

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.

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 or Python.



*PPMS with optional
liquid nitrogen-jacketed
helium dewar*

Magnet Configurations

- Select from 9 T, 14 T, or 16 T longitudinal solenoid magnet configurations
- Systems may also be ordered without any installed magnet

Available Measurement Options

- **Electrical Transport:**
AC Resistance (ETO); DC Resistance;
Horizontal Rotator; Pressure Cell (Transport);
van der Pauw-Hall
- **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 (MFPs):**
User-designed experiments using MFPs;
Suitable for user-designed experiments
Chip carriers: LCC (48 and 20 connections) and DIP
(16 connections) variants available
- **FMR Spectroscopy:**
Broadband (2-40 GHz) CryoFMR
- **Optics:**
Optical Multi-Function Probe; Photoconductivity MFP;
Light Sources



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PPMS Probe

Specifications

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 (≈ 1 T/min.) 16 T: 160 Oe/s (≈ 1 T/min.)
Min Field Charging Rate:	0.1 Oe/s
High Vacuum (optional)	< 0.1 mTorr

**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*