

Technical Specifications



Kinexus DSR				
	DSR+	DSR	DSR-E	DSR-III
Rheometer Platform	Each system designed to meet the demanding needs of research, product development, comparative benchmarking, quality control and assurance required by the global asphalt / bitumen industry			
Motor control	Electronically Commutated (EC), drag cup motor control providing absolute direct: shear strain, shear rate, shear stress for operation in steady, dynamic, and transient loading modes			
Torque range – viscometry (rate and stress control)	5 nNm – 225 mNm	10 nNm – 200 mNm	20 nNm – 200 mNm	100 nNm – 150 mNm
Torque range – oscillation (strain and stress control)	1 nNm – 225 mNm	5 nNm – 200 mNm	10 nNm – 200 mNm	100 nNm – 150 mNm
Torque resolution	0.1 nNm	0.1 nNm	0.1 nNm	0.1 nNm
Position resolution	<10 nrad	<10 nrad	<10 nrad	<10 nrad
Angular velocity range	1 nrad ^s ⁻¹ to 500 rad ^s ⁻¹	10 nrad ^s ⁻¹ to 325 rad ^s ⁻¹	10 nrad ^s ⁻¹ to 325 rad ^s ⁻¹	10 nrad ^s ⁻¹ to 200 rad ^s ⁻¹
Step position control in strain control	< 10 ms	< 10 ms	< 10 ms	< 10 ms
Frequency range	6.28 μrad ^s ⁻¹ to 942 rad ^s ⁻¹ (1 μHz to 150 Hz)	6.28 μrad ^s ⁻¹ to 628 rad ^s ⁻¹ (1 μHz to 100 Hz)	6.28 μrad ^s ⁻¹ to 628 rad ^s ⁻¹ (1 μHz to 100 Hz)	6.28 μrad ^s ⁻¹ to 628 rad ^s ⁻¹ (1 μHz to 100 Hz)
Motor inertia	12 μN.m.s ²	12 μN.m.s ²	12 μN.m.s ²	12 μN.m.s ²
Normal force range	0.001 N – 50 N	0.001 N – 50 N	0.01 N – 50 N	0.01 N – 20 N
Normal force resolution	0.5 mN	0.5 mN	0.5 mN	0.5 mN
Normal force response time	<10 ms	<10 ms	<10 ms	<10 ms
Vertical lift speed	0.1 μm ^s ⁻¹ to 35 mms ⁻¹	0.1 μm ^s ⁻¹ to 35 mms ⁻¹	0.1 μm ^s ⁻¹ to 35 mms ⁻¹	0.1 μm ^s ⁻¹ to 20 mms ⁻¹
Vertical lift range (measurable)	230 mm	230 mm	230 mm	230 mm
Gap resolution (over full vertical lift range)	0.1 μm	0.1 μm	0.1 μm	0.1 μm
Fully configurable vertical profiles	By speed and by Normal Force			
Raw instrument variables	5 kHz constant streaming data			
Complete sample history	Data available from loading to unloading as standard			
Instrument interface	USB2 – plug and play			
Dimensions	D x W x H (weight): 485 mm x 490 mm x 680 mm (47 kg)			

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rSpace software	Sequence-driven user interface enabling Standard Operating Procedure (SOP)-type test functionality and fully customizable test designs			
General rheology	✓	✓	✓	✓
rSolution applications database	✓	✓	✓	✓
Rheology toolkit package	✓	✓	✓	✓
Asphalt rheology	✓	✓	✓	✓
Rheology analysis package	✓	✓	✓	✓
Sequence design functionality	✓	✓	✓	✓
Interactive materials database	✓	✓	✓	✓

NOTE: Specifications have been obtained under conditions as stated in the Installation and Site Requirements for Kinexus rheometers

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Kinexus DSR – Accessories

Environmental Controllers*	DSR+	DSR	DSR-E	DSR-III
Asphalt Active Hood Oven				
Standard temperature range (optional)	-5°C to 180°C (-40°C to 180°C)	-5°C to 180°C (-40°C to 180°C)	-5°C to 180°C (-40°C to 180°C)	-5°C to 180°C (-40°C to 180°C)
Heating rate (controlled)	30°C/minute	30°C/minute	30°C/minute	30°C/minute
Temperature resolution	0.01°C	0.01°C	0.01°C	0.01°C
Temperature stability	Better than ± 0.1°C	Better than ± 0.1°C	Better than ± 0.1°C	Better than ± 0.1°C
Universal Cylinder Peltier				
Standard temperature range (optional)	0°C to 200°C (-30°C to 200°C)	0°C to 200°C (-30°C to 200°C)	0°C to 150°C (-30°C to 200°C)	0°C to 150°C (-30°C to 200°C)
Heating rate (controlled)	15°C/minute	15°C/minute	15°C/minute	15°C/minute
Temperature resolution	0.01°C	0.01°C	0.01°C	0.01°C
Temperature stability	Better than ± 0.1°C	Better than ± 0.1°C	Better than ± 0.1°C	Better than ± 0.1°C
High Temperature (HTC)				
Standard temperature range	RT to 350°C	RT to 350°C	RT to 350°C	RT to 350°C
Heating rate (controlled)	50°C/minute	50°C/minute	50°C/minute	50°C/minute
Temperature resolution	0.01°C	0.01°C	0.01°C	0.01°C
Temperature stability	Better than ± 0.1°C	Better than ± 0.1°C	Better than ± 0.1°C	Better than ± 0.1°C

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Kinexus DSR – Accessories					
Options Available*		DSR+	DSR	DSR-E	DSR-III
Quick-connect upper geometries	Plug and play; auto-recognition and configuration in software	✓	✓	✓	✓
Disposable plates option	Upper and lower disposable plate options for curing materials	✓	✓	✓	✓
Crumb rubber kit	C14/25 – CRM C25 cup & C14 bob for use with cylinder cartridge. Other cups, bobs and vanes available	✓	✓	✓	✓
Solids Fixtures kit	Solid fixtures for use with cylinder cartridge for testing rectangular or cylindrical solids (Asphalt cores)	✓	✓	✓	-
Plates and Cones diameter & angle	Standard diameters range from 4 mm to 60 mm Standard angles are 0.5°, 1°, 2° and 4° – others on request	✓	✓	✓	✓
Asphalt Plate diameter	Asphalt 4 mm, 8 mm and 25 mm plates	✓	✓	✓	✓
Tribology – friction	Ball Tribology kit based on ISO7148 design	✓	✓	✓	-
Temperature Calibration Kit	Fully automated and integrated NIST traceable device for easy verification and calibration of system temperature	✓	✓	✓	✓

* Additional Environmental controllers, accessories and geometries available upon request

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