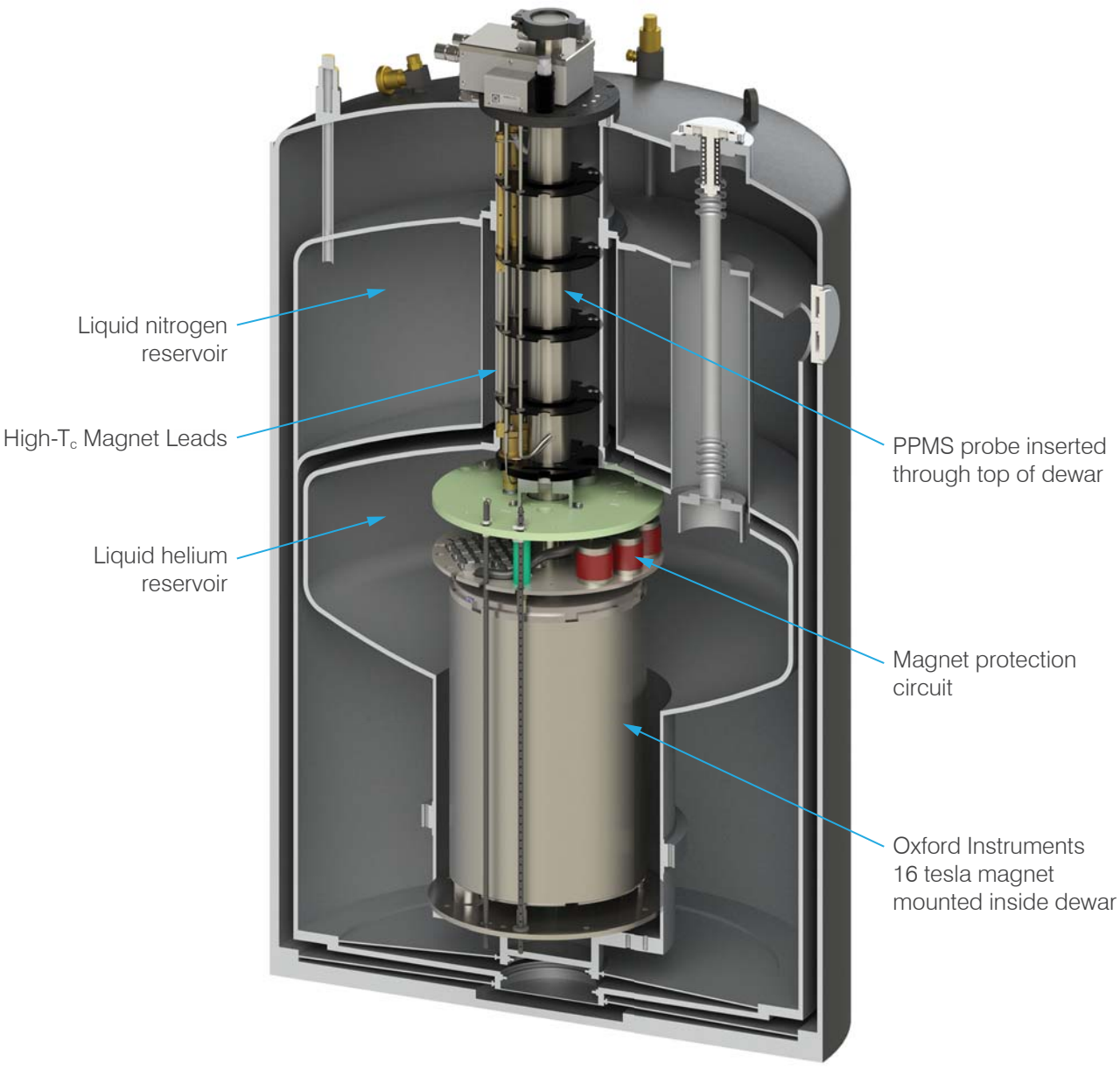
16 Tesla PPMS® (Model PPMS-16)

In its continuing effort to provide systems that offer the widest range of performance, Quantum Design offers the PPMS-16. At the heart of this system is an Oxford Instruments NbTi/Nb3Sn hybrid 16 tesla (@ 4.2 K) longitudinal magnet. Because of its size, the magnet is mounted directly into a specially designed bottom loading, high capacity, nitrogen shielded, helium dewar. The PPMS probe is then inserted into the dewar/magnet assembly. This design optimizes cryogenic efficiency leading to an expected He boil-off rate of ~6 liters/day. Installed on the system is a pair of specially designed High-Tc magnet leads which greatly reduce the helium boil-off during high field magnet field sweeps.

In addition to the 16 tesla high field magnet, this PPMS contains a state-of-the-art HCH High Current (120A, 10V) power supply. Utilizing Quantum Design's HCH architecture, this supply will provide continuous charging through zero field. Overvoltage protection and very low noise are inherent features of this design.



Cutaway view showing the PPMS-16 magnet and probe inside its bottom loading, nitrogen jacketed dewar

As with all Quantum Design instruments, the PPMS-16 is a fully automated laboratory workstation. This system has been designed primarily for performing high field magnetometry using Quantum Design's Vibrating Sample Magnetometer (VSM).

Other measurements include:

- Electromagnetic (DC Resistivity, Electrical Transport, Sample Rotator)
- Thermal (Heat Capacity, Thermal Transport)
- Magnetic (VSM Oven, Torque Magnetometry, AC Susceptibility, AC in Dilution Refrigerator, Ultra Low Field, Magneto-Optic)
- Ultra-low temperature (He3, Dilution Refrigerator, Adiabatic Demagnetization)
- Expansion (Dilatometer)
- High Pressure (Hydrostatic Pressure Cell)

Specifications (Standard system specifications apply except where noted):

Model	M605
Magnet:	±16 Tesla Longitudinal Field
Magnet Type:	NbTi/Nb_3Sn hybrid
Field Homogeneity:	0.1% over 1 cm DSV
Slew Rate:	0.05 to 16.6 mT/sec. (typical)
Field Resolution:	0.03 mT
Remanent Field:	~750 Oe over the sample volume
Location of Magnet:	Magnet is mounted in PPMS helium dewar
Stray Field (estimated):	Radial distance at 5 Gauss to 2.8 meters (unshielded) and 1.75 meters (with P755 Stray Field Shiled) Axial distance at 5 Gauss to 3.0 meters (unshielded) and 2.8 meters (with P755 Stray Field Shiled)
Power Supply:	New HCH 120A, 10V power supply
Special Helium Dewar:	Bottom-loading, High-Capacity, Liquid Nitrogen Jacketed
Helium Capacity:	~60 liters with magnet and probe in dewar
Nitrogen Capacity:	~74 liters
Static LHe Boil-off:	~3.6 liters/day
LHe Boil-off:	~6 liters/day (under normal usage)
Power Requirements:	200 to 240V, 50/60 Hz, 20 A

System Availability

Estimated delivery of the PPMS-16 is ~12 months after receipt of an order.

Quantum Design

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

Specifications subject to change without notice
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