

IOWA STATE UNIVERSITY

Senior Design Weekly Report

Weekly Report 11

Group: May-06

Group member: Chongli Cai, Qiaoya Cui, David Hoffman, Andrew Kom, Ailing Mei

Client: Garmin International

Advisor: Dr. Colin Christy

Period: 11/5/2012-11/11/2012

Date: 11/11/2012

Goals to Meet

This past week, we got stuck in our progress by a number of issues we wanted to resolve this week. The first problem is that with the PIC controller. Simply put, we are finding that things that worked before, such as the UART communication, and even the simple program to turn the LEDs on via pushbutton connections. We see there being 2 possible explanations for this. First is that through something we did (maybe static discharge or accidental shorting while probing the board) broke a vital device on the board itself. The other option is that something we did in a program is not something that we can get rid of by reprogramming the board with an old functioning program.

On the side of things, we plan on trying a UART connection with the Launchpad MSP430, using a document online that explains how someone did this before. At the very least, this will give us a way to continue testing the MSP430 while we wait for the LCD screens to arrive. As far as the current sensor circuit goes, we would like to get a more ranged test done on the device (from around 1mA to 3A) to see if the reaction of the device is linear throughout, or if at higher currents, it loses some accuracy. The only problem with this is to get a higher current value to test. We will need a resistor that can handle 3A at a voltage that can produce said current. This requires us to have a large power resistor, which is difficult to find.

Weekly Progress

This week, we continued to try to figure out what is wrong with the PIC controller, and have come to the two above conclusions. We have decided to research the possibility of a “full system reset” to rule out one of the options. If this does not work, we must send it back, and perhaps either order a new board, or just put our focus on the MSP430 side of the project.

As we were discussing our options for measuring a variable current, we came up with the idea that this sensor uses a “shorted trace” to measure the current, and doesn’t depend on any voltage differences. This being the case, we would like to use a power supply’s built in current limiter to try getting our larger range. By shorting the input of a power supply, we can set whatever the current we want it to produce by using the current control knob. We hope that this strategy will work to give us a better range of measured currents.

Finally, on the MSP430 side, we just found the document that will give us an idea of how to connect the UART to a PC. We plan on trying to utilize this document this coming week, given that we don’t know when the LCD will arrive. We ordered 2 LCDs, but only one has been sent. The other will get sent as soon as it arrives at Garmin.

Individual Contributions

Andrew:

Wrote the Weekly Progress Report 11

Located a document on connecting the MSP430 Launchpad to a PC for UART

Helped create our presentation slides

Chongli

Helped create our presentation slides

Tried to determine a way to generate a larger current with low power resistors

Ailing:

Helped create our presentation slides

Qiaoya:

Created our presentation slides

David:

Continued debug work on the PIC evaluation board