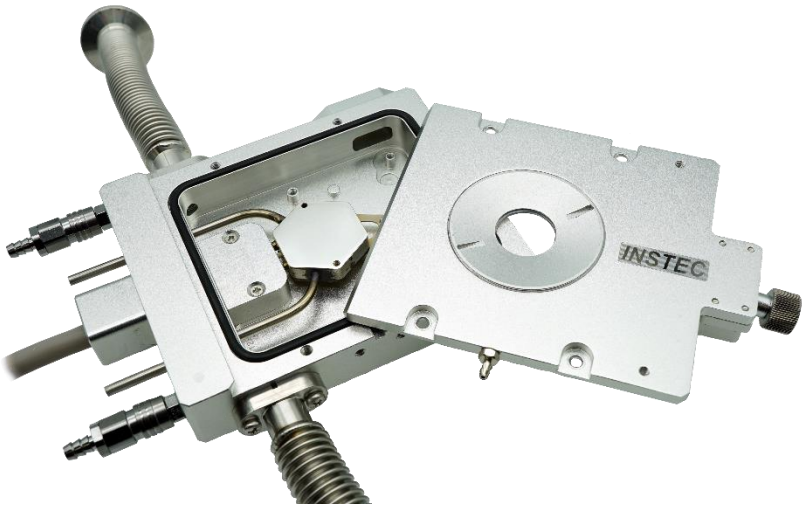
HCP421V

Compact Vacuum Thermal Plate

DESCRIPTION



The **HCP421V** gas-tight thermal plate is designed for applications where both thermal and atmospheric control is critical. Using a silver heating and cooling block, this plate provides a wide temperature range with exceptional thermal uniformity. The gas tight chamber creates a closed environment to eliminate oxidation, aid in humidity studies, or conserve expensive reacting gases. Additionally, up to 2 optional feedthrough ports are available for electrical connection and probing. The extremely compact design makes the HCP421V highly compatible with a majority of reflection-mode optical systems.

KEY FEATURES

Compact Design

Suited for use on upright microscopes, optical benches, and other instruments with limited space.

Wide Temperature Range

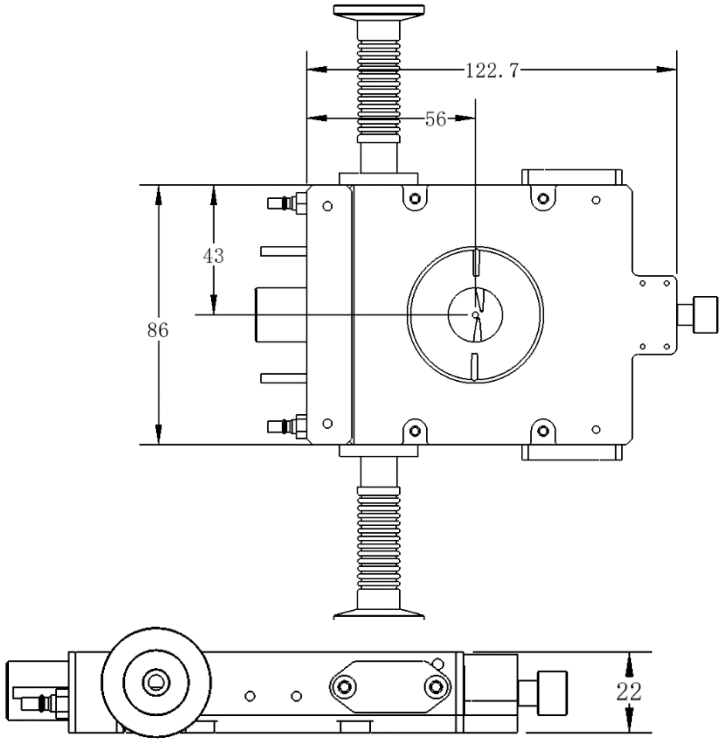
-190°C to 400°C (with optional ***LN2 cooling accessory***)

Rapid Heating Rates

+150°C per minute max rate

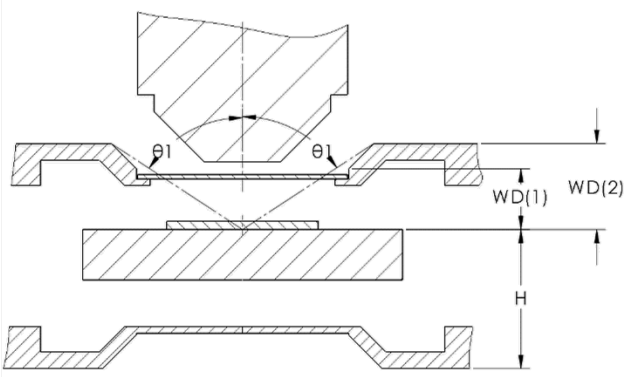
Vacuum Tight Chamber

Vacuum-sealed chamber to prevent condensation and oxidation. Also allows for ultra-low or high temperature experiments with minimal contamination of the sample. Features flexible KF16 flanges.



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 temperature of the surface of the sample heating block – giving the closest and most accurate reading of sample possible. Additional sensor and alternative sensor, such as a thermistor, options are also available.



