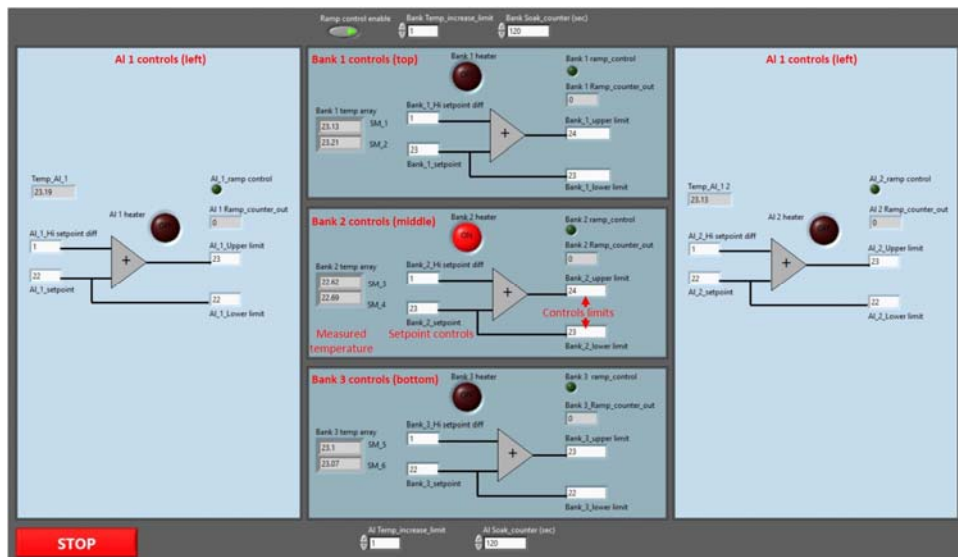


Controls development for the ECal 6 supermodule test stand

Marc McMullen
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This month I modified the software I wrote for the single Ecal supermodule to control six supermodules and two aluminum bar heaters. The supermodules in the system would need to be segmented so that multiple (2) supermodules will be powered by a single channel. This was different in that the single module controls monitor a single RTD sensor. Multiple supermodules can be at different temperatures. This means that one supermodule can be in the control range limits as the other is outside the range. The code for a group of supermodules (called a bank) would have to be written so that the controls would heat the supermodules, as long as one was below the low set point, providing that neither exceeds the high set point.

- Expand one channel controls software for five channels
- Install equipment and instrumentation on test stand
- Test for functionality

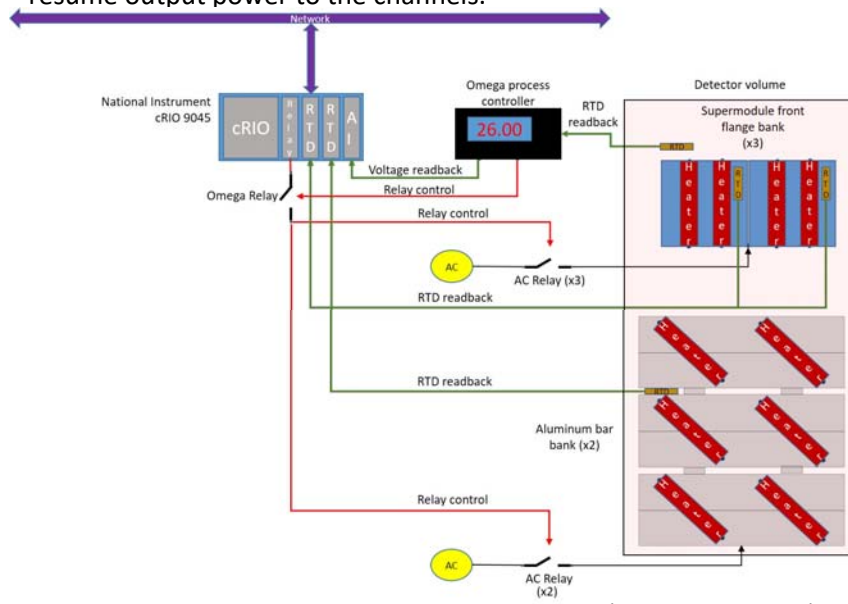


Controls development for the ECal 6 supermodule test stand

In addition to the three banks of supermodules, the test stand has three pairs of aluminum bars, on each side, which are all in contact via aluminum spacers and operate as individual left and right channels. These are monitored as a single channel.

Power to each of the channels is supplied by a Lowell RPC-20 AC relay which is actuated by the controls software.

The controls software operates five individual channels (three supermodule banks and two aluminum bar stacks). In addition to the heater controls, an Omega process controller is used to monitor the temperature of the front of the overall detector volume and will be set as an overall temperature limit which will disable the relay controls for all the channels. The Omega will latch if the temperature is exceeded. This will require human intervention to resume output power to the channels.



6 channel ECAL heater controls teststand diagram (2 channels shown)