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

› Overview

The HPD XLF-600 Dilution Refrigerator, featuring the Aspect DR core and Frostbyte™ software, is designed for quantum computing research, development, and deployment. It offers high cooling power, expansive experimental access, and state-of-the-art secure software to meet the demands of quantum computing R&D and quantum data centers.

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

› Features / Benefits

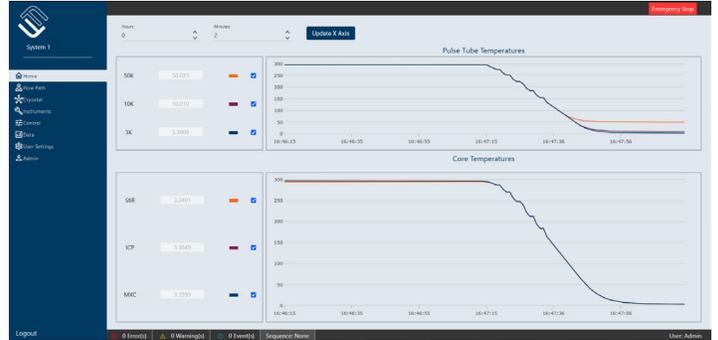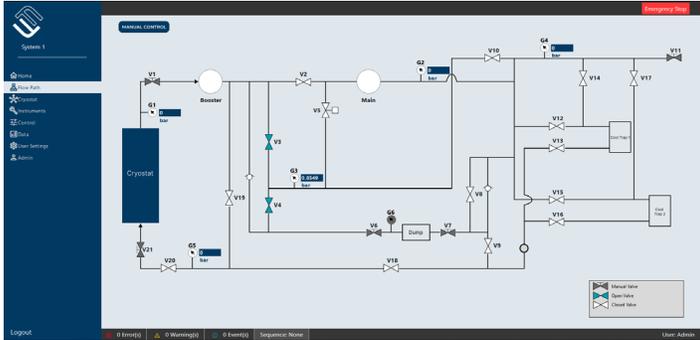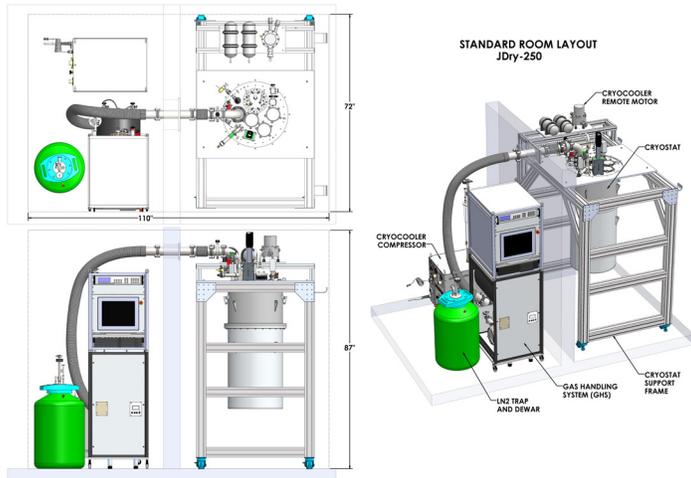|	
High cooling power	• 600 µW at 100 mK and 20 µW at 20 mK • Base Temperature < 10 mK • Aspect DR core: Streamline sintered silver process and high efficiency Laser Welded Heat Exchangers
Large experimental space	• 508 mm mixing chamber plate • 12 ISO 100 line-of-sight ports and accommodating up to 300 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

FormFactor™

Design Specifications

Base Temperature	<10 mK
Cooling Power	600 μW @ 100 mK
	20 μW @ 20 mK
Mixing Chamber Plate Diameter	508 mm (20 inches)
Cooldown Time (Room Temp to 10 mK)	With LN2 precooling: ≤36 hours;
	Without LN2 precooling: ≤48 hours
Top Flange NW-100 to Experimental Wiring	12 * 100 mm diameter (NW ports)
User Control Interface	Frostbyte
He-3 Requirements	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

XLF-600-DS-0224

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