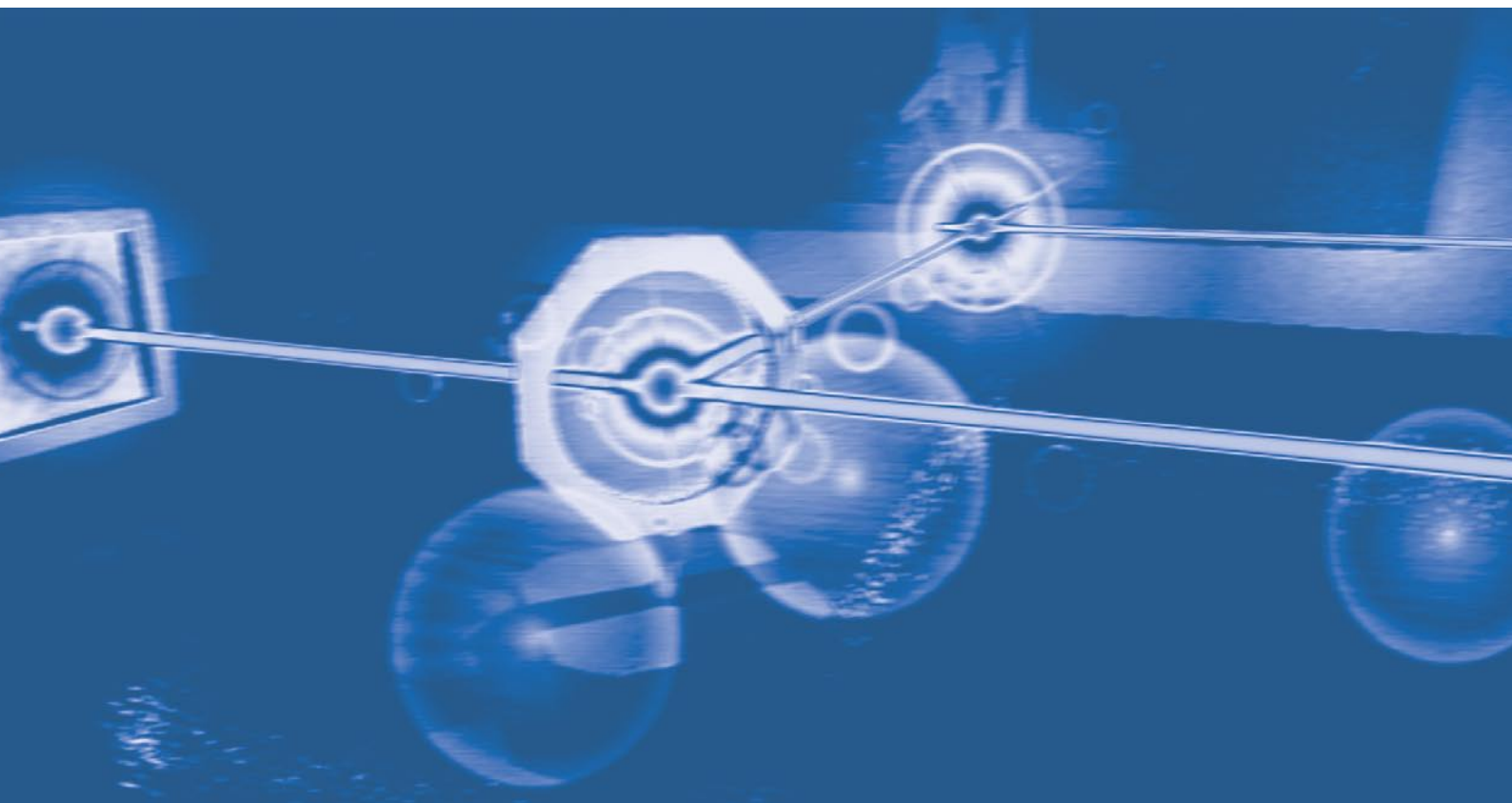




LINSEIS
LASER DILATOMETER



LINSEIS LASER Dilatometer provide the most powerful tool for the determination of the thermal expansion and expansion coefficient (CTE).

Further application examples are the evaluation of sintering processes of ceramics, metals and powder metals, the dimensional changes during chemical reactions (Oxidation) and phase changes of solid materials.

As a unique feature LINSEIS offers its LASER Dilatometer either in horizontal or vertical (Zero-Friction) mode of operation to provide the perfect solution for every application.

Dilatometer of the Pico-series.
As the name indicates already the physical resolution goes up to Pico-meters ($0,3\text{nm} = 300\text{ Picometer}$).

That means resolutions can be obtained which are up to a factor 33,33 higher than the resolution obtainable up to date.

On top the principle of interference measurement gives the possibility for much higher accuracy.

