

# CryoPS

Dedicated probe station systems that provide precisely-controlled environments.



## Application

DC, RF, mmW Tests;

MEMS, NEMS, Optoelectronics Tests;

Super conductor Tests.

,etc.

## Features

- Precisely controlled environment – High vacuum chamber with 4.4K-675K stage temperature range.
- Upgradable – Upgradable in positioners, temperature range, vacuum range, and optical access.
- Affordable – Using liquid cryogen, very competitive price among the products of the same grade.
- Compact Footprint – Perfect for academic and laboratory research settings with limited space.

## Description

KeyFactor's CryoPS offers a cryogenic environment with  $10^{-3}$  to  $10^{-6}$  mbar vacuum level. It meets the requirements for non-destructive measurement of the electrical properties of materials and early-stage electronic devices.

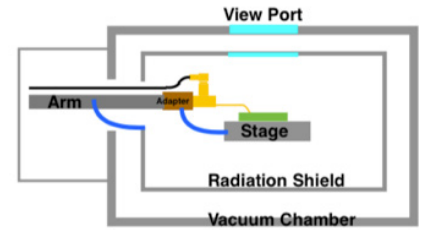
Users can start with a standard system and upgrade to a higher level probe station with higher vacuum level and temperature range. Dedicated design is also available upon request.

Typical applications include sampling IV and CV curves over a wide range of temperatures, measuring microwave and electro-optical responses, characterizing magneto-transport properties in variable magnetic fields, Hall-effect measurements to understand carrier mobility, and a variety of other material studies.

# CryoPS Probe Station

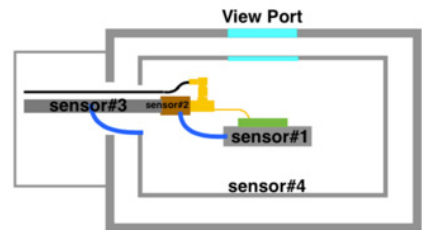
## The key factors to your DUT(sample device) temperature.

The temperature of the device under test (DUT) would be affected by heat radiation and transmission from the parts around it. If without comprehensive thermal anchoring to these parts, the real temperature of the DUT would be much higher than you see on the temperature controller. That is because the temperature sensor is always installed on the stage but not the DUT. To avoid erroneous results, we apply the innovative thermal anchoring technique to probes, arms and radiation shields.



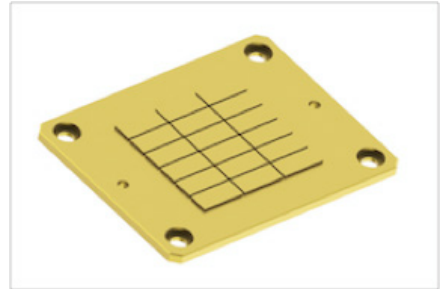
## Comprehensive temperature monitoring.

There are four temperature sensors in our system to provide you with a accurate thermal profile of the test environment. One sensor is installed on the sample stage and the others are installed on the radiation shields, probe arms, and probes separately.



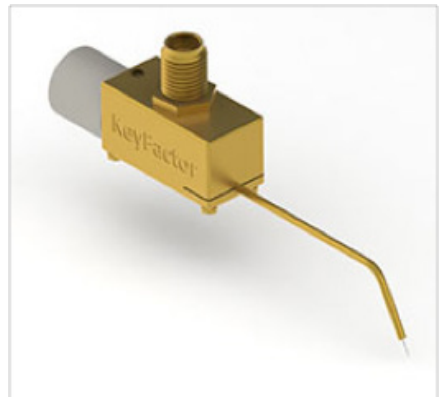
## Various sample holders.

The most common sample holder is a OFC holder grounded to the System chasis. It is used when no background signal transmission is needed on the DUT. We also provide coax and triax versions with low noise for high resolution signal measurement. All holders are Type II gold plated.



## High performance probes available.

FemtoProbe is compatible with CryoPS. This set up will provide guarded probe tips to triax source and measurement units. It significantly reduces system noise level and will enable you to measure signals down to 1 femtoamp resolution.



## Specifications

### Chuck

Diameter	2" to 4" (6" to 8" available upon request)
Material	OFC
Plating	Type II gold plated
Planarity	<50µm@475k

### Temperature System

Temp. Range	4.4K-475K, extended range 675K available upon request.
Accuracy	100mK±0.001*target temp.
Stepping	100mK
Stability	100mK
Heating	Heating cartridge
Cooling Source	LHe or LN2
Cryogen Container Volume	40L, larger volume available upon request.
Cryogen Consumption	Around 3L down to basic temperature.
Cooling Time	Around 45 min down to basic temperature.
Heating Time	Around 30 min up to 475K.
Temp. Sensors	3 PCS, one for stage monitoring and controlling, the others for probe and radiation shield monitoring.

### Chamber and Vacuum

Material	Aluminum (Ni-Plated)
Vacuum Level	10 <sup>-3</sup> mbar, 10 <sup>-6</sup> mbar with Turbomolecular pump available upon request.
Pump Down Time	Depending on chamber volume. Generally around 15~30min.
Viewport	2" to 4" clear view, larger size available upon request.
Viewport Material	Fused quartz (chamber) and IR absorbing window (radiation shield).

### Probing

Positioners	4 sets, up to 6 sets available upon request.
Probe Holders	4 sets, up to 6 sets available upon request.
X-Y-Z travel range	25mm*25mm*10mm, larger travel range available upon request.
Accuracy	1µm to 10µm, customized.
Probe Mount and Arm	Thermally anchored.
DC Probes	Low noise coax probes, electrical isolation >100G (coax or triax feedthroughs).
RF Probes	Frequency range DC up to 67GHz.
Fiber Optic Probes	Available for electro-optical measurements.

## Vision System

Microscopes	Mono, stereo, and Superscope available.
Magnification	Varies according to models.
Camera	Watec WAT-231S2 or equivalent cameras.
Monitor	DELL

## Microscope Mounting & Movements

Boom Stand for stereo microscope	Pivoted structure for stereo microscope or monoscope.
Rigid Bridge for Superscope or SlimScope* (Not a standard module, available upon request.)	
X-Y travel range (fine)	25mm*25mm, larger travel range (50mm) available upon request.
Resolution	1 $\mu$ m
Pneumatic lift	40mm
Manual lift	50mm

## Ordering Information

CryoPS-2in	2in sample holder-chuck set up.
CryoPS-4in	4in sample holder-chuck set up.

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