TEM Server 7.7

Service Release Notes

PN 309283

Revision 7.7.1 • 29-Mar-2021

Contents

1 Introduction

TEM 7.7.X is a TEM Server software version. It is released for Thermo Scientific Transmission Electron Microscope (TEM) systems as the following microscope software versions:

- Titan 3.7.X for High End systems with a Titan column.
- Talos 2.7.X for Mid Range systems with a Talos column.

This document describes the changes and improvements made with respect to the previous release, TEM Server 7.6.1.

1.1 Mandatory and Breaking Changes

None since the previous release.

1.2 Highlights

Although this TEM Server release brings many improvements and extends existing functionality with small new features, it does not introduce major new modules or functionalities.

2 System, Software and Hardware Compatibility

2.1 Supported Microscope Types

Range	Generation	Supported	Models and Remarks
HighEnd TEM (Titan column)	G1/G2	**No**	Titan, Themis, Krios, Metrios, Halo, ETEM
	G3	**No**	ETEM
	G3, G3i	Yes	Themis, Krios, Metrios, Halo
	G4	Yes	Spectra, Krios, Metrios
MidRange TEM (Talos column)	G1	**No**	Talos, Glacios
	G2	Yes	Talos, Glacios

Note   **Verify that all microscope hardware is supported before installation of this TEM Server release.**

Refer to Supported Hardware on page 10 for a list of supported modules and subsystems.

2.2 Supported Software Upgrades to TEM Server 7.X

Note   **This TEM Server 7.X release does not support a direct upgrade from TEM Server 6.X software.**

To install a new TEM Server 7.X software version on a system, only the following scenarios are supported.

Upgrade scenarios for High-End systems with a Titan column

(Titan, Themis, Spectra, Krios, Metrios, ETEM)

Generation	Supported Upgrade Scenarios to Titan 3.X Software
G1, G2	No regular supported upgrade scenario. Submit an NSR to investigate the feasibility to upgrade the system to Titan 3.X software.
G3, G3i	• Titan 3.X to any later Titan 3.X For instructions, refer to 308714. • Titan 2.15.X (Windows 7) to Titan 3.2.1 (Windows 10) *This software upgrade is only supported as an NSR.* For instructions, refer to 308780.
G4	Titan 3.X to any later Titan 3.X For instructions, refer to 308714.

Upgrade scenarios for Mid-Range systems with a Talos column

(Talos, Glacios)

Generation	Supported Upgrade Scenarios to Talos 2.X Software
G1	No regular supported upgrade scenario. Submit an NSR to investigate the feasibility to upgrade the system to Talos 2.X software.
G2	- Talos 2.X to any later Talos 2.X For instructions, refer to 307345. - Talos 1.15.X (Windows 7) to Talos 2.2.1 (Windows 10) *This software upgrade is only supported as an NSR.*

2.2.1 Special Attention Points for Systems with NSR(s)

Note	**According to the NSR process, regular software upgrades are not supported for systems with an NSR.**

If a system with an NSR requires a software upgrade, then a new NSR should be submitted for the desired software upgrade. In practice, systems with one or more NSRs are often upgraded without submitting a new NSR.

Note	**If a system has one or more NSRs, then the installation of a software upgrade must be treated with the same caution and attention to detail as the initial NSR(s).**

Pay special attention to:
- Supported Hardware on page 10.
- Discontinued Hardware on page 14.
- Non-standard software functionalities.
  Verify that all non-standard functionalities are still supported.

2.3　Supported Software

Note	**This chapter specifies the *minimum* software versions that are compatible with this TEM Server release.**

Newer software versions may be available that are backward compatible with this TEM Server release.

- Check TEM SW Archive for the most recent compatible software versions.
- Refer to the release notes of the listed software products for a specification of the supported TEM Server releases.

In the tables below, the *Upgrade* column specifies whether or not an upgrade is necessary.

Upgrade	Explanation
Mandatory	The application *must* be upgraded to maintain system functionality and/or performance. If the application is not present on the system, then it is not necessary to install it.
Automatic	The application upgrade is included in the TEM Server installation.
Optional	The application *can* be upgraded, this is not required for system functionality or performance.
No change	There is no new application version.
Uninstall	The application must be removed.
N/A	The application does not support, or is not supported by this TEM Server release.

2.3.1   Microscope PC

The Microscope PC must run on the Windows 10 IOT Enterprise operating system.

