

# TEM Server 6.13

## Customer Release Notes

**PN 306020**

Revision A • 1-Mar-19

# Contents

<b>1</b>	<b>Introduction</b> .....	<b>3</b>
1.1	Mandatory and Breaking Changes .....	3
1.2	Supported Microscope Types .....	4
1.3	Supported Software .....	5
1.4	Discontinued Hardware .....	7
<b>2</b>	<b>Source and High Tension</b> .....	<b>8</b>
2.1	New Features .....	8
2.2	Improvements .....	8
<b>3</b>	<b>Vacuum</b> .....	<b>8</b>
3.1	New Features .....	8
3.2	Improvements .....	8
<b>4</b>	<b>Optics</b> .....	<b>8</b>
4.1	New Features .....	8
4.2	Improvements .....	9
<b>5</b>	<b>Cameras and Detectors</b> .....	<b>9</b>
5.1	New Features .....	9
5.2	Improvements .....	9
<b>6</b>	<b>Motion</b> .....	<b>9</b>
6.1	New Features .....	9
6.2	Improvements .....	9
<b>7</b>	<b>Autoloader</b> .....	<b>10</b>
7.1	New Features .....	10
7.2	Improvements .....	10
<b>8</b>	<b>Solved Issues</b> .....	<b>11</b>
<b>9</b>	<b>Known Issues</b> .....	<b>14</b>
<b>10</b>	<b>Copyright and Limited Rights</b> .....	<b>16</b>
<b>11</b>	<b>Addendum to Release Notes for New Software Releases on APM, EPU 2, and Permission Management</b> .....	<b>17</b>
<b>12</b>	<b>Index</b> .....	<b>19</b>

# 1 Introduction

TEM 6.13.X is a TEM Server software version. It is released for a selection of Thermo Scientific and FEI systems as the following microscope software versions:

- Titan 2.13.X
- Talos 1.13.X

This document describes the changes and improvements made with respect to the previous release, TEM 6.12.1.

This document is intended for users of Thermo Scientific and FEI Transmission Electron Microscopes.

## 1.1 Mandatory and Breaking Changes

### Titan and Talos

- After upgrading to Titan 2.13.X or Talos 1.13.X, the Bias and Gain reference images for the FluCam must be re-acquired with the FlucamViewer.

### Titan

- On all Titan systems, Permission Management is available as an option. On **Krios G3i** systems, the option is enabled by default, but it can be disabled during software installation. Permission Management hides a selection of alignments from normal users and from the supervisor user level. For a detailed specification of the hidden alignments per user level, please refer to [302478 - TEM User Interface - Permission Management](#). Permission Management is one aspect of a larger software restructuring effort for our Life Science customers that includes changes in EPU 2.x and the addition of Automated Performance Monitoring (APM) in Sherpa. At the end of this Release Notes document, a letter is included from the Life Science product management and marketing team in which the highlights of the software restructuring efforts are introduced.

## Talos

- On **Glacios** systems, the Permission Management option is installed and enabled by default.

---

**Note**      It is *not* possible to install Talos 1.13.X on a Glacios *without* enabling Permission Management.

---

Permission Management hides a selection of alignments from normal users and from the supervisor user level. For a detailed specification of the hidden alignments per user level, please refer to [302478 - TEM User Interface - Permission Management](#).

Permission Management is one aspect of a larger software restructuring effort for our Life Science customers that includes changes in EPU 2.x and the addition of Automated Performance Monitoring (APM) in Sherpa. At the end of this Release Notes document, a letter is included from the Life Science product management and marketing team in which the highlights of the software restructuring efforts are introduced.

## 1.2 Supported Microscope Types

Family	Type	Supported	Remarks
Titan	Titan (all)	Yes	
	Themis Z/S	Yes	
	Krios	Yes	
	Metrios	Yes	Metrios UI 3.5
	ETEM	Yes	
	Halo	Yes	
Talos	F200X/C/S/i	Yes	
	L120C	Yes	
	Arctica	Yes	
	Glacios	Yes	
Tecnai	All	<b>No</b>	TEM 6.7 is the last release that supports Tecnai systems

## 1.3 Supported Software

The tables below specify the recommended versions for various software products surrounding the microscope and its use.

