# LINK Software and Modules

## Temperature Control, Graphing, Imaging and Measurement Tools

### Image Your Sample

Take synchronised images and videos as your sample evolves with temperature

### Experimental Control

Use LINK for sample analysis to control temperature, vacuum, pressure, humidity and imaging

### Image Analysis

Calibrated measurement of feature size and area, or view structural phase transitions

# Introducing LINK Software and Modules

Take control of your experiment with LINK software. Alongside LINK's market-leading temperature control features, there are optional modules for the recording and analysis of images during your experiment. Adding imaging to your system greatly enhances its capabilities, allowing you to directly monitor and analyse changes to the physical characteristics of your material such as colour, size, shape and phase transitions.

A range of optional modules, packaged with different cameras, are available for LINK. These include Image Capture, Extended Measurements, TASC (Thermal Analysis by Surface Characterisation), 21 CFR 11, and a full Software Development Kit (SDK).

LINK supports Linkam's T96 and T95 controllers and is a native 64 bit application compatible with Windows 10 64 bit. Modules are compatible with all versions of LINK. LINK's standard features include:

- Live display of current status for easy monitoring.

- Full control of heating and cooling rates, limit and hold time of up to 100 ramps.

- Row by row control of vacuum, humidity, tensile force and shear modes controllable and synchronised with temperature.

- Full five point temperature calibration.

- Trigger I/O for synchronisation with other equipment.

- Real-time chart of temperature and other measured parameters.

- XY coordinate mapping — micro stepped motors enable micron repeatable position resolution and recall for selected stages including the CMS196 and MDS600.

- Automatic setup of controls and parameter limits based on stage type connected.

- Includes .NET Component for easy integration into 3rd party applications.

# Image Capture Module

Many materials change colour, shape and size with changing conditions. For example, thermotropic liquid crystals undergo phase transitions as the temperature is changed, rubber can tear when under tensile force and many materials change colour as they oxidise at higher temperatures. By acquiring images in addition to recording the sensor parameters, visual changes such as colour can be analysed, the size and speed of a tear can be characterised and the size and shape of particles can be measured. All these changes can be easily correlated to temperature.

A range of LINK Image Capture Modules and cameras are offered, making it extremely easy to automatically capture images at specified points during an experiment. Input triggers are stored and marked on the chart for easy synchronisation with other equipment. Each image is stamped with the current temperature (and other measured parameters) so offline analysis is straightforward.

- Image resolution up to 2447x2048 (depending on camera selected).

- Burn a scale bar into the image. Includes a reticule for easy calibration of your optical system in X and Y.

- Capture still images and video, synchronised with your temperature and environmental profiles.

- Trace how your sample changes with temperature - click on the purple points on the profile graph to see images at the exact temperature of interest.
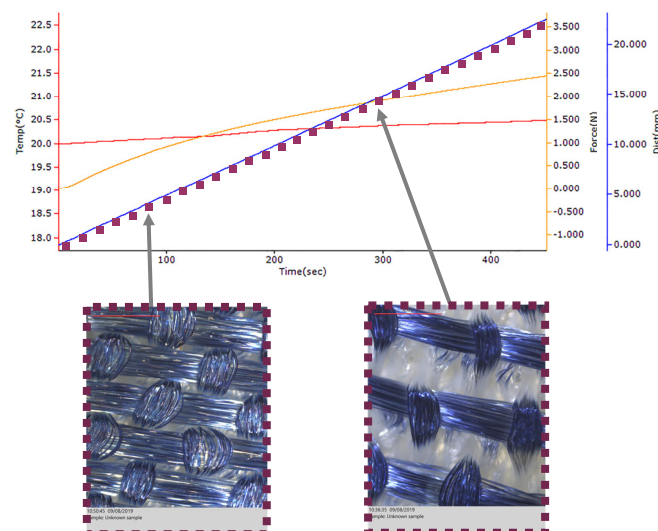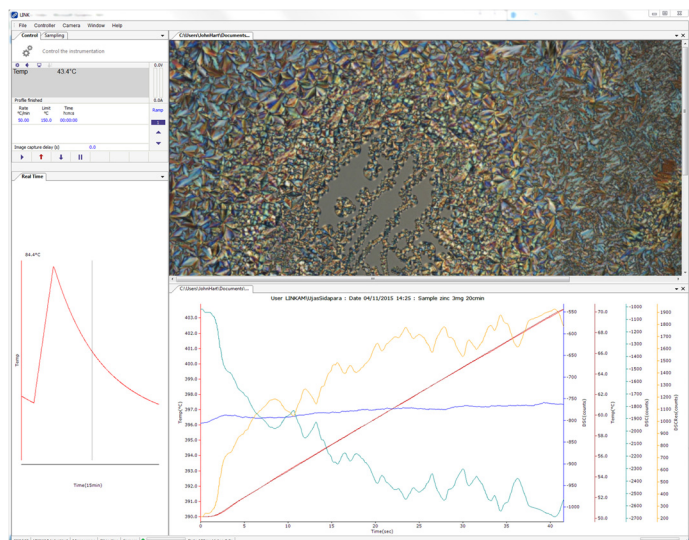


