



6-Supermodule Test Stand Heater Controls

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Detector Support Group
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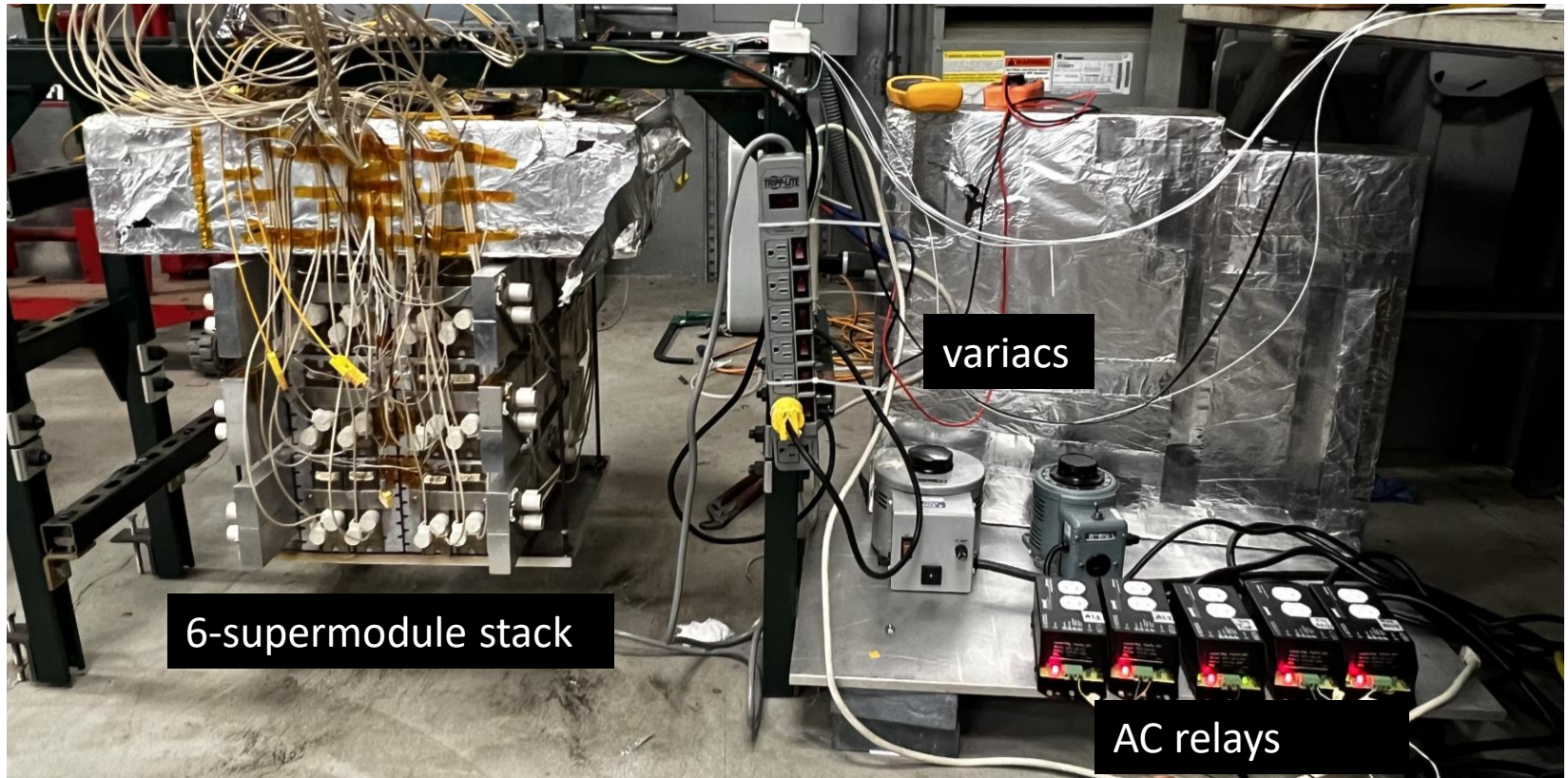
Contents

- Objective:
 1. Develop multi-channel control system for the 6-supermodule test stand
 2. Provide user instructions on how to operate the software
- Test stand
- Control software
- Conclusion

