

Minutes of Jan 21 2021 ProtoDUNE-ND Electronics Integration Meeting

- Attendees: Geoff, Trevor, Matt, Sasha, James, Karen, Steve, Anne, Ming Jeong, Arturo, Zelimir and Ting
- News and status of action tasks
 - There is a new detector layout of 2x2 in MINOS hall. Cryostat and MINERvA modules moved 1.5m upstream and raised by 18" to be centered on the beam line.
 - We like to fix the configuration before starting other equipment layout. Please take a look of the layout and send MinJeong and Ting comments/suggestions ASAP
 - We placed a full size MINOS rack (42U and 36" deep) on the west side of the cryostat vessel on the access platform. It is placed against the upstream handrail.
 - We like to reduce the height and depth of the rack to something like 27U and 24" deep. We need Sasha to provide the equipment sizes the light readout system planned for this rack
 - We also added the LAr filter tank to the model. It is under the access platform and located on the east side of the cryostat. James wants the LA filter tank to get closer to the cryostat to avoid loss of LAr. James to send Min Jeong the pipe length limitation.
 - Trevor reported that they are making good progress on PLC programming. He estimate the system should be ready before March for the next singleCUBE test run
 - Sasha has obtained the schematic light readout feedthrough board from Igor. We need to upload it to DUNE docDB together with Gerber file and BOM.
- MINOS VME crate for light readout use
 - Steve's slide is posted to indico, with many photos
 - Garry Drake confirmed the crates are VME64x
 - There 6U (Minder crate) and 9U (Master crates) versions of the crates.
 - The light readout needs the 6U crates (Sasha, please confirm)
 - The Wiener power suppliers have three pieces: chassis, power bricks and front panel.
 - The power bricks can be swapped out with chassis and front panel in place. There is a DB9 for communication of the power supply
 - The crates and Wiener can be integrated with BiRa RPS and switchbox for control and also with CANbus for remote monitoring
 - There are plenty of MINOS VME crates and Wieners for spares. We will need to test of them using the power load test stand. Linda and Ting are in discussion with PPD to take over the teststand.
 - Those racks and power suppliers were operated in MINOS rack with chilled water heat exchange.
 - The past MINOS operation experience from Steve suggest airflow cooling is a viable option.
 - We need to do engineering studies to decide airflow alone is adequate to operate the power supplier.
 - Linda and Matt will need to collect power and heat output of boards planned of the light readout for the engineering studies
- Light readout system board schematic
 - Sasha obtained schematics from ADC vendor (DUBNA design and fabricate the ADC board). The schematic is posted in DUNE docDB 21809
 - Matt asked the DC power need for the ADC. Sasha is to find out

- Sasha showed a schematics of prototype VGA board. This is a near-production board with only minor twist is expected. He says it is ready for review.
- Additional, Sashes included an overall schematics including e-PCB inside LAr, feedthrough board from Igor and VGA. It is very nice documentation for the system.
- We like to have those documentation in DUNE docDB to start safety engineering design review (SEDR).
- Matt asked for engineering design note for those boards.
- We also need Gerber file for PCB layout and MOB for component specification for the SEDR.
- There is a trigger board designed by DUBNA. This is very useful info for discussions of beam timing and trigger design for NUMI beam run. We like to hear more.
- Summary of action tasks:
 - Sasha to upload light readout feed-through board schematic
 - Sasha to provide size info of equipment planed for the rack on access platform
 - James to send Min Jeong the pipe length limitation.
 - Linda and Matt to perform cooling requirement studies of MINOS rack and Wiener power for light readout use
 - Sasha to provide info of ADC board DC power need
 - Sasha to collect Gerber file, BOM and engineering notes for E-PCB,ADC and ADC
 - Matt and Linda to start review of the light readout design documentation and prepare SEDR review procedure
 - Linda and Ting to follow through the discussion with PPD to obtain DAB load test-stand.
- We will meet in two weeks on Feb 4.