Thermo Mechanical Analyzer

TMA7000 SERIES

HITACHI

Inspire the Next

TMA7000 SERIES

The New World in TMA

High Sensitivity – Great Flexibility

- New technology for measurement optimization
- Low noise, high sensitivity TMA signal
- Wide measurement range (± 5mm)
- Stress-Strain, Creep, Stress-Relaxation and DMA Measurements

The New Cooling Systems

- The integrated LN_2 gas control unit guarantees cooling efficiency
- The electrical cooling unit helps to reduce running costs

Automatic Gas Control Unit

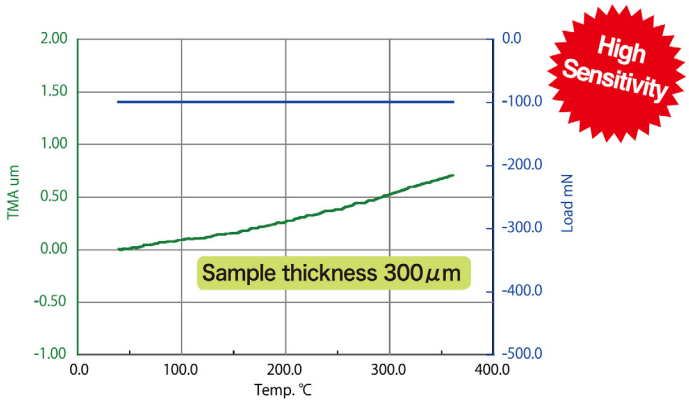
- Mass flow controllers for precise flow control

System Expandability

- The optional Cooling Systems, Humidity Control Furnace, Swelling Measurement, Vacuum Measurement and High Volume TG Measurement Accessory allow configurations for all application needs

Hitachi High-Tech Science

Thermo Mechanical Analyzer



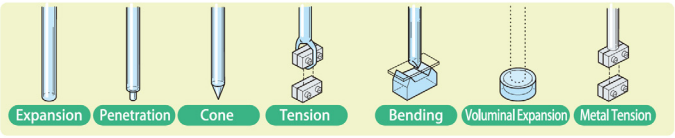
Measurement of thin glass plate

Dramatically improves basic performance

- Our newly developed optimization technology minimizes the noise level of the TMA signal and doubles sensitivity.
- Optimized to measure minor changes of low-expansion material and thin films.

Designed to meet all Application needs

- Wide dynamic ranges: Measurement range ±5mm Load range ±5.8N Maximum sample size 10mm diameter and 25mm length.
- Stress-Strain, Creep, Stress-Relaxation, and DMA measurements increase the value of use above the conventional TMA measurements such as thermal expansion, glass transition and softening.
- The complete range of measurement probes covers all application needs



Complete Cooling Unit

- The **LN2 Dewar Vessel** attached to the furnace can easily perform measurements from -170°C.
- The powerful **Auto LN2 Gas Cooling Unit** uses the cold nitrogen gas to allow heating and cooling in the temperature rang from -150℃ to 600℃ automatically. New furnace design and improved control electronics increase cooling efficiency by more than 30%.
- High performance, easy handling and minimal running costs are the key features of the unique **Electrical Cooling Unit** in the temperature range of -60°C to 450°C.
- The **Auto Air Cooling Unit** uses compressed air to cool the furnace automatically down to room temperature after measurement to improve sample throughput.

Auto LN2 Gas Cooling Unit

Electrical Cooling Unit

Model name	TMA7100	TMA7300
Temperature range	-170 to 600°C	Ambient to 1500°C
Sample cylinder	Quartz, Metal*	Alumina
Probe	Quartz Expansion Probe Quartz Penetration Probe* Quartz Cone Probe* Quartz Tension Probe* Quartz Bending Probe* Metal Tension Probe* Volume Expansion Accessory*	Alumina Expansion Probe
Probe supporting method	Cantilever	
Measurement range	±5mm	
RMS noise / sensitivity	0.005μm / 0.01μm	
Load range / Resolution	±5.8 N / 9.8μN	
Scanning rates	0.01 to 100°C /min	
Maximum sample dimensions	Expansion, Penetration:10(ϕ)×25(L) mm Tension:5(W)×1(T)×25(L) mm	Expansion:10(ϕ)×25(L) mm
Sample length	Automated measurement	
Atmosphere	Air, Inert gas Vacuum (to 13Pa)*, Swelling measurement* Humidity control measurement*	Air, Inert gas Vacuum (to 13Pa)*
Stress control mode	Constant:±5.8N, Constant rate loading: 9.8×10^{-2} to 9.8×10^{6} mN/min, Sinusoidal loading: 0.001 to 1 Hz, Combination: maximum 40steps	
Strain control mode	Constant: ±5000 μm, Constant rate strain control: 0.01 to 10^{6}μm/min Sinusoidal strain Control: 0.001 to 1Hz, Combination: maximum 40steps	
Gas purge control	Flow Meter* Gas Cooling Unit* Mass Flow Cooling Unit*	
Cooling unit	LN2 Dewar Vessel Auto LN2 Gas Cooling Unit* Electrical Cooling Unit* Auto Fan Cooling Unit*	Auto Fan Cooling Unit*
Dimensions	390(W) × 550(D) ×740(H) mm	

＊optional

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