Features

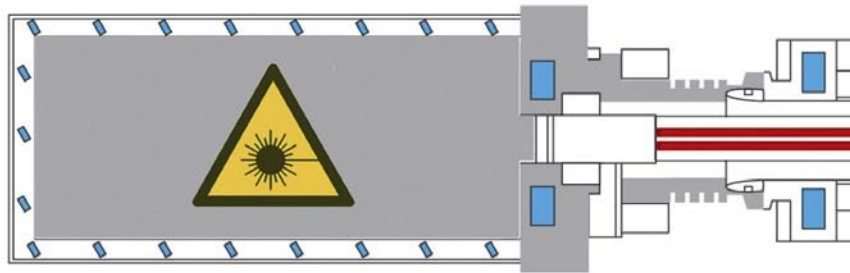
- Non contact Laser measurement
- Highest resolution & accuracy available worldwide
- Absolute measurement, no calibration necessary

Vacuum atmosphere

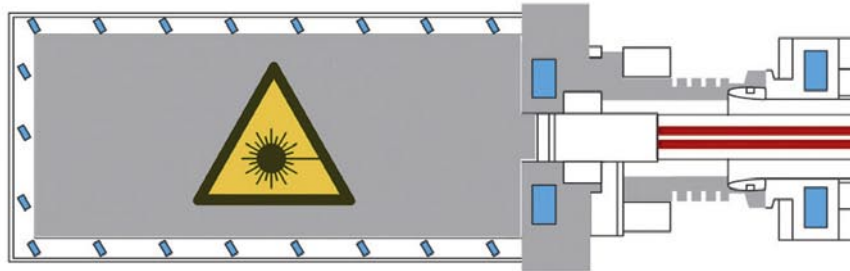
The vacuum tight construction ($10\text{E-}5\text{ mbar}$) of the L75 series permits measurements in the purest gas atmospheres. This feature is essential in preventing unwanted effects due to sample oxidization.

Measurement system

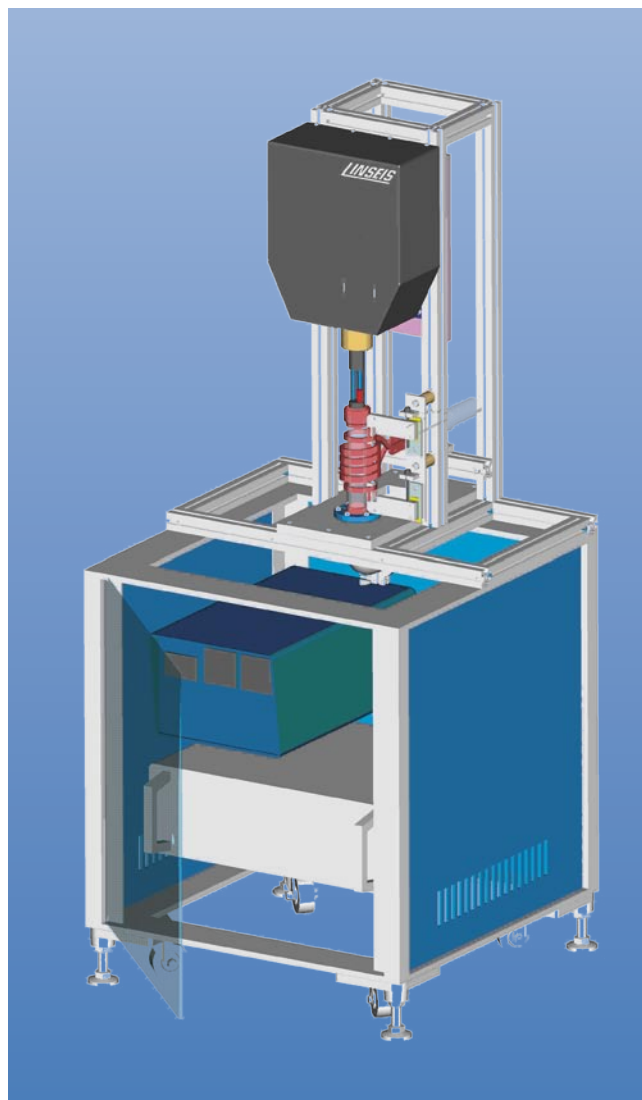
Laser Dilatometer built after the Michelson-Interferometer principle.



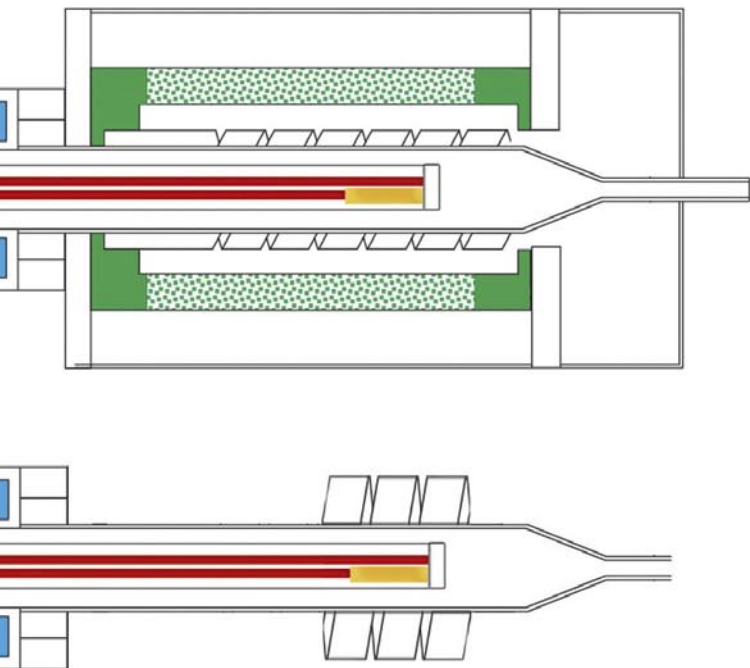
Laser Dilatometer with resistance heater



