

MATRIX AFM control upgrade

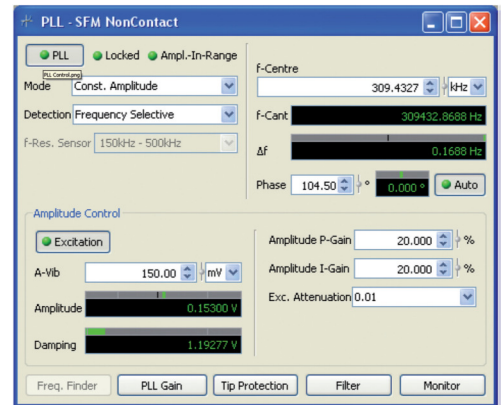
QPlus and Beam Deflection AFM option

MATRIX AFM control at a glance:

- Flexible and usable for QPlus modes and beam deflection
- Integrated Kelvin regulator
- digital AFM control board including frequency detection, analog signal preamplifiers, light source control, digital processor board
- digital phase-locked loop (PLL) that can be run in constant amplitude and constant excitation mode
- Many AFM signals like frequency and phase shift, normal force, lateral force, dissipation and Kelvin probe signals are all directly accessible for the software through the MATRIX Bus System with a time resolution in the nanosecond range
- 6 additional analogue input ports available in the standard configuration



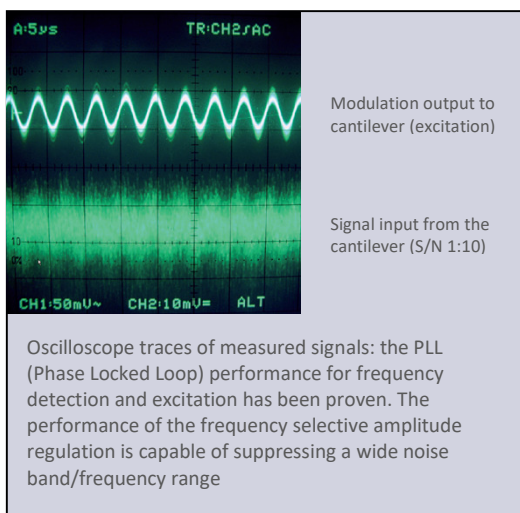
MATRIX AFM control board



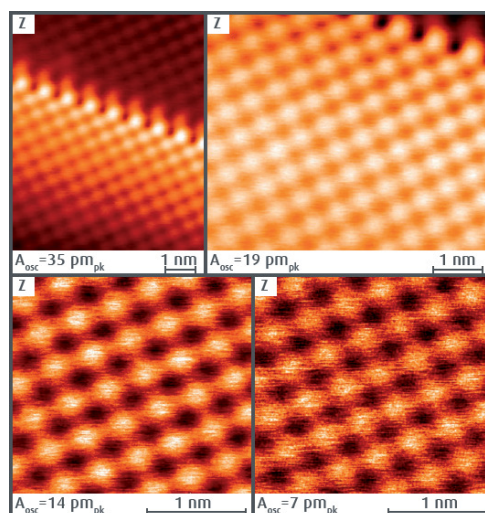
PLL window in the MATRIX software

Measurement Modes

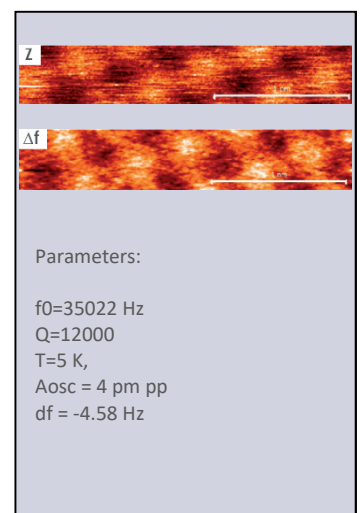
- AFM non-contact modes:
QPlus, EFM, MFM, Kelvin Probe (FM & AM Mode), Multi-mode Operation & Spectroscopy, Constant Damping
- AFM contact modes:
Normal force & lateral force, Force-Distance Curves, Conductive AFM, Piezo Response AFM (PFM)
- Detection Modes:
PLL modes (constant amplitude & constant excitation) Self-excitation (constant amplitude)



Stable oscillation with signal to noise ratio 1:10



QPlus with small Amplitudes on NaCl



Summary

Parts needed:

- AFM-SPU PLL electronic board
- SRTC board
- Set of connection cables
- Additional PDC board and/or PFU filter unit (for QPLUS mode)

Requirements:

- Some early MATRIX versions require modification of power supply

Limitations:

- Only compatible with MATRIX controller

Options:

- Upgrade package with Zürich instruments MFLI, TBD