

## Extreme Temperature (-170C to +125C) Electronics for Nanorover Operation

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### Abstract

The design of the electronics control and data system for the extreme environment seen by the Muses-CN 1.3Kg, 288 cubic cm nanorover is presented. The Muses-CN electronics is a low mass, low volume, low power electronics platform that must operate over the -170C to +125C temperature range and 1 AU free space radiation environment. The Muses-CN electronics is a 3 Watt system that allows for 0.05 to 10 MIPS processing power to be used to control 10 motors for mobility and science measurements, along with interfacing to the IR and AXS spectrometer, APS camera and robotic telemetry signals. Design trades and approach for a low power electronics system with space and commercial grade electronics parts operating in this temperature range is discussed. The unique packaging constraints on the Chip on Board implementation over this temperature range are also discussed as are component temperature results.