

DROP SHAPE ANALYZER – DSA100

SPECIFICATIONS



Product group specifications	DSA100B			DSA100S			DSA100E		
Camera system									
Connection	USB 3.0								
Performance	CF03: 200 fps at 1200 × 800 px 500 fps at 560 × 350 px 800 fps at 320 × 200 px 2000 fps at 90 × 60 px CF06 ¹⁾ : up to 3400 fps at 640 × 50 px								
Optics									
Focus	manual			manual			software-controlled		
Zoom	7× zoom, manual			7× zoom, manual			7× zoom, software-controlled		
View angle	±4°								
Field of view	CF03: 3.9 mm × 3.9 mm to 24.7 mm × 24.7 mm CF06 ¹⁾ : 1.7 mm × 1.3 mm to 10.8 mm × 8.1 mm								
Resolution	CF03: 3.1 to 21.7 μm CF06 ¹⁾ : 2.5 to 17.8 μm								
Illumination									
Type	high power monochromatic LED								
Wave length, dominant	470 nm								
Field of light	46 mm × 46 mm (D × H)								
Dosing system									
Dosing	manual			software-controlled			software-controlled (4×) + manual (1×); up to 8 dosing units possible		
Drop deposition	manual			software-controlled			software-controlled		
Syringes, volume	glass (500 μL), disposable (1 mL)			glass (450 μL), disposable (900 μL)			glass (450 μL), disposable (3 mL)		
Resolution	-			0.1 μL with glass syringe			0.1 μL with glass syringe		
Speed	-			10 to 1400 μL/min			10 to 1400 μL/min		
Double pressure dosing system ¹⁾									
Drop deposition	software-controlled								
Cartridge, volume	disposable (1 mL)								
Resolution	0.1 μL								
Speed	fixed								
Stages	x-axis	y-axis	z-axis	x-axis ²⁾	y-axis ²⁾	z-axis	x-axis ^{2), 3)}	y-axis ^{2), 3)}	z-axis ^{2), 3)}
Control	-	-	manual	manual			software-controlled		
Length	-	-	38 mm	100 mm	100 mm	38 mm	100 mm	100 mm	38 mm
Resolution	-	-	-	2 mm/turn	2 mm/turn	-	10 μm		
Accuracy	-	-	-	-	-	-	100 μm		
Tilting									
Type	internal					external ¹⁾			
Control	software-controlled								
Range	0 to 90°								
Software									
ADVANCE	contact angle surface free energy of solids ²⁾ interfacial and surface tension of liquids ^{2), 3)}								

Measurement specifications
DSA100B
DSA100S
DSA100E
Sessile drop/captive bubble

Result	contact angle
Range ⁴⁾	0 to 180°
Resolution ⁴⁾	0.01°
Accuracy ⁵⁾	0.3°
Model	conic section, polynom, circle, Young-Laplace, height-width
Type ⁶⁾	advancing, receding, static, dynamic, tilting

Surface free energy of solids ²⁾

Result	surface free energy
Model	equation of states, Zisman, Fowkes, Wu, Owens-Wendt-Rabel-Kaelble, Schultz-1, Schultz-2, extended Fowkes, acid-base theory

Pendant drop/rising drop ^{2), 3)}

Result	interfacial and surface tension
Range	0.01 to 2000 mN/m
Resolution	0.01 mN/m
Accuracy	0.3 mN/m
Model	Young-Laplace
Type	static, dynamic

¹⁾ optional

²⁾ optional for DSA100B

³⁾ optional for DSA100S

⁴⁾ software-based

⁵⁾ instrument-based

⁶⁾ additional accessories may be required

General specifications	DSA100B	DSA100S	DSA100E
Sample dimensions			
Maximum sample space ⁷⁾	320 mm × ∞ × 275 mm (W × D × H)		
Temperature control			
Devices	temperature-controlled sample stage, chambers, cuvette		
Type	liquid, electrical, Peltier		
Range	-30 ⁸⁾ to 400 °C ⁹⁾		
Maximum sample size	132 mm × 132 mm × 27 mm (W × D × H) ¹⁰⁾		
Resolution	0.1 K		
External circulator	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) ¹¹⁾	2 connectors (PT100) ¹¹⁾	2 connectors (PT100)
Location	sample stage, chamber, cuvette		
Housing and peripherals			
Compartment	test liquids protected against light		
Needle protection shield	yes		
Camera und optics housing	yes		
Control keyboard	PC keyboard for ADVANCE software operation available (KB20)		
Levelling	yes		
Environment			
Temperature	operating: 10 to 40 °C storage: -10 to 70 °C		
Humidity	without condensation		
Instrument dimensions			
Footprint	555 mm × 375 mm (W × D)		
Height	490 mm		
Weight (without accessories)	24 kg		
Power			
Voltage	88 to 264 V		
Power consumption	100 W		
Frequency	50 to 60 Hz		
Interfaces			
PC	USB 3.0		

⁷⁾ without axes

⁸⁾ with Tempering Chamber – TC40

⁹⁾ with Tempering Chamber – TC21

¹⁰⁾ with Tempering Chamber – TC 11

¹¹⁾ retrofittable