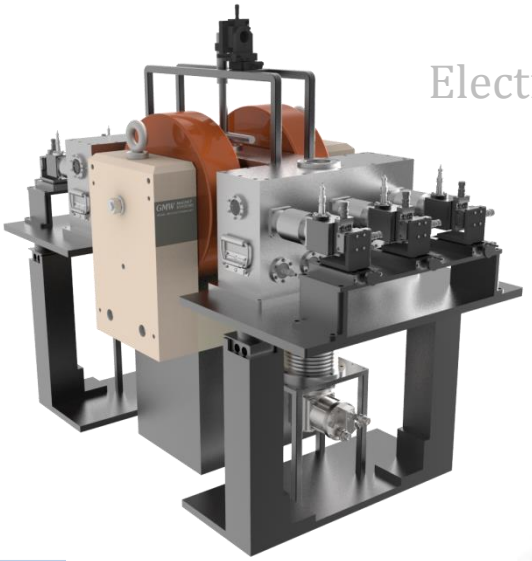

MCPS-CF

Electromagnet-based Cryogenic Probing Solutions

The Model MCPS-CF enables cost effective, stable, reliable and convenient probing of devices and circuits at very low temperatures and at large magnetic fields. Built-in vibration isolation, smart thermal management, and engineered thermal expansion compensation makes this system ideally suited for a wide range of applications spanning from nanoelectronics (spintronic research, molecular electronics, etc.) to space based electronics. The system uses closed-cycle refrigerator and proprietary thermal management permitting inexpensive and fast operations. Built-in vibration isolation minimizes the vibrations to industry-standard levels. Ultra-stable micro-manipulated stages permit accurate and reproducible contact of the probe tip on device features. Wide selection of the probes and wafer chucks permit applications ranging from ultraprecise, fA-scale measurements, RF measurements and many more.

Key Features

- Cost- competitive, stable, reliable, and convenient to use
- Temperature range from 10K to 400K (0.1K accuracy) with 4.2K to 480K (optional)
- Closed- cycle refrigerator for cost effective cryogen-free operations
- Characterization of up to 1” diameter samples (up to 2” diameter optional)
- DC to 67GHz measurements
- 4 micromanipulated probe arms (up to 6 available in optional configurations), with highly accurate XYZ and optionally θ adjustment
- Thermally anchored probe tips
- Temperature- controlled radiation shield
- Clear view top window (high purity quartz)
- High frequency vibration damping
- Integration with electromagnet for horizontal magnetic field generation
- High level of customization to accommodate most exotic probing needs

Specifications :

Sample size	- Up to 50mm round
Thermal specifications	- Cryogen-free closed cycle refrigerator including cold head, compressor, chiller and required helium hoses - **Temperature range**: standard 10K to 400K, 4.2K to 480K available as options - **Temperature accuracy**: 0.1K - Thermally anchored prone arms and radiation shield - Temperature controlled (heater) chuck - Temperature monitoring of the chuck and probe arm Temperature monitoring of radiation shield is optional
Vacuum	- Base pressure 1.0 x 10^{-5}torr standard, down to sub-10^{-6} torr optional
Optics	- **Additional viewports**: can be added by customer request - **Window materials**: fused silica, custom materials and coatings are available
Microscope:	- Extra-long working distance stereo-zoom microscope - Eyepieces with reticles: 10x, 20x - **Working distance**: 75mm at 10x magnification - Trinocular vision for simultaneous eyepiece viewing and camera viewing - Coaxial illumination with optional programmable shutter
Cameras:	- Digital cameras ranging from 1 megapixel to 10 megapixels. Included with the camera is software for image and video capture as well as dimension measurement capability

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Specifications (cont.):

Probes	- DC - RF (various) - Active - High power
Micromanipulators	- Various resolutions and ranges available
Cables available	- Cryogenic temperature- compatible coaxial cables - Cryogenic temperature-compatible coaxial triaxial cable
Wafer chucks available	- Grounded - Isolated - Coaxial - Triaxial - All wafer chucks are planar to within 15µm at room temperature - Thermal expansion is compensated to a large part by design
Software	- LabView-based software for computer control and monitoring of temperatures. Several temperature testing sequences are pre-programmed and custom sequences can be easily programmed by the end user
Vibration isolation	- Vibration isolation table with air damping system - Vibration- isolating bellows
Options	- Fiber optic probes - High level of customization to the customer needs
Magnetic field generation	- Horizontal magnetic field, up to 0.5T Range of power supplies available (unipolar or true bipolar) Hall probe for active magnetic field control is optional

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