Objective

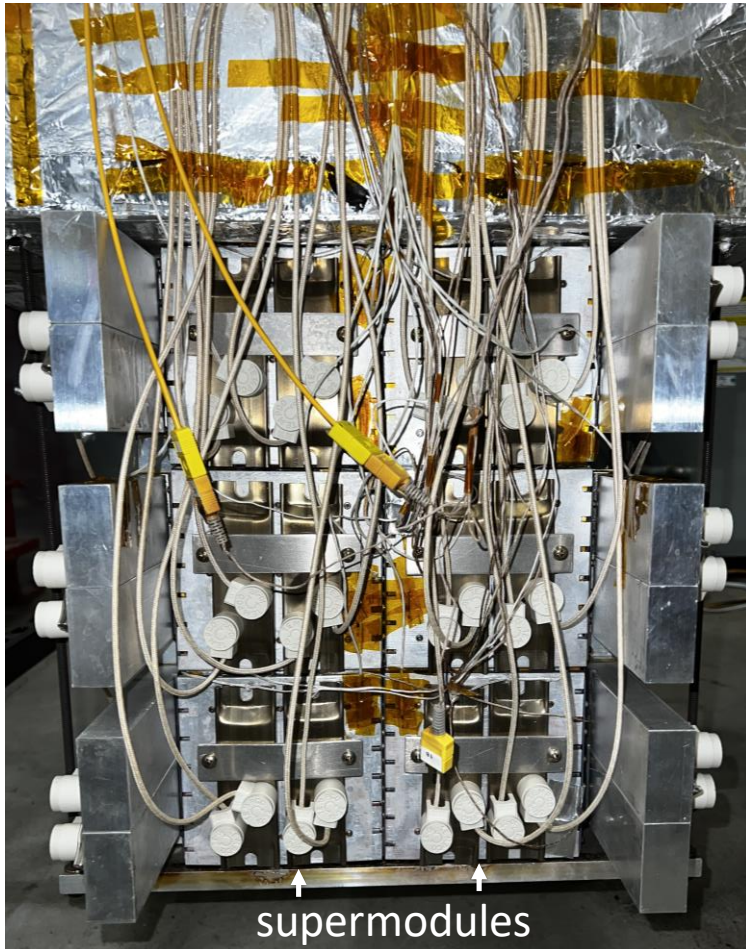
1. Develop multi-channel control system for the 6-supermodule test stand
2. Provide user instructions on how to operate the software

Test Stand

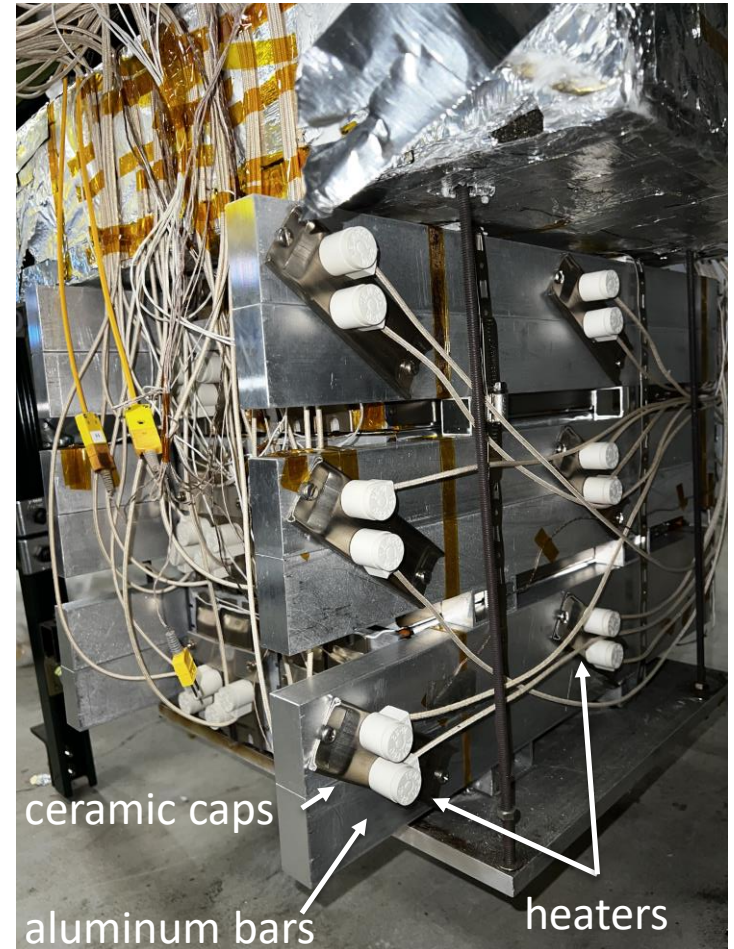


The Hall A ECal 6-supermodule test stand is located in the physics storage building. The test stand consists of a 3 x 2 array of supermodules; two stacks of six aluminum bars, one located to the left of the array, and one to the right; two heaters per supermodule; and six heaters per side of aluminum bars.