*Left:* Use LINK's temperature and environmental controls while capturing images of your sample. All parameters are stored within LINK for easy analysis and export.
*Right:* Take images in sequence with other parameters, allowing changes in the sample to be easily observed as the temperature and environment changes.

# Introducing LINK Software Modules

Recording the temperature is only half the story. See how your sample shape and size evolves with changing environments such as temperature, humidity, vacuum or other parameters such as XY location, tensile or shear force. LINK can provide additional information about your sample characteristics, dimensions, and phase change behaviour.

## Extended Measurements Module

LINK Extended Measurements adds a new level of analysis and annotation. Precisely measure the sample properties of all regions of interest on your sample image.

- Multiple image measurement tools for distance, angle and area.

- Fully calibrated measurements.

- Annotation tools.

- Measurements and annotations can be burned into the image for quick and easy analysis, and for pasting directly into a report.
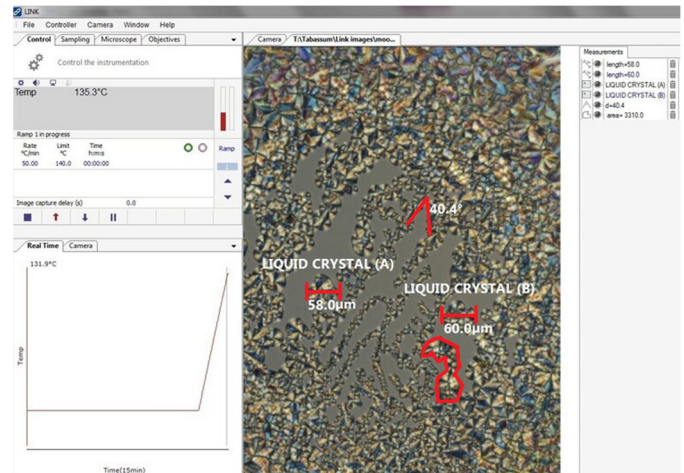


## TASC Module

The TASC Image Analysis module is an exciting new thermal analysis system. Linkam and Cyversa have developed, in partnership, this revolutionary thermal technique that provides characterisation scientists with a powerful new tool for analysing materials.

Turn your temperature control microscope stage into a thermal analysis laboratory capable of measuring glass and melting transitions in many different materials including opaque samples. A new image analysis algorithm enables structural changes in any sample to be tracked and quantified.

- More sensitive than DSC at low heating rates and for small samples.

- Local thermal analysis at the exact position the change occurs - measure local phase changes on a microscopic level.

- Kinetic parameters over a wider range of heating rates than any conventional method.

