Detector Support Group

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

Weekly Report, 2024-02-07

Hall A – ECAL

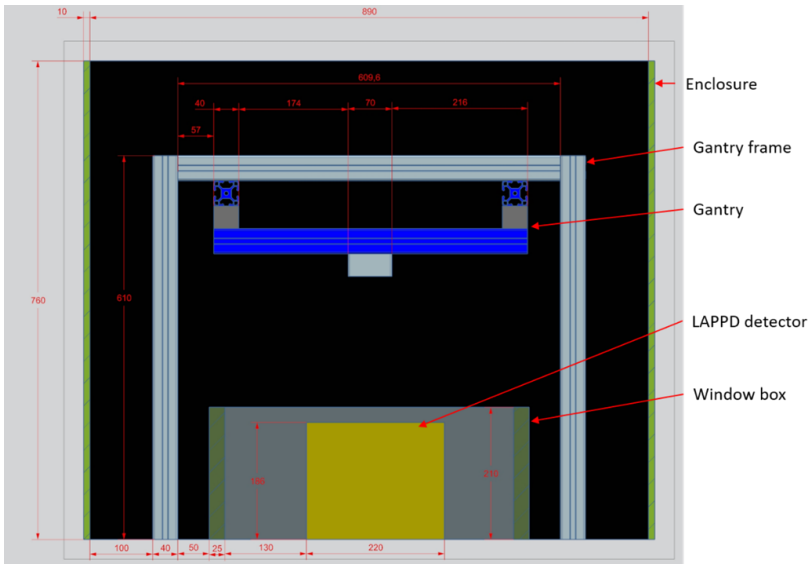
Peter Bonneau and Marc McMullen

- Power supply controls interface chassis
  - ✶ Completed bottom panel fabrication drawing, with mounting holes for the three computer boards
    - Prototype chassis ordered
  - ✶ Completed computer board design
    - Completed design review
    - Sent out manufacturing files for fabrication; estimated arrival by 2/14
    - Ordered components

Hall A LAPPD

Pablo Campero and Marc McMullen

- Working on the design of the gantry support structure and box for LED light
  - ✶ Researched the circuitry to power the LED light
- Continued drawing 3D model of the detector test stand



Front view of the LAPPD enclosure with gantry and gantry frame. Dimensions are in millimeters.

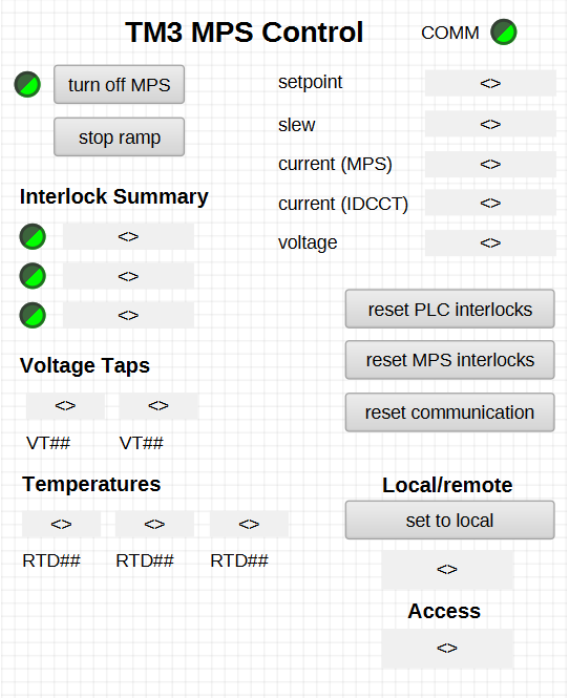
- Set up gantry motorized system and connected to computer
- Began LabVIEW program to control and monitor gantry position
  - ✶ Installed Zaber instrument drivers

Hall A – Møller

Mary Ann Antonioli and Brian Eng

- Added additional analog input module to PLC setup for extra channels to read out DC current transducers on each power module
  - ✶ Created wiring diagram
- Created ePAS for wiring and testing PLC

- Laid out Phoebus screen for magnet power supply testing



Phoebus screen for magnet power supply testing; process variables are not yet connected.

