

# MFS

## Modular Force Stage

NEW



### Tensile and Compression

A wide range of grips to accommodate different samples

### Wide Range of Forces


Interchangeable options for tension and compression of 0N up to 600N

### Multiple Control Options

Full control of speed, distance, movement mode, applied force and temperature



 [www.linkam.co.uk](http://www.linkam.co.uk)

 +44 (0)1737 363476

 [info@linkam.co.uk](mailto:info@linkam.co.uk)

# Introducing the MFS

Linkam's MFS is designed to characterise the mechanical properties of your samples and is a new and improved version of the TST tensile stage with increased sensitivity, resolution and support for compression. The modular design allows users to have an additional level of control over experimental conditions, alongside the ability to change grips, force beams, and heater types; for example a liquid cell, or a temperature module that can be controlled from < -195°C up to 350°C. These additional options accommodate a wide range of samples, from single fibre threads to reinforced composites, and environmental control using the humidity or heated liquid cell modules.

The MFS provides a way to characterise and image all types of samples. The understanding of thermo-mechanical properties is increasingly important in the development of next-generation materials. Existing materials are being deployed in new environments, and innovative new materials and composites are being developed to meet the demand for stronger, more durable samples that can handle a range of environmental conditions, from inside the human body to outer space.

The MFS can be used with reflected or transmitted illumination as well as with other popular characterisation techniques such as X-ray, Raman and FT-IR. Its sample chamber can also be gas purged via the built-in gas ports. Additional options for humidity control and electrical contact posts are available.

A system requires the MFS stage, a T96-S temperature controller and LINK software for computer control. For cooling below ambient temperatures, an optional LNP96-S liquid nitrogen pump is also available.



## Features

### COMPRESSION AND TENSILE FORCE

Test the compressive and tensile properties of your sample relative to temperature, and capture high resolution images of the structural changes in situ.

### WIDE RANGE OF CONTROL PARAMETERS

Speed of jaws, distance moved and the force applied can be varied relative to temperature and environment.

### ENCODED DISTANCE MEASUREMENT

Built-in high resolution encoder for measurement of changes in length. Dual threaded leadscrews ensure the middle of the specimen stays centrally located.

### MODULAR DESIGN

Grips, force beams, heaters and lids can be easily changed to accommodate a wide range of sample types.

### HUMIDITY

Add the RH95 humidity unit to your system to accurately control the relative humidity around your samples.

### CUSTOM OPTIONS

Please contact us with details of your requirements.

## Technical Specification

### Distance Resolution

1µm

### Maximum Travel

85mm

### Tensile and Compressive Force Range

0N to 2, 20, 200 or 600N

### Speed Range

0.1 to 5000 µm/s \*

### Force Resolution (Maximum Force)

0.00001N (2N) 0.0001N (20N)  
0.001N (200N) (600N TBC)

### Movement Modes

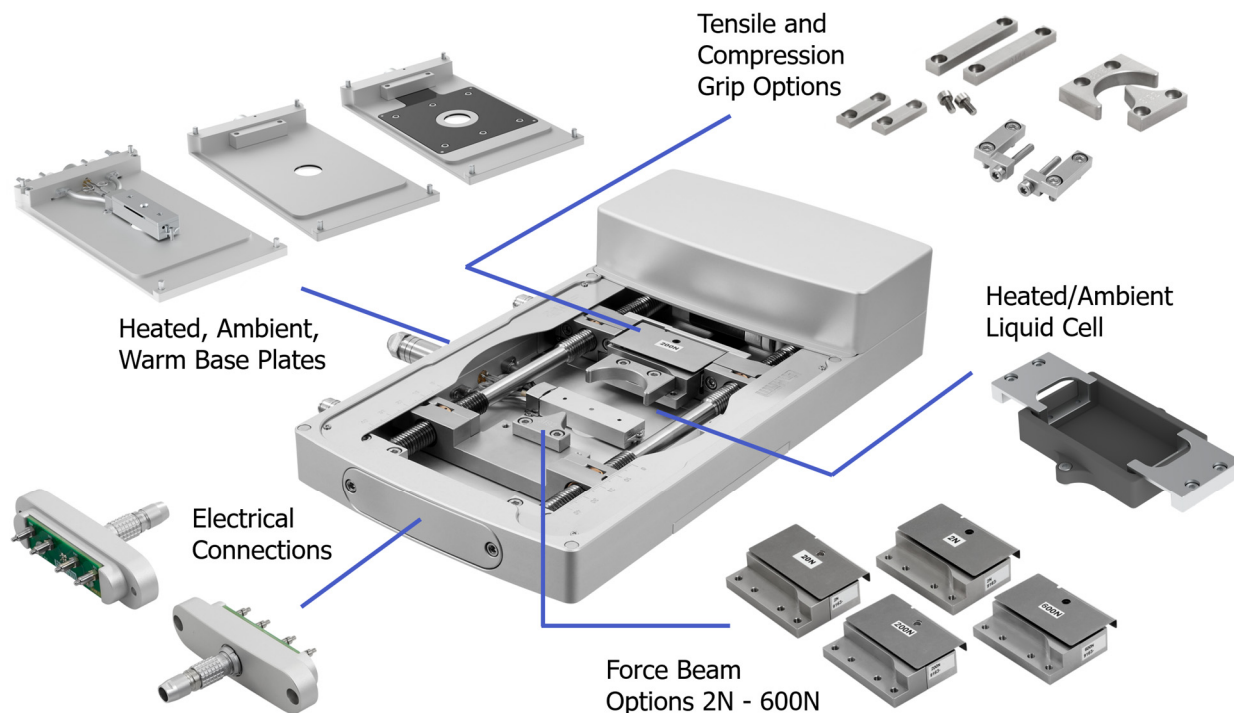
Step  
Velocity  
Tensile/Compressive Cycling  
Controlled Force

