



# Creating A Datalogger For Biomedical Applications

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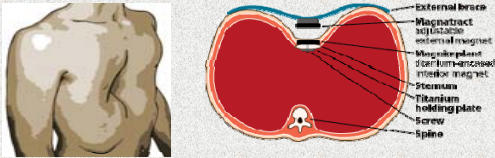
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## Background:

In bio-medical applications, sensors are used to monitor the change in pressure due to magnets inside of a patient with *Pectus excavatum* in real time. A datalogger for a pressure sensor will be able to record and provide physicians with up to date information about these patients, by transferring data via USB.



## Goal:

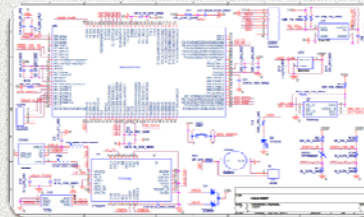
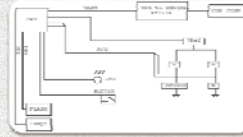
- ✦ Design and build an ultralow power datalogger that will record the pressure reading from a pressure sensor.
- ✦ The datalogger should be able to record data continuously for 3 months without changing the 1.5V button battery supply.

## Approach:

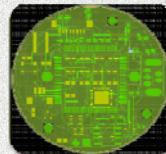
- ✦ 6 layer and a 2 layer PCB will be constructed to minimize the size of the board by using Cadence OrCAD Capture.
- ✦ FlexiForce® sensor will be used so pressure can be detected by calculating the change in resistance
- ✦ Key components used: microcontroller (MSP430), 2 Mb flash memory (W25X16AL), and a USB Interface.

## Overview of the Design Flow

- ✦ Make schematic using OrCAD Capture.
- ✦ Generate PCB Editor netlist.
- ✦ Position the parts on the board outline.
- ✦ Route files and generate manufacturing files.



Netlist



## Results:

- ✦ Constructed schematic using OrCAD Capture.
- ✦ 6 and 2 layer board completed, produced gerber files.
- ✦ Familiarization with design and industrial standard with OrCAD software for PCB construction.
- ✦ Hands on experience with surface mount soldering.



## Future Plans:

- ✦ Complete 6 layer board with signal integrity.
- ✦ Modify datalogger so that data can be transferred wirelessly by using an intergrated circuit with wireless capabilities.



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