

CPS-25-CF-HV-10K

Helium-Free Cryogenic Probe Stations For Testing at 10K to 460K Range at Extended Vacuum Levels



The model CPS-25-CF-HV enables cost effective, stable, reliable and convenient probing of devices and circuits at very low temperatures at improved vacuum levels. Built-in vibration isolation, smart thermal management, and use of low outgassing materials in combination with improved sealing makes this system ideally suited for a range of applications where better vacuum levels are needed, such as graphene research, molecular electronics, etc. 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.

Key Features

- Cost- effective, stable, reliable, and convenient to use for up to 25mm diameter wafers
- Temperature range from 4.5K to 470K (0.1K or better accuracy and stability)
- Closed- cycle refrigerator for cost effective cryogen-free operations
- Characterization of up to 25mmx25mm samples
- DC to 67GHz measurements with proper probes selected
- 4 micromanipulated probe arms (up to 8 available in optional configurations), with highly accurate XYZ and optionally θ adjustment, with up to 4" X, 1 $\frac{3}{4}$ " Y and 0.5"Z
- Thermally anchored probe tips
- Temperature- controlled radiation shield
- Improved vacuum rating of the components
- Clear view top window (high purity quartz)
- High frequency vibration damping
- High level of customization to accommodate most exotic probing needs



Specifications :

Chuck size

- Up to 25mm, 50mm or 100mm

Thermal specifications

- Cryogen-free closed cycle refrigerator (Sumitomo model 204N) including cold head, compressor, chiller and helium hoses.
- **Temperature range:** below 10K to 480K and more are available
- **Temperature accuracy:** 0.1K
- **Temperature stability:** ± 50 mK below 100K
- **Temperature resolution:** 0.001K
- Thermally anchored probe 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 better 1.0×10^{-5} torr standard with all components at room temperature with proper vacuum pump selected, down to sub- 10^{-7} torr optional with all components at room temperature
- Gas port and pressure relief valve are included in base system

Optics

- **Additional viewports:** can be added by customer request
- **Window materials:** fused silica or quartz, custom materials and coatings are available

Microscope:

- Qioptiq's Optem Zoom 70 system (4um resolution) is standard, Zoom 125 or zoom 160 system are available as options, as well as less expensive solutions
- Coaxial and ring light LED illumination
- Optional cooled shutter
- Either boom mounted or with base mounted on fine resolution XY or XYZ slides

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 (coaxial or triaxial)
- RF (various)

Micromanipulators

- Various resolutions (40TPI or 3 μ m is standard, better resolution is available with extra cost) and ranges (2"x1"x0.5", 4"x1"x0.5" or 4"x1.75' x 0.5")available

Cables available

- Cryogenic temperature- compatible coaxial cables
- Cryogenic temperature-compatible triaxial cable
- Cryogenic RF cables
- Cryogenic non-magnetic RF cables

Wafer chucks available

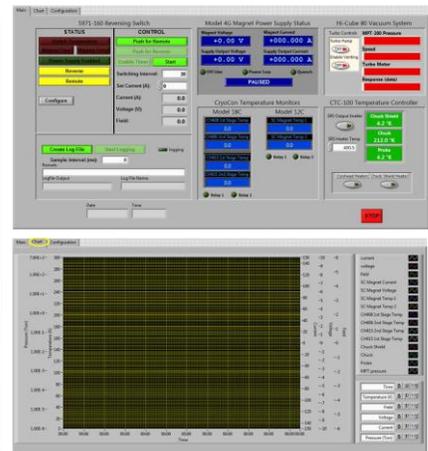
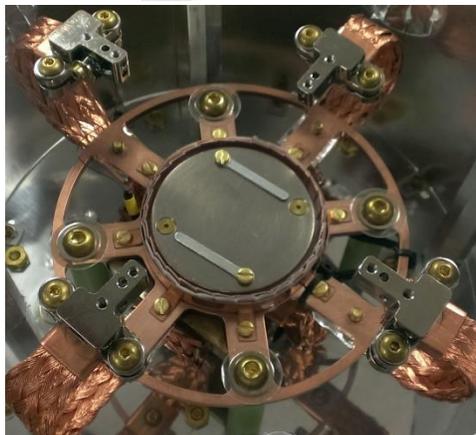
- Grounded
- Isolated
- Coaxial
- Triaxial

Software

- LabView-based open-source software

Vibration isolation

- Vibration isolation table with air damping system
- Vibration- isolating bellows
- Vibrations at the chuck < 1 μ m



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