Software	Version	Upgrade	Remarks
Tomography	5.5	**Mandatory**	Includes Tomography 4.15 for STEM and STEM/EDS experiments.
EPU	2.10	**Mandatory**	
EPU-D	1.6	**Mandatory**	
MAPS	3.15	**Mandatory**	Maps 3.14 is not released yet at the time that TEM Server 7.5.1 is released.
Velox	3.0	**Mandatory**	
TIA	5.7.0	Automatic	Included in Titan and Talos SW installation. There will be no new features in TIA anymore, only critical issues are solved.
GMS	3.4.3.3212	**Mandatory**	For all supported Gatan cameras and filters.
Bruker Esprit	2.2.1.4291	**Mandatory**	For Dual-X / Single-X
Sherpa	2.4	Automatic	Included in Titan and Talos SW installation.
CEOS	5.1.5	Automatic	● Included in Titan SW installation. Only for systems with corrector(s). ● Requires Linux Kernel 7.8 on the Corrector PC.
Metrios UI	4.3	**Mandatory**	
Quadera Software	N/A	N/A	
RAPID	4.0.1	**Mandatory**	
Imaging Codec Pack	3.15.0	Automatic	
Data Collector	3.2	Automatic	

Service Tools

Note   **The mentioned software versions are the minimum version numbers for this TEM Server release. Service Tools are often backward compatible with a limited range of preceding TEM Server releases.**

SW Product	Version	Remarks
AutoAlignments Tip	**Uninstall**	- Replaced by *Sherpa > HT Conditioning*. - The AutoAlignments Tip tool is *not* compatible with TEM Server 7.6.X.
Alignment Checker	1.4.6	*Not available for FSEs* Check TEM SW Archive - Alignment Checker for latest update.

2.3.2 Support PC and Network PC

The Support PC or Network PC must run on a Windows 10 operating system.

SW Product	Version	Upgrade	Remarks
RAPID	4.0.1	**Mandatory**	Older releases may still work also.
Email Service and Port Forwarder	-	**Mandatory**	Install from Titan/Talos ISO
Imaging Codec Pack	3.15.0	Optional	

2.3.3 Remote Operation PC

SW Product	Version	Upgrade	Remarks
RAPID	4.0.1	**Mandatory**	Older releases may still work also.
TARO Simple	-	**Mandatory**	Install from Titan/Talos ISO
Imaging Codec Pack	3.15.0	Optional	

2.3.4 Other PCs

SW Product	Version	Upgrade	Remarks
TIA Offline	5.7.0	Optional	TIA Offline is backward compatible. There are no new features in TIA since 4.22. The upgrade is optional, but recommended.
Velox Offline	3.0	**Mandatory**	Velox Offline is backward compatible.
Bruker Esprit Offline	2.2.1.4291		Same version as on the Microscope PC.
Imaging Codec Pack	3.15.0	Optional	

SW Product	Version	Upgrade	Remarks
Inspect3D	Upgrade depends on compatibility with Tomography data		
Amira / Avizo	Upgrade depends on compatibility with Inspect3D data		

2.4   Supported Hardware

Functionality	Hardware	Remarks
Facilities, Communication and Infrastructure		
Microscope PC	HP Z4 G4	
CAN Controller	CCB	Only in the TEM Cabinet, not in the Optics Cabinet
	SCU	
	SCU2	
User I/O	OSD for Talos	
	OSD for Titan G4 and Themis S	
	Loading Area LEDs for Krios G4	
	KVM Extender	
Source and High Tension		
HT Tank	G1	
	G2	
	G2.3	
Gun	FEG G1	XFEG and SFEG, with and without Monochromator
	FEG G2	XFEG and SFEG, with and without Monochromator
	CFEG	
	Thermionic	LaB6 and Tungsten
Vacuum		
IGPD2 power supply	IGPD2v2	
	IGPD2CI	With cable interlock
	IGPCU 5KV / 5.5KV	

Functionality	Hardware	Remarks
Optics		
Talos Optics Boards	Version 1	
Current Measuring Board	CMAG	
	CMIB	
Phase Plate	SCU Remote Controlled Heating	Keithley Power Supply (USB)
	PPHS Power Supply (Ethernet)	Type 1 and Type 2
Probe Corrector	DCORPLUS	
	SCOR	
Image Corrector	CETCORPLUS	● non-constant power ● constant power
	CcCOR	
Cameras and Detectors		
Cameras	Flucam 2	
	Flucam 3	
	Falcon 3EC	
	Falcon 4	Requires a Ceta camera
	Ceta	● Including Ceta Speed Enhancement (Ceta-2) ● Supported Sensor Packages: Ceta 16M, Ceta-D/-M/-S
	Gatan US1000XP	
	Gatan OneView	
Filters	Gatan Filters	See Support for Gatan Filters on page 13.
	Selectris	Only for Krios and Glacios
	Selectris X	Only for Krios and Glacios
STEM Detectors	HAADF	
	BF/DF Retractable	

