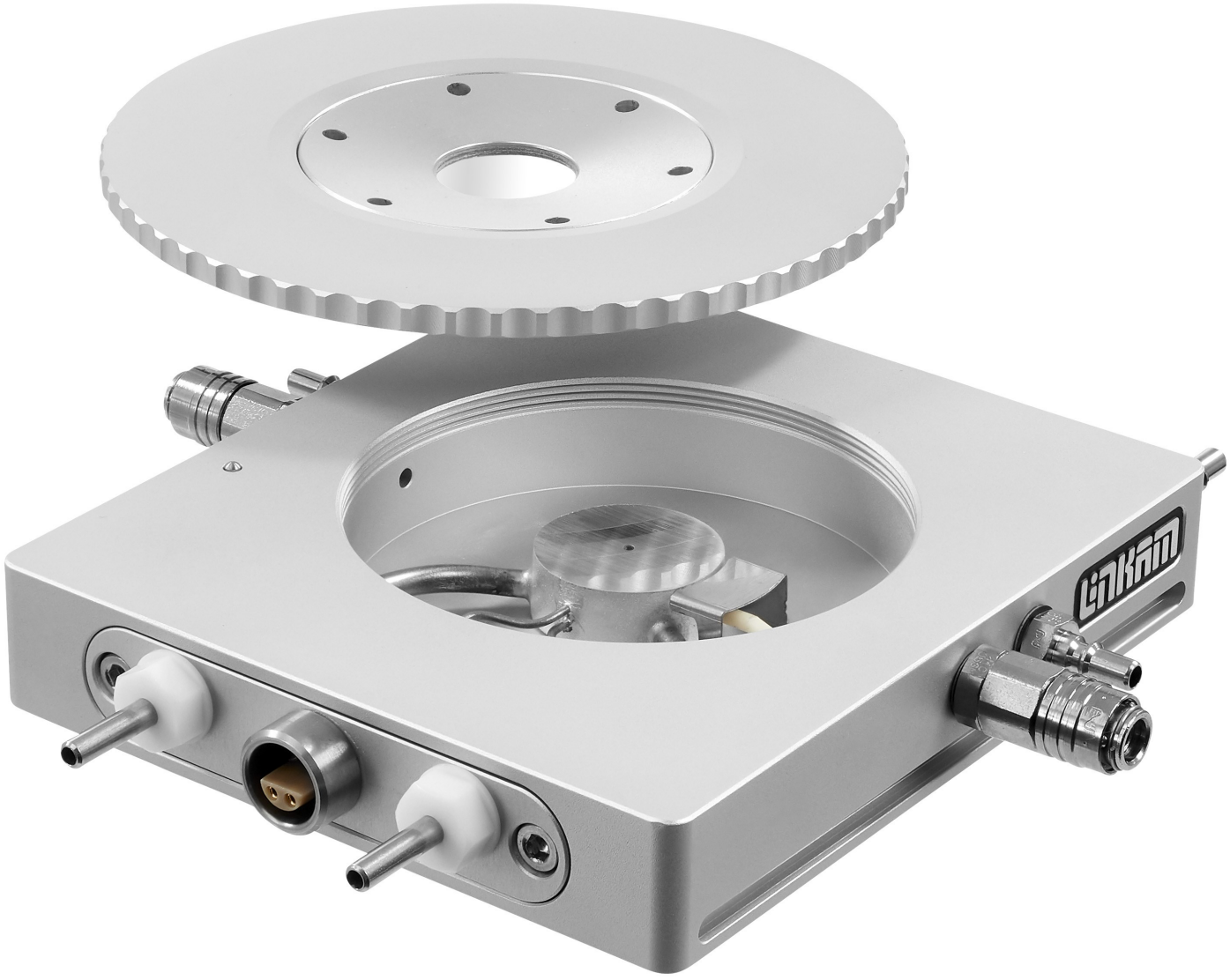
HFS600

Versatile Heating and Freezing Stage



Heating and Freezing
Temperature range from < -195°C up to 600°C

Optical Techniques
Supports confocal, Raman, light microscopy, X-ray and more

Rapid and Slow Heating
Precise control with heating and cooling rates from 0.01°C to 150°C/min

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Introducing the HFS600

The HFS600 is used in a range of applications where rapid heating/cooling rates and high levels of accuracy and stability are required. It is a compact stage which can be used either horizontally with microscopes, vertically in spectrometer systems, or on synchrotron beamlines. It can be fitted with a variety of window materials for Raman, IR, UV and X-ray investigations.

Samples are quickly characterised by heating to within a few degrees of the required temperature at a rate of up to 150°C/min, then slowed down to a few tenths of a degree per minute to closely examine sample changes.

NEXUS software can be used to record the entire experiment and associated images, which can then be displayed as a chart or exported for further analysis.

A system requires both the HFS600 stage and a T96-S temperature controller, which is available with either NEXUS software for computer control, or a LinkPad touch screen for stand-alone control. For cooling below ambient temperatures, an optional LNP96-S liquid nitrogen pump is also available.

Features

Wide Temperature Range
The temperature range spans from < -195°C (with the addition of an optional LNP96-S) up to 600°C for a versatile range of experiments. The stage body is water-cooled for work above 300°C.

Rapid Heating Rates
The T96-S controller allows the stage to heat samples at a maximum rate of 150°C/min.

High Degree of Accuracy and Stability
The embedded high quality Pt100 platinum sensor guarantees high accuracy and stability throughout the temperature range.

