attoCFM I

1008165

Technical Specifications

General Specifications	
type of instrument	free-beam based confocal microscope with room temperature optics head and cryogenic objective
sensor head specifics	unique low temperature compatible achromatic objectives with high numerical aperture, optimized for different wavelength ranges
Confocal Unit	
configuration	compact and modular design, two or more optical channels; standard configuration: one excitation and one detection channel
key benefits	quick and reliable alignment of each channel, steering mirror for combined beams long-term stability
quick-exchange of optical components	beamsplitters, filter mounts for up to 4 filters/polarizers, (1" diameter); optional piezoelectric rotator with filter mount
pinhole configuration	two pinholes (fiber apertures), different illumination and collection wavelength possible
pinhole size	dependent on fibers, typically 3 .. 9 µm mode field diameter
compatible LT-objective	LT-APO/VIS, LT-APO/VISIR, LT-APO/NIR (see accessory section for more information)
inspection unit	sample imaging with large field of view: ~54 µm (attoDRY)
Illumination	
excitation wavelength range	400 .. 1000 nm, default 650 nm (others on request)
illumination port specification	FC/ APC-connector for single mode fibers or free-beam configuration
Detection	
detection mode	e.g. reflection, luminescence, fluorescence, Raman (optional)
detection wavelength range	detector upon user`s choice, typically Si detector (coupling of the light to other detectors)
detection port specification	FC/ APC-connector for single mode fibers or free-beam configuration
transmission option	low temperature compatible detector below the sample for transmission measurements (intensity)
Sample Positioning	
total travel range	5 x 5 x 4.8 mm^3 (open loop)
step size	0.05 .. 3 µm @ 300 K, 10 .. 500 nm @ 4 K
fine scan range	50 x 50 $µm^2$ @ 300 K, 30 x 30 $µm^2$ @ 4 K (optional, open loop)
closed loop scan resolution (steady state, 100 ms sample time)	1 nm rms typ.
sample holder	ASH/QE/0 quick exchange sample holder and integrated heater with calibrated temperature sensor
Suitable Operating Conditions	
temperature range	1.5 K..300 K (dependent on cryostat); mK compatible setup available on request
magnetic field range	0..15 T+ (dependent on magnet)
operating pressure	designed for He exchange gas (vacuum compatible version down to 1E-6 mbar on request)
Suitable Cooling Systems	
titanium housing diameter	48 mm
bore size requirement	designed for a 2" (50.8 mm) cryostat/magnet bore
compatible cryostats	attoDRY1000/2100
Compatibility with Electronics	
scan controller and software	ASC500, Nanonis Mimea
laser	LDM600 laser/detector module (for detailed specifications please see attoCONTROL section)
Options and Upgrades	
closed loop scanning & global sample coordinates	interferometric encoders for scan linearization and closed loop sample navigation
ultra-large scan range upgrade	80 x 80 $µm^2$ @ 300 K, 125 x 125 $µm^2$ @ 4 K
in-situ inspection optics	incl. with CFM I external optics head
sample holder upgrade	ASH/QE/4CX quick-exchange sample holder (8 electrical contacts, integrated heater & T-sensor)
closed loop upgrade for coarse positioners	resistive encoder, range 5 mm, sensor resolution approx. 200 nm, repeatability 1-2 µm
Voigt geometry upgrade	optional scanner for Voigt & Faraday geometry