Functionality	Hardware	Remarks
	BF/DF Retractable Mk2	
	Panther STEM BF-S/DF-S	Also known as NextGen- or NG-STEM.
	Gatan 805, 807, BF/DF	
EDS	Super-X G2 / G2 Lite	Requires Velox
	Dual-X / Single-X	Requires Esprit 2.2
Scan Engines	PIA, PIA EDS	
	CAB/A	
	Gatan DigiScan	
Motion and Specimen Loader		
CompuStage Mk1 / Mk2	TSC	
Piezo Enhancement	PI E545	
	PI E727	
Automated Aperture System	AAM-G1 with NYCe4000	
	AAM-G2 with TAC	Including Heated Apertures
Autoloader	Plan 1, 2, 3 with NYCe4000	
	Plan 3 with TAC	
IVIS		

Note **Although the supported hardware list contains a limited selection of (legacy) hardware that is not available on new, factory-built systems, TEM 7.X software can *not* be retrofitted on all legacy systems.**

Note **All Gatan cameras and filters that are supported by the installed GMS version on the Gatan PC can (also) be installed in Stand-alone configuration.**

2.4.1 Support for Gatan Filters

The default GMS version is specified in the GMS column header. If a configuration requires a different GMS version, then this is specified for that particular configuration.

Gatan Filter	Embedded	Camera Name	GMS: 3.4.3.3212	Computer	Fast Embedding
Enfinium SE / ER	Yes	*NA*	-	Micr. PC	No
Quantum 963	Yes	EF-CCD	-	Micr. PC	No
Quantum 964	*No*	-	-	-	-
Quantum 965	Yes	EF-CCD	-	Micr. PC	No
Quantum 966	Yes	EF-CCD	-	Micr. PC	No
BioQuantum 967	Yes	EF-CCD	-	Gatan PC	Yes
BioQuantum 968	Yes	EF-CCD	-	Gatan PC	No
BioQuantum 1967	Yes	EF-CCD	-	Gatan PC	Yes
Continuum 1065 ER	Yes	EF-CCD	-	Gatan PC	No
Continuum 1066 HR	Yes	EF-CCD	-	Gatan PC	No
Continuum 1077 S	Yes	*NA*	-	Gatan PC	No
Continuum 1069 K3	Yes	EF-CCD	-	Gatan PC	Yes
Continuum 1069 K3 Dual	Yes	EF-CCD	-	Gatan PC	No
		EF-K3			Yes
Continuum 1069 K3 HR	Yes	EF-CCD	-	Gatan PC	Yes
Continuum 1069 K3 HR Dual	Yes	EF-CCD	-	Gatan PC	No
		EF-K3			Yes
BioContinuum 1067 K3	Yes	EF-CCD	-	Gatan PC	Yes

- Enfinium SE / ER and Continuum 1077 S:
  These are EELS filters that do not have imaging capabilities.
- Continuum 1069 K3 Dual and HR Dual:
  - The EF-CCD camera is embedded via the old embedding interface with *DM Remoting*.

- The EF-K3 camera is embedded via the Fast Embedding interface with *GatanDMRemoteServer*.

2.5   Discontinued Hardware

None since the previous release.

3 Source and High Tension

3.1 New Features

Titan

- **CFEG**:
    - CFEG is now supported by the **Ice Growth microscope test**.
    - The **Smart BCM based ramping algorithm** is now available for the High Temperature flash procedure. It is used only during normal system operation. For service actions, the old slow algorithm still applies.

      For Metrios systems, the smart BCM algorithm is the default option after a Low Temperature flash.

3.2 Improvements

Titan

- **CFEG**: the vacuum trip levels for IGPf, IGPa and IGPp are increased for a more reliable CFEG start-up.

