

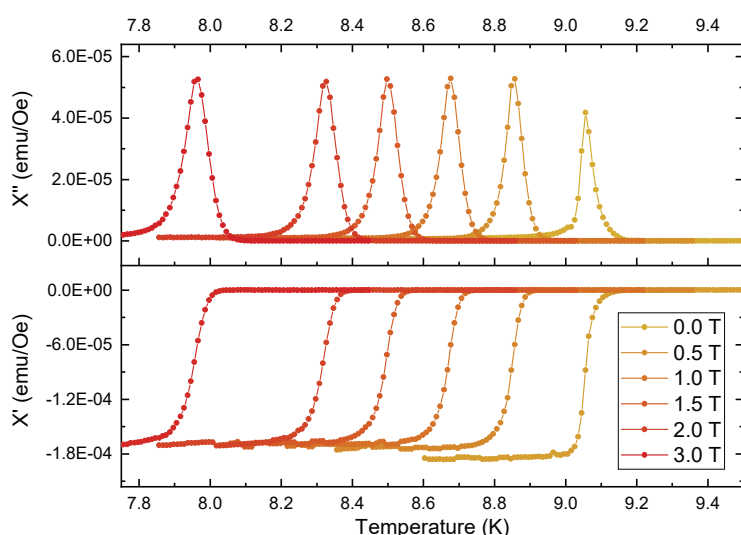
AC Susceptibility (ACMS II)

DynaCool (D505) / PPMS (P505) / VersaLab (V505)

The AC Measurement System (ACMS II) is a versatile susceptometer for magnetic measurements. In addition to a mutual induction-based determination of the AC susceptibility, the ACMS II enables the user to perform DC magnetization measurements without having to change sample mounts, electronics, or the hardware configuration. The coil set assembly can be used over the entire field and temperature range of the base system.

Key Features:

- Automated nulling procedure utilizes trim coils to minimize background contributions to the measured AC susceptibility
- Multi-point background subtraction schemes available to improve AC susceptibility accuracy
- Susceptibility can be parameterized either as a total moment and phase angle $[\chi, \theta]$ or as a real and imaginary component $[\chi', \chi'']$
- Automated touch-down procedure preserves sample centering across large changes in temperature
- Included sample holders allow for various types of samples to be measured including: small single crystals, thin films (can be oriented with applied field in- or out-of film plane), sintered polycrystalline pieces, and loose powders
- Capability to record higher harmonic data is available with an optional upgrade (P505H)



Temperature dependence curves of the real and imaginary components of AC susceptibility in a NbTi sample for a family of fixed magnetic fields. The onset of temperature of the superconducting state is suppressed lower for increasingly high field strengths.

AC Measurement System (ACMS II) Specifications

(for zero-field)

AC Susceptibility $[\chi]$

Sensitivity*: $1 \cdot 10^{-8}$ emu @ 10 kHz
Phase Accuracy: $\pm 0.5^\circ$

DC Magnetic Moment $[m]$

Sensitivity: $5 \cdot 10^{-6}$ emu
Accuracy: $\pm 1\%$

Drive Parameters

Amplitude: 0.05 to 15 Oe (peak)
Frequency Range: 10 Hz to 10 kHz

Coil Set Dimensions

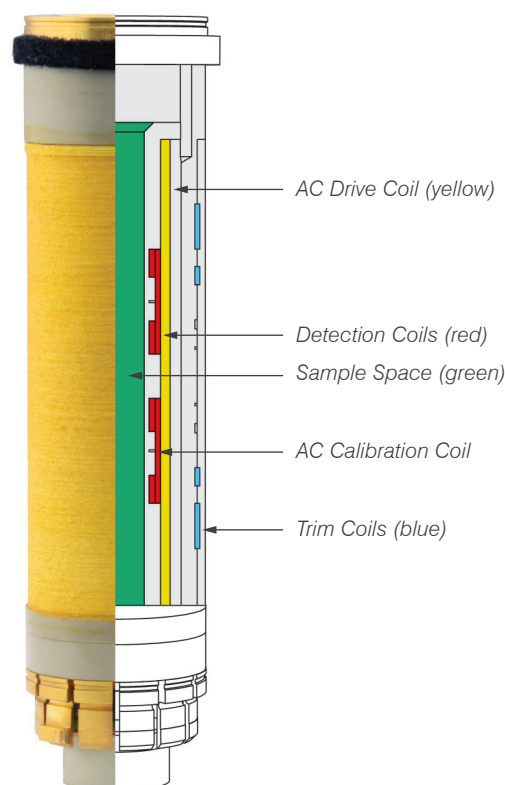
Bore Diameter: 8 mm

Operational Range

1.8 to 400 K; 0 to 16 T

*Expect an order of magnitude decrease in sensitivity for every order of magnitude decrease in drive frequency.

Specifications are subject to change without notice.



Schematic view of the ACMS-II coil set internal components showing the various individual constituent coils.