

IOWA STATE UNIVERSITY

Senior Design Weekly Report

Weekly Report 8

Group: May-06

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

Client: Garmin International

Advisor: Dr. Colin Christy

Period: 10/15/2012-10/21/2012

Date: 10/21/2012

Goals to Meet

Continued From last week's goals, our goals this week consisted of the following: getting the MSP430 programed with a simple "hello world" type of program, getting the PIC MCU programming interface running and reprogramming the PIC with the initial LED-Pushbutton program, attempt of run a serial interface with a computer Hyper Terminal using the PIC, and finally, locating an LCD screen to order and start testing. In addition to these, we also have ordered and are waiting for the arrival of the hall-effect sensor to start testing.

Weekly Progress

This week, we were able to successfully run a simple program using the MSP430 MCU that sends a pulse on/off signal to the 2 LEDs on the development board.

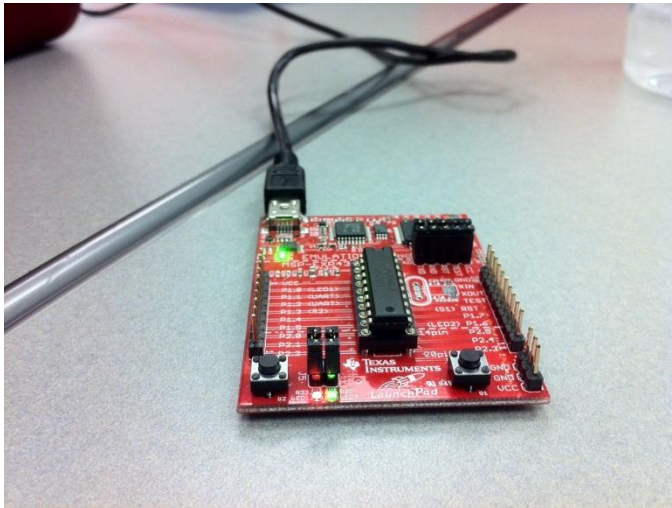


Figure 1: MSP430 Launchpad Board with the closest Red and Green LEDs pulsing on/off

This means that we can now focus our attention, with the MSP430, on getting an interface with the ADC running.

On the PIC MCU side, we were able to get programming communication running by removing and replacing the LED code back on. Also, we now have a cable that can go from the serial port on the evaluation board to a 9-pin RS232 to USB adapter cable.

In addition, we have researched possible LCD screens for our project:

Part Name	Price	Pros	Cons
ACM2004D-FL-GBS	\$20.17	Largest Screen Size	Most Expensive Option
NHD-0420H1Z-FL-GBW-33V3-ND	\$17.70	Datasheet has coding examples, 4 or 8-bit display	Requires a Module connection board
Sainsmart 12864	\$19.99	Already Modular	Expensive
Congli 2	\$9.99	Cheap, w/ pushbuttons	Only 2 lines

Future Planning

For the coming week, we would like to run an ADC test on both MCU's. This will involve giving the ADC pin a set voltage, within the reference range, and attempting to get the unit to convert the analog signal and send it to the UART serial port. This will be done on the PIC chip using the serial ports provided on the evaluation board. The MSP430 MCU may require more work to get a serial communication established. Depending on the connection method required, we may not need another cable. In addition to these, we would also like to use the Op Amp circuit we designed, with the hall-effect sensor, to try getting a current value read. The sensor should arrive this week.

Given the LCD table above, this week, we will make a decision for which LCD(s) to test, and make a purchase request for them.

Pending Issues

Communication made between the MSP430 and Hyper Terminal may be more complicated than it appears. This will be a priority this week.

Individual Contributions

Andrew:

Wrote the Weekly Progress Report 8

Created odd mini-USB to RS232 F 9-pin Spliced cable

Aided in getting a simple LED driving code running on the PIC

Contacted Steve (Garmin) to schedule the next meeting, and to inquire about LCDs we should look into

Chongli:

Researched possible LCD screens to use

Started researching voltage measurement and LCD communication of the MSP430

Ailing, Qiaoya:

Wrote a basic program to send a periodic pulse to the LEDs on the evaluation board

Began investigating the ADC and UART capabilities of the MSP430

David:

Wrote basic LED driving program for the PIC MCU

Investigated the capabilities of the UART communication of the PIC and the syntax for it