3.3 Impact on Service

No (major) items.
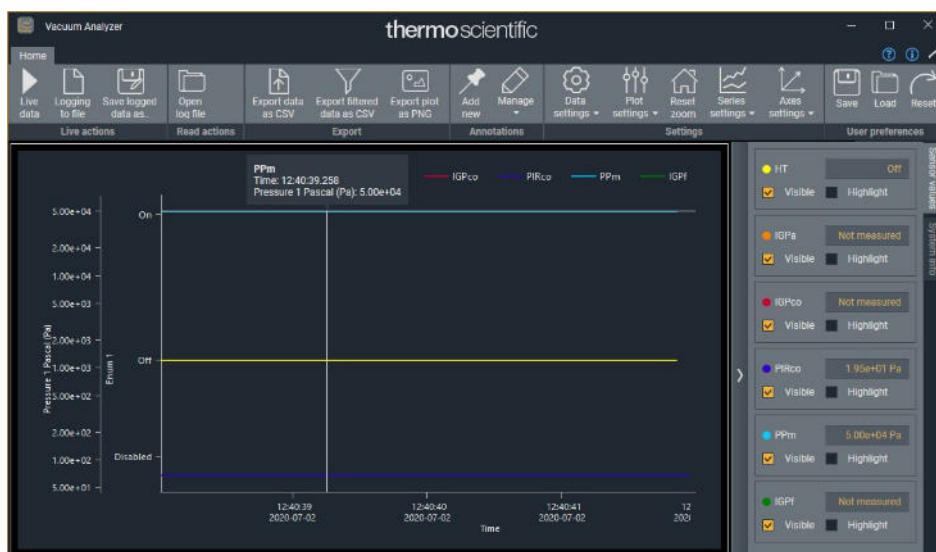
4 Vacuum

4.1 New Features

No (major) items.

4.2 Improvements

No (major) items.

4.3 Impact on Service

Titan and Talos

● The **Vacuum Analyzer** replaces the obsolete Pressure Logger (Titan) and Vacuum Logger (Talos).

Talos

● The **IGP Cable** disconnect timeout is decreased from 5 minutes to 15 seconds.
● The **TEM HAL** dialog (tstHalNG) has a new *Vacuum only* profile.
● The **Vacuum service dialog** has a new notification about waiting 15 minutes for Falcon 4.

5   Optics

5.1   New Features

Titan

● **Metrios ToolReadiness**:
  ● New Dumbbell Contrast Analysis Algorithm to evaluate the resolution quality for HR-STEM.
  ● The STEM Condenser Center Probe alignment is automated.

Talos

● **Align Genie** has new alignments:
  ● Center C2 (STEM nP Imaging mode).
  ● Beam Tilt Pivot Points (STEM nP Imaging mode).
  ● Condenser Stigmation (STEM nP Imaging mode).
  ● Set Eucentric Height (cross-grating in TEM uP).

5.2   Improvements

Titan and Talos

● **Sherpa AutoCTF**:

- AutoCTF verifies that all prerequisite calibrations are completed before the procedure is executed.
- The PDF Report can now also be generated on demand.

- **Sherpa APM**:
  - APM verifies that all prerequisite calibrations are completed before the procedure is executed.
  - On systems with a Thermo Scientific Selectris (X) filter:
    - If the system does *not* have a Monochromator, then the energy filter optics alignments are included in the APM Alignment file.
    - If the post-filter Falcon 4 camera is inserted, then APM blanks the beam while the APM Alignment is loaded.

- **Sherpa Energy Filter**:
  - To improve the robustness of the Center Pre-slit procedure, the 5 mm aperture is used instead of the 2.5 mm aperture.
  - To improve the robustness of the Crossover Correction procedure on systems with less accurately aligned SA magnifications, the Crossover Prepare procedure is improved and is now integrated in the correction procedure.

Titan

- **Sherpa OptiSTEM+**:
  Multiple small corrections and layout improvements in the user interface.

Talos

- The Spotsize values for 200 kV are updated.
- **Align Genie**:
  On-click UI alignment list update after switching between TEM and STEM modes

5.3   Impact on Service

Titan and Talos

- The following parameters are added for **Health Monitor**.
  - Gun deflector: `Align_GS`, `Align_GT`
  - Condenser deflector: `Align_CS`, `Align_CT`, `Offset_CS`, `Offset_CT`
  - Beam deflector: `Align_BS`, `Align_BT`, `User_BS`
  - Image deflector: `Align_IS`, `Align_DS`, `User_IS`, `User_DS`, `BS_IS`, `BT_IT`
  - Probe convergence angle
  - Illuminated Area
  - Illumination (Converging, Parallel, Spreading)

Titan

- The CEOS Corrector software and user interfaces now support the following Gatan filters:
  - Gatan Continuum 1069 Dual with K3 camera.
  - Gatan BioContinuum 1067 with K3 camera.