Test Stand: Stack

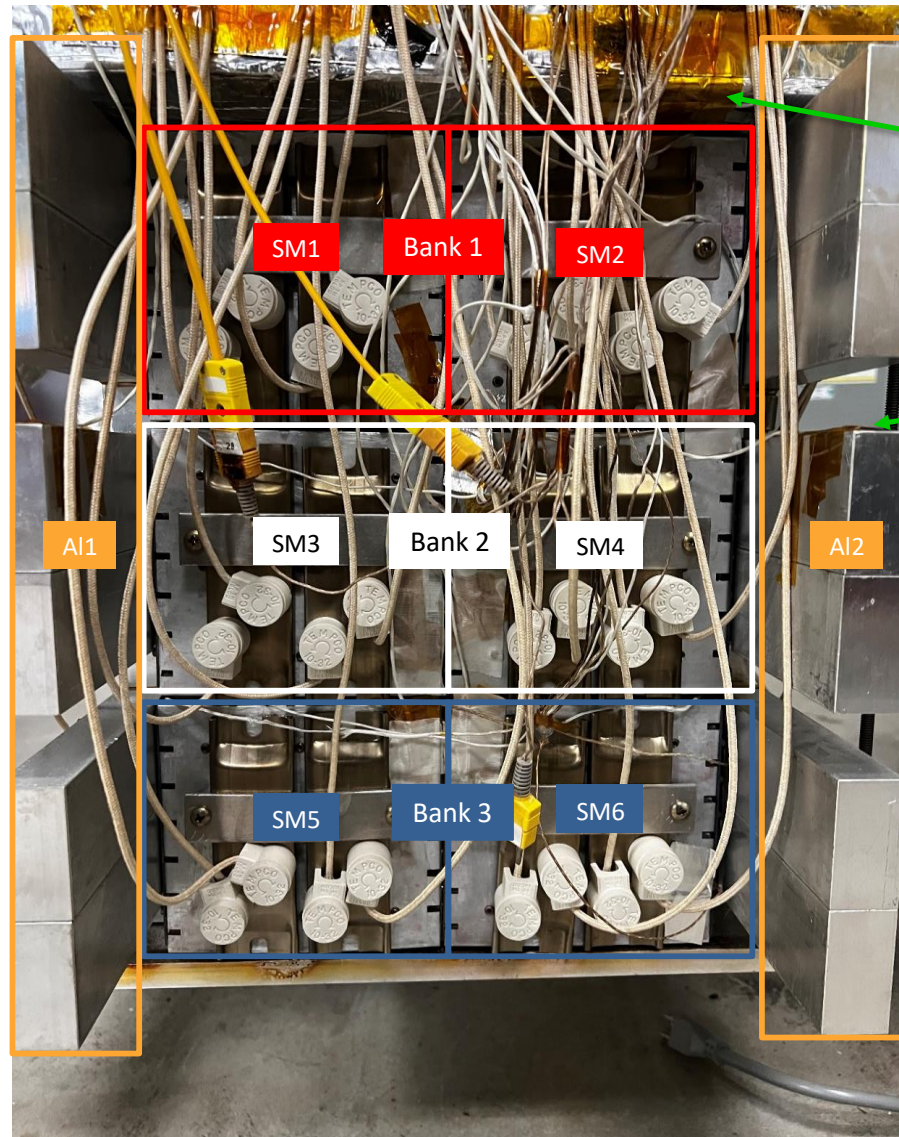


Front view of supermodules and aluminum bars with heaters



Side view of aluminum bars with heaters

Test Stand: Stack



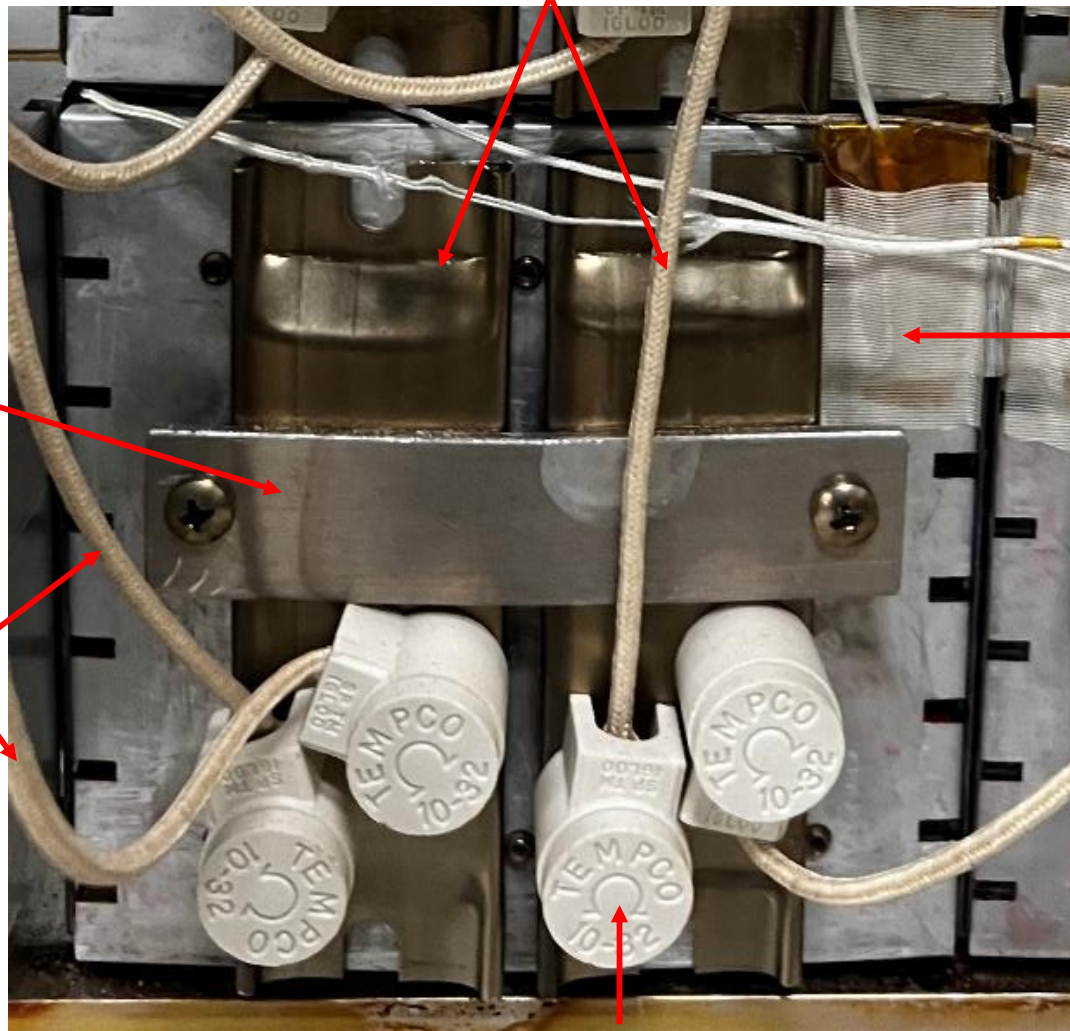
Omega RTD location

