Tomography 5.22

Release Notes

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Document History

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Introduction

Purpose

This document describes the Thermo Scientific Tomography software releases.

Audience and Scope

These release notes are intended for users of the Thermo Scientific Tomography software and those who manage the installation of Thermo Scientific Tomography software on the microscope computer.

This document describes the content of the most recent and few historic Tomography releases.

Hardware Requirements

The Tomography software can be used on the Microscope PC of Thermo Scientific and FEI TEM systems with a compatible microscope software release and a compatible camera and/or detector.

System, Software and Configuration Compatibility

The following tables show the compatible microscope software versions, the preferred Tomography software versions per microscope software version, and the system configuration compatibility.

Although the Tomography software is backward compatible with a limited range of microscope software versions, some of the new features and improvements may be available only for the most recent supported microscope software version(s).

Preferred Tomography Version per Microscope Software Version

Titan	Talos	Tecnai	Tomography	Remarks
3.19 – 3.24	2.19 – 2.24	–	5.22	First version compatible with Windows 11.
3.18	2.18	–	5.21	
3.17	2.17	–	5.20.1	

Titan	Talos	Tecnai	Tomography	Remarks
3.16	2.16	–	5.19	
3.15	2.15	–	5.18	
3.14	2.14	–	5.17	
3.13	2.13	–	5.16	
3.12	2.12	–	5.15	
3.11	2.11	–	5.14	
3.10	2.10	–	5.13	
3.9	2.9	–	5.12	
3.8	2.8	–	5.11	
3.7	2.7	–	5.10	
3.6	2.6	–	5.9	
3.5	2.5	–	5.8	
3.4	2.4	–	5.7.1	
3.3	2.3	–	5.6	
3.2	2.2	–	5.5	
3.0 - 3.1	2.0 - 2.1	–	5.4.1	
2.15	1.15	–	5.7.1	
2.14	1.14	–	5.3	
2.13	1.13	–	5.2	
2.12	1.12	–	5.1	

Titan	Talos	Tecnai	Tomography	Remarks
2.11	1.11	–	4.12	
–	–	5.7	4.9	
2.6 – 2.10	1.6 – 1.10	5.6	4.7	Titan 2.6 requires patch 649671.
2.5	1.5	–	4.5.0	
2.4	1.4	–	4.4.1	
2.0 – 2.3	1.0 – 1.3	–	4.4.0	
1.6	–	4.6.4	4.1.2	Last release for Windows XP.

Compatible Microscope Software Versions per Tomography Version

Tomography	Titan	Talos	Remarks
5.22	3.19 - 3.24	2.19 - 2.24	
5.21	3.18 - 3.23	2.18 - 2.23	
5.20.1	3.17 - 3.22	2.17 - 2.22	
5.19	3.16 - 3.21	2.16 - 2.21	
5.18	3.15 - 3.20	2.15 - 2.20	
5.17	3.14 - 3.19	2.14 - 2.19	
5.16	3.13 - 3.18	2.13 - 2.18	
5.15	3.12 - 3.17	2.12 - 2.17	
5.14	3.11 - 3.16	2.11 - 2.16	
5.13	3.10 - 3.15	2.10 - 2.15	

Tomography	Titan	Talos	Remarks
5.12	3.9 – 3.14	2.9 – 2.14	
5.11	3.8 – 3.13	2.8 – 2.13	
5.10	3.7 – 3.12	2.7 – 2.12	
5.9	3.6 – 3.11	2.6 – 2.11	For STEM / EDS experiments, Tomography 4.X is no longer required.
5.8	3.5 – 3.10	2.5 – 2.10	Tomography 4.21 for STEM / EDS experiments is available as a *separate* software installation.
5.7.1	2.15 3.4 – 3.9	1.15 2.4 – 2.9	• Preferred over Tomography 5.7 • Last release to support Windows 7 based microscope software (Titan 2.X and Talos 1.X). • Tomography 4.20 for STEM / EDS experiments is available as a *separate* software installation.
5.7.0	3.4 – 3.9	2.4 – 2.9	Tomography 4.20 for STEM / EDS experiments is available as a *separate* software installation.
5.6	2.15 3.3 – 3.8	1.15 2.3 – 2.8	Tomography 4.19 for STEM / EDS experiments is available as a *separate* software installation.
5.5	2.15 3.2 – 3.7	1.15 2.2 – 2.7	Tomography 4.18 for STEM / EDS experiments is available as a *separate* software installation.
5.4.1	2.15 – 3.6	1.15 – 2.6	Tomography 4.17 for STEM / EDS experiments is available as a *separate* software installation.

