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Product Introduction

Model PPMS-16:
16 Tesla PPMS

(Features/Specifications)

In its continuing effort to provide systems that offer the widest range of performance, Quantum Design introduces the PPMS-16. At the heart of this system is an Oxford Instruments NbTi/ Nb_3Sn 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 for 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-T_c magnet leads. These leads greatly reduce the helium boil-off during high field magnet field sweeps.

Besides the 16 tesla high field magnet, this latest PPMS will contain a state-of-the-art 120A, 10V power supply. Utilizing Quantum Design's relayless H-plate architecture, this supply will provide continuous charging through zero field. Overvoltage protection and very low noise are inherent features of this design.

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 the new P525 Vibrating Sample Magnetometer System), electromagnetic (Models P400 DC Resistivity and P600 AC Transport Measurement Systems) and thermal transport property measurements (Models 650 Heat Capacity and P670 Thermal Transport Systems). *[Although this system can accommodate the Model P500 AC Susceptibility/DC Magnetization Measurement System (ACMS), the ACMS performance will be degraded due to the reduced region of homogeneity. Therefore, the standard specifications of the P500 ACMS option do not apply when installed into a 16-tesla PPMS system.]*

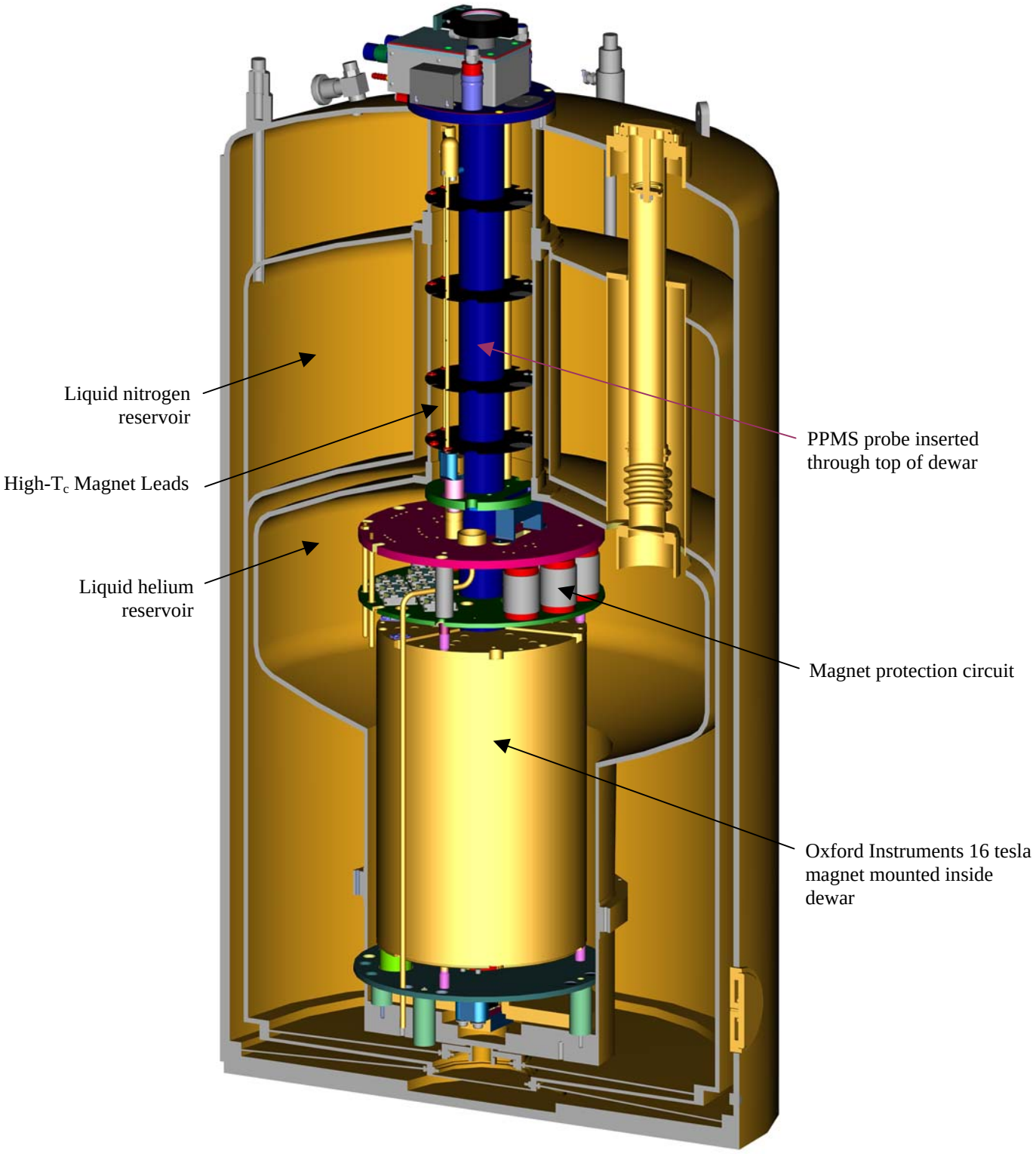
System Availability

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

Preliminary System Specifications

(Standard system specification apply except where noted):

Magnet:	±16 Tesla Longitudinal Field
Magnet Type:	NbTi/Nb_3Sn hybrid
Field Homogeneity:	0.1% over 1 cm DSV
Slew Rate:	0.05–21mT/sec. (typical)
Field Resolution:	0.03 mT
Remanent Field:	<150 Oe over the sample volume
Location of Magnet:	Magnet is mounted in the special PPMS helium dewar.
Power Supply:	New 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:	200-240V/50 or 60 Hz, 20 A



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