aluminum bar RTD location

For supermodule RTD location, see next slide

Test Stand: Supermodule with Heaters

Tempco strip heater 120 VAC/125 W (two per supermodule)



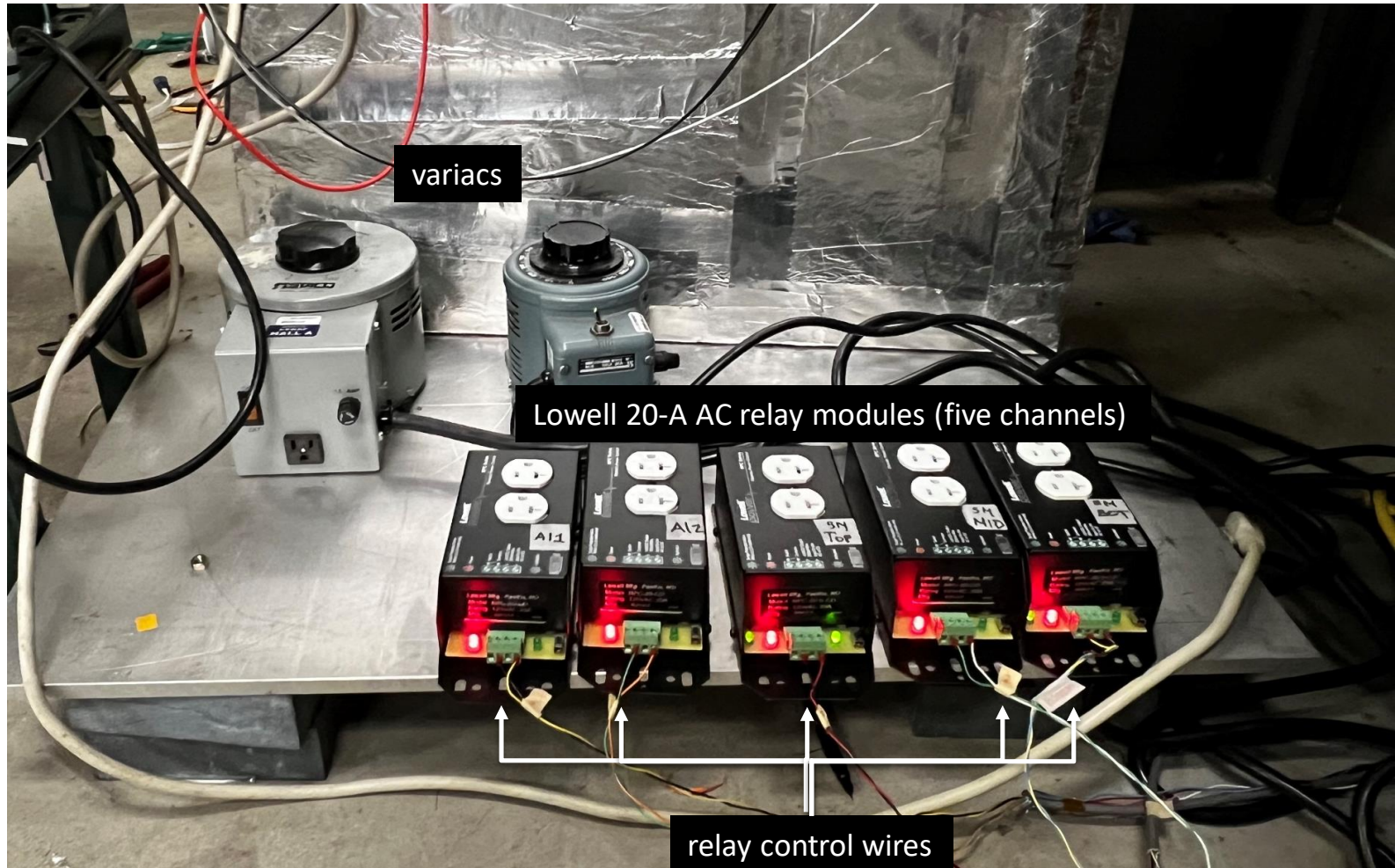
aluminum clamp

power cables
(two per heater)

