

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		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 (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			
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)	-			0.1 µL			0.1 µL			
Speed (syringe dosing)	-			0.02 to 25 µL/s			0.02 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)										
Type				internal						
Control				software-controlled						
Range				0 to 90°						
Resolution				0.01°						
Accuracy				0.3°						
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)			

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		

Measurement specifications	DSA30B	DSA30S	DSA30E
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	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		