Drop Shape Analyzer

DSA100

Specifications

Drop Shape Analyzer – DSA100E
(Expert configuration)

Product group specifications	DSA100B	DSA100S	DSA100E
Camera CF04 (standard)			
Connection		USB 3.0	
Resolution		1920 × 1200 px	
Frame rate		2300 fps	
Dark noise		7 electrons	
Dynamic range		73 dB	
5 megapixel high speed camera CF10 (optional)			
Connection		USB 3.0	
Resolution		2592 × 2048 px	
Frame rate		3450 fps	
Dark noise		9.3 electrons	
Dynamic range		60 dB	
Optics			
Focus		manual	
Zoom		7× zoom, manual	
View angle		±4°	
Field of view		with CF04: 3.9 × 3.9 to 24.7 × 24.7 mm with CF10: 7.1 × 5.6 to 49.8 × 39.4 mm	
Resolution		with CF04: 3.1 to 21.7 µm with CF10: 2.7 to 19.2 µm	
Illumination			
Type		high power monochromatic LED	
Wave length, dominant		470 nm	
Field of light		46 mm × 46 mm (D × H)	

Product group specifications	DSA100B	DSA100S	DSA100E
Dosing system			
Syringe dosing	1 × manual	1 × software-controlled	2 × software-controlled
Liquid Needle double pressure dosing	optional	optional	1 × included
Multi-dosing system (optional)	up to 8 liquids software-controlled		
Drop deposition (syringe dosing)	manual	software-controlled	software-controlled
Syringes, volume	glass (500 µL), disposable (1 mL)	glass (1×, 450 µL), disposable (900 µL)	glass (2×, 450 µL), disposable (900 µL)
Resolution (syringe dosing)	-	20 nL	20 nL
Speed (syringe dosing)	-	0.004 to 25 µL/s	0.004 to 25 µL/s
Liquid Needle double pressure dosing			
Control	software-controlled		
Speed	fixed (fast jet)		
Resolution	0.1 µL		
Cartridge, volume	disposable, 1 mL		

Stages (default setup)	x-axis	y-axis	z-axis	x-axis	y-axis	z-axis	x-axis	y-axis	z-axis
Control	-	-	manual	manual			software-controlled		
Length	-	-	45 mm	100 mm	100 mm	45 mm	100 mm	100 mm	38 mm
Resolution	-	-	16 mm/turn	2 mm/turn	2 mm/turn	16 mm/turn	10 µm		
Accuracy	-	-	-	-	-	-	100 µm		

Tilting (optional)		
Types	internal	external
Control	software-controlled	
Range	0 to 90°	
Resolution	0.01°	0.1°
Accuracy	0.3°	1°

Software	ADVANCE		
Contact angle	recommended	recommended	recommended
Surface free energy of solids	optional	recommended	recommended
Interfacial and surface tension of liquids	pendant drop, rising drop (optional) Constrained Sessile Drop (optional)	pendant drop, rising drop (optional) Constrained Sessile Drop (optional)	pendant drop, rising drop (recomm.) Constrained Sessile Drop (optional)
Fiber contact angle	Meniscus (optional)	Meniscus (optional)	Meniscus (optional)
Software languages			
	Chinese (simplified), English, French, German, Japanese, Korean, Portuguese, Russian, Spanish		

Measurement specifications	DSA100B	DSA100S	DSA100E
Sessile drop/captive bubble			
Result	contact angle		
Range (software-based)	0 to 180°		
Resolution (software-based)	0.01°		
Accuracy (instrument-based)	0.1°		
Models	conic section, polynomial, circle, Young-Laplace, height-width		
Types	advancing, receding, static, dynamic, tilting		
Surface free energy of solids			
Results	surface free energy (SFE), polar & disperse part, acid & base part, H-bond part		
Models	equation of state, Zisman, Fowkes, Wu, Owens-Wendt-Rabel-Kaelble, Schultz-1, extended Fowkes, acid-base theory		

Measurement specifications	DSA100B	DSA100S	DSA100E
Pendant drop/rising drop			
Results		interfacial and surface tension	
Range (software-based)		0.01 to 2000 mN/m	
Resolution (software-based)		0.01 mN/m	
Model		Young-Laplace	
Types		static, dynamic	
Meniscus			
Results		contact angle	
Range (software-based)		10 to 90°	
Resolution (software-based)		0,01°	
Minimum fiber diameter		55 µm	
Types		static, dynamic, advancing, receding	

General specifications	DSA100B	DSA100S	DSA100E
Sample dimensions			
Maximum sample space		320 mm × ∞ × 275 mm (W × D × H, without axes)	
Temperature control (optional)			
Equipment		temperature-controlled sample stage, chamber, cuvette	
Types		liquid | liquid (large) | Peltier | electrical	
Range		5 to 90 °C | -10 to 130 °C | -30 to 160 °C | 50 to 400 °C	
Maximum sample space		132 mm × 132 mm × 27 mm (W × D × H; large liquid chamber)	
Resolution		0.1 °C	
Flow-through thermostat		with liquid	
Inert gas		yes	
Temperature measurement			
Range		-50 to 400 °C	
Resolution		0.1 °C	
Precision		0.1 °C	
Accuracy		1/3 DIN B (±0.1 °C at 0 °C to ±0.8 °C at 400 °C)	
External sensor		2 connectors (PT100)	
Locations		sample stage, chamber, cuvette	
Housing and peripherals			
Compartment		test liquids protected against light	
Needle protection shield		yes	
Camera und optics housing		yes	
Levelling		yes	
Environment			
Operating temperature		10 to 40 °C	
Humidity		without condensation	
Instrument dimensions			
Footprint		555 mm × 375 mm (W × D)	
Height		490 mm	
Weight (without accessories)		24 kg	
Power supply			
Voltage (AC)		88 to 264 V	
Power consumption		100 W	
Frequency		50 to 60 Hz	
Interfaces			
PC		USB 3.0	