In the 'Upgrade' column an advise is given whether or not an existing installation needs to be upgraded:

- **Mandatory:** to maintain full functionality and performance in combination with the upgraded TEM Server, the involved software product must be upgraded as well.
- **Automatic:** the involved software product is updated automatically by the TEM Server software installer.
- **Optional:** upgrade is recommended, but not necessary.
- **No change:** no new version is needed since the preceding Microscope software release.
- **N/A:** the software product is not supported by, or does not support this version of the TEM Server.

The 'Upgrade' advise only applies when the involved software product is already present. When the advise for a software product is 'Mandatory', but the software is not present, there is no need to install it unless the customer requests it and has purchased any necessary licenses.

### 1.3.1 Microscope PC

SW Product	Version	Upgrade	Remarks
Tomography	4.9.0	Mandatory	
EPU	2.1	Mandatory	
MAPS	3.7	Mandatory	
Velox	2.7	Mandatory	
TIA	4.21	Automatic	Included in Titan and Talos SW installation
GMS	3.2.3.1508	Mandatory	
Bruker Esprit	1.9.4.2	No change	Required for Super-X G1
Bruker Esprit	2.1.2.17921	Mandatory	Required for Dual-X
Sherpa	1.10	Automatic	Included in Titan and Talos SW installation
AutoCTF	N/A	Uninstall	AutoCTF functionality is integrated in Sherpa. AutoCTF software <i>must</i> be uninstalled.
CEOS	4.6.8	Automatic	Included in Titan SW installation when configured with corrector(s)
Metrios UI	3.5	N/A	Not yet released for TEM 6.13
Metrios FOUPLoader	3.7.1	N/A	Not yet released for TEM 6.13
Imaging Codec Pack	3.11.0	Optional	
Quadera Software	4.6.2	No change	ETEM only
RAPID	3.3.1	Optional	Older releases may still work also.
Imaging Codec Pack	3.11.0	Optional	

### 1.3.2 Support PC

SW Product	Version	Upgrade	Remarks
RAPID	3.3.1	Optional	Older releases may still work also.
Email Service and Port Forwarder	-	Mandatory	Install from Titan/Talos ISO
Imaging Codec Pack	3.11.0	Optional	
Metrios FOUPLoader	3.7.1	N/A	Not yet released for TEM 6.13

### 1.3.3 Remote Operation PC

SW Product	Version	Upgrade	Remarks
RAPID	3.3.1	Optional	Older releases may still work also.
TARO Simple	-	<b>Mandatory</b>	Install from Titan/Talos ISO
Imaging Codec Pack	3.11.0	Optional	

### 1.3.4 Other PCs

SW Product	Version	Upgrade	Remarks
TIA Offline	4.21	<b>Mandatory</b>	TIA Offline is backward compatible
Velox Offline	2.7	<b>Mandatory</b>	Velox Offline is backward compatible
Imaging Codec Pack	3.11.0	Optional	
Metrios FOUPLoader	3.7.1	N/A	Not yet released for TEM 6.13
Imaging Codec Pack	3.11.0	Optional	
Inspect3D	Upgrade depends on compatibility with Tomography data		
Amira / Avizo	Upgrade depends on compatibility with Inspect3D data		

## 1.4 Discontinued Hardware

None since the previous release.

## 2 Source and High Tension

### 2.1 New Features

#### Talos

- Auto HT ramp-up.  
Auto HT ramp-up is a software functionality in Sherpa for Talos L120C. The functionality ensures a fully automatic and safe HT ramp-up from zero to maximal HT after the accelerator was exposed to atmosphere.

### 2.2 Improvements

#### Talos

- Filament OCX: Messages are correctly displayed after HT SCU communication recovers.

