

Technical Specifications

NETZSCH

Kinexus Prime			
	ultra+	pro+	lab+
Rheometer platform	High-end rheometer for highest demands	For research and development	Quality control with SOP ⁴⁾
Operating modes	Direct strain control, shear rate control, shear stress control		
Torque range – viscometry ^{1) 4)}	1.0 nNm - 250 mNm	3.0 nNm - 225 mNm	5.0 nNm - 200 mNm
Torque range – oscillation ^{2) 4)}	0.5 nNm - 250 mNm	1.0 nNm - 225 mNm	5.0 nNm - 200 mNm
Torque resolution	0.05 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 ⁻¹ to 500 rad · s ⁻¹	1 nrad · s ⁻¹ to 500 rad · s ⁻¹	10 nrad · s ⁻¹ to 325 rad · s ⁻¹
Step position control in strain control	< 10 ms	< 10 ms	< 10 ms
Bearing type	Air bearing		
Frequency range	6.28 µrad · s ⁻¹ to 942 rad · s ⁻¹ (1 µHz to 150 Hz)	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)
Motor type	Low inertia drag cup motor		
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	0.001 N - 50 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 µm · s ⁻¹ to 35 mm · s ⁻¹	0.1 µm · s ⁻¹ to 35 mm · s ⁻¹	0.1 µm · s ⁻¹ to 35 mm · s ⁻¹
Vertical lift range (measurable)	230 mm	230 mm	230 mm
Gap resolution ³⁾	0.1 µm	0.1 µm	0.1 µm
Fully configurable vertical profiles	By speed and Normal Force		
Raw instrument variables	5 kHz constant streaming data		
Complete sample history	Acquisition of raw data from loading to unloading as standard		
Interface	USB2 – plug and play		
rSpace software	Site-wide user license, sequence-driven user interface enabling Standard Operating Procedure (SOP)-type test functionality and fully customizable test designs		
Dimensions and weights	D x W x H (weight): 485 mm x 490 mm x 680 mm (47 kg)		
Power supply	100 - 240V, 15A		

1) Shear rate and shear stress controlled
2) Shear strain and shear stress controlled

3) Specification of accuracy over full vertical lift range
4) Note the relationship between shear stress, torque and measuring geometry.

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Measuring geometries

Quick-connect geometries	Plug and Play; auto-recognition and configuration by the software
Material	Stainless Steel 316 (British Steel BS) as standard Other options are available, e.g., for chemical compatibility (titanium or Hastelloy)
Plate and cone diameter	20 mm throughout 60 mm as standardized range – other diameters on request Plates with 4 mm, 8 mm and 25 mm specifically designed for asphalt testing
Cone angle	Variants with 0.5°, 1°, 2° and 4° – other angles on request
Interchangeable lower plates	Varying diameters and surface finishes (to match upper geometries)
Concentric cylinders	C14 (DIN), C25 (DIN), C34 as standard
Interchangeable cups	Quick release/engage mechanism, optional with removable base and fill-up mark
Surface finish option	Smooth, sand blasted, serrated, splined or grooved
Vane tools	Type C14 and C25
Disposable option	Upper and lower disposable plates for the investigation of curing materials

Environmental controllers

Quick-Connect cartridge system	Plug and play; auto-recognition and configuration by the software
Peltier-plate cartridge	Temperature range: -40°C to 200°C Maximum heating rate*: 30°C/min Maximum cooling rate*: 30°C/min
Peltier-plate cartridge with active hood	Temperature range: -40°C to 180°C Maximum heating rate*: 30°C/min Maximum cooling rate*: 20°C/min
Peltier-plate cartridge with active hood prime***	Temperature range: -45°C to 225°C Maximum heating rate*: 50°C/min Maximum cooling rate*: 50°C/min
Peltier-cylinder cartridge	Temperature range: -25°C to 200°C Maximum heating rate*: 15°C/min Maximum cooling rate*: 15°C/min
HTC Prime	Temperature range: 5°C** to 450 °C Max. heating rate*: 30°C/min Max. cooling rate*: 15°C/min Max. boost cooling rate: 20°C/min
DEA cartridge****	Temperature range: with active hood: -40°C to 200°C without active hood: -40°C to 160°C
Temperature resolution	0.01°C
Temperature stability	Better than ± 0.1°C

* Temperature range dependent

** At 6 bar Vortex cooling air pressure (5°C at 5.5 bar Vortex cooling air pressure)

*** -40°C to 200°C with active hood prime, -45°C to 225°C with active hood prime+.

**** Dielectric analyzer DEA 288 *Ionic* required

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