Omega high temp RTD
(one per supermodule)

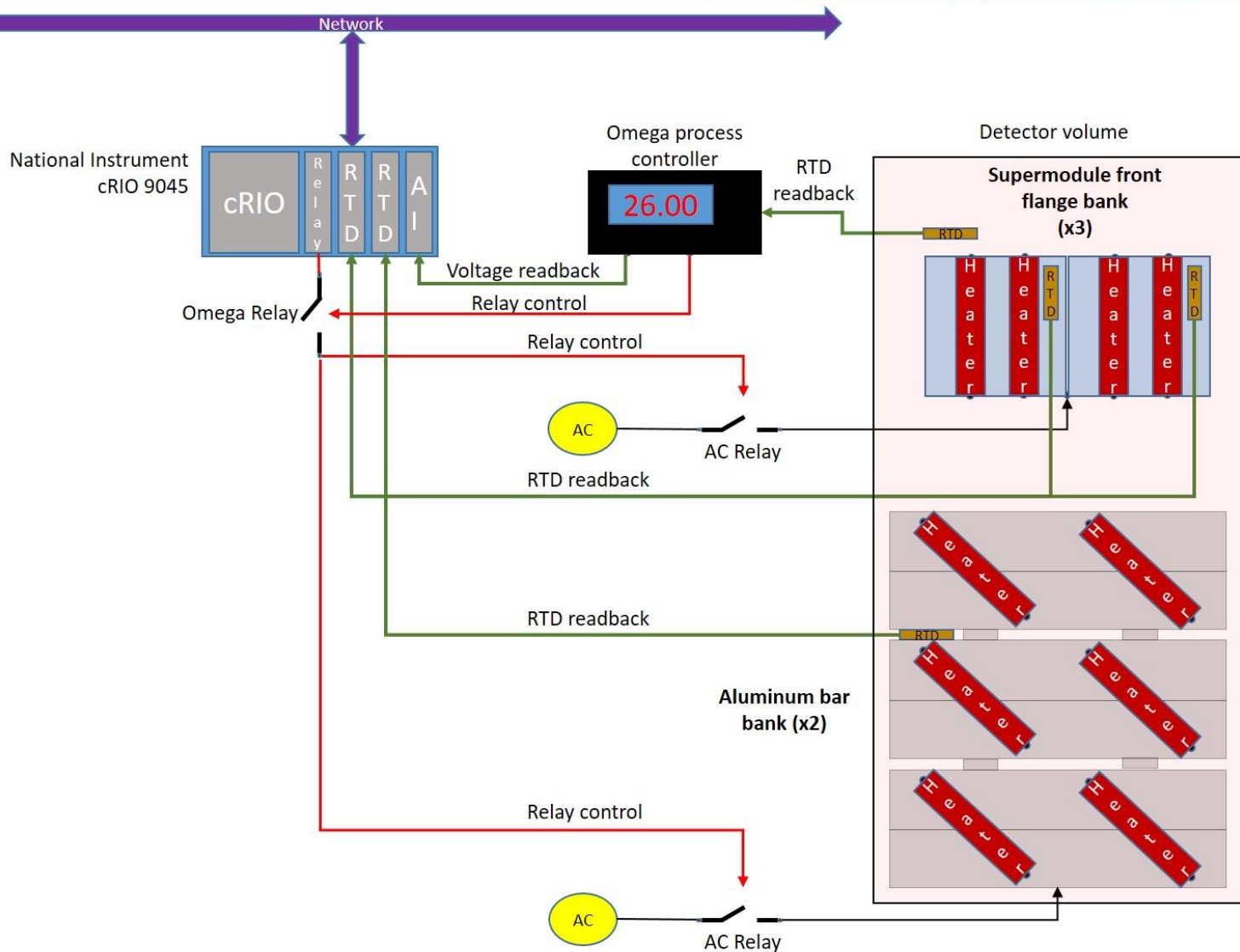
ceramic wire cover
(two per heater)