6 Cameras, Filters and Detectors

6.1 New Features

Titan and Talos

- Operational state changes of all EDX detectors (Super-X G2, Dual-X, Single-X) are now directly available to all apllications that request an EDX acquisition.
- **EMPAD 3S** allows stand-alone 3rd party STEM detectors to synchronize with the Panther STEM CAB/A scan engine.
- The software interface with Gatan Digital Micrograph now supports **Dose Protector events** for the following Gatan filters:
  - Continuum 1069 with K3
  - BioContinuum 1067 with K3
  - BioQuantum 1967 with K3
  - BioQuantum 967/968 with K2

  This enables execution of the OptiMono functionality with Gatan K2 and K3 cameras. If the post-filter camera retracts during the OptiMono procedure, then the user can find out why this happened.

Talos

- The Bruker 30 mm^2 detector is integrated for Single X.

6.2 Improvements

Titan and Talos

- **Sherpa Energy Filter**:
  Various user interface improvements:
  - The entire camera name is now displayed.
  - EF Entrance: the beam center in the FluCam image and the entry fields for the beam center coordinates are now labeled with *X* and *Y*.
  - Scrolling behavior of the Results panel is improved. It now only auto-scrolls to the most recent lines when the down arrow key or page down key is pressed.

- When **Gatan Digital Micrograph** is used in combination with Velox it is no longer necessary to start Digital Micrograph with Administrator privileges.

- **TEM User Interface** > **EDX Control**:
  - The count rates and temperature of only the first four EDX detector segments are displayed. For detectors segments 5 and 6, no data is displayed in the EDX Control control panel.
  - Acquisitions are disabled.

Note   **Use the Velox software to acquire EDX data.**

- **4D STEM** with **Ceta-2**:
  The pixels in the first column of the camera sensor are no longer over-exposed.

- **Gatan GMS**:
  The following applications and processes can now be executed with regular user privileges. It is no longer necessary to use the Run as Administrator option:
  - The GMS application.
  - RpcServer (started automatically) for all configurations with a BioQuantum 1967 or Continuum 1067 filter and the Gatan camera is shipped with a dedicated Gatan PC.
  - GfiRemoteProxy (started automatically) for all system configurations where the Gatan camera is shipped with a dedicated Gatan PC.

6.3 Impact on Service

Titan and Talos

- The **Falcon 4 Service Tool** is extended with two new tabs:
  - The **Overview** tab displays the status and error messages of all Falcon 4 modules.
  - The **Version Info** tab displays all version numbers and serial numbers for the Falcon 4 modules.

- **CalGetterTest** now *always* requires a camera name.
  The CalGetter no longer uses TIA functions and interfaces, so if no camera is inserted it can not determine which camera to use if no camera name is provided.

- **Gatan software** installation and configuration for embedded cameras and filters:
  - *GatanDMRemoteServer*:
    GMS is installed on the Gatan PC and communicates via the *Fast Embedding* interface:
    - BioQuantum 967/968 with K2 camera
    - BioQuantum 1967 with K3 camera
    - BioContinuum 1067 with K3 camera
    - Continuum 1069 with K3 camera
  - *DM remoting*:
    GMS is installed on the Gatan PC and communicates via the *old embedding* interface:
    - Continuum 1065 ER
    - Continuum 1066 HR
    - Continuum 1069 NR
    - Continuum 1077 S
    - BM-OneView
  - *Local Configuration*:
    GMS is installed on the Microscope PC.
    - Quantum 963/965/966
    - Enfinium SE/ER
    - BM-UltraScan1000XP

- On the Microscope PC, the following **Gatan software** should now be run with regular privileges (not with Administrator rights):
  - GMS 3.4.3.3212
  - RpcServer (started automatically)
  - GfiRemoteProxy (started automatically)
  - Gci2RemoteProxy (started automatically)

7 Motion and AutoLoader

7.1 New Features

Titan and Talos

- The Autoloader TMP Recovery function automatically recovers TMPAL errors on the Autoloader. If recovery fails, then a message is displayed and a new UEC is logged:
  `VACUUM PUMP TMP|AL ERR_AUTO_RECOVER_ERROR(3.1.33.23)`

7.2 Improvements

No (major) items.

7.3 Impact on Service

Titan and Talos

- **Piezo Controller**:
  New firmware must be uploaded to the Piezo controller. If the Piezo controller is power on and connected, then the firmware is uploaded automatically during the TEM Server installation. If not, then the firmware can be uploaded manually via TAD.

8 TAD, Service Tools, Installer and Licensing

8.1 New Features

No (major) items.

