

Sensors for Extreme Environments

APPLICATION

Three mini-DMS sensors were purchased for use in a cryogenic imaging system to measure the small gap between a 4K super-conducting magnetic sensor and the vacuum window to the outside world. The magnetic sensor surface will be coplanar with the FO sensor surfaces. The FO sensors will be looking at mirrored targets on the thin vacuum window to measure the gap. The three readouts will also be used for leveling the magnetic sensor coplanar to the window.

Sensor requirements:

- 3 mm range
- static speed
- high magnetic field
- moderate vacuum
- cryogenic temperature, 4°K
- Ø 1.54 mm max. allowable probe size



SOLUTION

- To operate in a high magnetic field at 4°K, probes were supplied using brass tips (**T3**) and teflon tubing (**C7**) to sheath the fiberoptic cable (there is no light in the vacuum chamber).
- To seal vacuum at the bulkhead, the customer selects the **Fv2** vacuum feedthru.
- To solve the problem of 3 mm range with a 1.54 mm diameter probe, we created the model **D47** sensor. This new model has almost the same range as our model D64, but the sensor tip diameter is much smaller, only 1.5 mm.

