Detector Support Group

We choose to do these things "not because they are easy, but because they are hard".

Weekly Report, 2023-05-17

Hall A – ECAL

Brian Eng and Marc McMullen

- Completed test of six-supermodule test stand to 100ºC
- Completed initial power-up test of two DC power supplies
  - ✶ 48-V, 10-A supply has adjustable output with an input control voltage of 0-10 V
    - Began assembling test stand to run a full range control test, with datalogging
  - ✶ 53-V, 2.8-A supply with adjustable output

Hall A - GEp

Mindy Leffel

- Completed one high voltage box; 14 of 22 completed

Hall A – SoLID

Pablo Campero

- Added input connector pinout for resistor box to drawing A00000-16-03-0250

Hall B – MVT

Brian Eng

- Troubleshooting FMT mixing issues
  - ✶ Changed low multiplier (when mixing system is trying to lower pressure in the mix tank; output flow = requested flow * multiplier) from 0.5 to 0, which required disabling the mix ratio alarms

Hall C – NPS

Mary Ann Antonioli, Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, Mindy Leffel, and Marc McMullen

- Verified pinout for 120-ft serial cable between cRIO and chiller; uses the National Instruments adapter (RJ50-DB9)
- Continued adding loops to LabVIEW code that break out arrays into individual variables; 24 completed, 40 total of 108
- Integrating PVs and test screens into the alarm test system
  - ✶ Developed and tested VisualDCT template for back crystal zone thermocouples, which, with a text file of PV names, generates the EPICS database upon alarm test system softIOC boot

Hall D – JEF

Mindy Leffel

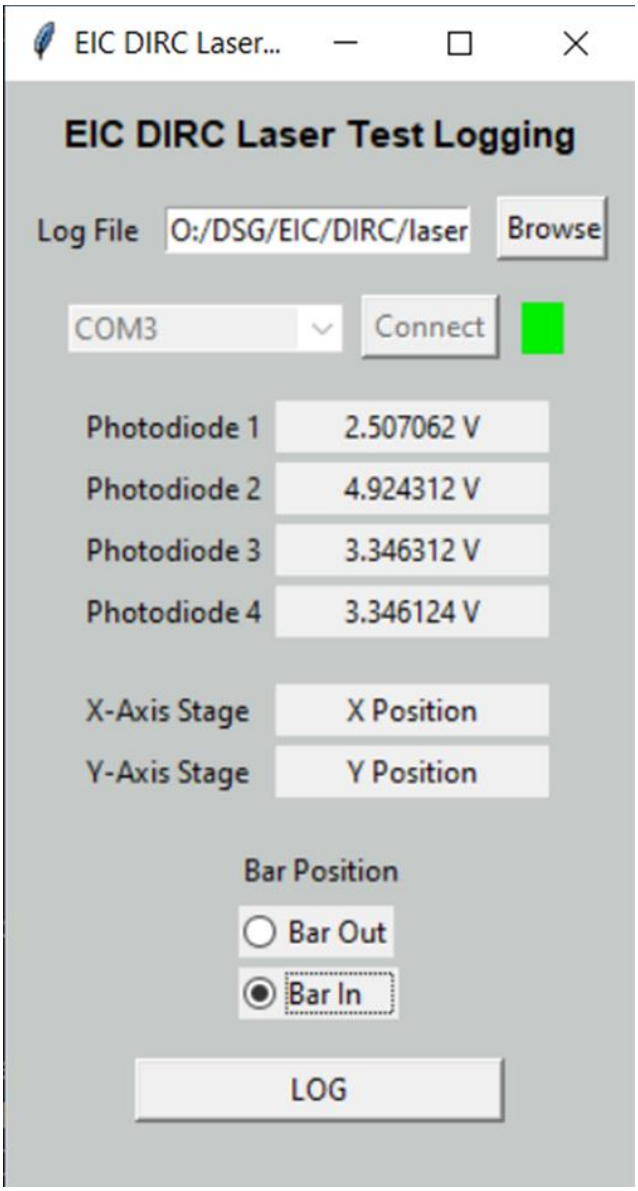
- Wrapped 20 crystals with 3M foil and Tedlar; 763 wrapped to date

EIC - DIRC

Tyler Lemon and Marc McMullen

- Reviewing and creating flowcharts for programs provided by collaborators for laser test station DAQ and analysis

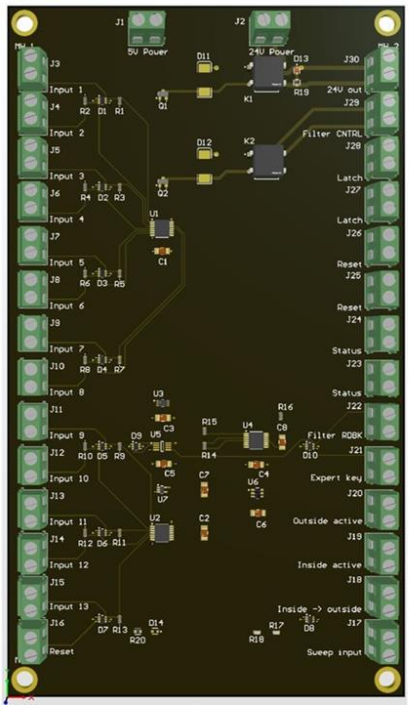
- Developed a Python user interface program for manual alignment tests that displays measurements of four photodiodes and saves data to a log file