8.2 Improvements

Titan and Talos

- The **Prerequisites** installer has new security patches for computers that run on a Windows Server operating system.
- The following **AY1 and AY2 lens parameters** from **Gatan Digital Micrograph** are now logged in Health Monitor.
- **TAD** for **Selectris**:

- In case the Slit Assembly must be replaced:
  - The *Total Distance Traveled* countercan be reset.
  - The Serial Number can be updated.
- The acceptance criteria for **Prism** test are improved:
  - Lower bound current: changed from 100 mA to 50 mA
  - Lower bound acceptance: changed from ±10% to –20% / +10%

Titan

- New system type: Krios G4.1
- Krios Rx:
  - Simplification of the Configurator.
  - TIA is not available to users. The ESVision executable is installed only for background functionalities.
- The obsoleted *Cs Probe corrector* and *Cs DCOR Probe corrector* have been removed.

Talos

- Support for new Bruker EDS Single X 30mm^2 detector.

8.3 Impact on Service

No (major) items.

9   Solved Issues

Solved in TEM 7.7.0

ID	Description	Titan	Talos
AUTSTR-2461	Aborting A2/B2 (OptiSTEM+) via STEM AutoTuning control panel results in Failed state	X	X
AUTSTR-2518	Update instructions of gun tilt/gun shift alignments (APM) for CFEG	X	
AUTSTR-2566	Condenser center TEM alignment (APM) does not return correctly when aborted	X	X
AUTSTR-2573	Phase plate activation (AutoCTF) does not start a new CSV file	X	X
BG-254	Missing configuration parameters in System Monitoring	X	
CAMERA-3982	Large cluster defect masking ca. 260px even though specified nonmasking area.	X	X
CAMERA-5023 TT837477	F4: Service tool: make some fields wider	X	X
CAMERA-5046 TT853358	Falcon 4: CPI serial number not shown in Falcon Service Tool	X	X
CAMERA-5060 TT859509	F4: 'users' are able to calibrate the sensor at every temperature	X	X
CAMERA-5086 TT874747	F4: development tool disabling dose protection failure	X	X
CAMERA-5390	Dual Ceta camera configuration is hampered due to long list of Ceta's in servicetool	X	X
CAMERA-5418	Wrong DQE spec 4k Ceta-S in DQETool	X	X
CAMERA-5423	Camera image no light. Shutter not working. IOM acquistion reports: Failed to set internal shutter control.	X	X
CAMERA-5447	BM-Ceta unstable temperature warning	X	X
CAMERA-5472	F4: Cooling not automatically enabled when switched off in servicetool and closing tool	X	X
CAMERA-5542	F4: Shelf context ID not shown in service tool	X	X

ID	Description	Titan	Talos
CAMERA-5543	F4: "Board mfg date" and "Board product" do not fit in "CMTS status details"	X	X
CAMERA-5936	Incorrect upper limit of Conversion efficiency in DQE report for Ceta16M	X	X
CAMERA-5939	Acquire button stays active (yellow) and UI reports Acquisition error	X	X
CAMERA-5948	F4: Negative dose reported in metadata.totaldose	X	X
CAMERA-5954	F4: Reference Manager does not give a warning when the reactive dose protector kicks in	X	X
CAMERA-6144	F3: Dcfi::IPC_DCFI: Processing failed: node failure (Error Monitor): cpr_missed_interrupt error triggered	X	X
CAMERA-6159	Exception raised when Continuous Acquisition is set to 60 sec exposure	X	X
CAMERA-6199	F4: Failed to CreateSensorDefectsDescription, Cable::RuntimeError: No More Frame Buffers available	X	X
DBOC-835 RDTS-781	EPU Aborts due to insufficient memory to retrieve calibrated magnifications	X	X
DBOPTICS-1609	Optics logging polluted with error messages	X	
DBOPTICS-1873	Extractor voltage F3EC and E-CFEG	X	
DBOPTICS-2002	TAD coil test	X	
DBOPTICS-2036	Provide correct Cc/Cs coefficients	X	X
DBOPTICS-2053	TEM UI does not display the convergence angle	X	
DBOPTICS-2055	Display issue in Beamsettings OCX for small convergence angles	X	
DBOPTICS-2056	Counts cetcor UI different compared TIA counts	X	
DBOPTICS-2056	Count cetcor UI different compared TIA counts	X	
DBOPTICS-2067	Switching of coarse attenuator not correct	X	
DBOPTICS-2078	New degauss profile for new octagon (Only in combination with Objective Full Range CP)	X	
DBOPTICS-2093	During normalization, blanker is activated but dactivated too soon	X	