HCP421V	
WD(1)	5
WD(2)	7.5
H	15
θ1	57°

Additional Features

- Includes standalone ***mK2000*** temperature controller
- Includes 'InstecApp' Windows compatible software for optional operation via PC
- Comes standard with optical glass windows that can be easily replaced with IR or UV transparent glass.

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THERMAL SPECIFICATIONS

Temperature Control	***mK2000*** with programmable precision switching PID method
Thermal Block	Silver
Sample Thermal Cover	Optional removable inner sample cover with additional window
Minimum Temperature	-190°C (with optional **liquid N2 cooling**)
Maximum Temperature	400°C
Temperature Sensor	100 Ω Platinum RTD
Maximum Heating Rate	+150°C per minute at 100°C
Maximum Cooling Rate	-50°C per minute at 100°C
Minimum Heating and Cooling Rate	±0.01°C per minute
Temperature Resolution	0.01°C
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-time data

OPTICAL SPECIFICATIONS

Optical access	Reflection capability only (see ***HCS421VXY*** for transmission capability)
Optical windows	Removable and exchangeable windows permit full-spectrum transparency
Minimum Objective Working Distance	5 mm
Window Aperture	Ø18mm (Ø 22mm window)
Top Viewing Angle	±57.0° from normal
Window Defrost	External window defroster

STRUCTURAL SPECIFICATIONS

Sample Area	Ø26 mm
Chamber Height	2.5 mm
Atmosphere Control	Sealed chamber with vacuum capability to control humidity, condensation and oxidation
Frame Cooling	Integrated frame cooling with optional chiller system
Mounting	Horizontal or Vertical mounting capability
Frame Dimensions	122.7 mm x 86 mm x 22 mm
Weight	600 g

OPTIONS

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Active Sample Cooling

Extend lower temperature limit to -190°C with our LN2-P cooling system; includes LN2 suction pump, 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***). Frame cooling keeps the outside of the HCP621G around the frame near room temperature, which preventing frost buildup when the sample is being cooled below freezing temperatures, and also prevents helps to prevent accidental burns.

Sample Fixing Clamps

Secure samples with metal, spring-loaded clamps. Useful in cases where the heating and cooling stage is mounted vertically.

Inner Cover

The chamber height is the distance between the top surface of the thermal block and the bottom surface of the outer cover. With an optional inner cover, this distance is minimized to allow for just enough space for intended samples (slides, slipcovers, wafer pieces, etc.). By closing the distance, vertical temperature gradients are significantly reduced, and sample temperature uniformity is significantly improved.

Electrical Feedthroughs

Add up to 6 electrical feedthroughs for applying an electric field to sample.

Microscope

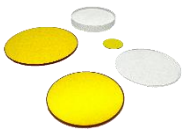
Entry-level polarizing microscope offering superior performance for a variety of research applications with specifications to satisfy a wide range of demanding observational requirements. (see**TPM-CX40**)

Camera

Integrate digital image acquisition with sample temperature overlay. Includes software (WinDV2 via InstecApp), USB 3.0 connection, 20-megapixel resolution, and standard C-mount microscope connection. (see ***MITO2***)

Mounting Adapter

Various mounting adapters are available for most microscope models and/or instruments. Custom mounting adapters may also be made to fit each and every application.



Windows

Additional or alternate available windows are Sapphire, BaF2, CaF2, ZnSe (see **HCS601GXY-IRM** for IR applications).

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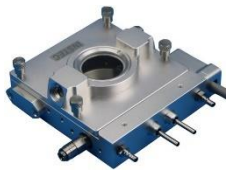
SIMILAR PRODUCTS

	HCP621G	HCP421V	HP1200G	TP102G	HCP621G-ELP
					
Temperature Range	-190°C to 600°C	-190°C to 400°C	RT to 1200°C	-25°C to 120°C	-190°C to 600°C
Atmospheric Control	✓	✓	✓	✓	✓
Sample Area	Ø26mm	Ø26mm	16 x 16mm	42mm x 42mm	Ø26mm
Sample Cooling	LN2	LN2	– *	Water	LN2
Thermal Block	Silver	Silver	Silicon Carbide	Anodized Aluminum	Silver
Electrical Feedthroughs	Up to 6	Up to 6	Up to 4	Up to 6	Up to 6
Transmission Option Available	✓	✓	✓	✓	

*Heating only, no sample cooling available

Other products to consider….

HCS621GXY heating and cooling stage with 28mm x 28mm sample area. Temperature range -190°C to 600°C. Gas tight chamber with gas purge capabilities. Includes XY positioning and option to add electrical feedthroughs.

HCS601G-IRM FTIR heating and cooling stage with 24mm x 24mm sample area. Temperature Range -190°C to 600°C. Gas tight chamber with gas purge capabilities. CWD=10.5mm WD=10.5mm, cone angle>100°C. Includes IR windows.

HCP600G-CAP heating and cooling plate for capillary tube applications. 28mm x 30mm sample area. Temperature range -190°C to 600°C. Gas tight chamber with gas purge capabilities. Manipulate capillary tube while maintaining chamber atmosphere.

CONTACT A REPRESENTATIVE