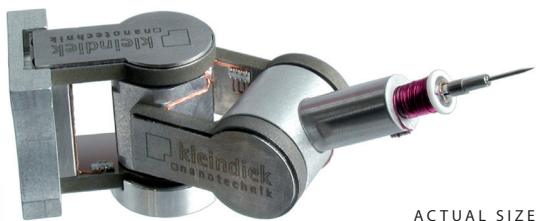


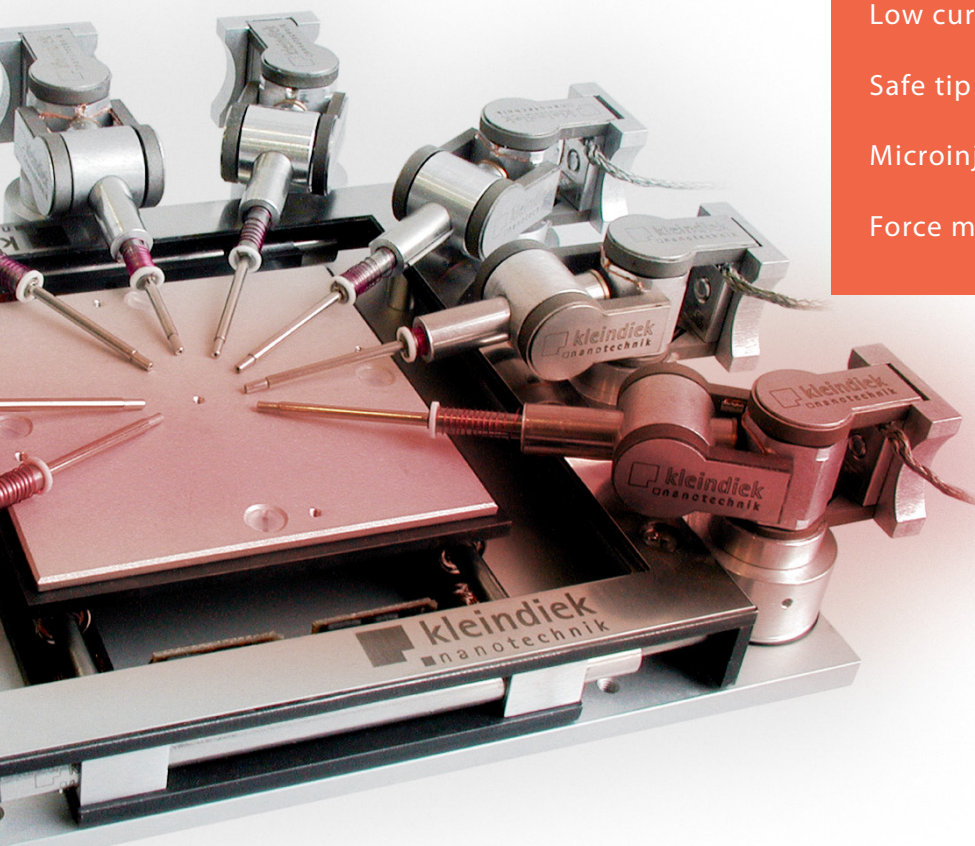
MM3A-EM Micromanipulator

Over the last few years, the MM3A-EM micromanipulator has created an unparalleled new dimension of quality in the field of Electron Microscopy. It is employed in a wide spectrum of SEM, FIB and other microscopes for an even wider range of applications and it has become the industry standard for OEM and retrofit solutions.

Give your microscope a hand: use the MM3A-EM to add new capabilities and functionality to your instrument.



ACTUAL SIZE



APPLICATIONS

- Electrical probing (FA)
- Nanomanipulation
- In-situ lift-out
- Materials science

PLUG-IN TOOLS

- Micro four-point probe
- Microgripper
- Rotational tip
- Low current measurement kit
- Safe tip approach
- Microinjector
- Force measurement system

MM3A-EM Micromanipulator

More compact and more flexible

- Small and practical
- Plug-and-play system with modular components
- Interfacing solutions for most SEM/FIB instruments (including load lock)
- Fast setup and removal
- Effortless work with multiple manipulators
- Useful plug-in tools

Clearer and simpler

- Result-oriented operation which leads to increased throughput
- Intuitive control interfaces and software
- User-friendly and easy to learn
- Quick and easy probe tip exchange
- Compact, stand-alone electronics
- Pioneering cabling technology with compact vacuum feedthrough

More robust and more stable

- Compact construction delivers higher resonance frequencies
- Excellent stability
- Low drift (1 nm/min)
- Reliable operation (one year endurance test)
- Virtually unsusceptible to vibrations
- Fast pre-positioning by hand

Faster and more precise

- No backlash or reversal play
- Sub-nanometer resolution (0.25 nm)
- Extensive working range (100 cm³)
- No "blind axis" like with cartesian systems
- Coarse and fine displacement in one drive
- High operating velocity (up to 10 mm/sec)

Technical specifications

- Length 62.1 mm
- Width 20.4 mm
- Height 25.4 mm
- Weight 45 g
- Operating range AB 240°
Operating range C 12 mm
- Piezo range A 4×10^{-4} rad (20 μm)
Piezo range B 4×10^{-4} rad (15 μm)
Piezo range C 1 μm
- Speed AB up to 10 mm/s
Speed C up to 2 mm/s
- Resolution A 10^{-7} rad (5 nm)
Resolution B 10^{-7} rad (3.5 nm)
Resolution C 0.25 nm
- Holding force 1 N
- Holding torque 3 to 4 Nmm
- Lift Y 5 g
- Probing current range 10 nA to 100 mA
- Maximum probing voltage 100 V
- Probing signal resistance 7.0 Ω
- Temperature range 273 K to 353 K
UHV version 273 K to 393 K
Low temp. version 4 K(*) to 77 K
- Lowest pressure 10^{-7} mbar
UHV version 2×10^{-10} mbar
- Mounting M4 tapped hole
- Material Stainless steel, aluminium

A = LEFT/RIGHT
B = UP/DOWN
C = IN/OUT

* Requires special control unit

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