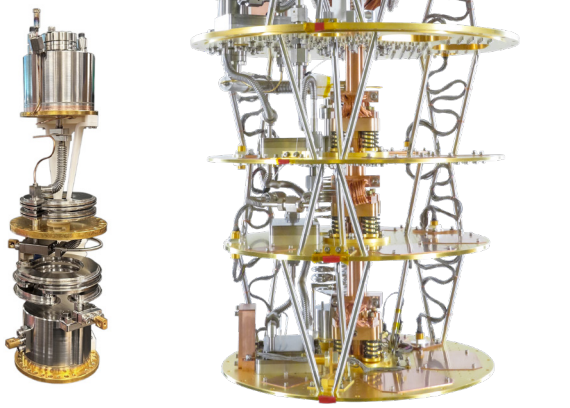
HPD
LF-600
Cryogen-Free Dilution Refrigerator for Quantum Computing

Overview

The HPD LF-600 Dilution Refrigerator, featuring the Aspect DR core and Frostbyte™ software, is designed for quantum computing research and development. It offers high cooling power, state-of-the-art secure software, and a 5 mK option to meet the demands of quantum computing research.



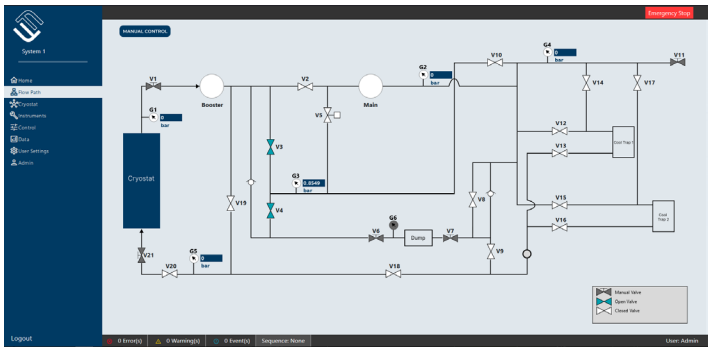
Aspect DR core with laser-weld heat exchangers provide high reliability with best-in-class cooling power and He3 efficiency.

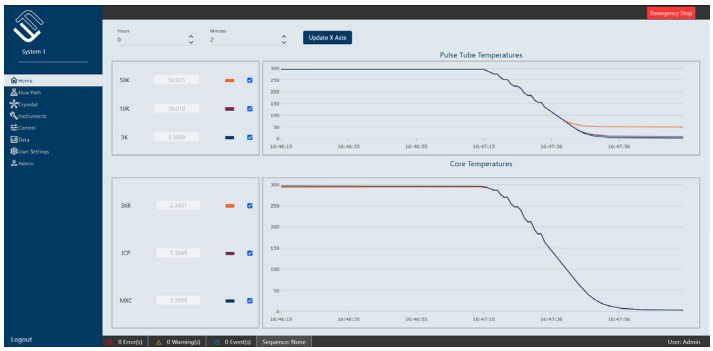
Features / Benefits

High cooling power	• 600 µW at 100 mK and 20 µW at 20 mK • Base temperature of <10 mK, with 5 mK option available • Aspect DR core: Streamline sintered silver process and high efficiency Laser Welded Heat Exchangers
Large experimental space	• 305 mm mixing chamber plate • 2 ISO 100 line-of-sight ports and accommodating up to 55 SMA coaxial lines • Light-tight all-copper welded MC shield with an IR black coating • 4K plate and specialized 10K plate for cold electronics and thermalization of experimental components
SmartGHS powered by Frostbyte	• Complete system automation • User authentications offering four secure access levels: Admin, Advanced, Basic, Read • Access via web browser and remote control can be achieved via scripted REST API • Runs on Debian Linux blade delivered with system or on customer machine
Engineered for easy service and long-term reliability	• All-metal seals within the helium (He) flow path and valve position monitoring • Convenient access to pumps, vacuum pump-out ports, and LN2 precool connections • Manufactured in the U.S.A.

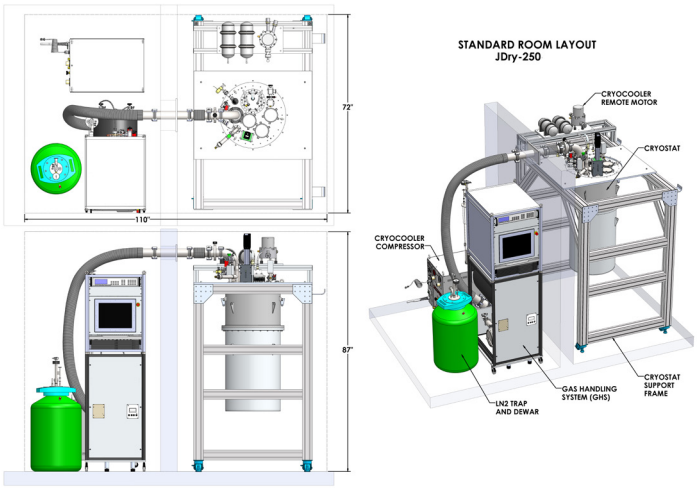
Design Specifications

	HPD-LF-600-10	HPD-LF-600-5
Base Temperature	<10 mK (standard system)	5 mK
Cooling Power	600 µW @ 100 mK	600 µW @ 100 mK
	20 µW @ 20 mK	20 µW @ 20 mK
Mixing Chamber Plate Diameter	305 mm	305 mm
Cooldown Time (Room Temp to 10 mK)	With LN2 precooling: ≤36 hours;	With LN2 precooling: ≤36 hours;
	Without LN2 precooling: ≤48 hours	Without LN2 precooling: ≤48 hours
Top Flange NW-100 to Experimental Wiring	2 * 100 mm diameter (NW ports)	2 * 100 mm diameter (NW ports)
User Control Interface	Frostbyte	Frostbyte
He-3 Requirements	22 L He-3	22 L He-3

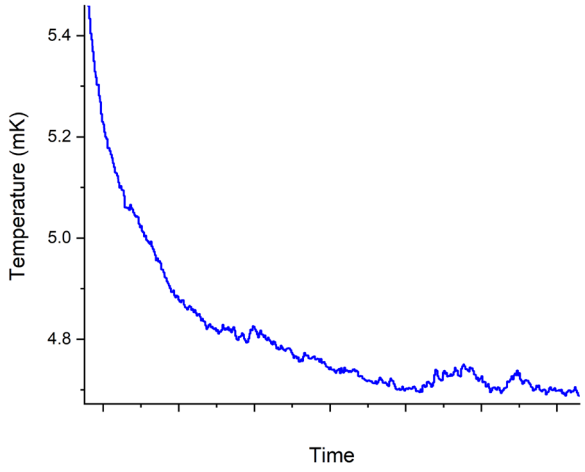




Frostbyte™ supports comprehensive system automation, and its intelligent sensing capability actively monitors all DR system diagnostics. It features four distinct user permission levels.



Standard Room Layout



FormFactor Boulder
4601 Nautilus Court South
Suite 100
Boulder, Colorado 80301
Phone: 303-447-2558
www.formfactor.com

LF-600-DS-0224