Laser Dilatometer with induction furnace



PRODUCT



Technical Data

Sample length: 20mm
 Resolution: 33 times better then conv. DIL
 Accuracy: 33 times better then conv. DIL

Ambient temperature: 10..30°C
 Sampleholder: Fused silica, Al2O3

Resistance Heater

Temperature range: -180...700°C
 RT...1000°C
 RT...1600°C

Induction Furnace

Temperature range: -180...1600°C
 Heating/Cooling rate: max. 0.1..99.9K/s
 Dwell time: 0...3000s / 0...3000min
 Acquisition rate: max. 1000 readings/s
 Cooling water: 2l/min, 5 Bar
 Sample-/Coolinggas: Inertgas, 10l/min max.
 at 1 Bar max.

Software

All LINSEIS thermo analytical instruments are PC controlled. The individual software modules exclusively run under Microsoft® Windows® operating systems.

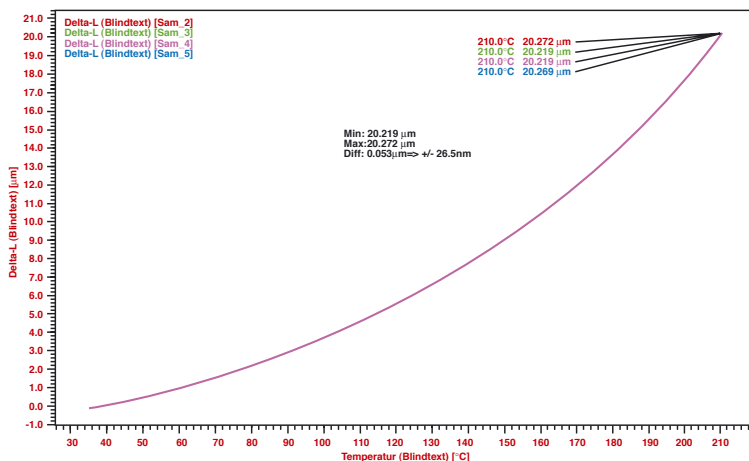
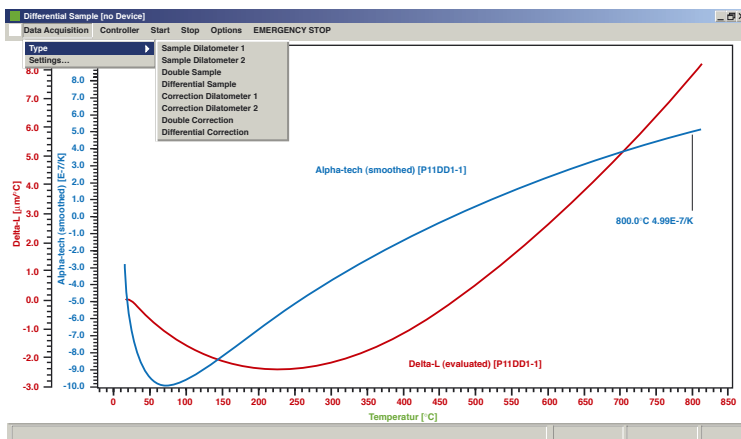
The complete software consists of 3 modules: temperature control, data acquisition and data evaluation.

The 32 bit software incorporates all essential features for measurement preparation, execution, and evaluation of a Dilatometer run. Thanks to our specialists and application experts, LINSEIS was able to develop comprehensive easy to understand user friendly application software.

Application

An INVAR sample was evaluated four times during heating in an air atmosphere. The temperature range was room temperature up to 200°C. This comparison clearly demonstrates the unbeaten accuracy of the LASER measuring technique.

The difference of the four measurements is as low as 0,01% FS. With the patented LINSEIS Laser Dilatometer, resolutions can be obtained which are up to a factor 33 higher than the resolution possible with a conventional Dilatometer.



**Horizontal / Vertical
Resistance Heater**

Temperature	Type	Element	Atmosphere	TC-Type
-180 - 700°C	L75/264	Thermo coax	inert, oxid., red., vac.	Type K
RT - 1000°C	L75/220	Kanthal	inert, oxid., red., vac.	Type K
RT - 1400°C	L75/230	Kanthal	inert, oxid., red., vac.	Type S
RT - 1600°C	L75/240	SIC	inert, oxid., red., vac.	Type S

Induction Furnace

-150 - 1600°C Induction Furnace (heating and colling at up to 100K/sec.)



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Services: Service Lab, Calibration Service

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