

# LTS420

Optimised Isothermal Sample Analysis Stage



## Large Heating Area

Ideal for larger samples of up to 53.5mm x 43mm

## Wide Temperature Range

Precise control from  $< -195^{\circ}\text{C}$  to  $420^{\circ}\text{C}$ , ideal for state transition experiments

## Swing-out Lid

For easier and faster sample loading

# Introducing the LTS420

The LTS420 stage is a versatile heating and freezing device optimised for isothermal analysis of larger samples, where high speed heating and cooling are required alongside outstanding thermal stability. It features a 53.5mm x 43mm silver block with a platinum resistor sensor embedded close to the surface for accurate temperature measurements.

Samples can be quickly and precisely characterised as a function of temperature or other environmental parameters, with the swing-out lid allowing easy access and fast sample changing. The sample can be easily mounted on a standard microscope slide which is firmly held in contact with the heating block, and can be manipulated 15mm in both X and Y directions. The sample chamber is gas tight and has valves to allow atmospheric composition control.

The LTS420 is one of Linkam's most popular stages and can be customised to your needs, such as the addition of probes for electrical sample measurements, gas purging, or humidity control.

A system requires both the LTS420 stage and a T96-S temperature controller, which is available with either LINK 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

### LARGE SILVER HEATING BLOCK

Provides excellent temperature uniformity whilst enabling high heating and cooling rates (0.01°C to 50°C/min) with rapid response times, ideal for state transition experiments. Water-cooled stage body for work above 300°C.

### SWING-OUT LID AND XY MANIPULATORS

The swing mechanism of the lid allows greater access and easier loading of samples. Sample position can be controlled over 15mm of travel in X and Y directions via the precision manipulators.

### QUICK-RELEASE GAS PORTS

Simple stage purging to allow atmospheric composition control.

### HIGH DEGREE OF ACCURACY AND STABILITY

The embedded high quality Pt100 platinum sensor guarantees high accuracy and stability throughout the temperature range.

### ELECTRICAL CONNECTIONS AND PROBES

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

### HUMIDITY

The LTS420-H version of the stage can be used with the RH95 Humidity Controller, allowing control between 5%-90% RH at temperatures from ambient to 85°C (RH range dependent on temperature).

### CUSTOM OPTIONS

Please contact us with details of your requirements.

# Application Examples

The LTS420 is used by research institutions worldwide owing to its versatile nature, with many options, configurations and customisability. It is suited to a variety of applications including:

## Food Research

The LTS420 is used by multinational consumer goods companies and food scientists to study the temperature and atmospheric stability of many types of food samples, from ice cream and chocolate to meats. It is also used to test food packaging.

Crystallisation

Thermal Analysis

Emulsification



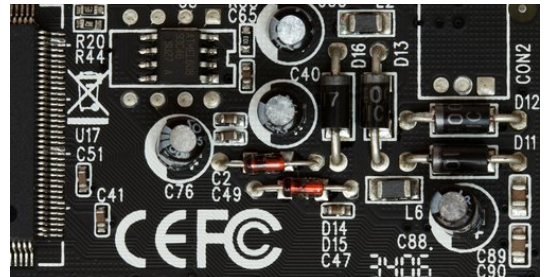
## Semiconductor and Electrical

Temperature control and atmospheric chemical characterisation via microscopy and spectroscopy are commonly used for analysis of semiconducting materials. The LTS420 can be used across many research fields, from LEDs and photovoltaic devices to energy storage and renewable energy materials.

Semiconductors

Liquid Crystals

2D Materials



## Plastics and Polymers

Within the materials field the LTS420 has many applications, from early in the research and development cycle to manufacturing and quality control. Its precision temperature control and large sample size are ideal for larger polymeric samples on standard glass slides and coverslips.

Melting Point Analysis

Crystallisation

Cloud Point Analysis



# Technical Specification

### Temperature Range

< -195°C (with addition of an optional LNP96-S) to 420°C

### Heating/Cooling Rates

0.01°C to 50°C/min

### Temperature Stability

< 0.01°C

### Sample Area

53.5 x 43mm

### Objective/Condenser Lens Working Distance

6.5mm / 12.5mm

### Compatibility

Reflected and transmitted light. Clamping options are additionally available for most microscopes.

## Discover More...



### Control Options

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

Both LINK software and LinkPad share a unified user interface that can control and monitor temperature and many other parameters including vacuum, humidity, tensile and shear force (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.

LINK software enhances this with data-logging functions and real time graphical feedback. Optional modules to enhance your system include the LINK Imaging Module for synchronised image capture, the LINK Extended Measurements module to measure key image features, the LINK 21CFR11 Module for data regulatory compliance, and LINK TASC providing image-based thermal analysis.

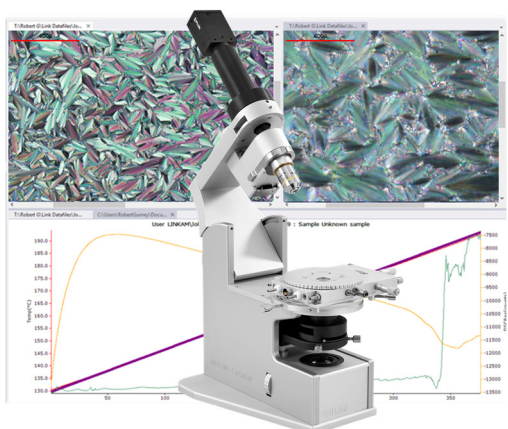


### RH95 Relative Humidity Controller

The RH95 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 ensuring accurate humidity control. The RH95 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 RH95 can be used to control the RH between 5% - 90% at temperatures from ambient to 85°C (dependent on device).



### 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.

## 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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