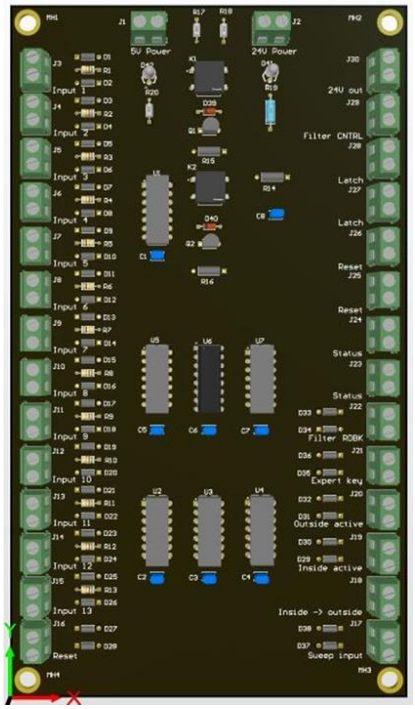
- ✶ Value for Photodiode 1 is the output of a transimpedance amplifier with input of 7.5 mA
- ✶ Value for Photodiode 2 is 5-V output of the DAQ system's microcontroller board
- ✶ Values for Photodiode 3 and 4 are 3.3-V output of the DAQ system's microcontroller board
- ✶ Bar Out refers to when measurements are taken without the test beam passing through the quartz bar. Bar In refers to when measurements are taken with the quartz bar in place and the test beam passing through the bar
- ✶ Data is saved to file in tabulated format using Log button

- Completed changes to interlock board schematic and design
  - ✶ All components are through-hole; board will be assembled by Mindy Leffel
  - ✶ Sockets will be used to mount the integrated circuits, allowing easy change if needed

Old Surface-mount design



New thru-hole design



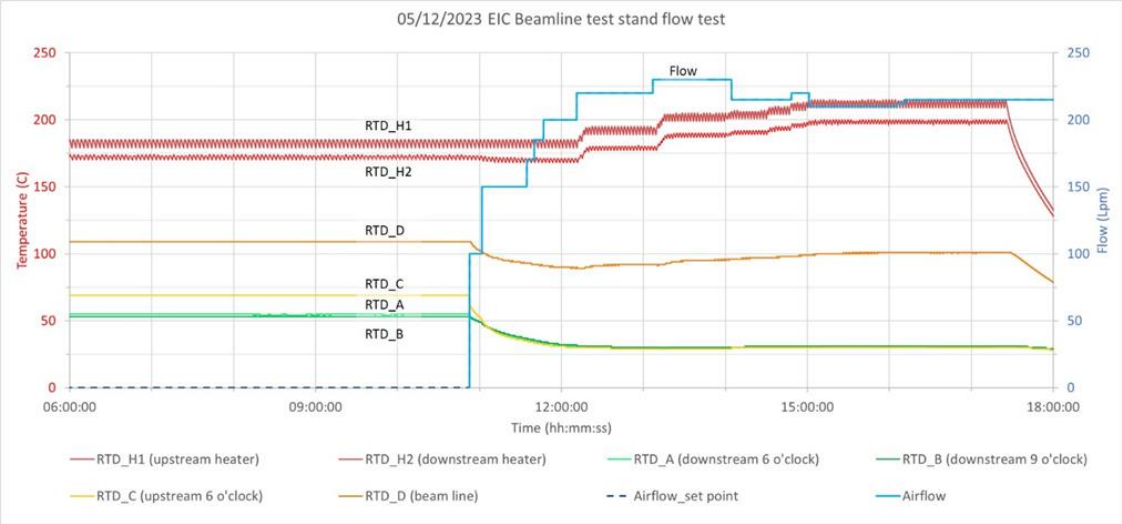
EIC – RICH

- Discussed with collaborators the possibility of DSG's mirror test stations being adapted for EIC RICH mirrors
  - ✶ Main difference is that test wavelength for reflectivity tests is < 200 nm for EIC RICH and was < 350 nm for Hall B RICH

EIC - Thermal Test Stand

Pablo Campero, Brian Eng, George Jacobs, and Marc McMullen

- Ran test at higher temperature, increasing heater temperature to 215°C to get 120°C on the beampipe before airflow began; then used ~215 lpm airflow to cool inside silicon surface to ~30°C, while maintaining 100ºC on the beampipe
  - ✶ Updated DSGlist to reflect changes to the procedure



- Working on thermal simulation
  - ✶ Ran simulation, but resulted in incorrect temperature for each component
  - ✶ Made a velocity contour plot, which indicated that air was not flowing from the inlets through the annulus space
  - ✶ Improving model geometry and model meshing to solve potential errors