Drop Shape Analyzer

DSA30

Specifications

Drop Shape Analyzer – DSA30E
(Expert configuration)

Product group specifications	DSA30B	DSA30S	DSA30E
Camera CF04 (standard)			
Connection		USB 3.0	
Resolution		1920 × 1200 px	
Frame rate		up to 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		up to 3450 fps	
Dark noise		9.3 electrons	
Dynamic range		60 dB	
Optics (standard)			
Focus		manual	
Zoom		6.5 × zoom, manual	
View angle		±3°	
Field of view		with CF04: 3.2 × 3.2 to 18.5 × 18.5 mm with CF10: 5.5 × 4.3 to 36.1 × 28.6 mm	
Resolution		with CF04: 2.5 to 16.2 µm with CF10: 2.1 to 13.9 µm	
Optics with extender lense (optional)			
Zoom		2× zoom, fixed	
Field of view		with CF04: 1.5 × 1.5 to 10.1 × 10.1 mm with CF10: 2.7 × 2.1 to 18.0 × 14.2 mm	
Resolution		with CF04: 1.3 to 8.4 µm with CF10: 1.0 to 7.0 µm	
Illumination			
Type		high power monochromatic LED	
Wave length, dominant		470 nm	
Field of light		Ø 42 mm	

Product group specifications	DSA30B	DSA30S	DSA30E
Dosing system			
Syringe dosing	1 × manual	1 × software-controlled	2 × software-controlled
Liquid Needle double pressure dosing	optional	optional	1 × included
Stood-up Drop pressure dosing	optional		
Multi-dosing system (optional)	up to 4 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		
Stood-up Drop pressure dosing			
Control	software-controlled		
Speed	fixed (fast jet)		
Resolution	fixed (≈ 0.4 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)			
Type	internal		
Control	software-controlled		
Range	0 to 90°		
Resolution	0.01°		
Accuracy	0.3°		
Software	ADVANCE		
Contact angle	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)
Receded contact angle	Stood-up Drop (optional)		
Fiber contact angle	Meniscus (optional)		
Software languages			
	Chinese (simplified), English, French, German, Japanese, Korean, Portuguese, Russian, Spanish		

Measurement specifications	DSA30B	DSA30S	DSA30E
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			
Result		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	
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	
Stood-up Drop			
Results		receded contact angle	
Range (software-based)		0-180°	
Resolution (software-based)		0.01°	
Model		conic section, polynomial, circle, Young-Laplace, height-width	
Meniscus			
Results		contact angle	
Range (software-based)		10 to 90°	
Resolution (software-based)		0,01°	
Minimum fiber diameter		65 µm, 40 µm (with optional extender)	
Types		static, dynamic, advancing, receding	

General specifications	DSA30B	DSA30S	DSA30E
Sample dimensions			
Maximum sample space		320 mm × ∞ × 275 mm (W × D × H, without axes)	
Temperature control			
Equipment		temperature-controlled sample stage, chambers, 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 size		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			
Levelling		yes	
Environment			
Operating temperature		10 to 40 °C	
Humidity		without condensation	
Instrument dimensions			
Footprint		610 mm × 250 mm (W × D)	
Height		610 mm	
Weight (without accessories)		10 kg	
Power supply			
Voltage (AC)		88 to 264 V	
Power consumption		100 W	
Frequency		50 to 60 Hz	
Interfaces			
PC		USB 3.0	