

# Thermal Sensor Specification Sheet

## 1. Overview

This document specifies the key characteristics of the thermal sensors to be used in the Canadarm2 Thermal Control System. These sensors are critical for real-time monitoring of component temperatures to ensure reliable thermal regulation in orbit.

## 2. Sensor Type

- Type:** Platinum Resistance Thermometer (RTD) or Thermistor
- Recommended Model:** PT1000 (RTD) / NTC 10kΩ (Thermistor)

## 3. Performance Specifications

Parameter	Specification
Operating Temperature	-100°C to +125°C
Accuracy	±0.5°C typical
Stability	±0.1°C per year
Response Time	< 1.5 seconds (in air)
Resolution	0.1°C
Self-Heating Effect	< 0.1°C (with ≤1mA excitation current)

## 4. Electrical Interface

Feature	Specification
Output Type	Analog voltage or I2C
Excitation Current	1 mA max
Supply Voltage	3.3V or 5V (depending on model)
Wiring	2-wire or 4-wire RTD
EMI Shielding	Yes (space-rated harness)

## 5. Mechanical Form Factor

Attribute	Value
Sensor Body	Bead or cylindrical probe

Attribute	Value
Size	3mm bead or 25mm × 3mm probe
Cable Type	Teflon-insulated, low-outgassing
Connector	Micro-D for flight hardware
Mounting Option	Adhesive-backed or bracket mount

## 6. Environmental Compatibility

- **Radiation Tolerance:** 50 krad
- **Vibration Tolerance:** 15g RMS
- **Thermal Cycling:** ±125°C, 200 cycles
- **Outgassing Compliance:** ASTM E595 qualified

## 7. Compliance & Standards

- NASA GEVS
- CSA Spaceflight Hardware Standard
- RoHS & REACH Compliant

## 8. Notes

- Sensor should be thermally bonded to component surface using space-grade adhesive or mechanical mount.
- Redundant sensors may be placed at critical nodes (e.g., joints, electronics bays).

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