospital, will ease the parents anxiety. This product is meant to ensure infants' health, relieving stress; thus, giving a peace of mind to parents.

Construction Design



Potential Market

In the United States 4 billion infants are born, while 28,000 die before the age of 1. To prevent disease such as SIDS (Sudden Infant Death Syndrome), Smart Crib will help monitor the health of an infant 24/7. While in the care of parents, daycares, nurseries, and hospitals the Smart Crib can be used as a tool to save infants lives.

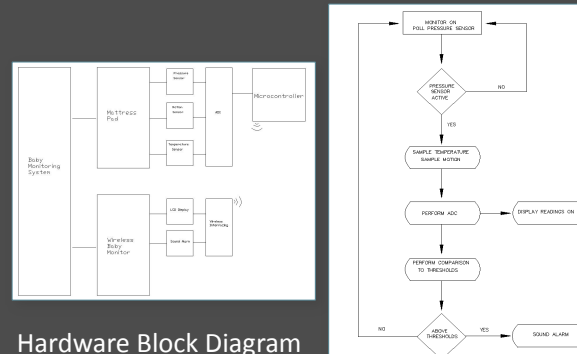
References:

- <http://www.msnbc.msn.com/id/25735103/>
- <http://www.nytimes.com/2009/04/07/health/07stat.html>

Hardware Layout

When an infant is lying in the crib, atop the mattress pad, the system activates. This is done using a pressure sensor underneath the pad. The remaining sensors, temperature and motion, will then begin to send an analog signal. This signal will be converted to a digital signal and sent to the microcontroller using an analog to digital converter. The microcontroller will then transmit the signal from the transmitter to the receiver in the monitoring unit. The receiver analyzes the data and transmits it to the LCD. A visual/sound alarm is triggered if the temperature or motion is beyond threshold limits set by the user.

Diagrams



Software Design

The sequence of operation for the Smart Crib is illustrated by the Software Flowchart. The operation tells the microcontroller to poll the pressure sensor. If inactive, the system will continue to poll the pressure sensor. If active, meaning an infant is on the crib mattress, the microcontroller stores the value of the temperature sensor and the motion sensor. An analog to digital conversion is performed and a reading is displayed on the LCD. The operation also compares these values to the set thresholds. If above the threshold an alarm will signal through the monitor. If below the threshold the system will return to the first step and repeat the process.