

DSG-RICH R&D Meeting

Date: February 28, 2022

Time: 11:00 AM – 12:00 PM

Attendees: Mary Ann Antonioli, Aaron Brown, Pablo Campero, Brian Eng, George Jacobs, Mindy Leffel, Tyler Lemon, and Amrit Yegneswaran

1. Hardware interlock system chassis testing underway

Mindy Leffel and Tyler Lemon

1. Seventeen of twenty four SHT35 sensor PCBs have been used with hardware interlock system's LabVIEW program since February 21, 2022 with no issues
 - Mindy Leffel is working on re-terminating five RJ45-Molex cables and fabricating two more for seven remaining sensor PCBs

2. Nitrogen supply setup for RICH-II

1. One 1/2"-outer diameter (OD) nylon tube for main N₂ supply
2. Main N₂ supply line branches off into two 1/2"-OD lines at detector
3. Two lines enter RICH N₂ volume, one at the right cable raceway, the other at the left cable raceway
4. Immediately inside the N₂ volume on both sides, there is a small store-brought manifold that splits the 1/2"-OD line into six, 20-meter long, 1/4"-OD lines
5. The six 1/4"-OD lines are routed down the front panel of the RICH to blow N₂ across aerogel tiles
 - 1/4"-OD lines are held in place by a specially designed bracket
 - Brackets are on hand in cleanroom
6. One bubbler is attached to detector shell through a connector at one of the cable raceways for N₂ exhaust

3. Air-cooling supply setup

1. Two nylon supply tubes from air-cooling panel to detector with disconnect at detector
 - OD of supply lines yet to be determined as Hall B Engineering is modifying setup to use larger diameter supply tubing
 - One supply line goes to right cable way on detector shell, second supply line goes to left cableway on detector shell
2. Each supply line continues down cableway to electronic panel (EP)
3. In EP, the nylon supply lines connect to a 1/2"-OD, stainless steel pipe manifold that directs airflow over electronics
 - Overall length of manifold will be 44"
 - The size, position, and number of the holes on manifold to distribute the air in the EP will be determined after tests in cleanroom

4. EPICS server and CSS-BOY user screen development in progress

1. EPICS server added to hardware interlock system sbRIO
2. EPICS PVs generated programmatically by sbRIO's LabVIEW program based on network variables used in program
 - PVs follow naming convention used in RICH-I
3. CSS-BOY user screen developed for monitoring
 - Used CSS-BOY linking containers widgets and macros to place items for each sensor without having to manually type in all PV values

CS-Studio
RICH-II Hardware Interlocks

Interlock Summary: CAEN Enable Status: OKAY HV ENABLED LV ENABLED EPICS CONTROL

Sensor & Limit Monitoring Sensor Location

Electronic Panel

High Limit Feedback	Interlock State	Latched Status	High Limit Feedback	Interlock State	Latched Status
Temperature 1 23.20 °C	ENABLED	OK	Humidity 1 20.89 %	ENABLED	OK
Temperature 2 23.24 °C	ENABLED	OK	Humidity 2 20.87 %	ENABLED	OK
Temperature 3 23.28 °C	ENABLED	OK	Humidity 3 19.86 %	ENABLED	OK
Temperature 4 23.29 °C	ENABLED	OK	Humidity 4 19.85 %	ENABLED	OK
Temperature 5 23.24 °C	ENABLED	OK	Humidity 5 19.81 %	ENABLED	OK
Temperature 6 23.29 °C	ENABLED	OK	Humidity 6 19.80 %	ENABLED	OK
Temperature 7 23.23 °C	ENABLED	OK	Humidity 7 19.82 %	ENABLED	OK
Temperature 8 23.32 °C	ENABLED	OK	Humidity 8 19.71 %	ENABLED	OK
Temperature 9 23.32 °C	ENABLED	OK	Humidity 9 19.66 %	ENABLED	OK
Temperature 10 23.33 °C	ENABLED	OK	Humidity 10 19.72 %	ENABLED	OK
Temperature 11 23.28 °C	ENABLED	OK	Humidity 11 19.80 %	ENABLED	OK
Temperature 12 23.30 °C	ENABLED	OK	Humidity 12 19.84 %	ENABLED	OK
Temperature 13 23.43 °C	ENABLED	OK	Humidity 13 19.82 %	ENABLED	OK
Temperature 14 23.43 °C	ENABLED	OK	Humidity 14 19.79 %	ENABLED	OK
Temperature 15 23.47 °C	ENABLED	OK	Humidity 15 19.83 %	ENABLED	OK
Temperature 16 23.40 °C	ENABLED	OK	Humidity 16 19.80 %	ENABLED	OK
Temperature 17 23.49 °C	ENABLED	OK	Humidity 17 19.84 %	ENABLED	OK
Temperature 18 23.43 °C	ENABLED	OK	Humidity 18 19.83 %	ENABLED	OK
Temperature 19 23.39 °C	ENABLED	OK	Humidity 19 19.78 %	ENABLED	OK
Temperature 20 23.33 °C	ENABLED	OK	Humidity 20 19.83 %	ENABLED	OK
Temperature 21 23.38 °C	ENABLED	OK	Humidity 21 19.86 %	ENABLED	OK
Temperature 22 23.27 °C	ENABLED	OK	Humidity 22 20.88 %	ENABLED	OK
Temperature 23 23.38 °C	ENABLED	OK	Humidity 23 20.88 %	ENABLED	OK
Temperature 24 23.38 °C	ENABLED	OK	Humidity 24 21.82 %	ENABLED	OK