Test Stand: Heater Power Control



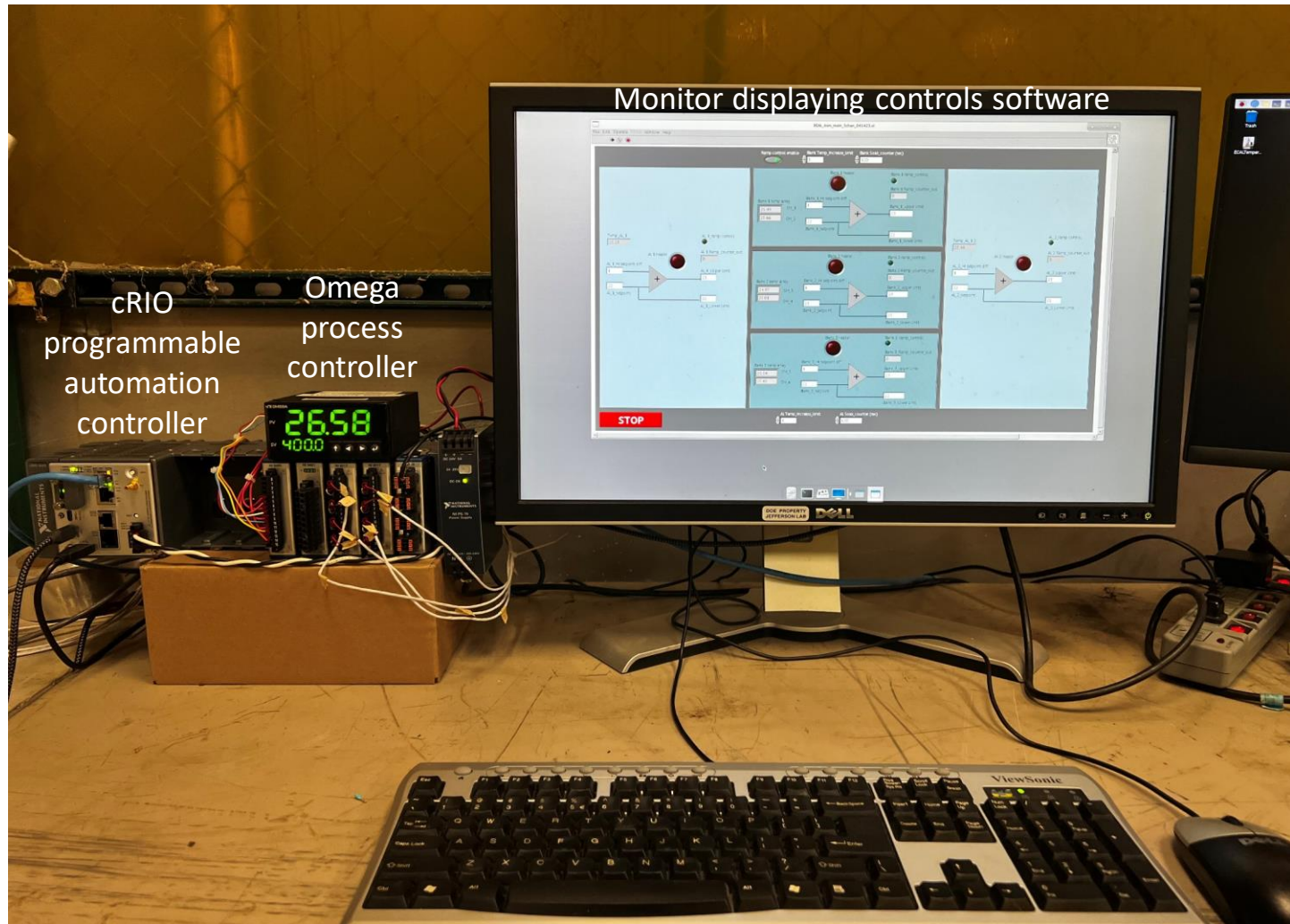
The controls software toggles the AC relays on and off to provide power to the heaters

