Senior Design Weekly Report

Weekly Report 6

Group: May-06

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

Client: Garmin International

Advisor: Dr. Colin Christy

Period: 10/7/2012-10/14/2012

Date: 10/14/2012

Goals to Meet

After last week's progress report was sent out, Dr. Christy requested a meeting to discuss our progress. He suggested that we start doing hands-on implementation. All we had done up until then was research and planning, but little to no progress was made to further our project with concrete results. Thus, after this Monday meeting, we made it a priority to follow his advice and start "messing around" with some circuit designs on table-top tests, and writing some codes. This led to our goals being to start our coding by just writing a simple "hello world" code on the PIC controller, and building breadboard circuits to test our current sensor circuit.

Weekly Progress

This last Wednesday, we ran some bench testing of the amplifier circuit we designed for the current and voltage measuring parts of the project. The build and results can be seen bellow. The idea of this circuit was to take a voltage reference at 2 points, and use the operational amplifier to change the voltage measured. This would be used across something like a sense resistor, as the current sensing circuitry.
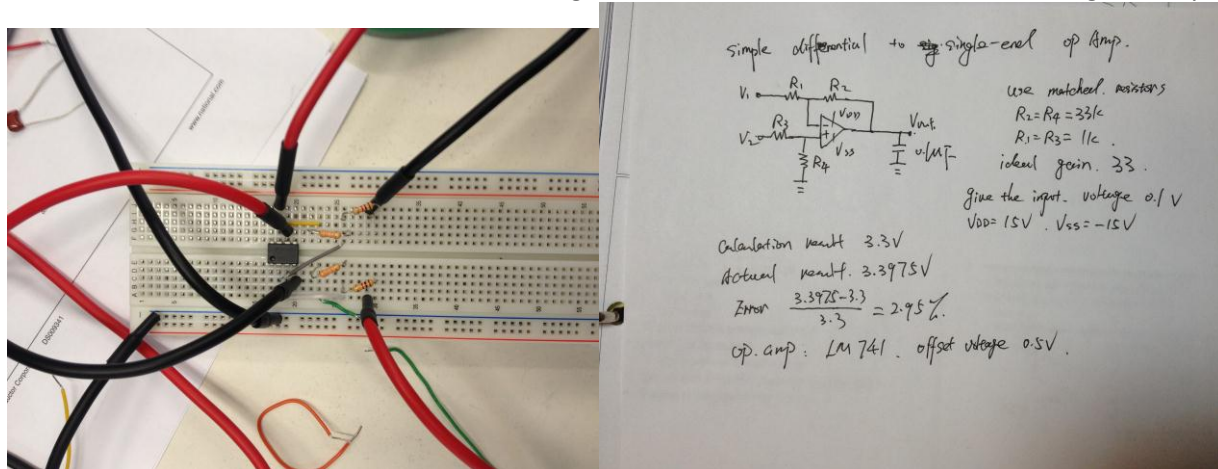

Figure 1(left): Breadboard implementation of circuit schematic (Figure 2 on right)
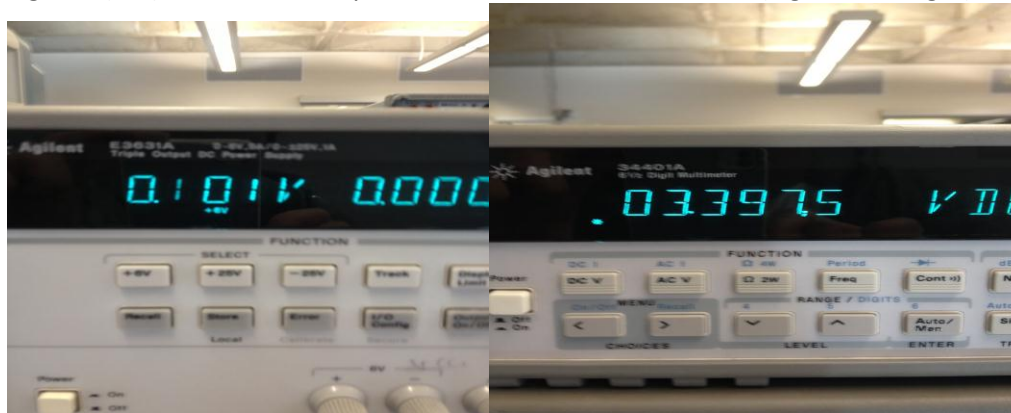

Figure 3(left): Input Voltage of .101V   Figure 4(right): Output of 3.398V

We also attempted to write a code on the PIC controller that would send the characters "hello world" to the serial ports on the evaluation board, and to the PC's USART communication terminal. We were able to write a program, but unable to connect the board's serial to a PC because of a cable connection problem. More on this can be found in the "Future Planning" and "Pending Issues" parts.

Future Planning

For the coming week, we are going to try to get a "hello world" program to work on the PIC and also on the TI MSP430. This will give us more options in the case that one is much better than the other. We also are going to request a hall-effect sensor from Garmin to start running tests with.

On the connection issue, the evaluation board of the PIC chip, it has 2 RS232 (serial) ports, but for some bewilderingly odd reason the evaluation board has 2 Mini-USB ports for each of them. This means that we need a cable that has a Mini-USB on one end and a correct pin-to-pin connection with a 9-pin F RS232 connector. We currently have a 9-pin M RS232 converter to USB that we would like to use to connect to the serial ports on the board. We will be making this cable early this next week to allow us to see serial transmissions from the PIC evaluation board.

Pending Issues

As stated above, the ability of us to connect to the serial ports on the evaluation board is currently a problem, but by splicing the correct cables (mini-USB and 9-Pin), we can make a cable for our use.

Individual Contributions

Andrew:
Wrote the Weekly Progress Report 7
Met with Dr. Christy to discuss project progress and to make plans for the coming weeks
Helped start to program the PIC chip with David
Communicated with Garmin to order a Hall-effect sensor, and possibly a PIC Kit 3

Chongli, Ailing, Qiaoya:
Built and tested a bench-top design of the Amplifier circuit for current measurements

David:
Started to program the PIC by removing the code that was on it (turned on LEDs using the push buttons) and put the code back on it