

# Technical Specifications for the DSC 8000/8500 Differential Scanning Calorimeters

## Thermal Analysis

### Introduction

At PerkinElmer, we're committed to the future of thermal analysis. We prove it with the introduction of our new line of high-performance DSC solutions – DSC 8000 and DSC 8500. The DSC 8000/8500 features our proprietary double-furnace technology, which directly measures the heat flow difference between two independent furnaces. This design gives higher accuracy and sensitivity for even your most demanding applications.

### Technical Description and Specifications

DSC type	Double-furnace design	The two furnaces are much lower in mass than a single furnace design allowing much faster thermal response and faster cool down times
Measurement principle	Power-compensation	Measures heat-flow (Energy) directly without the need for conversion. Delivers more accurate heat-flow measurements
Furnace material	90% platinum alloy	Superior thermal conductivity for fast furnace response. Extremely chemically robust. Can operate with oxygen at temperatures >600 °C to allow furnaces to be cleaned by combustion.
Temperature sensors	Distributed, platinum resistance thermometers	Platinum resistance thermometers are more accurate and linear over a wider temperature range than thermocouples
MT-DSC	Included	
Software	Includes Pyris™ software, Pyris Player, Isothermal Kinetics, Scanning Kinetics, Specific Heat and Purity software packages	
Cooling accessories	Chiller, Intracooler 2, Intracooler 3 and CLN2	

	DSC 8000	DSC 8500	Technical Description
<b>Hardware Features</b>			
Dual, digital mass flow-controller	Included		Switch easily between gases
Cooling accessory upgrades	User exchangeable		Minimal downtime and expense
Automated DSC cover	Included		Easy, quick sample loading and unloading
Semi-automated sample loading accessory	Included		
96-position autosampler	Optional		
High-pressure DSC	Optional		
Photocalorimeter	Optional		
DSC-Raman	Optional		
<b>Calorimetric Performance</b>			
Dynamic range	±1300 mW		Allows applications with high energy thermal transitions to be measured
Accuracy	<±0.2%		
Precision	<±0.03%		
Indium height/width (mW/°C)	18.4		Indium melting peak height/width at half-height. 1 mg Indium, 10 °C/min, nitrogen purge. No mathematical treatment to the data or correction applied.
Indium melting time (sec)	2.3		The time between Indium melting peak onset and maximum
<b>Temperature Performance</b>			
Range	-180 °C to 750 °C		
Accuracy	±0.05 °C		Using on-set temperatures of Indium melting peak
Precision	±0.008 °C		
Data points/sec	33	100	
Controlled heating rates	0.01 to 300 °C/min	0.01 to 750 °C/min	
Controlled cooling rates	0.01 to 150 °C/min	0.01 to 750 °C/min	Depends on cooling accessory installed and cooling range selected
In-situ ballistic sample cooling of up to 2100 °C/min	Upgrade	Included	
Between-sample cooling times (100 to -100 °C with CLN2 cooling accessory)	80 seconds	30 seconds	For fast sample turnaround

**DSC 8000****DSC 8500****Technical Description****Temperature Performance, continued**

Controlled Cooling	Ambient coolant – nitrogen purge	Ambient coolant – nitrogen purge
	10 °C/min to 22 °C	10 °C/min to 22 °C
	20 °C/min to 35 °C	20 °C/min to 35 °C
	50 °C/min to 70 °C	50 °C/min to 70 °C
	100 °C/min to 125 °C	100 °C/min to 125 °C
	Liquid N <sub>2</sub> coolant – helium purge	Liquid N <sub>2</sub> coolant – helium purge
	10 °C/min to -170 °C	10 °C/min to -170 °C
	50 °C/min to -165 °C	50 °C/min to -165 °C
	100 °C/min to -140 °C	100 °C/min to -140 °C
		200 °C/min to -100 °C
		300 °C/min to -60 °C
		400 °C/min to -20 °C
		500 °C/min to 30 °C
		750 °C/min to 100 °C

**Regulatory**

21 CFR Part 11 Compliance	Optional
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Qualification, verification and calibration services	Available
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**Site Requirements**

Dimensions (HxWxD)	30 x 54 x 62 cm (12" x 21" x 24") without autosampler
	50 x 54 x 62 cm (20" x 21" x 24") with autosampler

Weight	20 kg (44 lb) without autosampler
	30 kg (66 lb) with autosampler

Power requirements	100-240 Volt 50/60 Hz	100-240 Volt 50/60 Hz
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