

HEATING AND COOLING STAGES

HCS402-STC200 MICROSCOPE HOT AND COLD STAGE SYSTEMS

Features

- Large Viewing Aperture
- Controlled Fast Heating and Cooling Rate
- Variable Sample Chamber Height
- Programmable Precision Temperature Control from -190 °C to 400 °C
- Easy Side Sample Loading with Standard Microscope Slides
- Standard RS232 Communication Port with Windows Software
- Optional IEEE Parallel Port
- Sample LabVIEW Drivers for RS232 and IEEE
- Gas Purge Sample Chamber



Description

The HCS402-STC200 Microscope Hot and Cold Stage system features a large sample volume, a large viewing area, precision temperature control, a fast heating rate, and a wide temperature range from -190°C to 400°C. The HCS402 has a very uniform chamber temperature due to the fact that there are two thin film heaters located both above and below the sample.

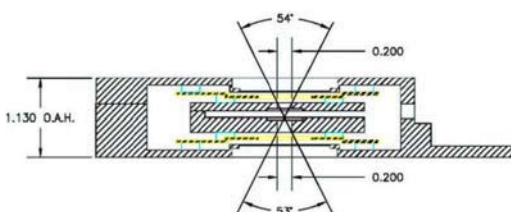
The HCS402 temperature controlled environment is the ideal choice for optical thermal microscopy or for other applications requiring optical access to the sample. All of the windows on the HCS402 stage are removable and exchangeable allowing the HCS402 to be used for small angle X-ray diffraction, FTIR, and other experiments requiring beam access to the sample. The HCS402 can also be mounted vertically for applications requiring horizontal beam access to the sample chamber. The interior of the HCS402 is large enough to accommodate a variety of samples, including complete electro-optic devices and cell culture preparations. Standard 1" x 3" (or 25mm x 75mm) microscope slides can be used as sample plates directly. An optional, fixed position thermal shielding shell is also provided to optimize thermal performance for work requiring ultra-high temperature stability and uniformity.

Applications

Flexible design and easy-to-use features make hot stage systems ideal for use in:

- | | | |
|-------------------------------------|---------------------------|-------------------------|
| • Optical Thermal Microscopy | • Food Science | • Medicine |
| • Polymers | • Material Science | • Dentistry |
| • Liquid Crystals | • Semiconductors | • Biophysics |
| • Forensics | • Microbiology | • Pharmaceutical |

Cross Section View of the HCS402



The picture below shows the cross section view of the HCS402 at its original configuration. When W10mm-HCS402, the 10mm viewing aperture option is purchased, or when the optional spacers are used, the scattering angle will change.



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Technical Specifications

Temperature Control:	Sensor Platinum RTD
Control Method:	Switching PID
Temperature Range:	-190°C to 400°C. (Optional wider temperature ranges are available). For below ambient operation, an optional cooling accessory is required.
Temperature Accuracy:	±0.3°C to 100°C, ±0.5°C to 200°C, ±0.8°C to 400°C or below ambient (when using optional shell)
Temperature Stability:	±0.1°C at 100°C
Minimum Heating & Cooling Rate:	±0.1°C/Hour
Maximum Heating Rate:	+100°C/Min. at 37°C
Maximum Cooling Rate:	-50°C/Min. at 37°C
Minimum Working Distance:	6.5 mm
Minimum Condenser Distance:	10 mm
Sample Area:	38mmX50mm
Chamber Height:	2.0mm, up to 12.5mm (using optional spacers)
Sample View Aperture:	5 mm dia.
XY Positioner (optional):	10 µm resolution
Mounting Hole Pattern:	6 holes on the base frame

Ordering Information

Part Number	Description
HCS402-STC20A	HCS402 with STC200 temperature controller configured for HCS402 with 115V input power, and RS232 communication port. (XY positioning not included), two heaters for both above and below sample.
HCS402-STC20U	HCS402 with STC200 temperature controller configured for HCS402 with 220V input power, and RS232 communication port. (XY positioning not included), two heaters for both above and below sample.
IEEE-STC200	Optional IEEE communication port and free sample LabView driver
LN2-P2AF2	The cooling accessory consists of a 2 liter liquid nitrogen container, the LN2-F2, and a two speed liquid nitrogen pump, the LN2-P2 with 115V input power, cools HCS402 down to -80°C, and HCS302 down to -120°C
LN2-P2UF2	The cooling accessory consists of a 2 liter liquid nitrogen container, the LN2-F2, and a two speed liquid nitrogen pump, the LN2-P2 with 220V input power, cools HCS402 down to -80°C, and HCS302 down to -120°C
LN2-P4AF4	The cooling accessory consists of a 4 liter liquid nitrogen container, the LN2-F4, and a double power liquid nitrogen pump, the LN2-P4 with 115V input power, cools HCS402 down to -120°C and HCS302 down to -190°C
LN2-P4UF4	The cooling accessory consists of a 4 liter liquid nitrogen container, the LN2-F4, and a double power liquid nitrogen pump, the LN2-P4 with 220V input power, cools HCS402 down to -120°C and HCS302 down to -190°C
WP115V	Water Pump (115 V AC pump) with 0.25" inlet and outlet tubing ID, for frame cooling
WP230V	Water Pump (230 V AC pump) with 0.25" inlet and outlet tubing ID, for frame cooling
WP115C	Water Pump (115 V AC pump) with 0.1" inlet and outlet tubing ID, for inner stage fast cooling down to 5°C with ice water
WP230C	Water Pump (230 V AC pump) with 0.1" inlet and outlet tubing ID, for inner stage fast cooling down to 5°C with ice water
W10mm-HCS402	10 mm diameter viewing aperture for HCS402
XY-HCS402	Precision XY positioner with adaptors for HCS402
SP06-HCS402	Optional 1.5 mm spacer set to increase sample chamber height
SP12-HCS402	Optional 3 mm spacer set to increase sample chamber height



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