

Technical Specifications

NETZSCH

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 nNm – 225 mNm	10 nNm – 200 mNm	75 nNm – 165 mNm
Torque range – oscillation (strain and stress control) ¹⁾	1 nNm – 225 mNm	5 nNm – 200 mNm	75 nNm – 165 mNm
Torque resolution	0.1 nNm	0.1 nNm	0.1 nNm
Position resolution	$< 1.8 \cdot 10^{-9}$ rad	$< 1.8 \cdot 10^{-9}$ rad	$< 1.8 \cdot 10^{-9}$ rad
Angular velocity range	1 nrad/s to 500 rad/s	10 nrad/s to 325 rad/s	10 nrad/s to 200 rad/s
Step position control in strain control	< 10 ms	< 10 ms	< 10 ms
Frequency range	6.28 μ rad/s to 942 rad/s (1 μ Hz to 150 Hz)	6.28 μ rad/s to 628 rad/s (1 μ Hz to 100 Hz)	6.28 μ rad/s to 628 rad/s (1 μ Hz to 100 Hz)
Motor inertia	12 μ N.m.s ²	12 μ N.m.s ²	12 μ N.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 μ m/s to 35 mms ⁻¹	0.1 μ m/s to 35 mms ⁻¹	0.1 μ m/s to 20 mms ⁻¹
Vertical lift range (measurable)	230 mm	230 mm	230 mm
Gap resolution (over full vertical lift range)	0.1 μ m	0.1 μ m	0.1 μ m
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)		

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

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 $\pm 0.1^\circ\text{C}$

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 $\pm 0.1^\circ\text{C}$

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

NETZSCH

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