

attoSTM I

low temperature scanning tunneling microscope, highly stable and compact

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Microscope Setup	
STM sensor unit	etched metal tip STM; with optical access for tip-sample approach
STM tips	e.g. Pt/Ir wire, Ø 0.4 mm; Tungsten wire
titanium housing diameter	47 mm (others on request)
current detection	low noise amplifier with variable gain and bandwidth
gain range	1E3 .. 1E11 V/A
sample bias	bias voltage applied to sample; current taken from tip
bias voltage range	±10 V
bias voltage bit resolution	76 µV
bias output noise	100µVpp (10 Hz - 100 kHz) 20µVpp (10 Hz - 1 kHz)
Operation Modes	
feedback modes	constant current, constant height
spectroscopy modes	current-distance, current-voltage, point contact spectroscopy
Sample Positioning	
positioners and scanners	modified coarse positioners ANPxyz101 with piezo scan tube
coarse range	5 x 5 x 5 mm ³
step size	0.05 .. 3 µm @ 300 K, 10 .. 500 nm @ 4 K
scan range	2 x 2 µm ² @ 300 K, 0.7 x 0.7 µm ² @ 4 K
sample monitoring	sample / tip monitoring via CCD camera (optional)
Operating Conditions	
temperature range	mK .. 300 K (dependent on cryostat)
magnetic field range	0 .. 15 T+ (dependent on magnet)
operating pressure range	1E-6 mbar .. 1 bar (designed for exchange gas atmosphere)
Cooling Specifications	
bore size	designed for a 2" (50.8 mm) cryostat/magnet bore
cryostat	LTSYS -He4, LTSYS -He3
Scan Controller and Software	
ASC500 SPM controller	for detailed specifications please see the ASC500 section

