

DESCRIPTION

The **HCS621GXY-GEO** gas tight 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 leads are available for sample connection and probing.



KEY FEATURES

Sample Side-Loading with XY Positioning

Position sample while maintaining a sealed chamber with the optional XY positioner. With greater flexibility, sample area accessibility, and precision control, the HCS621GXY-GEO is optimal for use with a rotational stage on a polarizing microscope due to the directional nature of polarization

Wide Temperature Range

-190°C to 600°C (with optional [LN2 cooling accessory](#))

Gas Tight Chamber

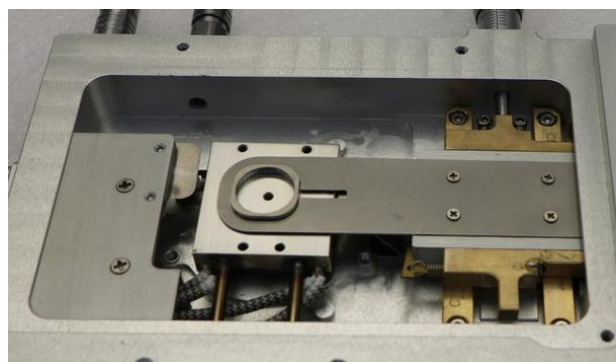
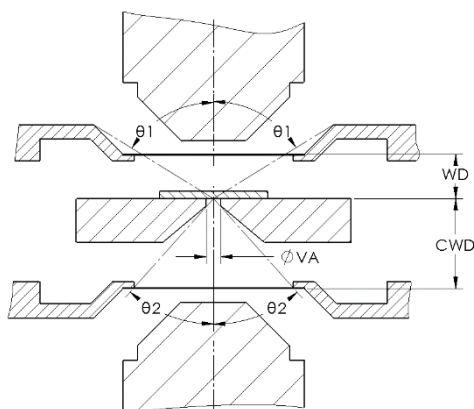
Allows for gas purging for defrosting and prevents condensation and oxidation. Also allows for a controlled atmosphere around sample. Features quick connect and release gas ports

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 option and alternative sensor, such as a thermistor, option is also available.

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.



THERMAL SPECIFICATIONS

Temperature Control	<u>mK2000</u> with programmable precision switching PID method
Thermal Block	Silver
Sample Thermal Cover	Optional removable Inner sample cover with additional window
Temperature Minimum	-190°C (with optional liquid N2 cooling)
Temperature Maximum	600°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 and Transmission capability
Optical windows	Removable and exchangeable windows permit full-spectrum transparency
Minimum Objective Working Distance	5.2 mm
Minimum Condenser Working Distance	12 mm
Top Window Aperture	Ø27 mm
Top Viewing Angle	±65.0° from normal
Transmission Aperture	Ø2mm
Bottom Viewing Angle	±19 from normal
Window Defrost	Integrated external window defrost

STRUCTURAL SPECIFICATIONS

Sample Area	28 mm x 30 mm
Chamber Height	2.8 mm
Sample Positioning	10 mm fine travel with Vernier XY dials for remote manipulation in closed chamber
Atmosphere Control	Gas tight chamber with purge to control humidity, condensation, and oxidation
Frame Cooling	Integrated frame cooling with optional chiller system (<u>C100W</u>)
Mounting	Horizontal mounting capability
Frame Dimensions	140mm x 97 mm x 22.5 mm
Weight	800 g

OPTIONS

Controlled Cooling

Extend lower temperature limit to -190°C with LN2-P cooling accessory; includes tubing and dewar (2L, 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 HCS621GXY-GEO cool and safe to touch with an optional water circulator. (see C100W chiller) Frame cooling option allows thermal control of frame independent of sample thermal block and aids in preventing frost buildup when cooling sample is being cooled below freezing temperatures.



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, the distance is minimized in design to allow for just enough height for intended samples (slides, slipcovers, wafer pieces, etc.) and to decrease the minimum objective working distance. By closing the distance, the vertical temperature gradients are also significantly reduced.



Electrical Feedthroughs

Add up to 2 electrical feedthroughs for applying electric field to sample.

Vacuum Tight Chamber

Can be both gas purged and evacuated to low pressures to protect sensitive samples from moisture and oxygen as well as to study vacuum processes such as freeze drying. (see HCS621VXY-GEO for vacuum compatible model)

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 [TPM310-TR](#))

Camera

Integrate digital image acquisition with sample temperature overlay. Includes software (WinDV thru InstecApp) USB 2.0 connection, 1.92-megapixel resolution, C-mount microscope connection standard. (see [MITO2](#))

Mounting Adapter

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

Windows

Additionally available windows are Sapphire, BaF2, CaF2, ZnSe (see [HCS601GXY-IRM](#) for IR applications).



APPLICATIONS

With its versatility and wide selection of options and configurations, the HCS621GXY-GEO hot and cold plate is suitable for several different applications and experiments.

Electrical

- Semiconductors
- MEMS devices
- PCBs

Materials

- Metallurgy
- Crystallization
- Melting Point Analysis
- Oxidization
- Cloud Point Analysis

Geology

- Fluid inclusion
- Thermal maturation

Oil and Gas

- Characterization
- Flow Studies

Polymers

- Temperature testing
- Formulation

Space Science

- Solar panel component testing
- Material testing under vacuum

