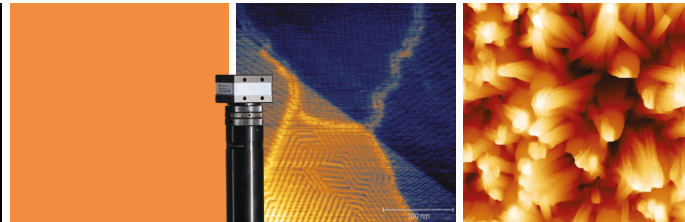


SmartSPM™

Advanced
Scanning Probe Microscope



Resolution

High resolution and stability



Automation

Automated operation



Versatility

Versatile - environments and options



SPM Modes

All SPM modes included



Upgradability

Flexibility to upgrade to NanoRaman™

SmartSPM Measuring Modes	
Basic modes:	<ul style="list-style-type: none"> • Contact AFM • Semicontact AFM • True Non-contact AFM • Top Mode™ • Phase Imaging • Dissipation Force Microscopy • Contact AFM in liquid (optional) • Semicontact AFM in liquid (optional)
Electrical modes:	<ul style="list-style-type: none"> • Single / Double pass Kelvin Probe Force Microscopy (KPFM) AM and FM • Capacitance Microscopy (SCM) • Single / Double pass Electric Force Microscopy (EFM) • Piezo Response Force Microscopy (PFM) • PFM with High Voltage (optional) • PFM-Top mode™ • Conductive AFM (optional) • Conductive AFM High Voltage (optional) • I-Top mode™ (optional) • I-V Spectroscopy (optional) • Photocurrent Mapping (optional) • Volt-ampere characteristic measurements (optional)
Nanomechanical modes:	<ul style="list-style-type: none"> • Lateral Force Microscopy (LFM) • Force Modulation Microscopy (FMM) • Force Curve Measurement (Force Distance (F-D) Spectroscopy and Mapping) • Nanolithography • Nanomanipulation
Special modes:	<ul style="list-style-type: none"> • Single / Double pass Magnetic Force Microscopy (MFM) • Tunable Magnetic Field (optional) • Shear-force Microscopy with tuning fork (ShFM) • Normal-force Microscopy with tuning fork
Other:	<ul style="list-style-type: none"> • Scanning Tunneling Microscopy (STM) (optional) • Scanning Tunneling Spectroscopy (optional)

SmartSPM Scanner and base	
Sample scanning range:	100 x 100 x 15 μm^3 (+/-10%)
Non-linearity:	XY < 0.05%, Z < 0.05%
Noise:	<ul style="list-style-type: none"> • < 0.1 nm RMS in XY dimension in 100 Hz bandwidth with capacitance sensors on • < 0.02 nm RMS in XY dimension in 100 Hz bandwidth with capacitance sensors off • < 0.1 nm RMS in Z dimension in 1000 Hz bandwidth with capacitance sensor on • < 0.03 nm RMS in Z dimension in 1000 Hz bandwidth with capacitance sensor off
Resonance frequency:	XY 7 kHz (unloaded); Z 15 kHz (unloaded)
Open loop XY drift:	< 0.5 nm / min
Motorized approach range:	17 mm
Maximum sample size:	40 x 50 mm ² , 15 mm thickness
Sample positioning: Motorized sample positioning range:	5 x 5 mm ²
Motorized approach range:	17 mm

SmartSPM AFM Head	
Laser wavelength:	1300 nm No influence of registration laser on photovoltaic measurements or on biological samples
Fully motorized:	4 stepper motors for automatic cantilever and photodiode alignment
Access:	Free access to the probe for additional external manipulators and probes
Illumination:	Illumination intensity is software controlled

