

## HEATING AND COOLING STAGES

### HCS412W HOT AND COLD STAGE

#### Features:

- Hot and Cold Stage Features Large Viewing Aperture and Large Incident Angle
- Programmable Precision Temperature Control from  $-60^{\circ}\text{C}$  to  $400^{\circ}\text{C}$  with  $0.1^{\circ}\text{C}$  Temperature Precision
- Controlled Fast Heating and Cooling Rate
- Dual Heaters Located Both Above and Below The Sample Chamber for Ultra Temperature Uniformity.
- Variable Sample Chamber Height
- Easy Side Sample Loading with Standard Microscope Slides
- Gas Purge Sample Chamber
- Removable and Exchangeable Windows
- RS232 Communication Port Included in Basic System with Windows Based Software
- Optional IEEE488 Communication Port
- Free LabVIEW Driver for IEEE488 and RS232



#### Technical Specification

Temperature Control Sensor	Platinum RTD
Control Method	Switching PID
Temperature Range	$-60^{\circ}\text{C}$ to $400^{\circ}\text{C}$ (Optional wider temperature range available) Below ambient operation requires liquid nitrogen cooling accessory.
Temperature Precision	$0.1^{\circ}\text{C}$
Temperature Stability	$\pm 0.1^{\circ}\text{C}$ at $100^{\circ}\text{C}$
Minimum Heating & Cooling Rate	$\pm 0.1^{\circ}\text{C}/\text{Hour}$
Maximum Heating Rate	$+100^{\circ}\text{C}/\text{Min.}$ at $37^{\circ}\text{C}$
Maximum Cooling Rate	$-50^{\circ}\text{C}/\text{Min.}$ at $37^{\circ}\text{C}$
Minimum Working Distance	11.5 mm with Glass Window
Minimum Condenser Distance	7 mm without Glass Window 10.5 mm with Glass Window
Sample Area	38 mm X 50 mm (1.5" x 2")
Chamber Height	2.0 mm, up to 12.5 mm (using optional spacers)
Sample View Aperture	38.5 mm diameter
Incident Angle	$56^{\circ}$
Optional XY Positioner	10 $\mu\text{m}$ resolution
Mounting Hole Pattern	6 holes on the base frame, two mounting tabs on the side of the frame



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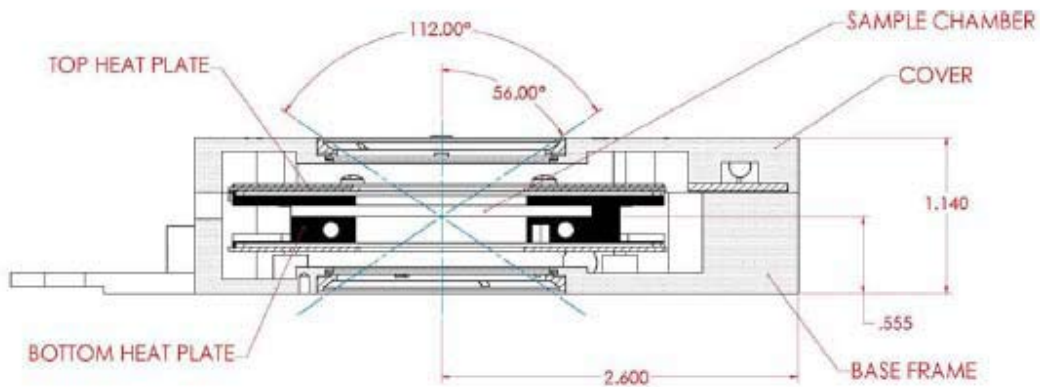
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### Cross section



### Ordering information

Part Number	Description
HCS412W-STC200	HCS412W Hot and Cold Stage. Dual Heaters. Configured with STC200 temperature controller. RS232 communication port with WinTemp software. 115V/230V Universal Input Voltage.
XY-HCS412W	Precision XY positioner with adaptors for HCS412W
SP06-HCS412W	Optional 1.5 mm spacer set to increase sample chamber height
SP12-HCS412W	Optional 3 mm spacer set to increase sample chamber height

Accessories	
Optional Parts for STC200	Please refer to the STC200 Temperature Controller brochure for add-on STC200 controller optional parts (e.g. IEEE-STC200: IEEE 488 communication port).
LN2-SYS	Liquid Nitrogen Cooling Accessory. Please refer to the LN2-SYS brochure for selections of liquid nitrogen cooling accessories.
WP115C/WP230C	115V or 230V circulation water pump for sample chamber cooling to below ambient temperatures (as low as 5 °C).
WP115V/WP230V	115V or 230V circulation water pump for frame cooling.



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