Technical Specifications

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Kinexus Prime DSR			
	DSR+	DSR	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	Low inertia 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) [1)]	5 nN·m – 225 mN·m	5 nN·m – 200 mN·m	75 nN·m – 165 mN·m
Torque range – oscillation (strain and stress control) [1)]	1 nN·m – 225 mN·m	5 nN·m – 200 mN·m	75 nN·m – 165 mN·m
Torque resolution	0.1 nN·m	0.1 nN·m	0.1 nN·m
Position resolution	< $1.8 \cdot 10^{-9}$ rad	< $1.8 \cdot 10^{-9}$ rad	< $1.8 \cdot 10^{-9}$ rad
Angular velocity range	1 nrads^{-1} to 500 rads^{-1}	10 nrads^{-1} to 325 rads^{-1}	10 nrads^{-1} to 200 rads^{-1}
Step position control in strain control	< 10 ms	< 10 ms	< 10 ms
Frequency range	6.28 µrads^{-1} to 942 rads^{-1} (1 µHz to 150 Hz)	6.28 µrads^{-1} to 628 rads^{-1} (1 µHz to 100 Hz)	6.28 µrads^{-1} to 628 rads^{-1} (1 µHz to 100 Hz)
Motor inertia	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 – 20 N
Normal force resolution	0.5 mN	0.5 mN	0.5 mN
Normal force response time	<10 ms	<10 ms	<10 ms
Vertical lift speed	0.1 µms^{-1} to 35 mms^{-1}	0.1 µms^{-1} to 35 mms^{-1}	0.1 µms^{-1} to 20 mms^{-1}
Vertical lift range (measurable)	230 mm	230 mm	230 mm
Gap resolution (over full vertical lift range)	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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Kinexus Prime DSR			
	DSR+	DSR	DSR-III
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	✓	✓	✓

1) Note the relationship between shear stress, torque and measuring geometry.

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

Technical Specifications

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Kinexus Prime DSR – *EasySwap* and High Temperature Cartridges*	
Asphalt Active Hood Oven***	
Standard temperature range (optional)	-5°C to 225°C (-45°C to 225°C)
Heating rate (controlled)	50°C/minute
Temperature resolution	0.01°C
Temperature stability	Better than ± 0.1°C
Universal Cylinder Peltier	
Standard temperature range (optional)	0°C to 200°C (-25°C to 200°C)
Heating rate (controlled)	15°C/minute
Temperature resolution	0.01°C
Temperature stability	Better than ± 0.1°C
HTC Prime	
Temperature range	0°C** to 450°C
Max. heating rate	30 K/min
Max. cooling rate	15 K/min
Max. boost cooling rate	20 K/min

Technical Specifications

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Kinexus Prime DSR – Accessories				
Options Available*		**DSR+**	**DSR**	**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
** at 6 bar Vortex cooling air pressure (5 °C at 5.5 bar Vortex cooling air pressure)
*** The optional temperature ranges -5°C to 225°C (-45°C to 225°C) with Asphalt Active Hood Ovens are only available for DSR+ and DSR.

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