## 3 Vacuum

### 3.1 New Features

#### Titan

- Introduction of "Vacuum Basic G2" as a standard option

### 3.2 Improvements

*No (major) items.*

## 4 Optics

### 4.1 New Features

#### Titan and Talos

- Full software integration of the new *Phase Plate SCU Based Heating Source*.
- Sherpa: *Automated Performance Monitoring (APM)* for Krios and Glacios.

#### Talos

- Introduction of the *NanoMEGAS* option.



## 4.2 Improvements

### Titan

- CEOS 4.6.8 replaces CEOS 4.6.3.

### Talos

- New firmware 2.0.0 for the Talos Optics boards.

# 5 Cameras and Detectors

## 5.1 New Features

### Titan and Talos

- NG-STEM:
  - Support for BF/DF detectors is added.
  - BD-S and DF-S detectors each have 8 sectors. These sectors can be addressed individually as single segment detectors.
- Storage Server:
  - Both a Falcon III and Ceta-2 camera can now be present in the same system.

### Talos

- Introduction of the *Precession* option.

## 5.2 Improvements

### Titan

- Esprit update to 2.1.2.17921 for Dual-X.  
Fixed a crash in after using Image Preview with image size > 256 pixel.

# 6 Motion

## 6.1 New Features

### Titan and Talos

- TEM Advanced Scripting support for Phase Plate.

## 6.2 Improvements

*No (major) items.*

## 7 Autoloader

### 7.1 New Features

#### Titan and Talos

- Safety Check framework implemented in Autoloader Cockpit and Autoloader initialization procedure.
  - Autoloader initialization damage prevention:  
Checking state of docker before starting initialization. If Docker is closed and cassette gripper is filled at onset of initialization, then initialization procedure stops and a warning message appears to the user.
  - Autoloader Cockpit calibration procedure damage prevention:  
For each calibration procedure a set of safety checks have been introduced. These checks verify a particular part of the Autoloader state. If a check fails, the calibration procedure is stopped and the user is informed about which particular test failed. When logged in under the factory account, user is allowed to skip the tests and continue calibration procedure.
- Temperature Control:  
The Temperature Control control panel now allows user to execute or schedule a new temperature command during execution of temperature conditioning, or when a conditioning command has been scheduled.

### 7.2 Improvements

#### Titan and Talos

- General software improvements in order to reduce likelihood of Autoloader UI buttons Load/Unload being incorrectly disabled.

## 8 Solved Issues

### Solved in TEM 6.13.0

ID	Issue Description	Titan	Talos
428014	OCX's are flickering: Vacuum (Supervisor), High Tension flapout	X	
598148	Autoloader error handling improved	X	X
619138	HM: Camera availability is logged every 30 minutes (was every 12 hrs)	X	X
672063	ETEM Vacuum UI error reporting is improved.	X	
700210	HM logging of pump status and errors (D2i) is improved	X	X
705919	Piezo axis independence: Reset on 2 axes caused 3rd axis to stop jogging	X	X
713444	FluCam connection issue resolved	X	X
714452	Connection loss with Dual-X detector after firmware update.	X	
716081	FluCam SW displays "normalizing" when no normalization is ongoing	X	X
720568	Flucam detector markers incorrect for Low kV	X	X
721450	Make instruction in gun alignments about the current check for XFEGs more clear.	X	X
722270	TEM Server crash at start up when FEG is in low extraction mode.	X	X
725808	FlucamViewer: SW exception handling is improved	X	X
727236	Brightness jumps when changing contrast on DF4.	X	X
728808	After conditioning step cannot be scheduled when conditioning is active	X	X
729902	AutoCTF does not restore defocus value	X	X
733916	Image shift calibration in Lorentz off on image corrected system	X	X
733923	Improve instruction in steps 2 and 4 of Image/Beam shift calibration	X	X
734321	Timestamp in Ceta2 MRC File is off by 1 hour (Daylight Saving)	X	X

