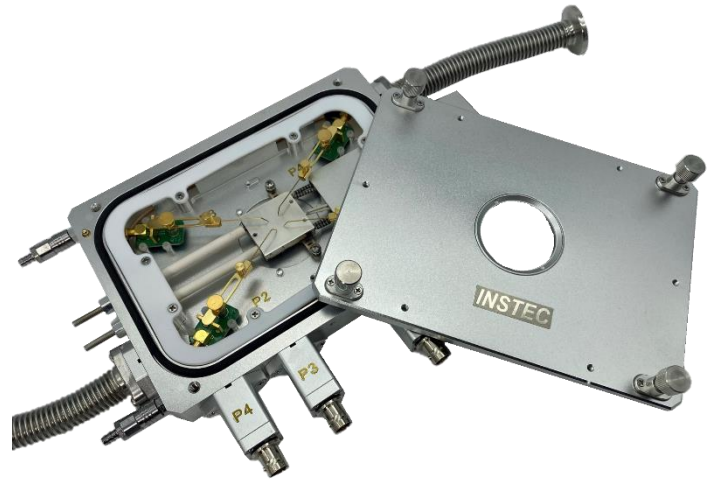


DESCRIPTION

The **HCP421V-PM** Mini Probing Stage is designed for applications where both thermal and low-pressure atmospheric control are critical. Samples are loaded onto the high-uniformity silver heating block and held in place with optional sample clips. Manually positioned probes can then be placed onto sample pads larger than 100 microns. The vacuum tight chamber supports vacuum pressures as low as to 1 mTorr; great for preventing oxidation, condensation, and icing. The sample area is large enough to accommodate a variety of samples, including wafers from 10mm to 30mm.



KEY FEATURES

System Integration

Integrates with modern instruments thanks to small footprint tabletop design; low profile and low working distance for optical instrument compatibility

Wide Temperature Range

Heating up to 400°C (Ambient or Vacuum), Cooling down to -196°C with Optional LN2-P Cooling System

Rapid Heating Rates

+150°C per minute @ 100°C max heating rate

Accuracy and Stability

A pt100 platinum RTD sensor is embedded into the sample heating and cooling block to guarantee high temperature accuracy and stability. The RTD sensor is calibrated to measure the surface temperature of the sample heating block – giving the closest and most accurate reading of the sample possible

Manual Prober positioning

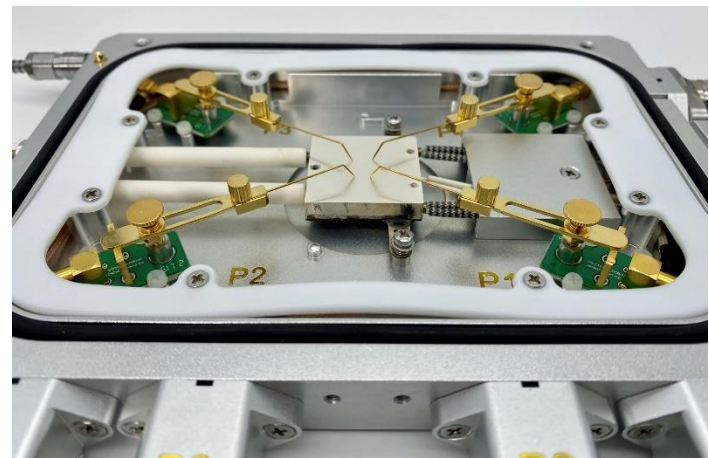
Manually positioned electrical probes are easily landed onto samples with pads larger than 100 microns. Simply adjust the tension screw, then lift the prober onto the pad. Spring force holds the probes in position. Multiple tip sizes/ dimensions available

Vacuum Tight Chamber

Allows for vacuum pressures as low as 1 mTorr to prevent oxidation, condensation, and icing. Easily connects to vacuum pump via either of 2 KF-16 vacuum ports. Multiple ports are included for mounting vacuum gauge to high-side of chamber without the need for Tee connections

Additional Features

- Includes standalone **mK2000** temperature controller
- Includes 'InstecApp' Windows compatible software for optional operation via PC
- User replaceable optical glass windows that can be easily upgraded for IR or UV compatibility



THERMAL SPECIFICATIONS

Temperature Control	<i>mK2000</i> with programmable precision LVDC switching PID method
Thermal Block	Silver
Temperature Minimum	-196°C (with optional liquid N2 cooling)
Temperature Maximum	400°C (600°C non-vacuum option available)
Maximum Heating/ Cooling Rate	+150°C per min @ 100°C, -50°C per min @ 100°C
Minimum Heating/ Cooling Rate	±0.01°C per min
Temperature Sensor	100 Ω Platinum RTD
Temperature Resolution	0.01°C (RTD)
Temperature Stability	±0.05°C (>25°C), ±0.1°C (<25°C)
Power supply	Universal power input
Software	Windows software to record and export temperature vs. time data

