

CryoAdvance® 100 Heat Load Map

Applicable Products	CryoAdvance® 100		
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Purpose

This document is intended to explain the heat load vs temperature capabilities of the CryoAdvance® 100 when used with a Coolpak 2000e helium compressor.

Background

The tradeoff between additional heat load and base temperature of a cryostat is based on the cooling capacity (also called cooling power) of the system. Cooling capacity dictates the amount of additional wiring (DC, RF, etc.) and accessories that can be brought into the cold space while maintaining the same base temperature. The Gifford-McMahon cryocooler and the Coolpak 2000e helium compressor both help to improve the CryoAdvance® 100's cooling capacity with increasing heat loads. The higher the system's cooling capacity, the better it can maintain the same base temperature with an increased heat load (up to the point that the heat load exceeds the system's cooling capacity).

Applicable Theory

The CryoAdvance® 100 has base specifications of >90mW of cooling capacity at 4.2K. This allows for combinations of up to 25 DC lines and 4 RF lines to be used in the system, as well as a variety of sample mounts, all while maintaining a low base temperature. Figure 1 shows the effect additional heat load has on the base temperature of the system.

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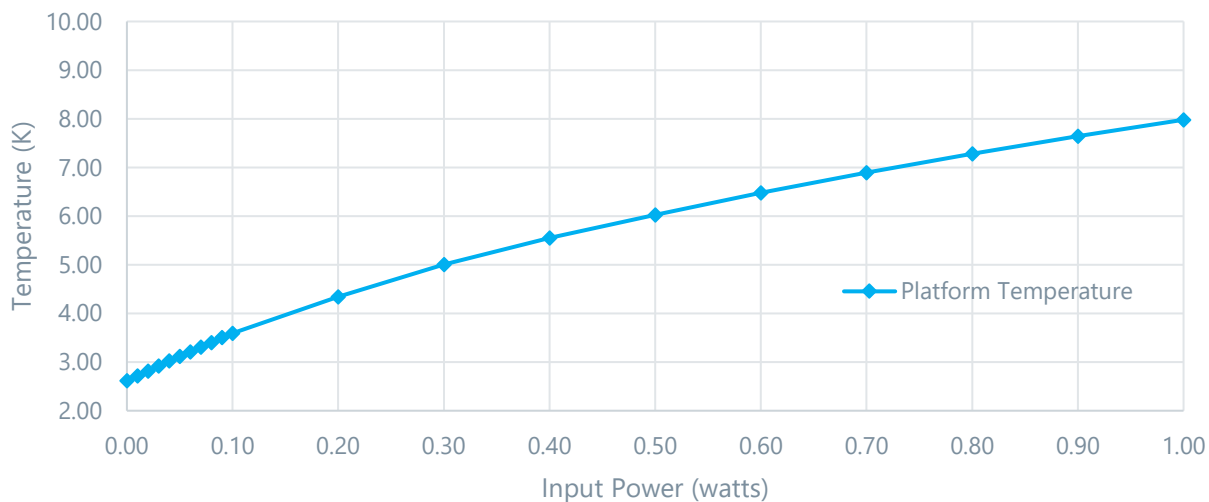


Figure 1: Heat Load vs Base Temperature on the CryoAdvance 100

The tradeoff for an increased heat load is an increase in base temperature. The higher temperatures can be kept to a minimum if proper wire management and routing is followed.

Summary

The CryoAdvance® 100 is a highly configurable 4.2K cryostat system with the ability to add DC and RF wiring as well as different accessories and sample mounts. To learn more about the CryoAdvance® 100, [contact](#), a Montana Instruments sales engineer.