Hall B – ALERT

Brian Eng, George Jacobs, and Marc McMullen

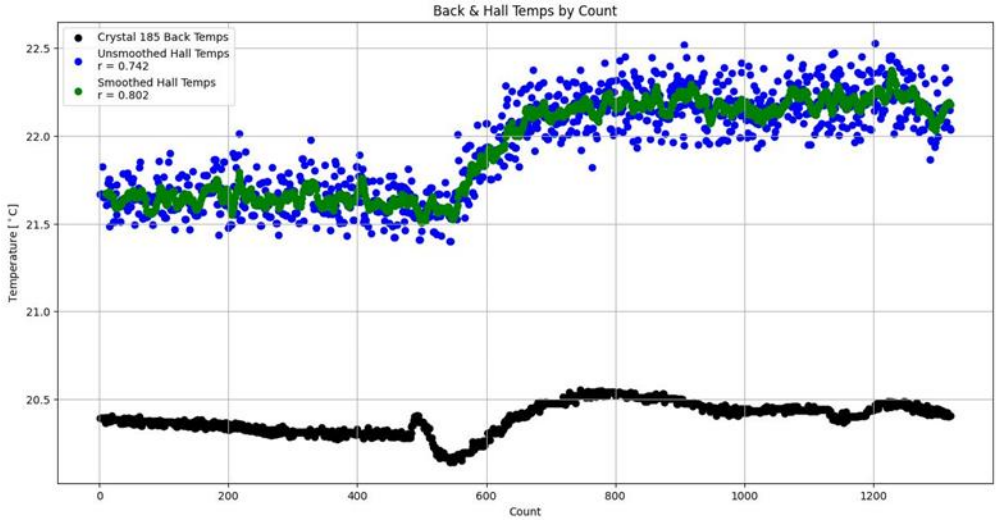
- Contacted Alicat for clarification on Modbus TCP/IP interface pinout for mass flow controllers; confirmed uses normal RJ45 network ports, in addition to industrial power jacks (screw lock barrel connectors)
  - ✶ Requisition submitted; awaiting management level signature
  - ✶ Lead time is ~3 weeks
- Suggested change to output of 4-20 mA for pressure transducers, which are 2-wire instead of 3-wire
  - ✶ Zero pressure is a different value than a disconnect, unlike voltage output
- Determined part numbers for Dwyer 626 pressure transmitters
  - ✶ Components purchased
  - ✶ Delivery is expected in 10 days

Hall C – NPS

Mary Ann Antonioli and Aaron Brown

- Debugging failure to trip in control and monitoring LabVIEW program, vers. 2
  - ✶ Arrays initialize correctly, but subVI that calculates trip delay times outputs empty arrays for status and latch timestamps; subsequent loop iterations fail
  - ✶ Using breakpoints, probes, and error propagation to determine where the program fails
  - ✶ Debugging still in progress

- Analyzing data from high voltage supply cable testing
- Developed Python program to plot front, back, and hall temperatures by count
    - ✶ Shortened data sets by removing the first 60 data points from the front and back crystal temperatures and removing the last 60 data points from the hall temperatures
    - ✶ Recalculated Pearson correlation coefficient with new data sets; back and hall improved from $r = 0.650$ to $r = 0.802$ for smoothed hall temperatures and from $r = 0.600$ to $r = 0.742$ for unsmoothed



Plot of back temperatures of crystal 185 and hall temperatures by count

Hall D – FCAL2

George Jacobs and Mindy Leffel

- Populated 45 PMT bases; completed 1375 of 1650
- Cut 330 wires; stripped 300
- Tested 10 PMT bases

EIC - DIRC

Peter Bonneau, Brian Eng, George Jacobs, Mindy Leffel. Tyler Lemon, and Marc McMullen

- Continued setup and benchtop testing of laser interlock system
    - ✶ System works as expected with interior control unit with expert key and exterior control unit
    - ✶ If operated in interior control mode without expert key, system does not reset
        - Possibly inputs to computer board for key switches are floating high and need pull-down resistors
        - Checking connections inside enclosure and whether any system input is floating to an unintended voltage

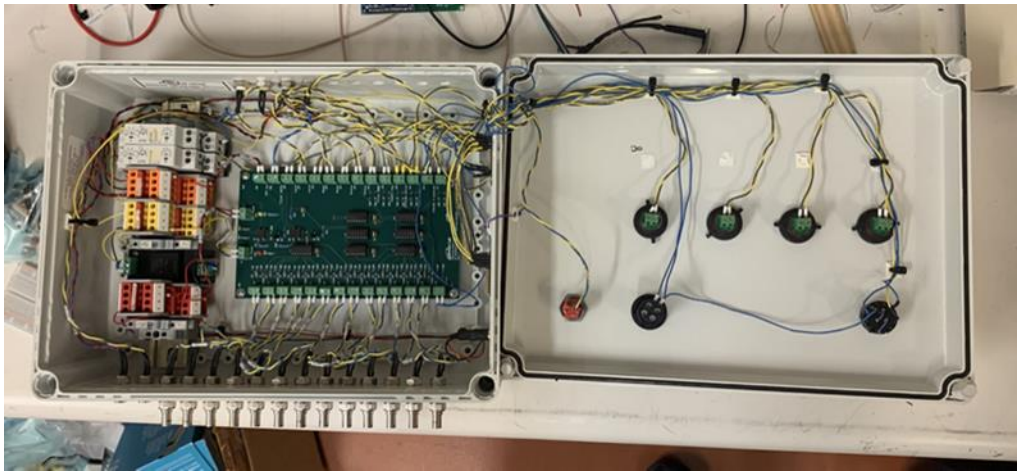


Photo of laser interlock system's interior control unit enclosure. Left side contains power distribution, system inputs, and computer board. Right side contains LED indicators, keyed switches for enabling system, and reset button.

- For Phoebus alarm test, developing code for the Phoebus alarm distributed system tests that checks the communication between the computer with the alarm software packages and the EPICS laser interlock softIOC server

DSG

Mary Ann Antonioli and Aaron Brown

- Completed changing code to reformat Notes section of website; began changes for Talks
- Updating DSG homepage with document search function; adding ability to search for documents by type