

SXM TRADE IN FOR SCALA AND MATRIX CONTROLLERS

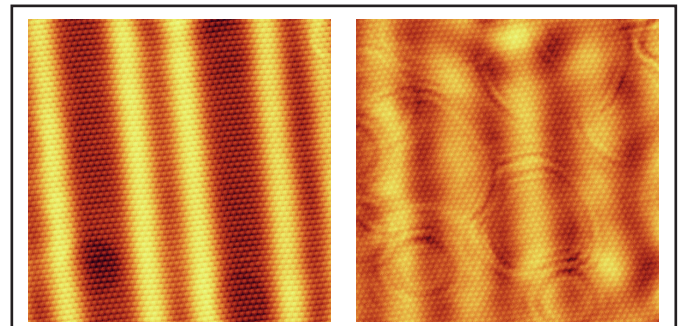
Versatile SPM Controller for new or existing Scienta Omicron SPMs

The new SXM Control System comprises state-of-the-art electronics and software solutions for Scanning Probe Microscopy. The SXM hardware features low noise, large detection bandwidth, configurable A/D and D/A converters, digital Lock In amplifiers. The SXM software offers standard SPM modes as well as advanced spectroscopy and manipulation experiments. A dedicated interface readily supports a variety of our established Scienta Omicron SPM products.

SXM SPM controller features:

- 8 parallel input channels (BNC inputs, 24 Bit A/D-converter)
- 7 parallel output channels (BNC outputs) 7 x 24 Bit D/A-converter
- 1 x High-Resolution fast D/A converter for Z: 22 Bit, 100 kHz bandwidth
- Low voltage inputs for AC modulation and/or DC offsets
- 4 x synchronous Lock-In amplifiers
3 Lock-In amplifiers for multipurpose use; one common set of BNC input and output (STM only version)
1 additional Lock-In amplifier is designed for PLL use and is operating a separate set of BNC input and output (SXM for QPlus® & AFM version)
- HV voltage amplifier unit for scanner piezo motion and coarse motor operation
- Powerful software package for imaging, spectroscopy, atom manipulation, and standard support tools like oscilloscope and FFT spectrum analysis
- Designed to work with LT STM, VT STM, and VT AFM products. Other instruments supported on request.
- Automation tools and programming interfaces available
- Optional interface for LT STM or VT AFM supporting QPlus® / AFM operation
- Integrated digital PLL for QPlus® / AFM operation (occupying a separate input and one output of the integrated lock In amplifiers , SXM for QPlus® & AFM version)

For further details about the SXM Controller Trade In package, particularly concerning the supported products, please find contact information on next page.



STM topography (left) and corresponding dI/dV map at -380 mV (right) of Au(111) at 9.6 K.
Instrument: INFINITY SPM



The SXM SPM Controller is the state of the art replacement for Scienta Omicron's SCALA Controller featuring various feedback schemes, exhaustive spectroscopy support, scan generation, multi-channel data acquisition, integrated Lock In Amplifiers, high voltage supplies for scan piezos and coarse motors.

Summary

SPM Control unit:

- Low voltage inputs: 8-channel parallel A/D-converter: 24 Bit, access: BNC connector for each channel (2 channels are blocked for tunneling current- and QPlus®-signals)
- 7 parallel output channels (BNC outputs)
- 7 x 24 Bit D/A-converter
- 1 x High-Resolution fast D/A converter for Z: 22 Bit, 100 kHz bandwidth
- Low voltage inputs for AC modulation and/or DC offsets: 4 x BNC analog inputs for modulation or offset for Z, Ubias, X and Y
- Low voltage monitor outputs: 4 x BNC outputs for Ubias, Z, X, Y, 2 x BNC outputs for tunneling current and QPlus® signal
- 4 x synchronous Lock-In amplifiers
- 3 Lock-In amplifiers for multipurpose use; one common set of BNC input and output (STM only version)
- 1 additional Lock-In amplifier is designed for PLL use and is operating a separate set of BNC input and output (SXM for QPlus® & AFM version)

Interface Unit

- Power Supplies for Scienta Omicron SPM PRE 4, AFM LU, AFM PRE
- Signal ports for AFM operation,

High Voltage Amplifier Unit:

- Scanner Piezo Voltages, voltage range: -160 V to 160 V
- Voltages for Slip-Stick motors:
LT / VT Pic Cable compatible SubD connectors. Max. Voltages: -400 V .. 400 V, Load capacitances: up to 10 nF , coarse motor control: via SXM software or via remote control

SXM measurement and analysis software:

- STM mode
- Contact AFM , NC-AFM, QPlus® mode (if applicable)
- Powerful Spectroscopy tool: Single point & Grid spectroscopy, Spectroscopy along a line , I(U), df(U), df(z), I(z), Ext(U), dI/dU... Individual spectra: define the density of points according to the requirements of your experiment
- Oscilloscope (time or frequency domain)
- Manual tip control (X, Y, Z)
- Drift correction
- STM feedback loops: logarithmic or linear
- Coarse motor operation via software or joystick
- Basic analysis/image processing software
- Tip conditioning
- Fly mode
- Surface tilt correction
- Programming and execution of macros for custom experiments
- Lock-in amplifiers for independent signal analysis
- Easy software access to D/A converters
- Combined STM/AFM experiment (if applicable)
- Atom manipulation
- Python interface

Compatibility:

- Interface is designed for LT STM, VT STM and AFM
- If your instrument is not listed above please contact us. More Scienta Omicron instruments may be compatible but need a case-by-case investigation

Part Numbers:

- PN07322 SXM Controller for STM operation, including Display, and Joystick
- PN07323 SXM controller for QPlus® / AFM operation, including Display, and Joystick

Upgrade package scope:

- SXM control electronics incl. Windows 10 PC, SXM Software for SPM operation, Present SPM Data analysis software, Computer Monitor 27"

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