OPTICAL SPECIFICATIONS

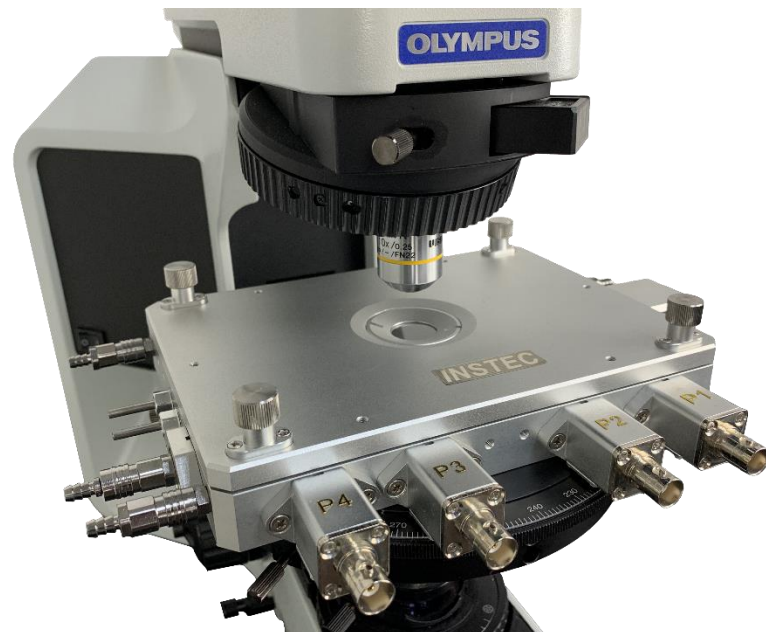
Optical access	Reflection (custom transmission option available)
Optical windows	Removable and exchangeable windows permit full-spectrum transparency
Minimum Objective Working Distance	8.5 mm
Top Window	Ø38mm
Top Viewing Angle	±60.0° from normal
Window Defrost	Integrated external window defrost

STRUCTURAL SPECIFICATIONS

Sample Area	Fits Ø10mm – Ø30mm wafers and devices (28mm x 30mm)
Chamber Height	6.3mm
Atmosphere Control	Vacuum tight chamber rated to 1mTorr
Frame Cooling	Integrated frame cooling channels (optional chillers available)
Frame Dimensions	180 mm x 130 mm x 27 mm
Weight	1350 g

ELECTRICAL FEATURES

Electrical Probes	Tungsten-rhenium DC probes (other options available)
Probe Positioning	Manually positioned probers for pads larger than 100mm
Connectors	Coaxial BNC (default), or triaxial BNC
Sample Surface	Grounded (default), floating, or triaxial
Ferromagnetic properties	Ferro-magnetic components (non-ferromagnetic model available for Hall Effect measurement)



OPTIONS



Active Sample Cooling

Achieve below ambient temperatures and/or controlled sample cooling with **LN2-P** cooling accessory; includes tubing and Dewar (3L, 10L, or 30L). Enables active cooling with rates of up to -50°C per minute (at 100°C).



Frame Cooling

Safety always comes first – keep the frame of the thermal stage cool and safe to touch with an optional water circulator (see **C100W** chiller). Frame cooling option allows thermal control of the frame independent of the sample area and aids in preventing frost buildup when the sample is being cooled below freezing temperatures.



Spacer Set

Increase chamber height with fitted **spacer kit and custom cover lid** to allow fitment of taller samples, while maintaining the gas tight capability with the top cover.



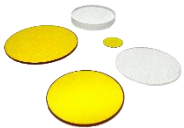
Microscope

Stereo microscope or tube microscope offering superior performance for a variety of research applications with specifications to satisfy a wide range of demanding observational requirements. (see **TPM310-TR**)



Camera

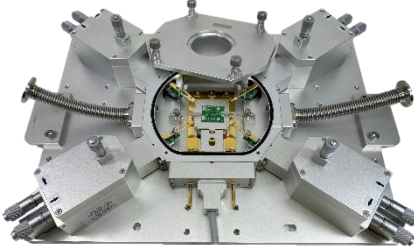


Integrate digital image acquisition with sample temperature overlay. Includes software (WinDV2 via InstecApp), USB 2.0 connection, 1.92-megapixel resolution, and standard C-mount microscope connection. (see **MITO2**)



Windows

Additional or alternate available windows are Sapphire, BaF2, CaF2, ZnSe.

SIMILAR PRODUCTS

	TP102V-MPS	HCP402SV-MPS	HP1000V-MPS
			
Temperature Range	-25°C to 150°C	-196°C to 400°C	RT to 1000°C
Sample Cooling	Water*	LN2	-
Sample Area	40mm x 40mm	50mm x 50mm	25mm x 25mm

*Requires Water-cooling for thermoelectric heating and cooling modules

Other products to consider....



HCP421V-PM mini probe stage with 28mm x 28mm sample area. Temperature range -190°C to 400°C. Low-vacuum tight chamber with gas purge capabilities. Probes not movable with cover lid on. Option to add electrical feedthroughs.



TP102V-PM thermoelectric mini probe stage with 40mm x 40mm sample area. Temperature Range -25°C to 150°C. Low-vacuum tight chamber with gas purge capabilities. Probes not movable with cover lid on. Option to add electrical feedthroughs.



HP1000V-PM high-temperature mini probe stage with 16mm x 16mm sample area. Temperature range ambient to 1000°C (heating only). Low-vacuum tight chamber with gas purge capabilities. Probes not movable with cover lid on. Option to add electrical feedthroughs.



HCP621G-PMH hall effect measurement stage with 28mm x 28mm sample area. Temperature range -190°C to 400°C. Low-vacuum tight chamber with gas purge capabilities. Probes not movable with cover lid on. Option to add electrical feedthroughs.