Product Overview

PPMS® EverCool® II

The New Physical Property Measurement System (PPMS) with EverCool-II Cryogen-Free Cooling Technology

The Quantum Design PPMS EverCool-II is an exciting cryogen-free enhancement to our industry-leading Physical Property Measurement System (PPMS) product line. It has been optimized **to eliminate any need for buying cryogens, ever.** The improved efficiency of the integrated cryocooler-based design now enables the initial cool-down procedure with only a standard helium gas cylinder. As usual, we deliver fully automated operation that will maintain optimal liquid helium levels.

The PPMS EverCool-II is:

- **Reengineered** for completely cryogen-free operation
- **Reconfigured** to be more affordable, while still offering compatibility with our complete line of measurement options
- **Available** as a complete system, or as an upgrade to your existing PPMS

The PPMS EverCool-II
a truly cryogen-free system
for the measurement platform
you've come to trust

Features

1. "Energy smart" Quantum Design engineered and built air-cooled helium compressor.
2. All EverCool-II functions are fully integrated in the PPMS MultiVu software for MS Windows, allowing automatic operation of all functions, including helium level control in the PPMS EverCool-II Dewar.
3. Use of a single cold head minimizes power consumption and cost of maintenance.
4. "Gas-only cool down": Initial cool down of system does not require transfer of liquid helium; one standard cylinder of standard high purity helium gas is sufficient to fill the dewar.
5. HiTc superconducting magnet leads that allow substantially reduced helium boil-off associated with magnet charging.
6. Cryocooler operation can be controlled automatically by the PPMS operating system or manually by the user to minimize any interference with sensitive measurements.
7. The EverCool-II Dewar includes a hook up and gas regulator for external He gas supply to automatically supply He gas for initial cool down of the system.
8. EverCool-II is compatible with all the PPMS options **except** the Dilution Refrigerator and Scanning Probe Microscope.
9. The PPMS EverCool-II Dewar is available with a new PPMS system, or as an on-site upgrade to installed PPMS systems.

The EverCool-II Dewar is not compatible with 14-tesla or 16-tesla longitudinal and 7-tesla transverse magnet systems.

No EverCool Dewar can retain helium during rapid pressurization, as safety relief ports are required. If a magnet quench occurs, all liquid He may be lost. Now that the EverCool-II Dewar runs on a helium gas cylinder, one can expect to quickly regain full measurement capability.

Note: Detailed configuration information available in the "PPMS EverCool-II Configuration Worksheet"

Specifications

Model: P935A New system orders; P935B Upgrades to existing systems

System Requirements: PPMS with 9-Tesla or smaller longitudinal magnet; or systems with no magnets.

Typical Helium liquefaction Rate: 5.0 liters/min He (g) at room temperature [about 8 liters/day (l)] (Static system: temperature control shut down, persistent magnet).

Typical Helium consumption Rate: About 300 liters/day He (g) (about one standard "A" size helium cylinder per month.

Nominal Liquid Helium Capacity: 6 liters

Liquid Helium Volume Maintained in the Dewar (Under Normal Conditions): 4 liters

Estimated Cool-Down Time (He gas): <30 hours

Physical Configuration (PPMS Dewar):

- **Cryocooler with compressor:** (a) EverCool-II Dewar with integrated cold head; (b) Pumping station upgrade as a separate pumping module and (c) Compressor with "energy smart" power controls.
- **Air-Cooled Compressor Power Requirements:** Outdoor: High Voltage 380-480 V @ 50/60 Hz, 3-Phase, 30A or Low Voltage 200-240 V @ 50/60 Hz, 3 Phase, 50 A breaker. Indoor: 200-240 V @ 50/60 Hz 1 Phase Power requirement of 11 KVA – outdoor and 2.5 kVA – indoor.
- **Water-Cooled Compressor Power Requirements:** Indoor High Voltage 380-480 V @ 50/60 Hz, 3 Phase, 30A, or Low Voltage 200-240 v @ 50/60 Hz, 3 Phase, 50 A breaker.
- **Water-Cooled Compressor Water Requirements:** Minimum Flow Rate 4.92 L/min. @ 28°C. Temperature Range 4°C to 28°C.
- **Maintenance Time on Compressor:** After 20,000 operational hrs (recorded by compressor).
- **Maintenance Time on Cold Head:** After approximately 20,000 operational hrs.

Quantum Design

Quantum Design, Inc.
10307 Pacific Center Court, San Diego, CA 92121
Tel: 858.481.4400 Fax: 858.481.7410
www.qdusa.com