

PPMS[®]

Physical Measurement Property System

Product Description

The Quantum Design PPMS represents a unique concept in laboratory equipment: an open architecture, variable temperature-field system, designed to perform a variety of automated measurements. Available measurement options include all required hardware and electronics to immediately begin collecting publication-quality data, while the system is also easily adapted to custom user experiments. Sample environment controls include fields up to ± 16 T and a temperature range of 1.9 to 400 K. The expandable design enables combining many features in one instrument to make the PPMS the most versatile system of its kind.

Cryogen-Free Option Available as Upgrade:

The Quantum Design PPMS EverCool-II[®] is the cryogen-free upgrade to the industry-leading Physical Property Measurement System (PPMS) product line. Available as an upgrade to existing PPMS installations.

Features

- Compatible with more than 20 Quantum Design Measurement Options which seamlessly integrate with the MultiVu software environment
- Versatile sample mounts couple easily to the 12 electrical leads built into the cryostat insert for consistently reliable electrical access
- Software controls for the temperature and magnetic field readily enable the automation of complex data acquisition procedures
- The included Model 6000, a sophisticated microprocessor-controlled device, eliminates the need to use or purchase external bridges, current sources, or voltage sources for basic system operation
- Sample chamber has 2.6 cm diameter to accommodate custom probes
- Interface with external 3rd party instruments, whether controlling these from within MultiVu or directing the PPMS from external software, such as NI LabVIEW.

PPMS with optional liquid nitrogen-jacketed helium dewar



Magnet Configurations

- Select from 9 T, 14 T, or 16 T longitudinal solenoid magnet configurations
- For transverse fields, a 7 T split-coil configuration is available
- Systems may also be ordered without any installed magnet

Available Measurement Options

- **Electrical Transport:**
AC Resistance (ETO); DC Resistance;
Horizontal Rotator; Pressure Cell (Transport)
- **Magnetometry:**
VSM + Large Bore; VSM Oven;
AC Susceptibility (ACMS II); FORC Software;
Fiber Optic Sample Holder (FOSH);
Pressure Cell (Magnetometry); Torque Magnetometer
- **Thermal Measurements:**
Heat Capacity; Thermal Transport (TTO); Dilatometer
- **Sub-Kelvin Capabilities:**
Dilution Refrigerator; Helium-3 Refrigerator;
Adiabatic Demagnetization Refrigerator (ADR);
Sub-Kelvin Measurement Options (AC Resistance,
DC Resistance, Heat Capacity, AC Susceptibility)
- **Multi-Function Probes:**
User-designed experiments using MFPs;
Photoconductivity; CryoFMR;
Optical Multi-Function Probe
- **Raman & FMR Spectroscopy:**
Raman Laser and Spectrograph;
CryoFMR and PhaseFMR
- **Optics:**
Light Sources; Optix Breadboard
- **PPMS Microscopy:**
SPM for PPMS

Specifications

PPMS

Temperature Range:	1.9 to 400 K
Temperature Stability:	$\pm 0.2\%$ ($T < 20$ K), $\pm 0.02\%$ ($T > 20$ K); (typical)
Temperature Accuracy:	$\pm 1\%$
Temperature Sweep Rate:	6 K/min. cooling, 10 K/min. warming; (typical)
Cool Down Time:	40 minutes (typical time to stable 1.9 K from 300 K)
Field Range:	± 9 T, ± 14 T, ± 16 T
Field Uniformity*:	9 T: $\pm 0.01\%$ over 5.5 cm on-axis 14 T: $\pm 0.1\%$ over 5.5 cm on-axis 16 T: $\pm 0.1\%$ over 1.0 cm on-axis
Max Field Charging Rate:	9 T: 190 Oe/s (> 1 T/min.) 14 T: 100 Oe/s (≈ 0.5 T/min.) 16 T: 160 Oe/s (≈ 1 T/min.)
Min Field Charging Rate:	0.1 Oe/s
High Vacuum (optional)	0.1 mTorr

PPMS EverCool II

Specifications identical to standard PPMS with the following additions:

Field Range:	± 9 T only
He Liquefaction Rate:	8 liquid liters / day; typical without additional heat load (equiv. 5 gaseous liters / minute)
Liquid Helium Capacity:	4 liters maintained under normal operating conditions; 6 liters total

**Uniformity range is centered 4.05 cm above the surface of a standard transport puck; this point represents the center of an installed VSM coil set. Specifications subject to change without notice*

Installed PPMS systems can be upgraded with cryogen-free EverCool® II option



10307 Pacific Center Court, San Diego, CA 92121
Tel: 858.481.4400 Fax: 858.481.7410
www.qdusa.com 1070-002 Rev. B0