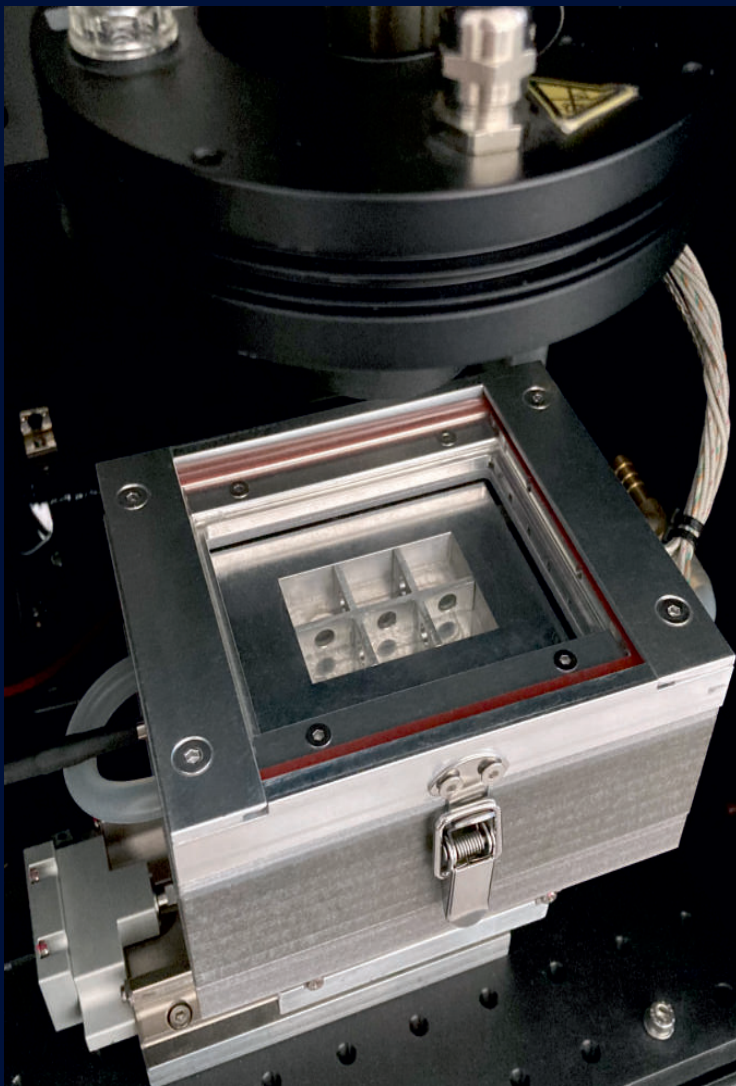




microDAC[®] CTE

Datasheet

microDAC[®] CTE is a fully automatic optical measurement system for the precise determination of the coefficient of thermal expansion (CTE) based on digital image correlation (DIC). It enables the parallel characterization of multiple samples under controlled thermal stress and is ideal for materials research and quality assurance in the fields of electronics, polymers, and composite materials.



Simultaneous measurement of the coefficients of thermal expansion (CTE) of 6 samples (in the x and y direction)



No sample preparation necessary



Fully automated measurement process



Complete measurement report including simulation ready data immediately after measurement

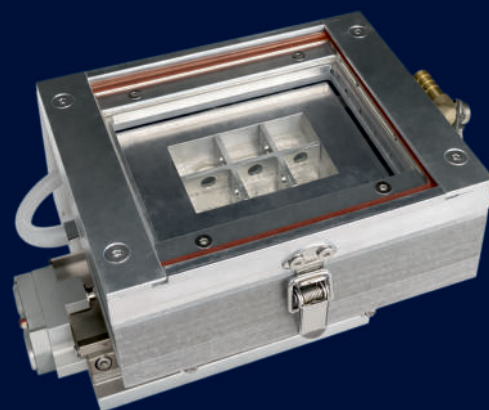


Technical Specification

System		
Type	Benchtop system for non-contact CTE determination using DIC	
System scope	19 inch housing: thermal chamber, optical precision measurement system including Z-axis motor unit, motorized XY positioning stage, controller, ventilation and cooling system with 2 pumps, PC with Software	
Housing	550 x 500 x 800	mm
Weight	max. 40	kg
Power supply	230 50	VAC Hz
Protection class	IP20	
Ventilation medium	Air	
Cooling medium	LN ₂ , to be provided by the customer	
Interface PC	USB 3	
Software	VEDDAC CTE	
Measurement		
Measuring principle	Optical dilatometer: motorized camera system with telecentric optics and ring light illumination (520 ... 550 nm wavelength)	
Measurement procedure	Fully automatic	
Measurement evaluation	Fully automatic	
Reference standards	VDI/VDE 2626 DIN EN ISO 9513	ASTM E2208 DIN EN ISO 11357-2
Evaluation principle	DIC: In-plane deformation measurement	
DIC resolution	≤ 27	nm
Output	CTE _{x+y}	ppm/K
Measurement parameters		
Temperature range	0 ... 300	°C
Heating rate	1 ... 50	K/min
Cooling rate	1 ... 50	K/min
Control accuracy	± 0,01	K
CTE resolution	± 0,2	ppm
Samples		
Sample dimensions, round	max. Ø 10	mm
Sample dimensions, rectangular	max. 10 x 10	mm
Sample thickness	max. 3	mm
Quantity	1 to 6	
Sample preparation	Not required ¹	

Key Features:

- » Fully automatic measurement process and evaluation
- » Multi-sample thermal chamber with 2x3 grid arrangement and flow-optimized design
- » Suitable for amorphous and semi-crystalline materials with glass transition temperature (T_g): automatic determination of the CTE below and above the T_g



Range of characterizable samples:

- » Metals and alloy
- » Polymers
- » Gap pads
- » Foils and plates
- » Cured materials
- » Substrates

Software VEDDAC CTE:



¹ DIC analysis requires a diffusely reflective, structured surface. For high-gloss or transparent samples, a suitable surface treatment is necessary.