The Microsat Cryocooler System (MCS) and Cubesat Cryocooler System (CCS) are radiation-hard, space-qualified integrated cryocooler assemblies (ICA) for miniature satellite platforms. The MCS and CCS have been developed on AFRL and NASA SBIRs, respectively, and are comprised of a high-reliability miniature cryocooler, a set of miniature Low Cost Control Electronics (mLCCE), and supporting thermal management components.

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Off-the-shelf solution to many needs

Configurable and customizable

Chosen by NASA, JPL and others
The mLCCE supports any of a wide range of linear cryocoolers in its design output power range, nominally 25W, and with minor adaptation, can accommodate rotary coolers as well. This paper highlights the evolution of the mLCCE supported by test results from the flight module phase of the more mature MCS program. For the MCS, a space-grade mLCCE rated for 55Krad has been built and integration tested with the AIM SX030. The test results for the system are discussed herein, and the overall cubesat-compatible mechanical subsystem design is also presented, including a description of the thermal management approach.

More broadly, the Iris Technology mLCCE represents a software-based general purpose, radiation hardened platform for the control of a variety of device types such as motors, actuators, solar power / battery charging systems, and optical bench thermal stabilization.

**Heat Load vs Input Power**

![Heat Load vs Input Power Graph](image_url)

**Heat Load vs Input Power to mLCCE**
SX030 Cooler- 140 K at 28 Vin