ID	Description	Titan	Talos
DBOPTICS-2098	Incorrect name displayed in CEOS UI for EF-K3	X	
DBOPTICS-2100	Alignment checker 1.4.5 fails to read DAR of TEM 7.6	X	
DBOPTICS-2102	Remove 'gen' from alignments OCX	X	X
DBOPTICS-2109	Continuous acquisition in fast mode uses previous recording settings	X	
DBOPTICS-2120	SmartOptics recalculations happen on aperture position change, not just aperture size change	X	
DBOPTICS-2121	Add CFEG to help page for gun tilt direct alignment	X	
DBOPTICS-2122	Wrong lens wobbled in Lorentz Basic SA alignment on probe corrected systems	X	
DBOPTICS-2126	Distortion correction should have Lorentz dependency	X	
DBOPTICS-2132	Update direct alignment Condenser Center Probe for new Optics implementation	X	
DBOPTICS-2150	Remove scanning dependency for DS_Calib	X	
DBOPTICS-2168	CCOR missing in the registry	X	
DBOPTICS-2201	EFTEM part not saved in alignment file	X	
DOI-2010	Improve AutoZLP use of UI name to select aperture	X	X
DOI-2225	Tune isochromaticity: loop while searching for image without mask	X	X
DOI-2226	Ni calibrations: Start MP value might not allow wobble	X	X
DOI-2231	Tune all distortions: routine indicates non-convergence while converged	X	X
DOI-2296	Chromatic distortion specification are not showing the correct value in sherpa (Selectris 200KV)	X	X
DOI-2303	Filter tuning: scaling of tuning specification by HT should be in correspondence with requirements for kVs under 200kV	X	X
DOI-2309	TEM cross over correction routine does not correct all mags after EFTEM 300KV (Selectris)	X	X
DOI-2325	Sherpa XOver Corrections: default entrance position is wrong	X	X

ID	Description	Titan	Talos
DOI-2334	LoadAlignments: improve user feedback on incompatible alignment data	X	X
DOI-2335	Tune DA order 1 and 2 not displaying graphs	X	X
DOI-2338	Ni Calibrations: ht offset should not scale with HT	X	X
DOI-2342	Sherpa Crossover: wrong clipping implementation and label beam center xy	X	X
DOI-2349	Blank beam during all procedures except measure NI of XO corrections	X	X
DOI-2350	Sherpa - Continuous acquisition: Do not set aperture back to original state	X	X
DOI-2353	Sherpa - either remove XML or move over to Energy Filter directory if maintaining	X	X
DOI-2356	Talos: crossover correction fails due to different intensity range	X	X
DOI-2357	Autofunctions: Distortions reporting not correct for order type	X	X
DOI-2358	Sherpa: Camera settings not properly loaded/restored	X	X
DOI-2395	Fix for Talos Sherpa: crossover correction keep actuator at focus persistent throughout		X
DOI-2397	Remove [Adjust ZLP] from Filter OCX for Selectris filters	X	X
DOI-2402	Sherpa: crossover does not redo 'screen current optimization' on each run	X	X
DS-634	Export of a 1-day DataServices package takes too long (>5 min)	X	X
IADM-127	Flucam Viewer help is outdated	X	X
IADM-367	Handover from nanoMEGAS to TEM handover causes crash of TEM peoUI		X
IADM-465	During normalizing coils, Flucam camera isn't paused mode in HR mode and there isn`t any message "normalizing, please wait" in the Flucam viewer		X
IN-522	Scanning engine is required for all EDS detectors		X
IN-539	Two BM-Falcon 4 and EF-Falcon 4 are not allowed to be installed together	X	X

ID	Description	Titan	Talos
IN-558	Fixed missing path to library libfftw3	X	X
MOT-1884	Stage piezo did not enable	X	X
MOT-2053	Automatic Cryo Box communication failure UEC not posted on system start up	X	X
MOT-2857	Stage2OCX Reset Holder causes additional flipflop moves	X	
MOT-3008	Stage beta move uses movement parameters of previously inserted holder	X	X
MOT-3047	Stage2OCX can show unformatted error messages	X	X
MOT-3059	Slit assy acceleration not according to lifetime test	X	X
NPD-137 SCOEMT4412	Could not close the TEM User Interface	X	
OSD-326	Mouse cursor no longer visible on some buttons on Krios Rx	X	
OSD-362	Crash of httpd.exe when shutting down MPC was fixed	X	X
OSD-43	Images displayed on OSD are no longer draggable	X	X
PPHS-10	TAD stability test fails when Phase Plate Heating Source is on for a long time	X	X
PPHS-17	PPHS Control cannot be used when Help is open	X	X
RDTS-460	Sherpa hangs/does not start when DM connection is lost	X	X
RDTS-550	Sherpa will not start when Filter is not operating	X	X
RDTS-569	Sherpa does not start when DM crashed	X	X
SCANDIUM-3051	In AUTOSTAR_ALGORITHMS StemAutoGainOffsetTasks python wrapper imports AUTOSTAR module	X	X
SCANDIUM-3073	AcquisitionMonitor service tab shows no devices on configurations without scan engine	X	X
SCANDIUM-3081	AutoStar StemAutoGainOffsetTask cannot be used by .NET applications	X	X
SCODBO-5503	Feg service OCX – swapped functionality of arrows that set extraction voltage	X	X
SCODBO-5506	Surpressor value cannot be set in service part of the Gun Dialog	X	X

