

# Linseis Thermo Balance L81 / 2400



Picture, L81/2400 (Tungsten furnace from RT up to 2400°C under Helium)

The L81 balance system uses a zero deflection / zero balance principle of detection. When a weight change is detected the balance reacts by attempting to move the balance arm. This however is countered by a magnetic force on the balance arm which keeps the balance arm in a zero position.

The detected signal from the sensors control the necessary current supplied to the compensation coils keeping the balance arm at zero deflection.

The current through the compensation coils are proportional to the change of weight. This signal is amplified and sent to a data acquisition / control board which is mounted in a computer.

The same magnetic coils that detect a change of weight are also used for the electronic tare.

The L81/2400 balance system uses a highly sophisticated simultaneous measuring system for TG/DSC measurements. This measuring system is made out of Tungsten and has two Tungsten thermocouples bonded to it's head.

The balance L81/2400 can only measure under very clean atmospheres like Helium or Argon. It is necessary to use a two stage vacuum pumping system with a first stage of rotary pump and a second stage of a turbo molecular pump.

The balance L81/2400 is easy to operate, it uses an electronic tare, the furnace is raised by a motor driven furnace lift, and the balance arm can be arrested using push button control. As you can see the balance is mounted on a separate independent chassis. It is isolated from the outer cabinet which supports the furnace and furnace lift. This isolation reduces noise caused by outside disturbances during the measurement.



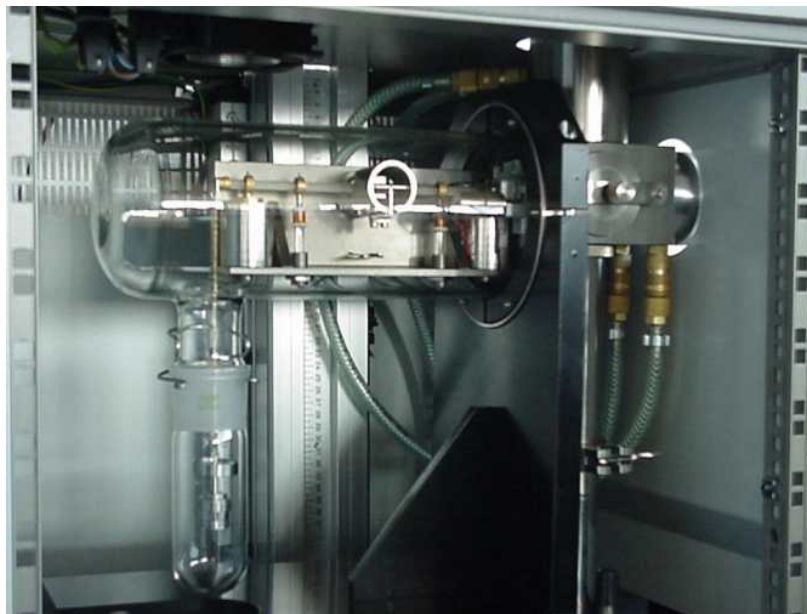
The data collection and temperature control is achieved using a Windows® based personal computer. The data acquisition and controlling card is placed into a PCI slot.

The Linseis data acquisition and evaluation software operates as separate multi-tasking modules. Both packages are all-inclusive and offer several calculations of the TGA, DTA, and HDSC signal.

Operating in a vertical mode eliminates errors caused by the expansion of the measuring system during heating.

The 2400°C Tungsten furnace which is used, is manufactured by Thermal Technology Corporation USA. This company is specialized in manufacturing furnaces for highest temperature applications. It is water cooled, even the high current voltage supply leads are water cooled. The power supply has the following data: 230V/100A (20kVA).

These expansion errors are common on high temperature horizontal systems and must be corrected.



The vertical mode of operation also affords a better adjustment and centering of the measuring system within the furnace hot zone. Simultaneous TG/DSC measurements can be made with highest sensitivity and best peak separation.

# Technical data L81 / 2400

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## Temperatur measurement

Resolution	+/- 0,1 °C
Accuracy	+/- 1,5 °C

## Sample weight

Accuracy	+/- 1 %, +/- 10 ug full scale
Resolution	1 ug
Reproducibility	+/- 0,5 %, +/- 10 ug full scale
Nois	+/- 1 ug
Drift	+/- 10 ug / K +/- 1,5 ug / mbar +/- 20 ug / day +/- 100 ug / month
Measuring ranges	2,5 / 25 / 250 / 2500mg
max. Sample weight	25g
Sample-holder	Tungsten
Temperature range	20°C up to 2400°C
Combinations	TG / DSC
Calibration	suggested 6 month interval
Weight calibration	using calibrated weights
Temperature calibration	melting of gold (Standard) for STA: BACO3, SRCO4, CaCO3, K2SO4, SIO2 Quartz peak, as ASTM Standard
Temperature accuracy	+/- 0,5 %
Heating rate	0,01 °C / min up to 50 °C / min
Data acquisition rate	max. 10 values / sec.