

LABSYS_{EVO}

TGA, DTA, DSC and Simultaneous
TGA-DTA, TGA-DSC



1000

From ambient to 1600 °C

- Coupling to gas analysis (FTIR, MS)
- New **3D high-precision Cp sensor®**
- Cp measurement within 2 % up to 1600 °C
- **CALISTO** software



LABSYS evo offers TGA with simultaneous DTA or DSC and Cp measurement within the temperature range of ambient to 1 600 °C. The **LABSYS evo** features a NEW high performance top loading balance and a unique 3D high-precision (Calvet type) Cp rod. Thanks to its unique ergonomic design and market leading Calisto software the **LABSYS evo** offers you the most easy-to-use Thermal Analysis system with uncompromised performance.

The HIGHLIGHTS

- **Simplicity of use:** thanks to both an ergonomic design and the dedicated market leading Calisto software, **LABSYS evo** is user friendly and intuitive to operate.
- **Wide temperature range:** TGA with simultaneous DTA or DSC and Cp measurement can be achieved for temperature up to 1 600 °C.
- **High Precision Cp Measurement:** the unique 3D (Calvet type) multiple thermocouples design enables large mass to be measured and to perform a Cp within 2 % , throughout the whole temperature range (ambient – 1 600 °C).
- **New top loading balance:** the unmatched stability, reproducibility and accuracy of this new balance offer unparalleled TGA data.

BALANCE & FURNACE

At the heart of the NEW **LABSYS evo** is an advanced coiled metal furnace and a new top loading thermostated balance that uses the technique of a beam articulated around a torsion band. The crossing furnace is ideally designed to be efficiently coupled to a gas analyzer. The different rods (DTA, DSC, TGA, 3D Cp) are changed within seconds using our unique "plug & play" connector.

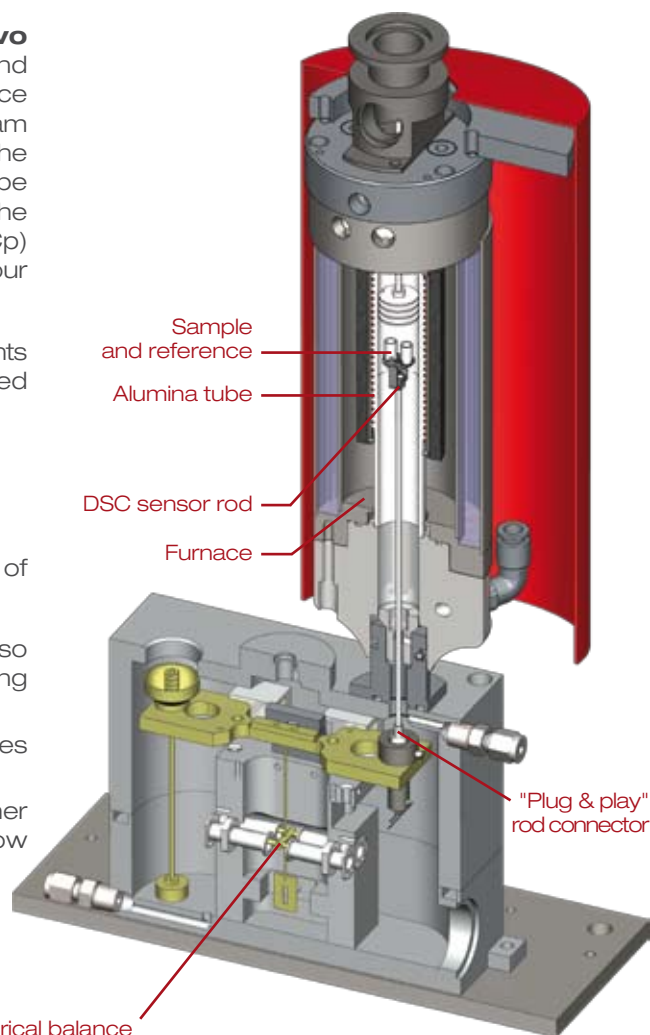
When only DTA, DSC or Cp measurements are required the balance beam is locked during the test for high precision.

Gas control panel

LABSYS evo offers the possibility of gas sweeping (inert or reactive) .

An automated gas control panel is also available as an option, with the following performance specifications:

- select from 3 different carrier gases (flow rate: 4 to 200 ml/min)
- mixing these carrier gases with another "auxiliary or reactive" gaseous fluid (flow rate: 0.3 to 16 ml/min).



SENSOR RODS

Different sensor rods are available for DSC/DTA, TGA, simultaneous TGA-DSC/DTA measurements:

- **DTA rods:** Platinel (ambient to 1 200 °C) or Platinum-Rhodium (ambient to 1 600 °C available with 20, 100 or 160 µl crucibles made of aluminum, alumina or platinum)
- **DSC rods:** chromel-constantan (ambient to 800 °C) or Platinum-Rhodium (ambient to 1 600 °C – plate type DSC, available with 75, 100 or 110 µl crucibles made of aluminum, alumina or platinum)
- **TGA rod:** ambient to 1 600 °C, available with 400 or 500 µl made of alumina, platinum.