SmartSPM Options

Conductive Unit (Current range 100 fA - 10 μ A / 3 current ranges (1 nA, 100 nA and 10 μ A) software switchable)
Liquid Cell / Electrochemical Cell (Liquid exchange capability)
Protection enclosure with stand for optical microscope
Humidity control system (Relative humidity range 10-85% / Relative humidity stability \pm 1%)
Heating Cooling module (from -50°C to +100°C)
Heating module (heating up to 300°C / Temperature stability 0.1°C)
Heating module (heating up to 150°C / Temperature stability 0.01°C)
Combined Shear-force and Normal-force tuning fork holder
Nanoindenter unit (Maximum load 5 mN)
Signal Access Module
Optical Coupling for co-localized AFM-Raman/PL, TERS and TEPL (OmegaScope)

SmartSPM Software

Omega:	<ul style="list-style-type: none"> Automatic alignment of registration system Automatic configuration with preset parameters for standard measuring techniques Automatic cantilever resonance frequency adjustment Macro language Lua for programming user functions, scripts and widgets Capability to reprogram DSP macro language of the controller in real time without reloading control software Spring constant calibration (Thermal method)
IAPro:	<ul style="list-style-type: none"> Process images in coordinate space including making cross-sections, fitting and subtracting of polynomial (up to 12 degrees) surface FFT processing with the capability to treat images in frequency space including filtering and analysis
Processing:	<ul style="list-style-type: none"> up to 5000 x 5000 pixel images.

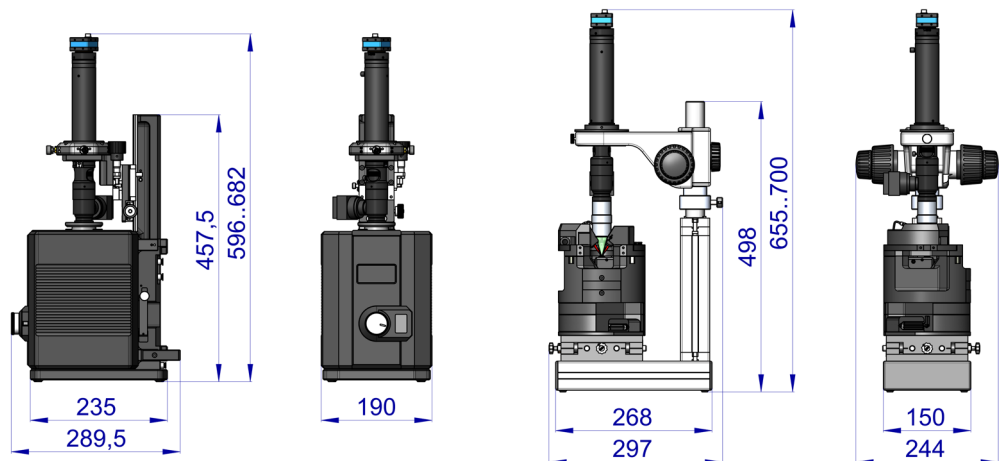
SmartSPM Controller electronics

Modular, fully digital, expandable controller
High speed DSP 300 MHz
ADC: 20 channels
High speed 500 kHz 18-bit ADCs for scanner position sensor
5 MHz frequency range registration system
2 lock-in amplifiers with 5 MHz frequency range
6 digital 32-bit generators with 5 MHz frequency range, 0.018 Hz resolution
7 stepper motors control
Digital outputs for integration with external equipment
Analog input/outputs for integration with external equipment



$\lambda = 325-1064\text{nm}$ P \leq 500mW
VISIBLE AND/OR INVISIBLE LASER RADIATION
AVOID EXPOSURE TO BEAM
CLASS 3B LASER PRODUCT

AIST-NT
 Technology



HORIBA
 Scientific

Explore the future

Automotive Test Systems | Process & Environmental | Medical | Semiconductor | Scientific

HORIBA

中国区授权经销商
 上海亨东仪器有限公司
 工作时间：周一至周五 (8:30 - 17:30)
 免费热线：400-991-9227
 手机：13661698706
 邮箱：13661698706@139.com
 网址：http://www.shhd17.com