Tomography	Titan	Talos	Remarks
5.4.0	2.15 – 3.6	1.15 – 2.6	**Tomography 5.4 is withdrawn.** **Do not install Tomography 5.4.**
5.3	2.14 – 3.5	1.14 – 2.5	Tomography 4.16 for STEM / EDS experiments is available as a *separate* software installation.
5.2	2.13 – 3.4	1.13 – 2.4	Tomography 4.15 for STEM / EDS experiments is automatically installed with Tomography 5.2
5.1	2.12 – 3.3	1.12 – 2.3	Tomography 4.14 for STEM / EDS experiments is automatically installed with Tomography 5.1
5.0.1	2.12 – 3.2	1.12 – 2.2	Tomography 4.13.1 for STEM / EDS experiments is automatically installed with Tomography 5.0.1
5.0.0	2.12 – 3.2	1.12 – 2.2	• First release for Windows 10 • Tomography 4.13 for STEM / EDS experiments is automatically installed with Tomography 5.0.

Compatible CryoFlow and TQM Versions per Tomography Version

Tomography	CryoFlow	TQM	SDP	Remarks
5.22	1.25 - 1.28	1.9 - 1.12	4.1, 3.1 - 3.3	
5.21	1.27	1.11	2.15, 3.1 – 3.3	
5.20.1	1.26	1.10	3.2	
5.19	1.25	1.9	3.2	
5.18	1.24	1.8		

Tomography	CryoFlow	TQM	SDP	Remarks
5.17	1.23	1.7		
5.16	1.22	1.6		
5.15	1.21	1.5		
5.14	1.20	1.4		
5.13	1.19	1.3		
5.12	1.18	1.2		
5.11	1.17	1.1		

Compatible Maps TEM Versions per Tomography Version

Tomography	Maps TEM	Remarks
5.22	3.32.1	• "Thermo Scientific Maps Data Exchange Service" needs to be installed, see Maps User Guide 3.32.1.
5.21	3.31.1	• "Thermo Scientific Maps Data Exchange Service" needs to be installed, see Maps User Guide 3.31.1.
5.20.1	3.30.1	• "Thermo Scientific Maps Data Exchange Service" needs to be installed, see Maps User Guide 3.30.1.
5.19	3.29.1	• "Thermo Scientific Maps Data Exchange Service" needs to be installed, see Maps User Guide 3.29.1. • Use Maps TEM 3.27.1 to install "Thermo Scientific Maps Data Exchange Service".
5.18	3.28.1	• "Thermo Scientific Maps Data Exchange Service" needs to be installed, see Maps User Guide 3.28.1. • Use Maps TEM 3.27.1 to install "Thermo Scientific Maps Data Exchange Service".

Tomography	Maps TEM	Remarks
5.17	3.27.1	"Thermo Scientific Maps Data Exchange Service" needs to be installed, see Maps User Guide 3.27.1.

Compatible Cameras for Tomography

Camera	Supported	Remarks
Ceta	Yes	- All Ceta Sensor Packages. - With and without Speed Enhancement (Ceta-2).
Falcon 4	Yes	Tomography
Falcon 4i	Yes	- Tomography 5.9 and later. - Requires Titan 3.10 / Talos 2.10 and later.
Falcon 3EC	Yes	
Falcon I / II	No	Tomography 4.13.1 and earlier.
Gatan Orius	Yes	
Gatan OneView	Yes	
Gatan US1000XP	Yes	
Gatan US1000/4000	No	Not supported in Windows 10.

> **Note:** The compatible cameras may not all be supported by the compatible microscope software versions. See the TEM Server Release Notes for a definitive list of supported cameras.

Compatible Energy Filters for Tomography

Energy Filter	Supported	Remarks
Selectris / Selectris X	Yes	Requires Titan 3.6 / Talos 2.6 and later.
Gatan Enfinium SE / ER	Yes	With US1000 camera.
Gatan Quantum 963 / 964 / 965 / 966	Yes	
Gatan (Bio)Quantum 967 / 968	Yes	With Gatan K2 camera.
Gatan BioQuantum 1967	Yes	With Gatan K3 camera
Gatan Continuum 1065 ER / 1066 / 1066 HR / 1067 / 1069 / 1069 HR / 1077 S	Yes	

> ℹ **Note:** The compatible energy filters may not all be supported by the compatible microscope software versions. See the TEM Server Release Notes for a definitive list of supported energy filters.