DSC plate rod



DTA rod



TGA rod



“plug & play” rod connectors

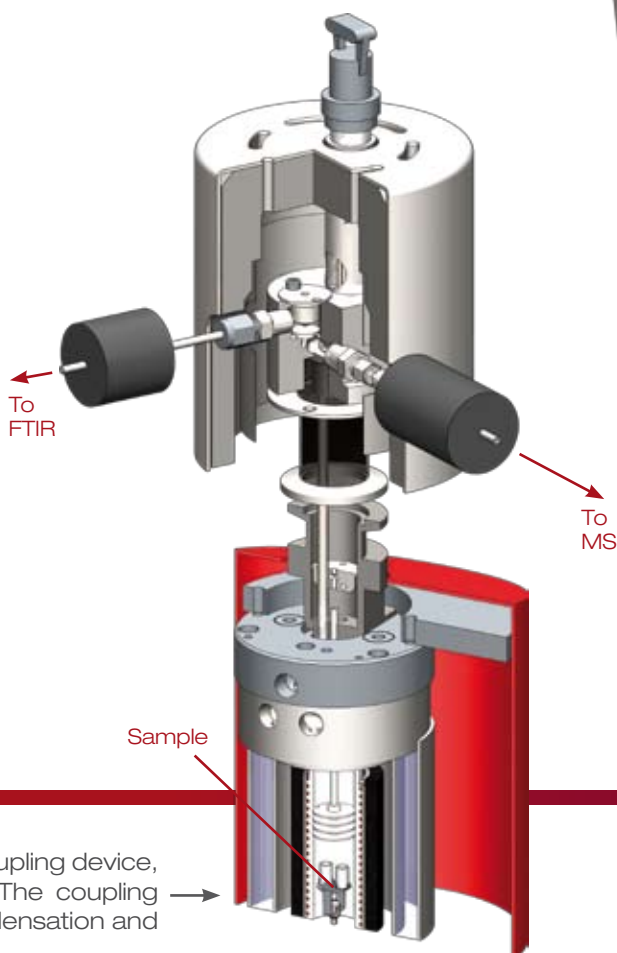
3D HIGH SENSITIVITY Cp SENSOR®

To increase the sensitivity of Cp measurement it is necessary to increase the mass, the sensitivity of the sensor and the speed of the furnace. Thanks to the large size of the crucible (380 µl to be compared to less than 100 µl for a regular DSC), the sensitivity of the sensor (up to 0.5 µV/mW) and the high heating and cooling rate of the furnace (100 °C/min) it is possible to have Cp measurements within 2 % precision, on the whole temperature range (ambient – 1 600 °C).

The 3D Cp (Calvet type sensor®) is composed of 10 thermocouples in series, that totally surround the sample.



3D Cp Sensor®



EVOLVED GAS ANALYSIS

LABSYS **evo** offers a “Plug & play” gas analyzer coupling device, enabling simultaneous MS and FTIR connections. The coupling device is heated up to 300 °C to avoid any gas condensation and is completely insulated for a safe handling.



Applications

With its wide temperature range (ambient to 1600 °C) **LABSYS evo** has a wide range of applications for DSC/DTA, TGA, simultaneous TGA-DSC/DTA, Cp measurements. Various fields of application are possible including polymers and plastics, advanced materials, pharmaceutical compounds, inorganic substances, thermodynamics (Specific Heat Capacity Cp precision within 2 %), energy, etc.


View the application notes in your field, available for download, by visiting www.setaram.com!

A huge database is in the Application Library area of our website. We have also included a powerful search engine that will enable you to find the most applicable data.

Specifications

Temperature range	Ambient to 1 600 °C
Isothermal temperature accuracy	+/- 1 °C
Isothermal temperature precision	+/- 0.04 °C
Programmable temperature scanning rate (heating and cooling)	0.01 to 100 °C.min ⁻¹
Furnace cooling	32 min (1 600 °C to 50 °C)
Maximum balance capacity	20 g
Weight range	+/- 1 000 mg; +/- 200 mg
Weighing precision	+/- 0.01 %
TG Resolution	0.2 µg 0.02 µg
Baseline dynamic drift (one hour)	10 µg
TG reproducibility up to 1 200 °C	< 50 µg
DSC rod - Resolution	0.4 µW / 10 µW dependent on sensor
3D Cp rod - Cp Accuracy	< 2 %
Vacuum	< 10 ⁻¹ mbar
Evolved gas	simultaneous MS, FTIR couplings (option)
Gases	• Two inlets for gas scanning (inert or reactive) or • 3 carrier gases (option)
Weight	(MFC from 4 to 200 ml/min) + 1 auxiliary or reactive gas (MFC from 0.3 to 16 ml/min)*
Dimensions (Height / Width / Depth)	55 kg / 121 lbs 56 closed, 76 opened / 53 / 58 cm
Power requirements	(22.0 closed 29.9 opened / 20.8 / 22.8 in) 230 V - 50/60 Hz

*MFC = Mass Flow Controller

Option: AKTS Thermokinetics software for comprehensive investigation of reaction or decomposition 



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