Nitrogen Volume

High Limit Feedback	Interlock State	Latched Status	High Limit Feedback	Interlock State	Latched Status
Temperature 25 24.88 °C	DISABLED	OK	Humidity 25 20.38 %	DISABLED	OK
Temperature 26 25.00 °C	DISABLED	OK	Humidity 26 20.82 %	DISABLED	OK
Temperature 27 23.85 °C	DISABLED	OK	Humidity 27 19.84 %	DISABLED	OK
Temperature 28 23.81 °C	DISABLED	OK	Humidity 28 19.84 %	DISABLED	OK
Temperature 29 23.81 °C	DISABLED	OK	Humidity 29 19.74 %	DISABLED	OK
Temperature 30 23.89 °C	DISABLED	OK	Humidity 30 19.80 %	DISABLED	OK
Temperature 31 23.80 °C	DISABLED	OK	Humidity 31 19.88 %	DISABLED	OK
Temperature 32 23.89 °C	DISABLED	OK	Humidity 32 19.93 %	DISABLED	OK
Temperature 33 23.81 °C	DISABLED	OK	Humidity 33 19.80 %	DISABLED	OK
Temperature 34 23.88 °C	DISABLED	OK	Humidity 34 19.81 %	DISABLED	OK
Temperature 35 45.00 °C	DISABLED	OK	Humidity 35 19.80 %	DISABLED	OK
Temperature 36 45.00 °C	DISABLED	OK	Humidity 36 19.80 %	DISABLED	OK
Temperature 37 45.00 °C	DISABLED	OK	Humidity 37 19.80 %	DISABLED	OK
Temperature 38 45.00 °C	DISABLED	OK	Humidity 38 19.80 %	DISABLED	OK
Temperature 39 45.00 °C	DISABLED	OK	Humidity 39 19.80 %	DISABLED	OK
Temperature 40 45.00 °C	DISABLED	OK	Humidity 40 19.80 %	DISABLED	OK
Temperature 41 45.00 °C	DISABLED	OK	Humidity 41 19.80 %	DISABLED	OK
Temperature 42 45.00 °C	DISABLED	OK	Humidity 42 19.80 %	DISABLED	OK
Temperature 43 45.00 °C	DISABLED	OK	Humidity 43 19.80 %	DISABLED	OK
Temperature 44 45.00 °C	DISABLED	OK	Humidity 44 19.80 %	DISABLED	OK
Temperature 45 45.00 °C	DISABLED	OK	Humidity 45 19.80 %	DISABLED	OK
Temperature 46 45.00 °C	DISABLED	OK	Humidity 46 19.80 %	DISABLED	OK
Temperature 47 45.00 °C	DISABLED	OK	Humidity 47 19.80 %	DISABLED	OK
Temperature 48 45.00 °C	DISABLED	OK	Humidity 48 19.80 %	DISABLED	OK

Gas System

High Limit Feedback	Interlock State	Latched Status
Air Flow 1 0.00 l/min	DISABLED	OK
Air Flow 2 0.00 l/min	DISABLED	OK
Air Pressure 1 200.0 psi	DISABLED	OK
N2 Flow 0.00 l/min	DISABLED	OK

INTERLOCK RESET

Expert Interface

UNDER DEVELOPMENT

CSS-BOY user screen running on development PC.

