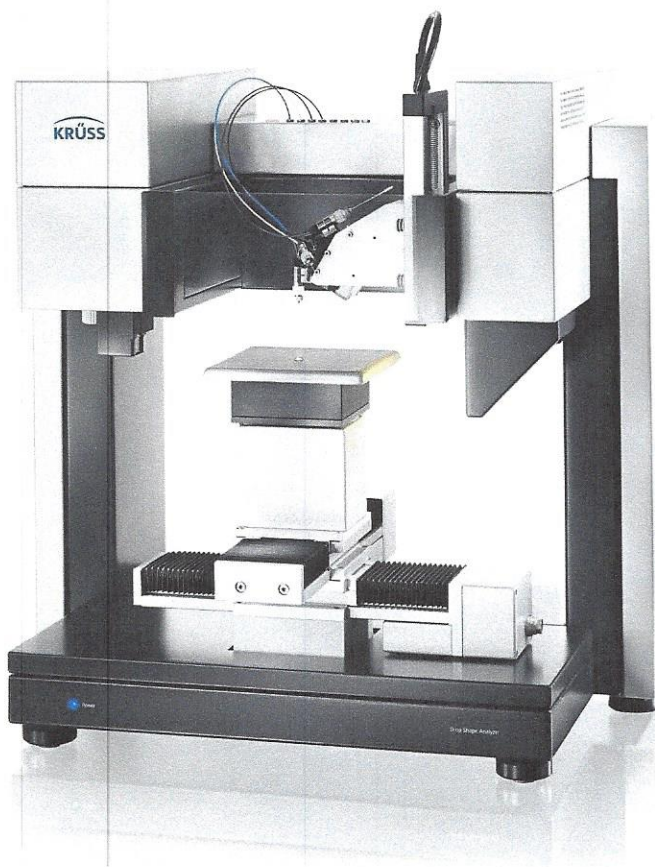


DROP SHAPE ANALYZER – DSA100

SPECIFICATIONS



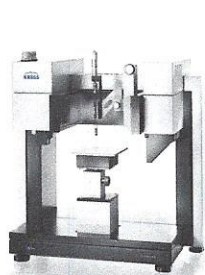
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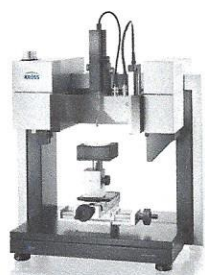
The modular design of our Drop Shape Analyzer – DSA100 is focused on the individual requirements of our customers. From the uncountable number of possible combinations we have put together three standard configurations: Basic, Standard and Expert. These vary in the degree

of automatization and their software facilities – from manual measurement of wetting right through to fully-automatic solutions with maximum software scope for solid and liquid surfaces. There is also nothing to prevent subsequent upgrading of the functional scope.

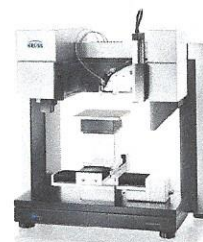
Features of the standard configurations



DSA100B – Basic



DSA100S – Standard



DSA100E – Expert

Horizontal axes (x-/y-axes) and lift table (z-axis)	■ Manual z-axis	■ Manual x-, y- and z-axes	■ Software-controlled x-, y- and z-axes
Dosing unit	■ Single-dosing unit ■ Manual	■ Single-dosing unit ■ Software-controlled	■ 4-fold dosing unit ■ Software-controlled ■ Expandable for up to eight liquids
Lens	■ Manual focus and zoom setting (7-times)	■ Manual focus and zoom setting (7-times)	■ Software-controlled focus and zoom setting (7-times)
Scope of the ADVANCE software	■ Contact angle	■ Contact angle ■ Surface free energy of solids	■ Contact angle ■ Surface free energy of solids ■ Interface and surface tension of liquids



Product group specifications
DSA100B
DSA100S
DSA100E
Camera system

Connection

USB 3.0

Performance

 CF03: 150 fps at 1200 × 1200 px
 500 fps at 1200 × 350 px
 800 fps at 1200 × 200 px
 2000 fps at 1200 × 60 px

 CF06 ¹⁾: up to 3400 fps at 640 × 50 px

Dark noise

CF03: 7 electrons

CF06: 10.5 electrons

Dynamic range

CF03: 73 dB

CF06: 56.6 dB

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

-

-

16 mm/turn

2 mm/turn

2 mm/turn

16 mm/turn

10 μm

Accuracy

-

-

-

-

-

-

100 μm

Product group specifications	DSA100B	DSA100S	DSA100E
Tilting			
Type	internal		external ¹⁾
Control		software-controlled	
Range		0 to 90°	
Resolution	0.01°		0.1°
Accuracy	0.3°		1°
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 space		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		
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 axes⁸⁾ with Tempering Chamber – TC40⁹⁾ with Tempering Chamber – TC21¹⁰⁾ with Tempering Chamber – TC 11¹¹⁾ retrofittable

NEEDLE SPECIFICATIONS

Description		Ø 0.2 mm	Ø 0.5 mm	Ø 1 mm	Ø 2 mm	Ø 3 mm	Needle kits	
J-shaped needle, stainless steel, with stainless steel luer-lock connector, one piece			NE71	NE72	NE73		NE97 3 needles in total	1× NE71 NE72 NE73
Needle, stainless steel, with stainless steel luer-lock connector, one piece		NE60	NE61	NE62	NE63	NE64	NE96 5 needles in total	1× NE60 NE61 NE62 NE63 NE64
Needle, stainless steel PTFE coated, with stainless steel luer-lock connector, one piece		NE30	NE31	NE32	NE33	NE34	NE93 5 needles in total	1× NE30 NE31 NE32 NE33 NE34
Disposable needle, PTFE, with PP luer-lock connector, 50 pieces			NE81	NE82	NE83			
Disposable needle, stainless steel, with PP luer-lock connector, 50 pieces			NE44		NE45 (Ø 1.8 mm)		NE94 30 needles in total	5× NE81 NE82 NE83 NE44 NE45 NE47
Disposable needle, PP, with PP luer-lock connector, 25 pieces			NE47 (Ø 0.7 mm)					