



## ***THB – TRANSIENT HOT BRIDGE***

*Measuring instrument for thermal conductivity,  
thermal diffusivity and specific thermal capacity*

# THB – Transient Hot Bridge



In view of vanishing primary energy resources and global warming, the thermo-physical properties of substances increasingly gain in importance. Knowledge of the specific heat is indispensable, above all for an economic energy use; thermal conductivity and thermal diffusivity are the most important parameters of new, more efficient working materials in the field of energy management, process engineering, biogene fuels and effective insulators for constructional energy saving. As fuels and insulators, renewable raw materials offer ecologic advantages. Their contribution to the protection of the environment and the climate as well as to the protection of finite fossil fuels still depends considerably on their thermo-physical properties which, until now, have been unknown in many cases.

The Transient Hot Bridge technique enables thermal conductivity, thermal diffusivity and specific heat measurements on various sample geometries and materials.

This Linseis measuring instrument provides the three material properties simultaneously after just a few minutes time – regardless of whether you have used the patented sensor in a solid matter (incl. bulk material, gels, pastes) or in a liquid.

The preparation of solid samples is pretty simple: One plane surface of two sample halves is sufficient for the sensor. Reference or calibration measurements are a thing of the past. As a matter of course, the THB measures absolute values, with an uncertainty which is not behind that of conventional plate or our laser flash devices.

Different sensors, easily to be exchanged, are available for laboratory and field use.

The THB measures fully automatically. Its software control optimizes the measurement process independently, aiming at a short duration and a minimum uncertainty. In addition, it continuously monitors a possible temperature drift of the sample. Due to the short measurement times, serial measurements can be performed at a forced sequence and with a high sample output.

In addition to the measurement values, the Software calculates and displays the associated measurement uncertainties in accordance with the international ISO standard.



## Advantages:

- Highest Accuracy
- Absolute technique (no calibration or reference sample required)
- Fast measurement cycles
- Non destructive measurement
- Broad measuring range
- Broad temperature range
- Easy handling (no trained staff required)
- Simple sample preparation
- Applicable for solids, liquids, powders and pastes
- No influence of sensor contact pressure on measurement
- Easy measurement of porous and transparent samples



## THB: Technical data

### Principle of measurement:

Transient strip sources according to a patented transient-hot-bridge procedure (THB), disturbing effect compensated, free from offset.

### Measuring ranges:

Thermal conductivity:	0,02 to 30 W/(m K)
Thermal diffusivity:	0,05 to 10 mm <sup>2</sup> /s
Specific thermal capacity:	100 to 5000 kJ/(m <sup>3</sup> K)

### Measurement uncertainties:

Thermal conductivity:	better than 2 %
Thermal diffusivity:	better than 5 %
Specific thermal capacity:	better than 5 %

### Duration of the measurement:

Solids:	typically 1 to 10 min
Liquids:	typically 1 to 120 s

### Service temperature:

Sensor:	-100 °C to 200 °C
Sensor type:	Kapton Insulated Sensor

### Sample size:

Smallest sample:	size 13mm diameter or square x 3mm height
Maximum Sample size:	unlimited

Sample temperature:	-100 up to 200 °C (Optional climate chamber)
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