Various Optical Techniques
Whether you need to perform Raman spectroscopy, X-ray microscopy or confocal, the HFS600 can handle it.

Quick-release Gas Ports
Simple and easy stage purging to allow atmospheric composition control.

Electrical Connections and Probes
Optional electrical connections and probes enable electrical measurements to be carried out on the sample.

Custom Options
Please contact us with details of your requirements.

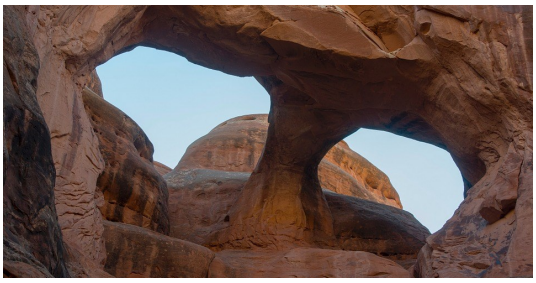
Application Examples

The HFS600 is a versatile and precise heating and cooling device which is compatible with a wide range of experimental techniques. It can be configured customised to your requirements and to suit many applications, including:

Earth Sciences and Geology

Thermal and environmental control experiments are used in geological research, such as studies of dissolved gases or mineral content in geological fluids. The HFS600 adds atmospheric control in combination with many microscopy and spectroscopic techniques.

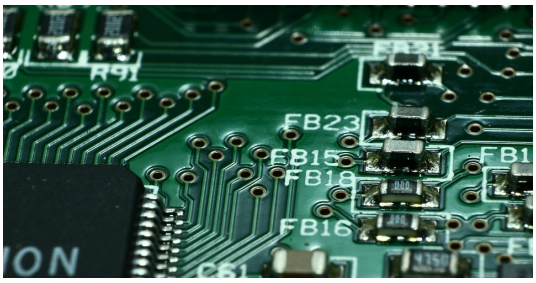
Fluid Inclusions | Oxidation Studies | Thermal Maturation



Semiconductor and Electrical

Temperature control and atmospheric chemical characterisation via microscopy and spectroscopy are commonly used for analysis of semiconducting materials. The HFS600 can be used across many research fields, from LEDs and photovoltaic devices to energy storage and renewable energy materials.

Photovoltaics | Liquid Crystals | Molecular Structure



Plastics and Polymers

Thermal and environmental experiments using the HFS600 in conjunction with microscopic or spectroscopic analysis are used across the broad range of soft materials, from soft polymers and hydrogels to thermoplastics and polymer nanocomposites.

Melting Point Analysis | Crystallisation | Phase Transitions

Technical Specification

Temperature Range	< -195°C (with the addition of an optional LNP96-S) up to 600°C
Heating/Cooling Rates	0.01°C to 150°C/min
Temperature Stability	< 0.01°C
Sample Area	22mm diameter
Objective Lens Working Distance	4.8mm
Compatibility	Reflected & transmitted light microscopes, confocal, Laser Raman and X-ray. Clamping options are additionally available for most microscopes.

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Discover More...

Control Options

Take control of your experiment with NEXUS software, or the stand-alone LinkPad touch screen, alongside the T96 temperature controller.

Both NEXUS software and a LinkPad can be used to control and monitor temperature and many other parameters including vacuum and humidity (dependent on system). The LinkPad provides an easy-to-use interface to the T96, for total control without a PC. Profiles with up to 100 ramps can be programmed, allowing simulation of complex processes.

NEXUS software enhances this with data-logging, rewind logged data and images to review whilst still recording, data run comparison tools, advanced triggering functions and real-time graphical feedback. Optional modules to enhance your system include the NEXUS Imaging Module for synchronised image capture, the NEXUS Extended Measurements Module to measure key image features, the NEXUS 21CFR11 Module for data regulatory compliance, the NEXUS Reporting Module to create reports in Microsoft Word and the NEXUS TASC Module for image-based thermal analysis.

Imaging Station

The Imaging Station provides a digital imaging platform compatible with Linkam temperature and environmental control systems. Use our high-resolution camera to capture images and videos of your samples while controlling the temperature and environmental conditions.

The Imaging Station has been specially designed with a pivoted mechanism to allow greater access to your Linkam stage, making it quick and easy to access the chamber and change samples. It has a built-in LED light source for transmitted light with further options available for reflected light, polarisation and phase contrast imaging.

The Imaging Station is also compatible with a range of long working distance objective lenses which can be easily switched with the quick-release mechanism.

RHGen Relative Humidity Controller

The RHGen is designed to provide sample humidity control to a wide range of Linkam's stages.

It allows precise control of water vapour in the environment around a sample. The RH sensor is located close to the sample block, providing a feedback loop to ensure accurate humidity control. The RHGen can be combined with light microscopy, Raman, FT-IR and X-ray to further characterise samples.

The smallest change in RH% can have huge implications on the characteristics of a sample and how it behaves. When combined with a Linkam stage or other sealed chambers, the RHGen can be used to control the RH between 5% - 90% at temperatures from ambient to 85°C (dependent on device).

Contact Details

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We make scientific instruments that help characterise materials from polymers to biological tissue and metals to composites. Our instruments are used for research by the world's most advanced scientific organisations and companies. Each of our instruments are designed and manufactured in-house by our team of highly experienced electronics, software and mechanical design engineers. We design and develop solutions for sample characterisation by collaborating with the best scientists in the world. Will you be next?

Linkam products are constantly being improved, hence specifications are subject to change without notice.
TASC products are a family of techniques developed by Prof. Mike Reading (Cyversa) and Linkam.

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