

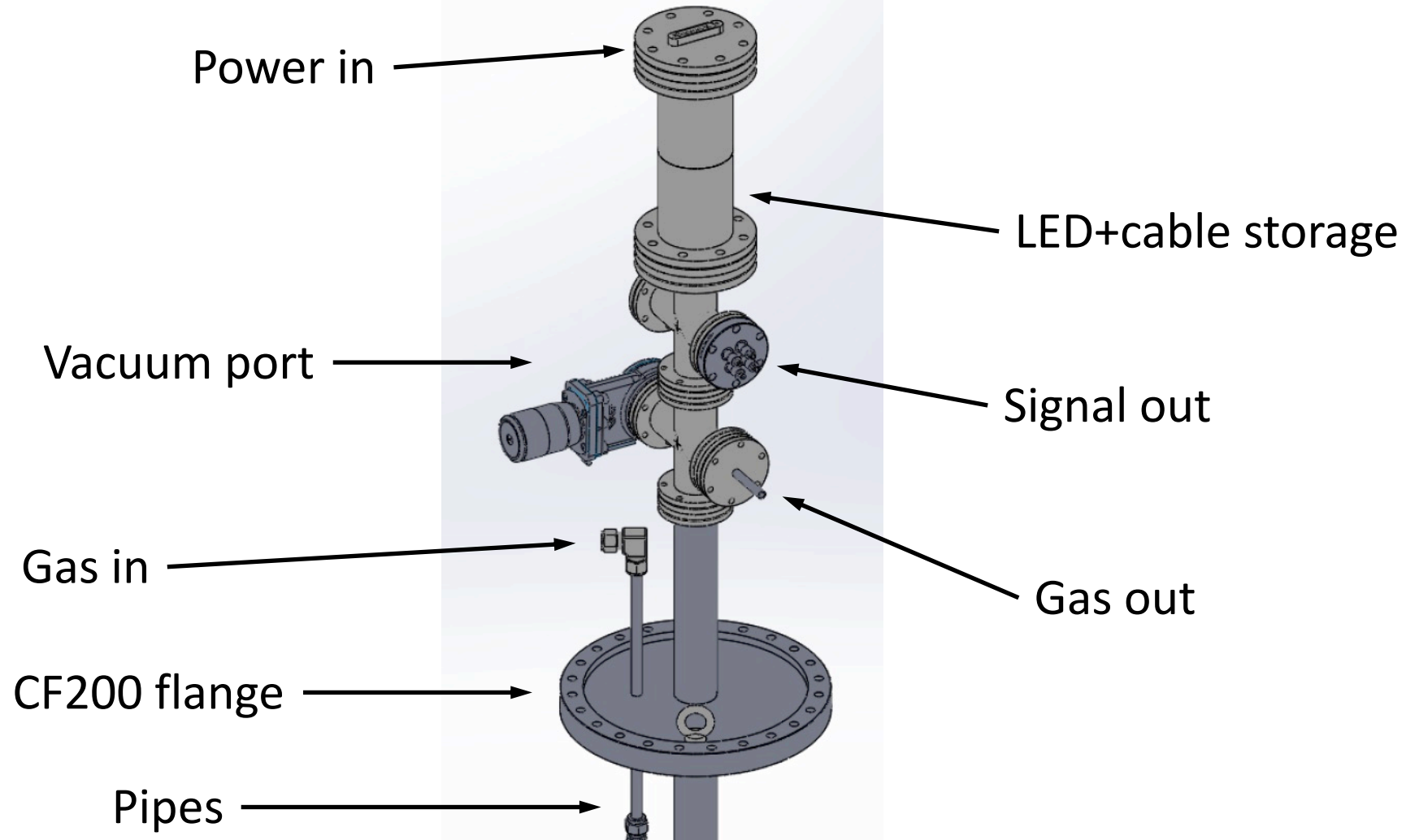
Integration of DArT in ArDM

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DArT current design.



INTEGRACIÓN OF DArT AND ArDM

- ArDM has been running in stand-alone mode for a long time.
- It would be desirable to maintain most of the ArDM functionalities in the new DArT runs.
- So, the development of DArT detector should be done independently of ArDM as much as possible.
- Nevertheless, DArT and ArDM would join in a given moment.
- Here is presented the aspects of the design that would affect to both DArT and ArDM.

Mechanical design.

- DArT requires a vertical cylindrical volume of diameter 200mm that goes from the top central CF200 flange to the center of ArDM.
- This volume should be free of obstacles.
- The new ArDM top photomultiplier support design should be done accordingly

Safety.

- DArT uses liquid argon (LAr), so it present a safety concern.
- Nevertheless the amount of LAr is marginal as compared to the mass of LAr in ArDM. Also, the physical parameters of DArT are imposed by the surrounding ArDM environment.
- The gas system of DArT is not operative in normal working conditions. Only when filling or emptying DArT the gas system becomes a safety concern, but during those punctual, not remote, operations human watch can handle safety exceptions.
- On the other hand, the ArDM safety system interact with the laboratory management, with the firemen and with the tunnel control. It have been used for a long time and it proved its reliability. I have no doubt that it should be used without modifications.
- Those considerations make us to conclude that, from the point of view of safety, DArT should be included in the, much more complex, ArDM safety system.
- The DArT parameters related to safety are pressure and temperature. Those will be read out by the DArT slow control.
- A simple way of integrate DArT in the ArDM safety system is to reserve 2 analog channels of the ArDM slow control for DArT pressure and temperature.
- Alternativily, a digital channel would allow the DArT slow control to raise an alarm to the ArDM safety system.

Physical space allocation

- The new space requirements of DArT are for the gas system.
- The more voluminous items in DArT gas system are:
 - The B50 pressurized atmospheric argon bottle.
 - The battery of 3 B10 depleted argon bottles.
 - The cryostat for depleted argon recovering.
 - Also would be an occasional use of a liquid nitrogen ranger for argon recovering.
- The place of the gas system and the path of the gas DArT lines have to be decided.
- Room on top of ArDM flange should be allocated for the DArT turbo-molecular vacuum pump (Pfeiffer HiCube 80 ECO).
- The DArT electronics crates also need some space. It has to be decided either if there is room in the current ArDM racks or a new rack has to be installed. This remark should be completed by the electronic people

Hi-Cube 80 Eco on top of ArDM