ID	Issue Description	Titan	Talos
737879	Problem with focus diffraction alignment for probe corrected systems	X	
738276	Cassette touches docker part during Initialize	X	X
740238	Talos Cryo-cycle: Vacuum error when PPM = med		X
740724	In relative move OCX, the B Tilt buttons can only be clicked once.	X	X
740752	Crash due to error in getting Collection Angle Range	X	X
741400	Esprit 2.1.2 line scan gives no counts when doing horizontal or vertical scan	X	
741664	Numbers on monochromator tune expert OCX flapout are cut off.	X	
741696	Crash after imaging the ronchigram on Ceta for STEM-CCD experiment	X	X
742840	TEM UI crash when after deleting an old Alignment File from list	X	X
743395	Esprit 2.1.2.17906: Spectrum map acquisition with drift correction crash	X	
745696	Extend condenser alignments with Beam_Shift and Rotation Center alignment for 3-condenser-lens mode	X	
746504	Autoloader: Load / Unload autoloader is incorrectly grayed out	X	X
749439	Lorentz OCX: using mouse wheel, the sliders move but no value change	X	X
749525	Incorrect Optics Metadata in images that are acquired on Monochromator Systems	X	X
753409	Sherpa: AutoComa: Zemlin tableau continues when fits fail	X	X
753459	Esprit: Starting a spectrum map sometimes gives an exception		
753556	Calibrate dose on OneView crashes temserver	X	X
754726	Unhandled exception in Flucam viewer in Send Image to TIA	X	X
756715	RPC server unavailable when GMS is launched	X	X
758216	FluCamViewer: BF detector is missing	X	X
763542	TEM UI hangup when toggling STEM mode	X	X

ID	Issue Description	Titan	Talos
764114	NG-STEM detector segments are ordered counter-clockwise in stead of clockwise	X	
765391	Cut off fluscreen viewer after upgrade	X	X

**Solved in TEM 6.13.1**

ID	Description	Titan	Talos
772524	Pixel size is missing of mrc stacks collected with EPU	X	X
780018	Flucam hangup after insert screen	X	X
787830	(Metrios) Esprit QMap export issues (6.13.1)	X	

## 9 Known Issues

### Known issues in 6.13.0

ID	Description	Titan	Talos	Remarks
538959	AutoTuning: Starting TIA during AutoTuning execution stops the execution			
539732	AutoTuning: FluCam needs to be paused manually when running Center C2 Aperture alignment			
642999	Talos FEG conditioning issue - burned OPU		X	
697063	auto tuning rotation center wrong error message displayed			
712191	AutoTuning: Misleading error message			
717382	SuperX G2 deadtimes don't match between idle and active acquisition			
717387	SuperX G2 deadtimes at low count rates are not correct during acquisition			
725174	SuperX G2 (PIA Eds) Event Buffer is not large enough for extended use-cases			
726312	TEM User Interface: Column pressure is displayed without units			
733615	Sherpa AutoCTF is very slow and irresponsible			
734766	Talos splash screen is shown on a Titan microscope.		X	
736864	Find Beam button in Monochromator (Expert) OCX does not function <i>(same root cause as to 767667)</i>	X		Cause: FeiAutoStarServer does not always shut down when the TEM server is stopped.
740184	STEM-EDX-EELS performance is lower for CAPP (NGSTEM) than for PIA	X		

ID	Description	Titan	Talos	Remarks
742314	Talos OSD not working as intended for cryoholder insertion with X-Twin		X	
743379	Timeout in TBCA firmware during acquisition data transmission			
755266	TEM server start hangs up when optics board off/network cable disconnected			
758333	OSD: inconsistency between vacuum OCX and OSD		X	
761235	Escalation: Sluggishness on Themis after S-CORR upgrade	X		Work instruction provided
767210	Autoloader control not possible when "All room temperature and AL pumped active"			
767667	<ul style="list-style-type: none"> <li>Find Beam in Monochromator (Expert) doesn't work (however Sherpa does work)</li> <li>STEM Auto Tuning functionality cannot be added to the Workset</li> </ul> <p><i>(Same root cause as 736864)</i></p>	X	X	Cause: FeiAutoStarServer does not always shut down when the TEM server is stopped.

