

Cryogenic Temperature Calibration Standard

Model 20948



Description

Calibration Standards are used to verify operation of cryogenic freezers to insure proper temperature and avoid damage of high-value products. Burns Cryogenic Temperature Calibration Standards are sealed temperature assemblies for use in cryogenic freezers and other applications where temperature measurement is critical in a sub-zero environment.

Application

A temperature standard with at least 4 times the accuracy (10x preferred) of the freezer control sensor must be used to verify and calibrate the freezer. Freezers must maintain accurate temperature control to ensure storage of product and materials in a cryogenic state. Typically, requirements dictate that the freezer must be tested and calibrated by comparison to a standard to verify that the freezer is functioning properly.

The test sensor must be designed to accommodate a number of different freezer sizes and fit through the seal of the freezer door without compromising the temperature in the chamber. It is often times not practical or cost effective to use a separate probe design to calibrate each different cryogenic freezer. Thermocouples are often used to calibrate at cryogenic temperatures, but they do not comply with good calibration practice which recommends the test sensor be at least 10 times more accurate than the unit under test. Attempting to recalibrate used thermocouples by removing them from service is not recommended per ASTM E230-03.

Features and Benefits

- High accuracy meets comparison calibration requirements
- NIST traceable calibration from Burns Engineering NVLAP accredited lab
- Flexible design allows the user to position the probe to the proper immersion depth of the material being stored and will fit through the freezer door without compromising internal temperature control
- Can be recalibrated to extend service life
- Proprietary seal prevents moisture and contaminants from entering the sensor, which can cause an inaccurate temperature reading

Specifications

Temp Range: -196°C to +200°C

Element Configuration: Single element, 100 ohms at 0°C, .003925 ohm/ohm/°C nominal alpha

Stability: $\pm 0.015^\circ\text{C}$ (.0060 ohms) maximum shift at TPW after 1000 hours at 200°C

Repeatability: $\pm 0.02^\circ\text{C}$ (.0079 ohms) maximum shift at TPW after 20 cycles between 21°C and -196°C

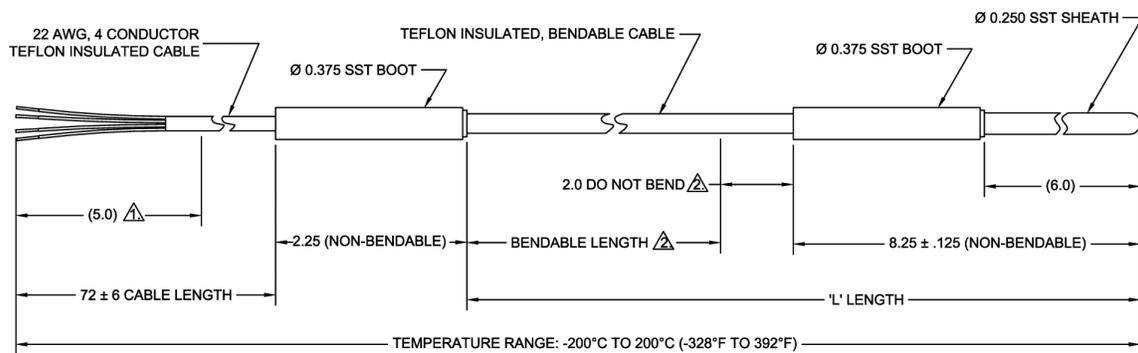
R0 Interchangeability: $R0 \pm 0.10$ ohms

Short-Term Repeatability and Hysteresis: $\pm 0.013^\circ\text{C}$ (0.0051 ohms) maximum change at TPW over any 5 consecutive thermal cycles from -196°C to +200°C

Vibration: Not for use in vibration service

Transition Fitting and Cable Temp Limits: -196°C to +200°C continuous

Insulation Resistance: 500 megohms minimum at 100 VDC at room temp



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