- Compatible with many Linkam stages such as the THMS, LTS, and TS ranges, as well as our DSC stages where TASC provides complimentary information.
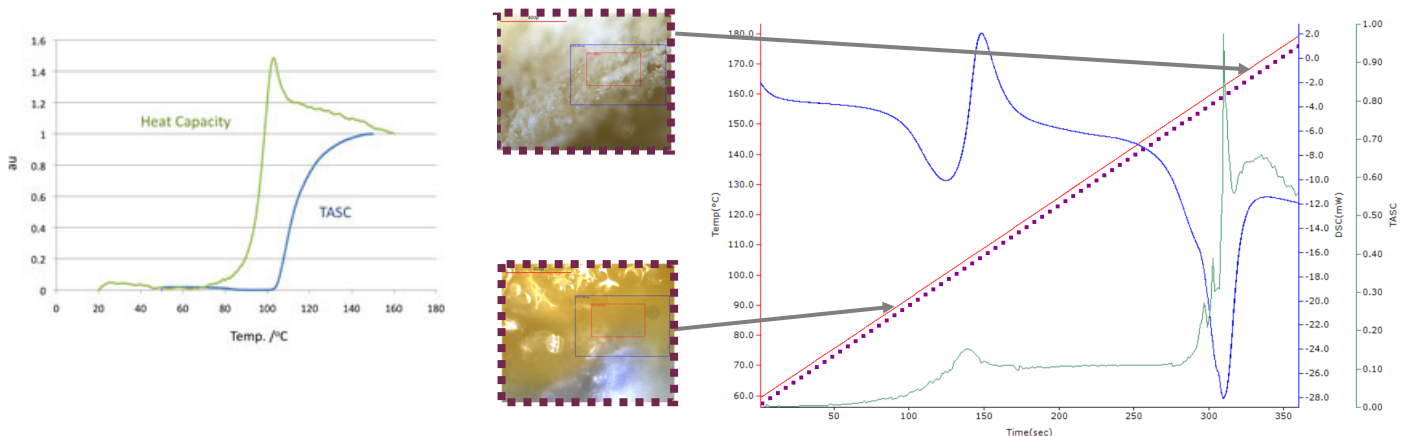


*Left:* Results from TASC compliment DSC data, and often show a more precise shoulder to the phase transition. *Right:* View all LINK's measured parameters on one graph and see how DSC and TASC data evolve with time and temperature. LINK captures images as the experiment progresses which is shown alongside temperature data.
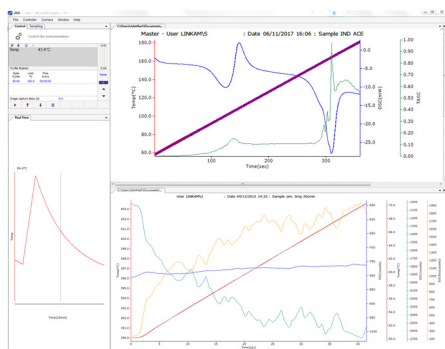
### 21 CFR 11 Compliance Module for LINK

The LINK 21CFR11 module provides a simple method of meeting the access control requirements of many industries. Access control is via Windows user account logon and supports full user level management and audit trails.

### LINK Software Development Kit

A full LINK SDK is available for Windows (C++ and .NET interface) for easy integration into third party applications. Ideal for OEMs to quickly and efficiently integrate full control of Linkam stages into their systems. Also suitable for end users wishing to integrate the temperature and environmental control functionality of their Linkam stage with other programmable experimental setups. A Linux version of the SDK is also available.
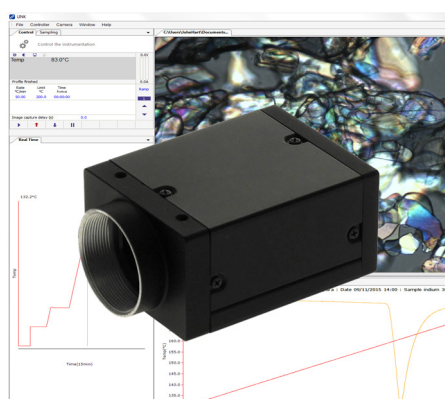
### High Resolution Camera Range

Linkam provide a range of powerful yet compact camera solutions which meet the demands of the majority of research applications and are tailored to work with temperature controlled microscopy setups. Choose from a range of high quality cameras, compatible with Linkam's Imaging Station and many other microscopes, to capture images and videos of your sample while controlling thermal and environmental conditions.

| Image Capture Module | Sensor Type | Resolution | Pixel Size | XY Pixels |
|---|---|---|---|---|
| High Performance Mono | CMOS | 3.2 Mp | 3.45 μm | 2048x1536 |
| High Performance Colour | CMOS | 3.2 Mp | 3.45 μm | 2048x1536 |
| High Resolution Colour | CMOS | 5.0 Mp | 3.45 μm | 2448x2048 |
| High Sensitivity Mono | CCD | 1.4 Mp | 6.45 μm | 1384x1032 |

### 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

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.*

🏠 **labor-welt.de/linkam**  ☎ **+49 (0)5131 4845200**  ✉ **info@latonline.de**