



DualScope™ C-26 Controller

Scanning Probe & Optical Microscope

New C-26 Controller Functions

The new C-26 controller has been widely improved with respect to its basic functionality for SPM measurements. Many of the control functions related to state-of-the-art SPM instrument are included as well as the design is open for future expansion of more functions

The C-26 controller follows the line in DME's 20 years of SPM instruments, so that users already familiar with DME's controller and SPM software can use their instrument experience, while at the same time the C-26 gives access to totally new and applicable functions. The C-26 controller supports a long series of DME SPM microscopes from earlier product series.

The following new functions, included in the C-26 controller, can be emphasized:

Programmable Z-axis control

where it is possible for the user to program all data points of the Z axis movement, at all data points on the lateral scale, in an almost in almost "free format". Thus it is possible for the operator to implement all forms of spectroscopy functions and at the same time maintaining the dynamics of the SPM scan. It will still be possible to have analog control of the Z axis, as it is in earlier DME controller layouts.

Feedback regulation

A newly introduced digital mode of the feedback loop enables precise real time processing of each point in the scan line. In combination with the also newly introduced "Dual Line Mode™", the information details of a previously scanned line can be combined with a second measurement performed on the same line again. This opens a fully new world of possibilities for fast measurements where the tip-sample distance can be precisely controlled without the feedback signal from the SPM sensor.

New lithography functions

also benefit from this measurement method. For example an STM scanner can write information very fast onto a surface by varying its bias voltage without disturbing the distance regulation. Also all other constant-distance measurement functions benefit from the Dual Line Mode™, as the precise XYZ position of the cantilever can be any function of the information from the previous scan line.

The new spectroscopy functions have been dramatically improved and are now fully customizable and also benefit from the exact Z control resulting from a digital Z control. Additionally, the pure analog Z regulation is still available and is unmatched with its fast scanning speed and low noise figure.

The C-26 controller contains all necessary interfaces for future extensions, and together with the capability of implementing software updates from the customer's side, it is really future-proof.



www.dme-spm.com





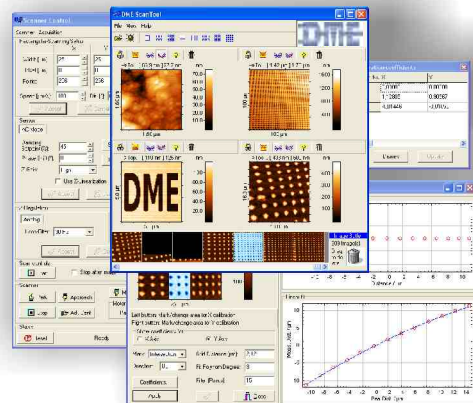
Controller Specifications

C-26 Controller Specifications

Dual CPU Design, 1 x 32 MHz, 1 x 16 MHz for autonomous scan operation and realtime processing
4 ADC Converters: max. sampling speed 250 kHz (improved)
16 DAC Channels: 10 x 16 Bit, 6 x 12 Bit
Detection: AFM DC / AC-Mode / STM, 2 Direct Independent Digital Synthesis Oscillators for AFM AC Generation / Detection, Frequency Range 3 KHz – 600 KHz
8 Built-In Piezo drivers ± 440 V
Built-In automatic self test (improved)
Feedback Loop: Switchable between digital and analog (new)
Automatic Z detector gain adjustment, resulting in 21 (23) bit effective Z resolution
Automatic X/Y gain switching, resulting in more than 19 bit effective X/Y scan resolution
Audio feedback
Built-in flash memory for dynamic updates of controller firmware from customer side
Max. 1024 x 1024 pixel resolution in scan frame
Lithography function, single and two-pass for AFM and STM operation (new)
Dual Line Mode™ scanning for two-pass measurements with built-in realtime processing (new)
Improved spectroscopy functionality

Connectors:

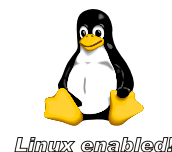
- 37 pole DME scanner connector
- 7 pole scanner connector (DS 45 series)
- 26 pole scanner connector (DS 95 series)
- Audio connector for audio feedback
- GPIB connector for communication with PC
- RS232 connector for controller firmware update
- AC and Error signal outputs for visual scanner monitoring
- 2 external signal inputs, ± 10 V
- BNC connector for measurement synchronization



Optional: Any other internal signal can be supplied as an optional controller output as well as conditioned to other external signals

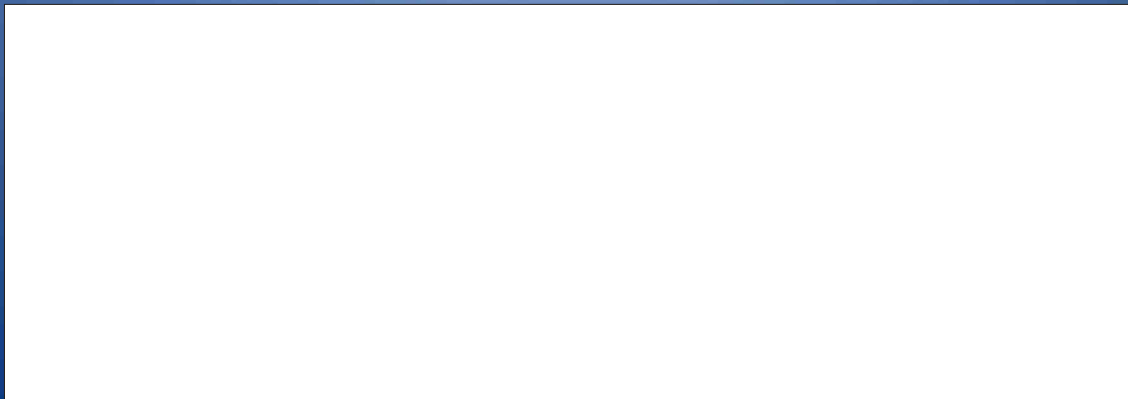
Software specifications

General purpose DME SPM Software. The straight-forward user interface makes SPM operation easy even for the inexperienced user.





DME - Danish Micro Engineering A/S



Transformervej 12 · DK-2730 Herlev · Denmark

Tel: +45 44 84 92 11 · Fax: +45 44 84 91 97 · www.dme-spm.com · E-mail: dme@dme-spm.dk

DME - 20 Years at the Forefront of Nano-Tech