Test Stand: Controls Diagram



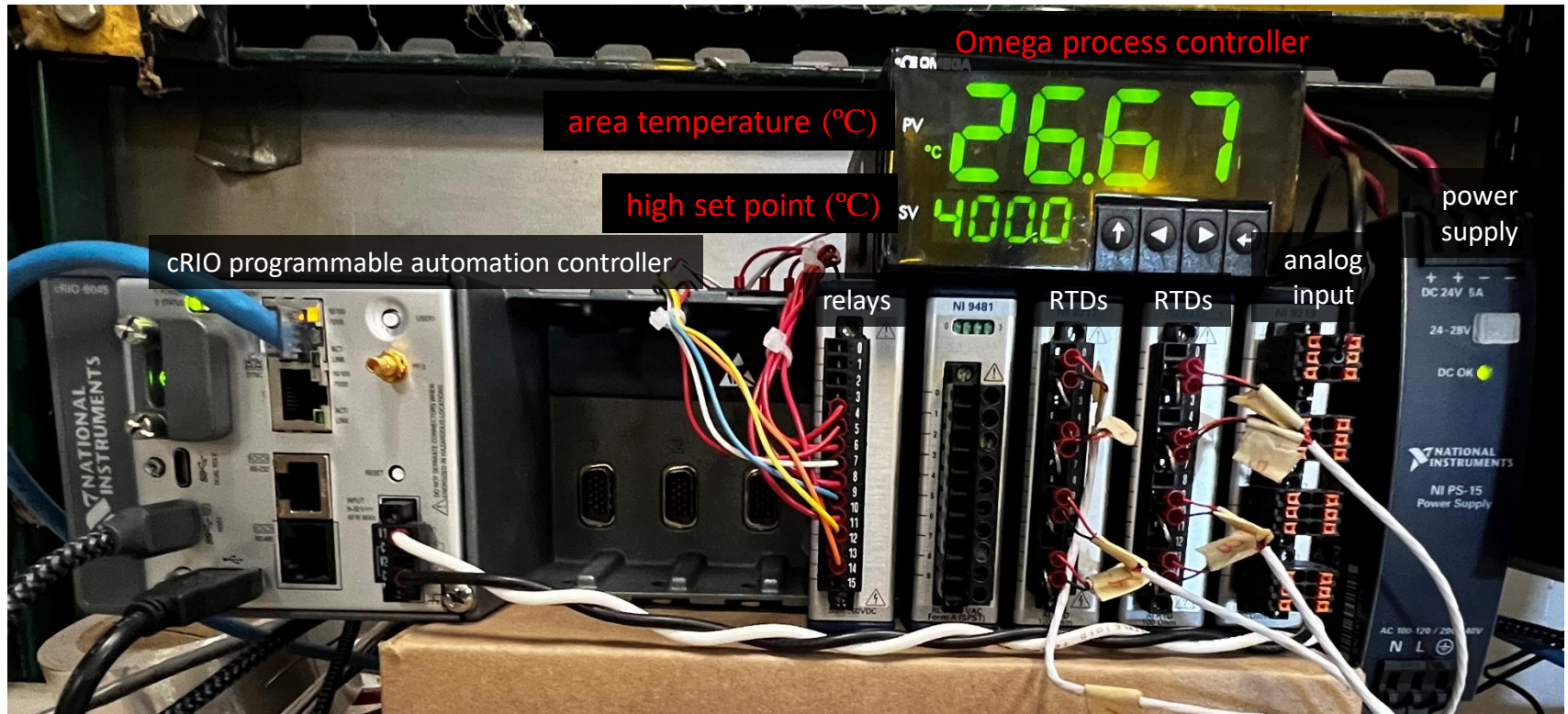
One supermodule bank and one aluminum bar bank shown

Test Stand: Controls Terminal



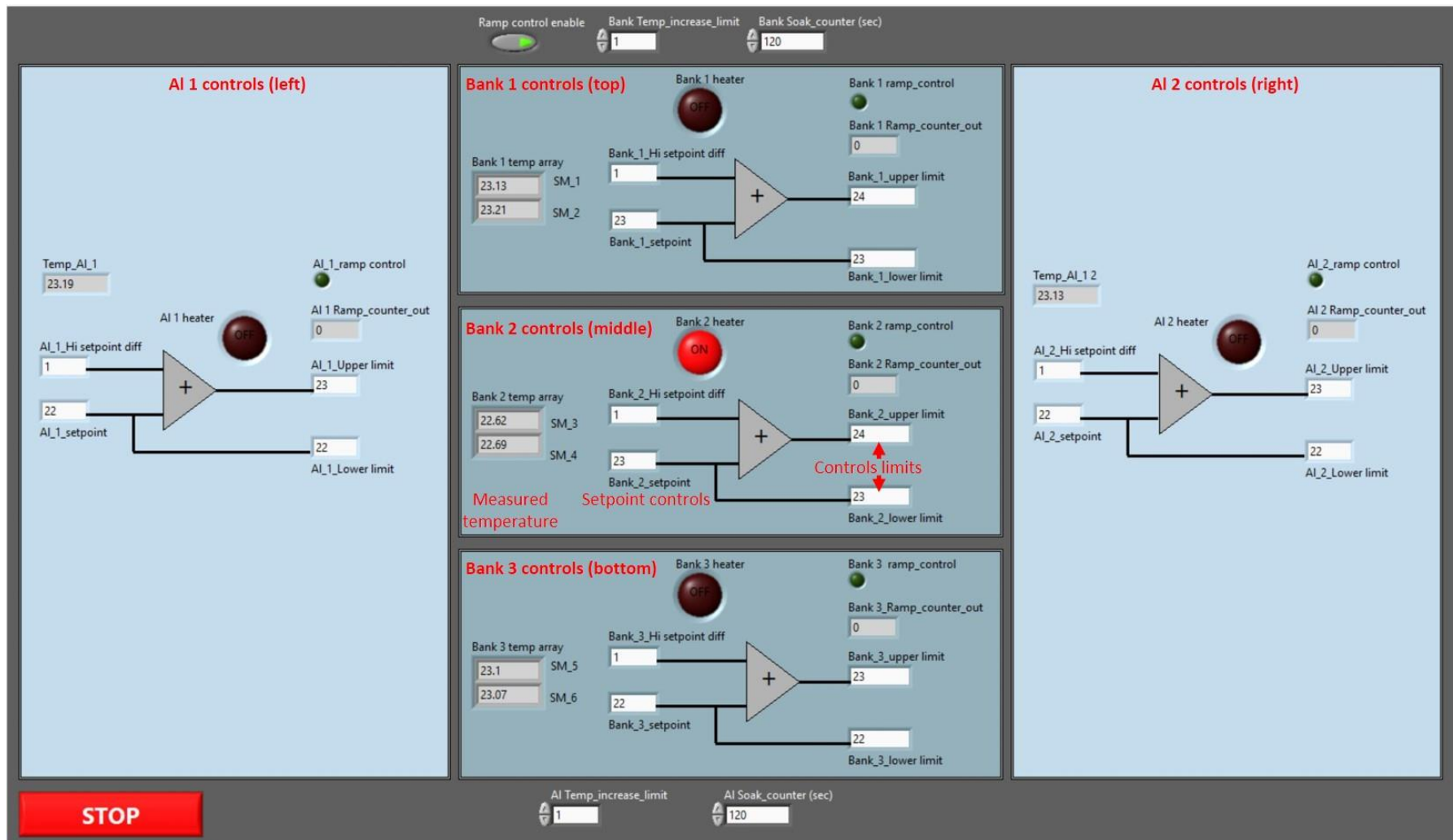
The cRIO controls terminal located with the test stand in the physics storage building

