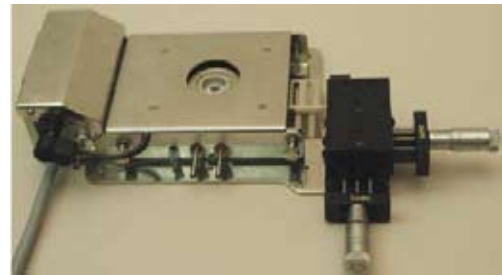


# HEATING AND COOLING STAGES

## HCS410-STC200 MICROSCOPE HOT AND COLD STAGE SYSTEMS

### Features:

- **Fast Heating Rate**
- **Variable Sample Chamber Height**
- **Programmable Precision Temperature Control from -60 °C to 400 °C**
- **Easy Side Sample Loading with Standard Microscope Slides**
- **Optional IEEE488.2 Communication Port**
- **Cools Objective Lens**



### Description

The HCS410 hot and cold stage features a large sample volume, a large viewing area, and precision temperature control, along with a faster heating rate, and a 400°C temperature limit. The stage provides a very uniform temperature in the sample chamber by two thin film heaters located above and below the sample.

The HCS410 temperature controlled environment is the ideal choice for optical microscopy or for other applications requiring optical access to the sample.

All of the windows on the HCS410 stage are removable and exchangeable allowing the HCS410 to be used for small angle X-ray diffraction, FTIR, and other experiments requiring beam access to the sample.

### Technical Specification

Temperature Control Sensor	Platinum RTD
Temperature Range	-60°C to 400°C, below ambient operation requires the LN2 cooling system, <b>wider temperature ranges are available, talk to a product specialist about our customized stages</b>
Temperature Accuracy	±0.2°C to 100°C, ±0.5°C to 200°C, ±0.8°C to 400°C or below ambient
Temperature Stability	±0.2°C at 100°C
Heating Rate	Ambient to 250°C in 5 min.
Minimum Working Distance	6.5 mm
Minimum Condenser Distance	13 mm
Sample Area	38 x 50 mm
Chamber Height	2.0 mm, 6.0 mm (with optional spacers)
Sample View Window	5 mm, (10mm viewing aperture optional)
Mounting Hole Pattern	6 mounting holes on the base

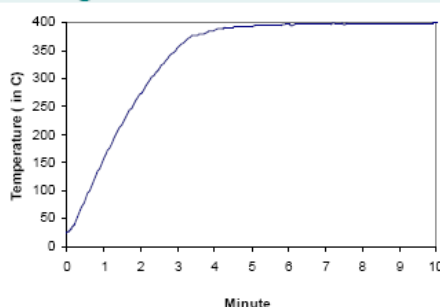
The HCS410 can also be mounted vertically for applications requiring horizontal beam access to the sample chamber.

The interior of the HCS410 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.

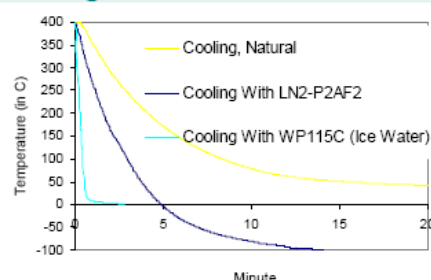
The STC200 standalone controller comes with RS232 communication port, which enables host computer control. Optional IEEE488.2 communication port is also available.

Comparing to Instec's HCS400 model, the HCS410 has better XY positioner, upper lid connector, and better gas purge inlet.

### Heating Curve



### Cooling Curves



Micro-optik, a division of Flokal B.V.

