

# attoAFM/MFM Ixs: Atomic / Magnetic Force Microscope

1008033

## Technical Specifications

<b>General Specifications</b>	
type of instrument	cantilever based AFM/MFM with interferometric deflection detection
sensor head specifics	attoAFM I+ head feat. alignment-free cantilever holder, tip exchange in less than 2 minutes
alignment-free cantilever holder (default)	compatible with PointProbe® Plus XY-Alignment Series by Nanosensors
conventional cantilever holder (optional)	compatible with standard commercial cantilevers
<b>Modes of Operation</b>	
imaging modes	contact mode, non-contact mode, constant height, constant force
slope compensation	2 axis scan plane correction
z feedback	phase modulation (PM) or frequency modulation (FM) using included PLL PI feedback loop for amplitude modulation (AM)
incl. standard techniques	AFM, MFM
optional upgrades	MFM, KPFM, PFM, conductive-tip AFM
<b>Resolution</b>	
measured RMS z-noise (constant force @ 4 K, 5 ms pixel time)	< 0.05 nm (expected)
	< 0.15 nm (guaranteed for PPMS without reliquefier (RL) / RL off; EverCool I/II off)
z deflection noise density	< 3 pm/vHz (dependent on laser system)
lateral magnetic resolution	< 20 nm (guaranteed for PPMS without reliquefier (RL) / RL off; EverCool I/II off)
z bit resolution @ 4 K	7.6 pm at 2 µm scan range
<b>Sample Positioning</b>	
total travel range	3 x 3 x 2.5 mm <sup>3</sup> (open loop)
step size	0.05..3 µm @ 300 K, 10..500 nm @ 4 K
closed loop scanning	not compatible
<b>Suitable Operating Conditions</b>	
temperature range	1.5 K..300 K (dependent on cryostat); mK compatible setup available on request
magnetic field range	0..14 T (dependent on magnet)(16 T compatible version available on request)
operating pressure	designed for He exchange gas (vacuum compatible version down to 1E-6 mbar on request)
<b>Suitable Cooling Systems</b>	
titanium housing diameter	23.9 mm
bore size requirement	designed for 1" (25.4 mm) cryostat/magnet bore size (e.g. PPMS)
compatible cryostats	see PPMS compatibility chart
<b>Compatibility with Electronics</b>	
scan controller and software	ASC500 (for detailed specifications please see attoCONTROL section)
laser	LDM1300 laser/detector module (for detailed specifications please see attoCONTROL section)
<b>Options and Upgrades</b>	
additional AFM head with manual alignment	conventional cantilever holder, compatible with standard commercial cantilevers

