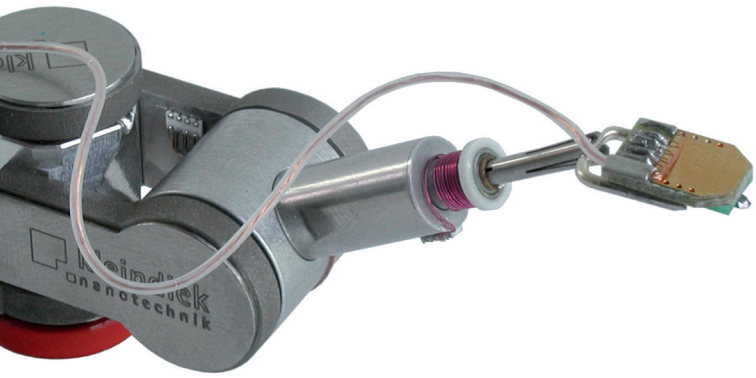
FMS-EM Force Measurement System

The FMS-EM is a compact force readout tool for the MM3A-EM micromanipulator. It enhances your system by allowing you to perform force measurements and nanoindentation.



Smallest outer dimensions are possible by means of a force readout system that requires no laser. Force feedback on the display of the controller is coupled with a loudspeaker to enable you to intuitively characterize materials and micromechanical structures by their resonance frequencies. Sharp silicon tips allow nanoindentation in a wide variety of materials.

The latest version of the system offers a complete force measurement solution including software for data acquisition, visualisation and export. The controller offers easy operation, zero adjustment at the touch of a button and a USB interface. The novel software features a calibration wizard and is capable of recording force-time curves.

The plug-in holder and force sensors can be quickly and easily retrofitted to your existing MM3A-EM micromanipulator.

Applications

- Nanoindentation
- Tensile measurement
- MEMS analysis

Technical specifications FMT-400 sensors

- Length 400 µm
- Width 50 µm
- Height 4 to 5 µm
- Tip radius < 20 nm
- Tip height > 5 µm
- Tip force constant (calculation) 2 to 4 N/m
- Force resolution 1 nN
- Maximum tip force 80 µN [1]
- Resistance 500 to 650 Ω
- Sensitivity 3.1×10^{-3} mV/nm at $V_{bridge} = 2.5$ V [2]
- Lowest pressure 10^{-7} mbar

Technical specifications FMT-120 sensors

- Length 120 µm
- Width 50 µm
- Height 4 to 5 µm
- Tip radius < 20 nm
- Tip height > 5 µm
- Tip force constant (calculation) 30 to 40 N/m
- Force resolution 10 nN
- Maximum tip force 360 µN
- Resistance 500 to 650 Ω
- Sensitivity 18.8×10^{-3} mV/nm at $V_{bridge} = 2.5$ V [2]
- Lowest pressure 10^{-7} mbar

[1] *Calculated with assumptive deflection of 10% and the lowest force constant*
[2] *Dependent on the bias voltage (V_{bridge}) that is applied to the series resistance of sensor and reference*

Further information

- Contact us at info@klendiek.com
- Find your local agent at www.klendiek.com

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