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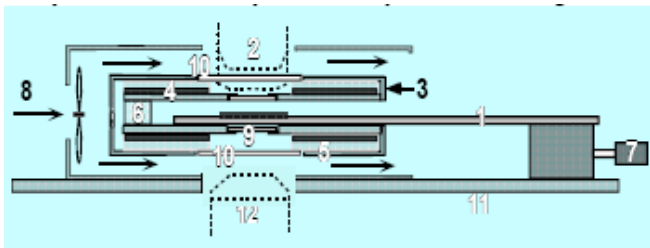
Tel +(31).486.46.3688 Fax +(31).486.41.4514, [www.micro-optik.com](http://www.micro-optik.com) email [info@micro-optik.com](mailto:info@micro-optik.com)

# HEATING AND COOLING STAGES

## HCS410-STC200 MICROSCOPE HOT AND COLD STAGE SYSTEMS

### Design Features

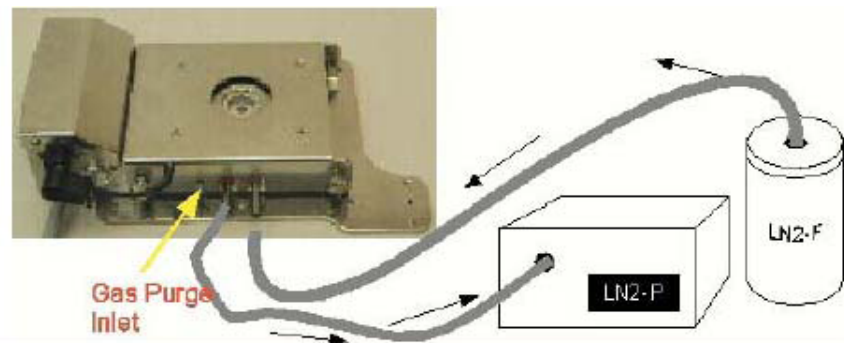
The design of the **HCS410** stage provides fast heating with good temperature stability, a large sample area, and good thermal shielding. The cooling fan keeps the body of the stage cool while the inside temperature can be as high as 400°C. The variable sample chamber height ensures a minimum objective working distance, while allowing for the accommodation of thicker samples. The mounting holes on the base enable the stage to be mounted firmly either horizontally or vertically. All of the stage's windows are ultra-thin for low birefringence.



- 1 Sample tongue
- 2 Objective
- 3 Furnace
- 4 Heater
- 5 Insulation
- 6 Spacer
- 7 X-Y positioner
- 8 Cooling fan
- 9 Inner windows
- 10 Outer windows
- 11 Base with mounting holes
- 12 Condenser

### Cooling Accessory

The LN2-P2F2 liquid nitrogen cooling accessory consists of the LN2-F2, a 2-liter liquid nitrogen container with a connector ready to plug into the stage, and the LN2-P2, a two-speed liquid nitrogen pump. The cooling accessory enables the stage to be cooled down to -60°C.



### Ordering information

Part Number	Description
HCS410-STC20A	HCS410 Hot and Cold Stage with STC200 Standalone Temperature Controller, one RS232 communication port, and WinTemp software. Input voltage 115V
HCS410-STC20U	HCS410 Hot and Cold Stage with STC200 Standalone Temperature Controller, one RS232 communication port, and WinTemp software. Input voltage 220V
SP12-HCS410	3.0 mm spacer set to increase sample chamber height
SP06-HCS410	1.5 mm spacer set to increase sample chamber height
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 line voltage. Stage can reach as low as -60°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 230V line voltage. Stage can reach as low as -60°C
W10mm-HCS410	Optional 10mm diameter viewing aperture
IEEE-STC200	Optional IEEE communication port and free sample LabVIEW driver
XY-HCS410	Precision XY positioner with adaptors for HCS410
WP115C	Circulation water pump to cool the sample, with adaptors to fit on 0.12" inlet and outlet on the HCS410 stage, with input voltage 115VAC. Stage can reach as low as 5°C when ice water is used.
WP230C	Circulation water pump to cool the sample, with adaptors to fit on 0.12" inlet and outlet on the HCS410 stage, with input voltage 220VAC. Stage can reach as low as 5°C when ice water is used.



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