

Microscope Companion™ (MiCo)

Release Notes

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1 Introduction

1.1 Purpose

This document describes the Thermo Scientific Microscope Companion™ (MiCo) software releases. (referred to as *MiCo* in the remainder of this document). For details about the use and features of the MiCo software, see the Microscope Companion™ User Manual.

1.2 Hardware requirements

The MiCo software can be used on the Microscope PC of Thermo Scientific and FEI TEM systems with a compatible TEM Server software version and compatible cameras and/or detectors.

1.3 System, software and configuration compatibility

MiCo is a hardware-oriented application with live-viewing of camera's and detectors for diagnostic purposes only. The application is not intended to be used for data acquisition. Data acquisition can be performed in other dedicated software applications like Thermo Scientific Velox, EPU, etc. In some situations it may be necessary to use the extended (camera/detector) functionalities in other applications in combination with MiCo.

Section 1.3.1 below shows the preferred version of MiCo software in combinations with the microscope software. Sections 1.3.2 to 1.3.5 show the system configuration compatibility for the versions addressed in Section 1.3.1.

1.3.1 Preferred MiCo version per microscope software version

The best user experience and access to the latest features is achieved in combination with the latest versions of the microscope software. We intend to make MiCo backward compatible with a limited range of Microscope Software versions, i.e., six versions in particular. We make this choice in order to deliver improvements on a more frequent basis. Therefore, you may or may not see some features described in these Release Notes based on your system and software versions. We recommend upgrading to the latest MiCo version that supports the current Microscope Software as detailed in the table below. Software version combinations outside of the range specified in the table are not supported.

The following table lists the preferred version of MiCo software in combination with the microscope software.

MiCo	Titan	Talos
MiCo 1.12	3.19 - 3.13	2.19 - 2.14
MiCo 1.6	3.12 - 3.8	2.13 - 2.8

1.3.2 Compatible microscopes and supported functionalities

Thermo Scientific Microscope Companion™ software contains functionalities for a limited range of Thermo Scientific transmission electron microscopes and is installed only on those by default.

The following microscopes are supported and their main functionalities are described.

Microscope Name	Functionality
Tundra	Automated alignments, SmartCam, Recovery options (Vacuum, Source/HT)
Glacios (G1 and G2), Arctica, L120C, F200	Automated alignments, SmartCam
Spectra Ultra	EDS detector calibration
Metrios 6	EDS detector calibration, SmartStage insert/retract

MiCo offers live-viewing most camera's and (STEM) detectors on any microscope (on Windows 10) for diagnostic purposes only. Only some Falcon/Ceta reference image are supported (not all and not SmartCam). For MiCo version 1.6 and below, only SmartCam (previously known as FluCam) is supported.

Note It is recommended to close FlucamViewer before using SmartCam in MiCo, see known issues.

2 **Microscope Companion™ (MiCo) 1.12**

Minor improvements for the heating cycle for applicable microscopes.

3 **Microscope Companion™ (MiCo) 1.11**

The heating cycle for applicable microscopes is released in the 1.11 version of the MiCo Software.

4 **Microscope Companion™ (MiCo) 1.10**

The following new features and changes are released in the 1.10 version of the MiCo Software.

- Introduction of an Actions page instead of Vacuum and Stage page:
 - The Actions page now contains Cryo-cycle, Recover Stage, Evacuate Column, Recover Optics Boards, Recover Electron Beam
 - The Home page now contains Open/Close column valves and insert/retract stage (for supported stages only).
- Setting of Spotsize and Probe Mode is now added to the header

5 **Microscope Companion™ (MiCo) 1.9**

The following new features and changes are released in the 1.9 version of the MiCo Software.

- Recovery of the Optics Board after degradation can now be performed on the Optics page.
- Progress information is displayed for the Insert and Retract functionality of SmartStage.
- Camera names are presented on the Detector Page.
- Falcon Reference Image Manager is now accessible on the Detector page.
- The measured HT value is now accessible on the Electron Beam page.

6 **Microscope Companion™ (MiCo) 1.8**

The following new features and changes are released in the 1.8 version of the MiCo Software.

- Layout improvements on the detector page.
- High Tension value is displayed on the Electron Beam page.
- Removed the layout button on the toolbar.
- Disable auto temperature control for UltraX to prevent cooling the detector in case of absence of liquid nitrogen.

7 **Microscope Companion™ (MiCo) 1.7**

The following new features and changes are released in the 1.7 version of the MiCo Software.

- Extended cameras support.

- Various updates regarding automated alignments (User Interface improvements, increased number of sequences, more supported systems, different modes). Alignments are only supported in TEM/EFTEM mode.
- The width of the pages at the left side of the application can be adjusted to two distinct dimensions in opened state to provide a better user experience of a camera view in combination with hardware controls. See the Resizing section under the Hardware Toolbar topic in the User Guide.
- Custom magnification correction to system calibration in TEM and STEM mode on supported systems.
- SmartCam contrast modes (natural, linear and high contrast) are available via right-mouse-click. See the SmartCam section in the User Guide.

8 **Microscope Companion™ (MiCo) 1.6**

The following new features and changes are released in the 1.6 version of the MiCo Software.

- Application renamed from Apollo to Microscope Companion.
- Updated cryo-cycle on supported systems.
- Stage Recovery.
- Optics page with Beam Diameter control on supported systems.

9 Known issues

The following are known issues that are being released with this version of the software.

ID	Description	Workaround
1	The startup time of MiCo may be longer than usual for some systems during the first time after TEM server start, taking from about 10 to 60 seconds.	None available for now.
2	Grey progress images are shown for few alignments using a Falcon (3) camera	None available for now.
3	Dose measurement for Falcon camera's is too sensitive and may prevent live-viewing of the camera.	Use other applications, like EPU.
4	Running SmartCam in the application blocks other software from using the same (like automated alignments) and it may cause alignments to fail quickly.	Close SmartCam manually. Note that MiCo does not need to remain open when working in other applications.
5	Gun Shift alignment requires an inserted holder for X-Ray safety on systems without Autoloader. However, it requires vacuum/no sample in beam.	Holder can be navigated to hole or holder can be slightly retracted from microscope.
6	Thermionic source not supported in MiCo and always shows good state.	Do not rely on MiCo for thermionic source state.
7	Stage recovery error is thrown with recovery of stage.	Ignore the error, the stage will be enabled
8	Missing reference image manager links for some camera's	Use Microscope Software Launcher to access the reference image managers
9	SmartCam has buttons for default overlays that may not be correct or relevant for the microscope	None available, not recommended to use

10 Copyright, Limited Rights and Revision History

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Revision Table

Revision	Date	Description of Changes
1.12	JAN-2024	Update for MiCo 1.12
1.11	OCT-2023	Update for MiCo 1.11
1.10	JUL-2023	Update for MiCo 1.10
1.9	APR-2023	Update for MiCo 1.9
1.8	DEC-2022	Update for MiCo 1.8
1.7	OCT-2022	Update for MiCo 1.7
1.6	JUL-2022	Update for MiCo 1.6

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