Compatible Detectors for Tomography

Detector	Supported	Remarks
HAADF	Yes	
BF/DF Retractable	Yes	
BF/DF Retractable Mk2	Yes	
Panther STEM (BF-S/DF-S)	Yes	
Gatan 805 / 807 BF/DF	Yes	
Super-X-G1 / G1 Lite	No	Not supported in Windows 10.

Detector	Supported	Remarks
Super-X-G2 / G2 Lite	Yes	
Dual-X / Single-X	Yes	

> ℹ **Note:** The compatible detectors may not all be supported by the compatible microscope software versions. See the TEM Server Release Notes for a definitive list of supported detectors.

Tomography 5.22

Tomography 5.22 introduces the following major new features, along with an improvement that allows users to adjust the acquisition order during acquisition.

- Traffic Lights

- Import/Export Image Filter Settings

- Optimize Optics

- Automatic Gain Reference

- Tomography Multigrid

- Search Map Star Rating

New Features

- **Traffic Lights**:The Tomography UI displays the current status of the microscope hardware. To begin data acquisition in cryogenic conditions, ensure all monitored systems are in a green ✅ state. A blue ℹ️ state or red ❌ state indicates subsystems that require either automatic or manual recovery action.

- **Import/Export Image Filter Settings**: Users can now export and import their image filter settings to reduce experiment setup time.

- **Optimize Optics**

  - User can automatically fine-tune the column of the microscope on all Glacios systems and Krios 5 systems.

  - Depending on the configuration of your microscope, the sequence may include the following auto functions: beam centering, finding parallel illumination, objective aperture centering, astigmatism correction, and coma correction.

- **Automatic Gain Reference**: User can acquire a new gain reference as part of the Optimize Optics task on Falcon 4, 4i cameras with TEM Software version 7.24 and higher.

- **Tomography Multigrid**

  - User can schedule automatic acquisition of Search Maps and Batch Positions for all samples in the autoloader. Tomography automatically performs actions to ensure all features are correctly targeted, even after multiple sample reloads.

  - Use the Sample selection in the Tomography tab to easily switch to another sample without loading it onto the stage. User can define Search Maps and Batch Positions on all samples in the autoloader that have an Atlas acquired.

  - Tomography Multigrid is a licensed option and may require a paid upgrade to your system. For more information, contact UpdateEM@thermofisher.com.

  - Tomography Multigrid is supported in **TEM** and **EFTEM** modes.

- **Search Map Star Rating**: Users can now rate acquired Search Maps using the Star rating and browse through them using arrows. They can also filter and sort Search Maps from highest to lowest star rating. These improvements provide a more organized definition of batch positions.

Improvements

- Users can now change the acquisition order for Search Maps and Batch positions while acquisition is running. The "Move Up" and "Move Down" actions are allowed.

Solved Issues

ID	Descripton	Remark
TOMO-7668	Targeting of Search Maps is incorrect on Lamellae with pre-tilt, if defined on an Overview image.	

Known Issues

Although a large amount of effort is spent to assure the quality of the Tomography software, it can still contain issues that affect your preferred workflow.

This chapter describes only the Known Issues for the most recent Tomography release. Historic Known Issues that are solved in the current release or in a preceding Tomography release are not listed here. For an overview of the Known Issues in a specific historic release, see the Release Notes document that is included in that software release.

ID	Issue Description and Workaround
TOMO-7774	Targeting on an Atlas can be inaccurate, if Atlas Alignment is calibrated.
	Reset Atlas Alignment
TOMO-7947	Tomography can crash when viewing FFT images
NPD-6089	Autostigmate and Autocoma will fail on TEM SW 7.17.1 - 7.20.1 with Gatan cameras.
	Install TEM SW patch that fixes missing pixel size in the metadata.
115829	Throughput issue when using K2 on Bioquantum. Calls to the energy filter can add significant delays. These delays can happen when switching between data acquisition and foil hole acquisition, or between data acquisitions, depending on which function creates the problem.
	Reset the camera and GMS, then reboot the Gatan PC.
44890	Storing of calibrations in the Auto Functions tab fails if the user does not have administrator privileges.
	Run the Auto Function calibrations on an account with administrator rights.
RDTS-1837	Emails are not being sent, either at the end of the Tilt Series or when using the *Test* button.
	• Contact your IT department to allow SMTP basic authentication for the Mail Service. • Contact Service to reconfigure the Mail Service on the Microscope PC and Network PC.