

gPod Accessible Blood Glucose Meter

Week 7
March 13, 2006
Matthew Bularzik

Work Completed

This week I spent on a number of things. I worked with Dave on the screen, researched about casing, worked a bit on the vial scanner, and started to look for surface mount components for the glucose circuit.

I started the week working on the LCD screen with Dave. We were trying to figure out how to get the screen to display characters and words. Through a bit of trial and error and some internet research it was determined that initialization was not the problem. This was determined since the cursor on the screen was present and blinking. Next was to determine if the data was being sent properly. A signal was sent where the high and low for the different pins was known and then the pins were checked. With the data being sent correctly the next issue was whether or not there were timing issues. Later it was determined that some of the pins were set wrong. Once the pins were set correctly the LCD screen displayed characters and number on the first line. Figure 1, below shows the LCD screen working correctly with a character string displayed on the first line.



Figure 1: LCD Working Correctly

Then I started to work on the vial scanner. I started by opening up the POS-X Xi 1000 barcode scanner to examine the circuit boards size, as can be seen by Figure 2 below. There were 2 major parts and one minor. There was a circuit board for the sensor and one for the microprocessor. The minor board was just for the button. Then I took a few quick measurements for later when I would be researching casing options. After reassembling the barcode scanner I plugged it in and tried a few different barcodes to see if something could be recognized. Then I tried to observe commands using LabView but there was no sub vi for USB. I tired looking at the National Instruments website about the use of USB and there was not too much.

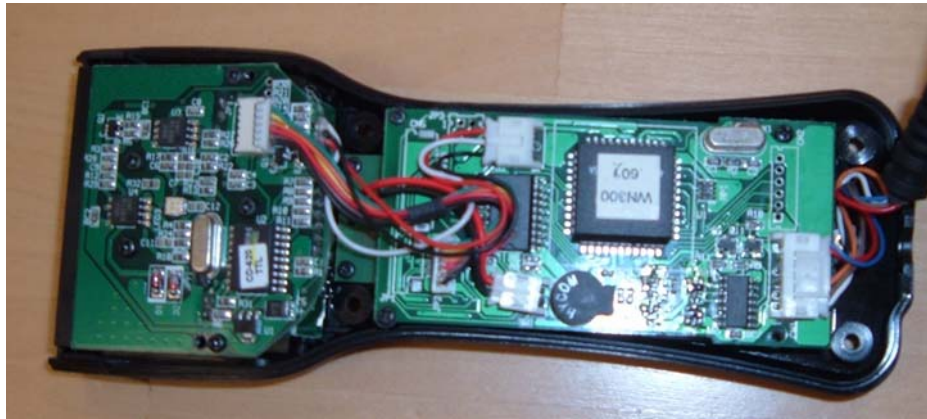


Figure 2: POS-X Xi 1000 Scanner Circuitry

Then I spent some time on the idea of casing and casing options. Through internet searches a few different enclosure sites were identified such as Pac-Tek and OKW. Both have good options though it was found that OKW will give up to one hundred dollars of free samples. Figure 3, below shows a sample enclosure for the glucose meter. While Figure 4, below shows a sample enclosure for the vial scanner. These are possible enclosures that could be used for our project. There are options for different battery sizes and options to hide the screws.



Figure 3: Sample Glucose Enclosure



Figure 4: Sample Vial Scanner Enclosure

Then I began to take stock of all the components that are being used in the glucose circuit and began to look for the same parts but in surface mount option. This was to make sure that they would all be available.

I also looked for new possibilities for a character LCD screen since we are beginning to think the one we found in the lab might be partially broken. This is due to the fact that we can't get the second line to work. That should be an easy thing to accomplish through all the information that we have found about using multi-line character LCD screens. I spent a few hours looking for code for this and didn't really find anything. A new SP03 speech module was also ordered since the ones we had are now both broken. Another 100 test strips were also ordered since most of the ones we had were used for the development of the glucose curve.

Future Work

This week I plan to continue to work with Dave on both the LCD screen and the SP03 speech module interfacing. I will also continue to investigate the surface mount components that will be needed for the final prototype. A new LCD will need to be found. I will continue to work on the vial scanner also.

Project Review

The microprocessor progress has been going well this week. There has been significant progress made with the LCD screen where characters can now be written to the first line. The preprogrammed phrases of the SP03 speech modules are also now able to be called by the microprocessor and Mike finished the glucose curve. The three systems should be integrated by the end of the week with the microprocessor and all the code added together. The glucose curve measurement should be done by the end of the week. There should be significant progress made on the vial scanner also. Total costs to date are \$681.01

Hours Worked

Hours worked on the project: 15.5 Hours