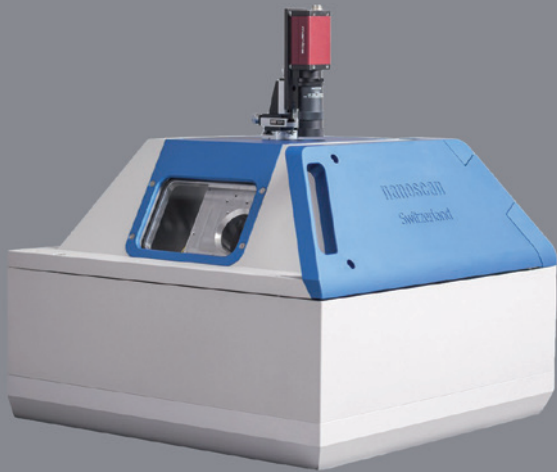




High-Precision Vacuum Scanning Force Microscope



NanoScan VLS-80

Presenting the next generation of NanoScan's high-precision Scanning Force Microscope: the Vacuum Large Stage SFM sets the standard in sample navigation by providing high-accuracy calibrated stage motion along with excellent positional reproducibility. High-vacuum enhances the Q-factor for outstanding measurement sensitivity. Closed-loop scanner electronics, large sample stage and a variable magnetic field option all combine to provide an instrument that defines a new state-of-the-art in scanning force microscopy.

VLS-80 Key Specifications

Scan Range	<ul style="list-style-type: none">• xyz: $80 \times 80 \times 10 \mu\text{m}^3$, closed-loop operation• Scan linearity better than 0.1%
Microscope Resolution	<ul style="list-style-type: none">• Digitally-controlled 20-bit scanner• Lateral (XY) / normal (Z) bit resolution: 0.8 / 0.1 Å• MFM lateral resolution: 10 nm
Sample Stage	<ul style="list-style-type: none">• Sample size: $100 \times 100 \times 15 \text{ mm}^3$• Sample weight up to 300 g• Motorized stage with 20-nm accuracy and up to 8 mm/s speed• Fast positioning with Drive-To-Point function
Magnetic Field Option	<ul style="list-style-type: none">• Variable perpendicular magnetic field up to $\pm 550 \text{ mT}$
Optical Access	<ul style="list-style-type: none">• Top-view camera for precise positioning: 6 μm resolution, 1 mm^2 FOV• Lateral-view camera for fast cantilever approach
Cantilever Detection	<ul style="list-style-type: none">• 4-quadrant beam deflection for simultaneous normal and lateral force measurement
Controller & Software	<ul style="list-style-type: none">• <i>ScanDirector</i>: Windows-based user interface• <i>ScanEngine</i>: Real-time controller running on PXI industry-standard
Phase-Locked Loops	<ul style="list-style-type: none">• Up to two fully independent Phase-Locked Loops
Measurement Modes	<ul style="list-style-type: none">• All standard static and dynamic SFM measurement modes• Multifrequency, Double-Pass, hr-MFM, KPFM, Long-distance Profiling• Q-factors up to 100 000 in high-vacuum increase sensitivity by a factor of >10 compared to air operation
Vacuum Operation	<ul style="list-style-type: none">• $< 5 \times 10^{-6} \text{ mbar}$• 24-hour Quiet Mode operation with <50 dBA (roughing pump off)
Vibration Isolation	<ul style="list-style-type: none">• Triple-level passive vibration isolation• Optional active vibration damping