Test Stand: Controls Instrumentation



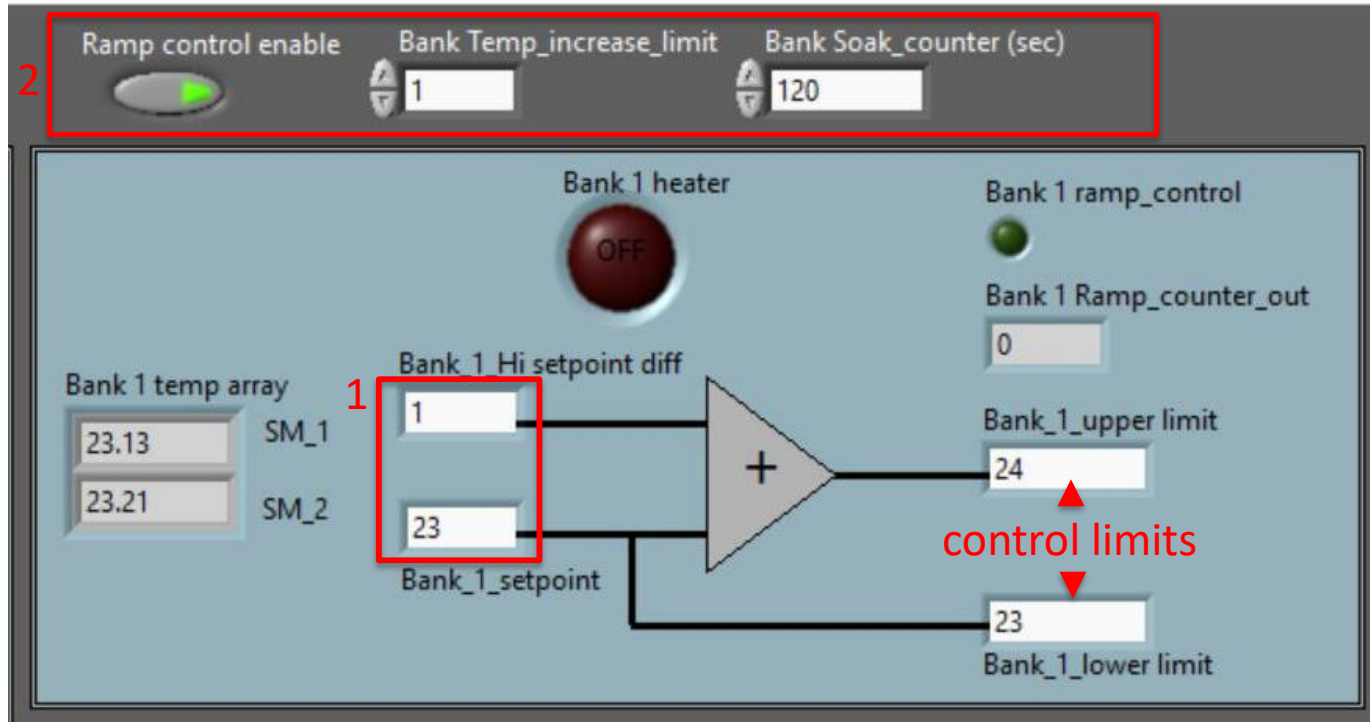
- cRIO controller reads back the supermodule and aluminum bar RTDs and switches the AC relays
- Omega controller monitors overall temperature of the supermodule front flange area and will disable power to all heaters if the Omega's setpoint is exceeded (currently set to 400°C)

Control Software: Front Panel



Five-channel, LabVIEW, control front panel

Control Software: User Inputs



1. Setpoint and high setpoint difference
2. Optional ramp control — controls the increase in the lower limit by adding a counter between increases to the lower limit

Conclusion

- The controls instrumentation has been installed
- All sensors are reading back correctly
- The software is ready for testing with the test stand

End