

## EE 492 Status Report #5

Nov. 1 - Nov. 14

Sddec24\_04

Sukup RTD Board Tester Kit

Client: Sukup (Dana Conrad)

Advisor: Nathan Neihart

**Weekly Summary:** This week we started the testing and troubleshooting phase of our project. We created all the necessary software and are putting it all together and ensuring it runs. We have also begun assembling the PCB and testing the switch, as well as the DAC.

### **Past week accomplishments:**

Team Member 1(Justin): I worked on completing the initialization script for the SPI communication as well as the script for transmitting and latching the two byte DAC code to DAC to produce the needed voltage. Also worked with the team to test our existing code with our MCU and DAC

Team Member 2(Tony): Mostly finished the host to MCU python script. It appears to be working fine, but I am still trying to add code to ensure the temperature entered is reasonable. I am also working to add extra code that will make it easier for the client to do troubleshooting in the future, as this project is also supposed to be a developmental tool.

Team Member 3(Sam): This week I worked on writing initialization code and pin settings for our PCBs test cases. This involved identifying which GPIO pins were needed to be set high for our varying test cases. With that I met with Michael to help solder our first PCB for testing. Once done soldering we ran continuity tests and probed our switches to ensure that we were able to get expected results. The switches between states should be fully functional.

Team member 4(Michael): This week we assembled and began trouble shooting the boards. After finding some hardware issues we ordered replacement parts for the next prototype builds and began trouble shooting the code.

### **Pending issues:**

Team Member 1(Justin): When testing with the DAC we weren't getting the expected outputs. I asked to meet with Dr. Neihart to help walk through my initialization and make sure it is correct.

Team Member 2(Tony): Change the python script so the user can only enter a temperature value between 30 and 254 degrees. Add more code to display results of many variables that appear within the code to make it easier to troubleshoot.

Team Member 3(Sam): Issues with one of our test cases was found during our testing of the PCB, we found that one of the switches was not rated for the 5V that were being sent through it. To resolve this we ordered a new part with the same footprint that can handle the 5V required to test our overvoltage case. Following this all should be good on getting to each test case to perform our analysis.

Team Member 4(Michael): Solder up the remaining two boards when parts arrive and continue to help with troubleshooting.

#### **Individual contributions:**

<b>Name</b>	<b>Hours this week</b>	<b>Hours Cumulative</b>
<b>Tony Haberkorn</b>	<b>8</b>	<b>33</b>
<b>Samuel Estrada</b>	<b>10</b>	<b>40</b>
<b>Justin Garden</b>	<b>6</b>	<b>33</b>
<b>Michael Hurley</b>	<b>10</b>	<b>35</b>

#### **Comments and extended discussion**

**Plans for the upcoming week:** For the following week we hope to work more on troubleshooting our PCB by implementing the new switch that was ordered after our initial failure. Along with this we hope to have our DAC code fully functional in order to perform the test case in which the user selects a temperature to simulate. In our debug we can probe different elements of the circuit to ensure we are getting the expected output. Finally we want to be able to test run our circuit with all aspects integrated together.

**Summary of weekly advisor meeting:** In this past week's meeting our advisor helped troubleshoot our software since we were unsure of the data that was being sent to the MCU. We were able to verify that the data was correct and plan on integrating it with our MCUs code. We then followed with making a plan on testing the DAC code for our following meeting.