\* Beam and force dependent

# Design the system you need

Linkam's MFS has a wide variety of modular components which allow you to customise your system to handle a broad range of mechanical characterisation experiments. Modules include heated and unheated base plates, electrical connections, humidity options and heated liquid cells. A range of force beams are available including a highly sensitive 2N beam for single fibre applications and a 600N beam for failure testing of structural composites.

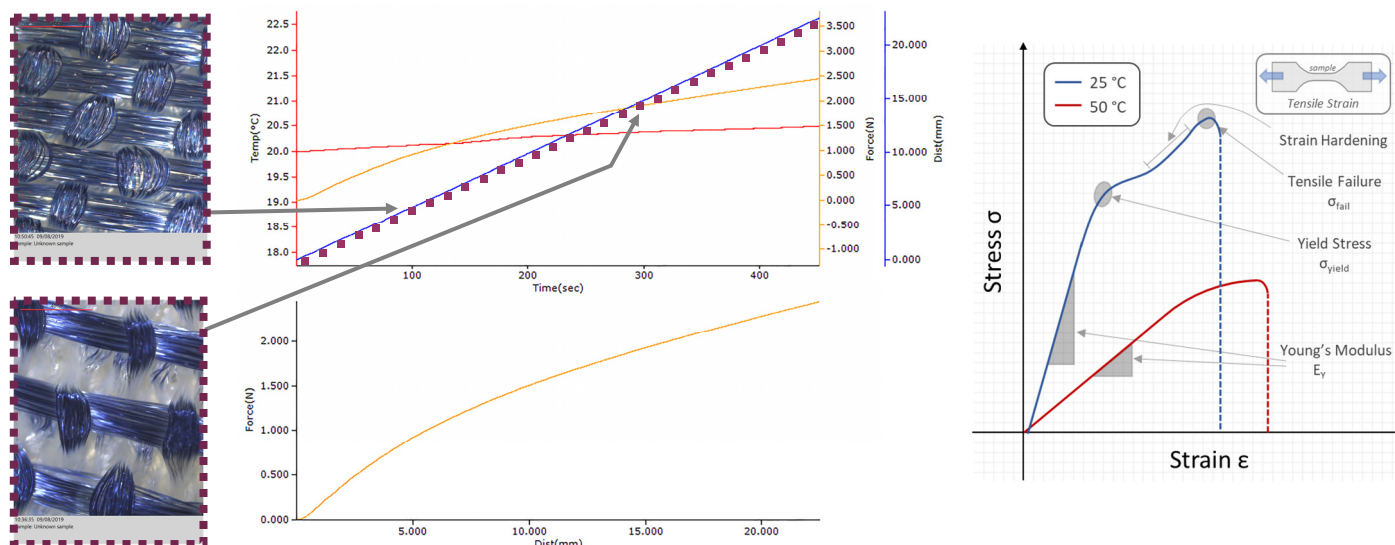
In addition, a wide range of custom module designs and grip options are available including clamping grips, compression, three-point bending and loop-pin tensile grips. We are constantly working with leading scientists to add more module options.



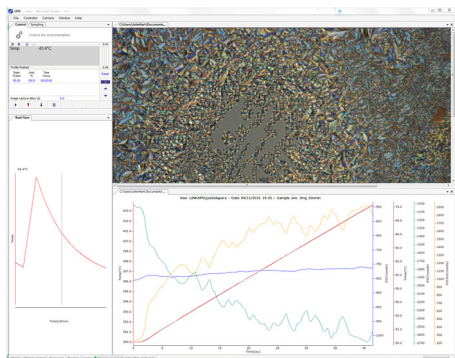
## Graphical Data

Analyse the mechanical properties of your samples with LINK software. Combine it with the LINK imaging module for in situ visualisation of your samples throughout your experiment.

Real-time graphs are displayed as the experiment is run. You can visualise your data in both temperature-time and force-distance graphs and export it for more detailed analysis.



## Discover More...



### LINK Control Software

Take control of your experiment with the LINK software. In addition to temperature, LINK can control or monitor many other device parameters such as vacuum, humidity, tensile force and shear force (dependent on system). LINK can be programmed with up to 100 ramps and provides real-time graphical feedback.

Optional modules to further enhance your system include LINK Imaging for synchronised image capture, LINK Extended Measurements for recording the measurement of key features in your images, LINK 21CFR11 for data regulatory compliance and LINK TASC providing image analysis 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

Linkam Scientific Instruments Ltd.  
Unit 8 Epsom Downs Metro Centre  
Waterfield  
Tadworth  
KT20 5LR  
United Kingdom

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.



 [www.linkam.co.uk](http://www.linkam.co.uk)

 +44 (0)1737 363476

 [info@linkam.co.uk](mailto:info@linkam.co.uk)