16.0 Instrumentation


Cernox
thin film resistance temperature sensors offer a negative temperature coefficient, monotonic response over a wide temperature range, low magnetic field induced errors and high resistance to ionizing radiation. Instrumentation to read temperatures from these sensors may be found on the LakeShore site, above.

- Low magnetic field-induced errors
- High sensitivity at low temperatures and good sensitivity over a broad range
- Excellent resistance to ionizing radiation
- Fast characteristic thermal response times: 1.5 ms at 4.2 K; 50 ms at 77K (in bare chip form in liquid)
- High Temperature Cernox offers a wide temperature range from 0.3 K to 420 K
- Broad selection of models to meet thermometry needs
- Manufactured by Lake Shore, insuring control over wafer level quality and yield for the future
- Excellent stability
- Variety of packaging options
There are 8 Cernox temperature sensors inside the cryostat, requiring 16 pins of a 19 pin penetration. Three are "spares" T9 through T11 instrument the bore liner to allow control of the thin film bore heater. The bore is to be maintained at room temperature. These do not have electrical connections that pass through the pressure boundary. BNL-002 shows two of Item #35, the instrumentation penetration. The second pin/instrumentation flange is a spare, and is intended to accommodate other possible instrumentation BNL may want to add at a later date. The pdf of the instrumentation flange layout in BNL-014, shows 19 labeled pins matching the pin-out specs in the table.
Bore Heater

Bore Heater Silicon Sheet, 300 Watts (Max) 115v. Only installed at the cold end of the bore tube. Manual variable power supply will be used.
Capacitive level sensor on the left and the discrete level sensor is on the right.

Capacitive level sensor on the left and the discrete level sensor is on the right.
Lower capacitive level sensor, before the cover was closed.