## 10 Copyright and Limited Rights

### Copyright

The information and materials contained herein are confidential and proprietary to FEI Company, part of Thermo Fisher Scientific. They are provided for your organization's internal use on a need to know basis. They cannot be duplicated or disseminated for any third party without the express consent of Thermo Fisher.

### Limited Rights

Contractor Name: FEI Company (part of Thermo Fisher Scientific)

Contractor Address: 5350 NE Dawson Creek Drive, Hillsboro OR 97124

The Government's rights to use, modify, reproduce, release, perform, display, or disclose these technical data are restricted to those rights specified in DFARS 252.227-7015(b)(2), FAR 52.227-14(g)(2)(Alternate II) and FAR 12.211. Any reproduction of technical data or portions thereof marked with this legend must also reproduce the markings. Any person, other than the Government, who has been provided access to such data, must promptly notify the above named Contractor.

To provide feedback on this document, please submit via [thermofisher.com/EM-Sales](https://thermofisher.com/EM-Sales)



## 11 Addendum to Release Notes for New Software Releases on APM, EPU 2, and Permission Management

Eindhoven, October 29, 2018

Dear Customer,

With this letter we would like to personally inform you on some significant changes and improvements that we have made in our latest software release. In the official release notes of the new software versions you find the technical specifics of its contents. However, seen the structural modifications that we have implemented, we would like to personally inform you on the main changes in this summary statement.

### **APM**

Before setting up a single particle acquisition run, it is critically important that the microscope is in a state of reproducible and optimal performance.

Automated Performance Monitoring (APM) is a new function that assesses the microscope alignment status in a semi-automated fashion. During an APM run, executed from the supervisor user account, the microscope performs an alignment check, which results in an advice to continue with your scientific experiment or in a suggestion to tweak specific alignment steps via a guided sequence. By performing this APM procedure bi-weekly, you will be assured that the microscope is in its best performing state and will not hamper your scientific output.

### **EPU 2.x**

- A number of daily routine alignments like Auto-coma and Auto-stigmatate have now become accessible from the EPU user interface. This avoids switching back and forth between the applications software and the microscope user interface, thereby contributing to an enhanced ease-of-use.
- The screening process has been significantly simplified for the user. Besides the possibility to screen an entire Autoloader cassette of up to 12 samples in one uninterrupted session, the screening process has become much faster. A grid atlas providing a low magnification overview can be recorded in approximately 5 minutes. In addition, an intelligent algorithm can be applied to automatically classify grid squares with similar quality. This will significantly improve the area selection for data acquisition, and thereby the throughput of the SPA workflow.

## **Permission Management**

In order to improve the ease-of-use and shield complexity from the operator, the number of accessible functionality in the TEM User Interface has been revisited. With Permission Management, the available functionality shall be more in line with the intended use of the user level. In addition, one can expect the alignments to become more stable over the life span of the microscope (less issues with accidental misalignments).

Most notably, a subset of the direct alignments have been set to supervisor level, so the user can focus only on the few alignments that need to be done before the application, while the supervisor can still access the full set of direct alignments. Furthermore the column alignments that are proven to be very stable over time have been set to customer-service level.

For a complete overview of the new functionality availability with Permission Management, we refer to the TEM User Interface - Permission Management User Manual.

We hope that the above information is useful for you. Your local service engineer is always there to assist you in setting up and taking the first steps with you on our new software.

With best regards,

The Life Science product management and marketing team

## 12 Index

### A

Addendum to Release Notes for New Software Releases on APM, EPU 2, and Permission Management • 17

Autoloader • 10

### C

Cameras and Detectors • 9

Copyright and Limited Rights • 16

### D

Discontinued Hardware • 7

### I

Improvements • 8, 9, 10

Introduction • 3

### K

Known Issues • 14

### M

Mandatory and Breaking Changes • 3

Microscope PC • 6

Motion • 9

### N

New Features • 8, 9, 10

### O

Optics • 8

Other PCs • 7

### R

Remote Operation PC • 7

### S

Solved Issues • 11

Source and High Tension • 8

Support PC • 6

Supported Microscope Types • 4

Supported Software • 5

### V

Vacuum • 8