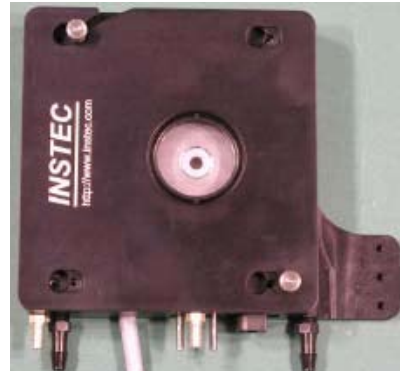


# HEATING AND COOLING STAGES

## HCD301-STC200 HOT AND COLD STAGE FOR INVERTED MICROSCOPES

### Features:

- Large Viewing Aperture
- Controlled Fast Heating and Cooling Rate
- Variable Sample Chamber Height
- Programmable Precision Temperature Control from -80°C to 250°C
- Standard RS232 Communication Port with Windows Software
- Optional IEEE Parallel Port
- Sample LabVIEW Drivers for RS232 and IEEE
- Gas Purge Sample Chamber



### Description

The HCD301-STC200 microscope hot and cold stage system is specially designed for using on an inverted microscope. The system features a large sample volume, a large viewing area, precision temperature control, a fast heating and cooling rate, and a wide temperature range from -80°C to 250°C.

The HCD301 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 HCD301 stage are removable and exchangeable allowing the HCD301 to be used for small angle X-ray diffraction, FTIR, and other experiments requiring beam access to the sample. The HCD301 can also be mounted vertically for applications requiring horizontal beam access to the sample chamber.

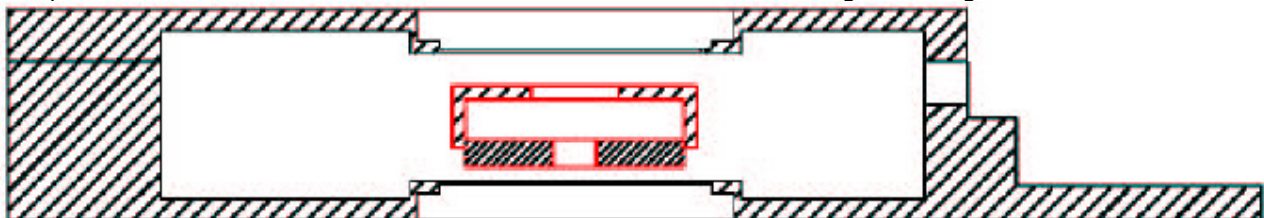
### Applications

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            | • Microbiology     | • Biophysics     |
| • Forensics                  | • AFM (Tip Scan)   | • Ramam Spectral |

### Cross Section View of the HCD301

The picture below shows the cross section view of the HCD301 at its original configuration.



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## HCD301-STC200 HOT AND COLD STAGE FOR INVERTED MICROSCOPES

### Technical Specification

Temperature Control Sensor	Platinum RTD
Control Method	Switching PID
Temperature Range	-80°C to 250°C. (Optional wider temperature ranges are available). For below ambient operation, an optional cooling accessory is required. With LN2-P2AF2 (or LN2-P2UF2), the hot stage can reach as low as -80°C. With WP115C (or WP230C) in ice water the hot stage can reach as low as 5°C.
Temperature Accuracy	±0.5°C to 100°C, ±1.0°C to 200°C, ±2.0°C to 250°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, [3.2mm when outer window is removed.]
Minimum Condenser Distance	15 mm
Sample Area	22mmX25mm
Chamber Height	2.0mm, up to 12.5 mm (using optional spacers)
Sample View Aperture	5 mm dia. (10mm diameter is optional)
Mounting Hole Pattern	6 mounting holes on the base frame

### Ordering information

Part Number	Description
HCD301-STC20A	HCD301 with STC200 temperature controller configured for HCD301 with 115V input power, and RS232 communication port. (XY positioning not included), only one heater below sample, temperature range -80°C to 250°C
HCD301-STC20U	HCD301 with STC200 temperature controller configured for HCD301 with 220V input power, and RS232 communication port. (XY positioning not included), only one heater below sample, temperature range -80°C to 250°C
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
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
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 cooling
WP230C	Water Pump (230 V AC pump) with 0.1" inlet and outlet tubing ID, for inner stage cooling
W10mm-HCD301	10 mm diameter viewing aperture for HCD301
SP06-HCD301	Optional 1.5 mm spacer set to increase sample chamber height
SP12-HCD301	Optional 3 mm spacer set to increase sample chamber height



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