ID	Description	Titan	Talos
SCOEMT4030	IGPa/IGPb pumpdown fails on CFEG, or CFEG trip levels (factory startup)	X	
SCOEMT4812 SCOEMT3461 RDTS-214	Show warning when vent projection is pressed while detectors are cold - G1.1 and G2	X	
SCOIADGAT-2078	Continuum 1069 Streak Images lower Frequency range	X	X
SCOMS-1701	Autoloader cockpit exchange procedure (HTML) instructions do not mention Alpha tilt optimization steps.	X	X
SCOMS-1916	Autoloader does not recover after attempted load while stage was moving	X	X
SCOMS-2065	When pressing START FILLING button via temperature control (Autoloader app), TEM server and SampleLoader app crash	X	X
SPEC-3804	SuperXG2 Calibration tool crashes on the calibration step if vacuum is not evacuated	X	X
SPEC-3804	SuperXG2 Calibration tool crashes on the calibration step if vacuum is not evacuated	X	X
SPEC-3935	EDX real/live time acquisition duration not correct	X	X
SPEC-4034	After upgrade no SuperX	X	X
VMR-125	VacuumAnalyzer get stuck when MaxSnapshotCount is reached	X	X
VMR-127	IGP Pressure gauges reports weird values when going to underflow	X	X
VMR-129	VacuumAnalyzer crash	X	X
VMR-132	Vacuum ServiceUI reports wrong TMP temperatures	X	X

Solved in TEM 7.7.1

ID	Description	Titan	Talos
AUTSTR-2833	Condenser Center Probe alignment requires TemServer restart	X	
AUTSTR-2879	Faulty caching of CalibrationContext in AutoCTF	X	X
BG-287	Changes in SysMon for APW not working properly	X	X

ID	Description	Titan	Talos
DBOC-894 RDTS-859	CalGetter optics regs wrong: Velox: Pixel to Stage shift is not calibrated	X	X
DBOPTICS-2326 RDTS-829	SCORR_error_D3828 & TIA PEOUI error	X	
DBOPTICS-2410	Condenser Center Probe alignment requires TemServer restart	X	
DBOPTICS-2456	In ImageCorrected Lorentz alignment change wobbler from Objective to Lorentz lens (rot. center)	X	
DBOPTICS-2468	Strange behaviour OL and MC-sliders in Lorentz ocx when in Lorentz-Tem mode	X	
IADM-774 RDTS-708	Patch for disabling JAI Driver	X	X
IN-667	SingleX 30 requires Scripting	X	X
IN-719	Disable JAI Driver for Flucam during installation	X	X
IN-746	Remove rule: 'MED' is incompatible with 'Thermionic' source		X
MOT-3803	SMCB Alpha Jog via handpanels does not update CP status for ACB	X	X
MOT-3913 RSTS-905	Stage move fails regularly on Metrios system	X	
MOT-4001	SMCB: Stage limits not set correctly after inserting ACB when at 1.9 degrees A tilt	X	X
OMR-284 RDTS-876	Talos 120kV - MicroED option		X
OSD-639 RDTS-932	Loading Holder - change settings of holder during pumping	X	
SA-2205	MagnCorr offsets are not restored after failed AllXxMagnifications run	X	X
SCANDIUM-3329 RDTS-915	Hardware synchronization of non-embedded STEM detectors is broken	X	X
SCOEMT-5456 RDTS-807	Unknown fluscreen calibration factor message	X	

ID	Description	Titan	Talos
SCOIADGAT-2453 RDTS-880	Mid Line appears in the K3 images in EPU during Data Acquisition	X	X
SCOINFRA-1564 RDTS-817	Integrate HM for non-administrative users	X	X
SCOMS-2149 RDTS-885	Cannot restart TEM server normally after upgrade to Titan 3.6.2 (autoloader issue)	X	
SCOMS-2184 RDTS-919	Autoloader: Load cartridge failed: Stage operation failed during loading/unloading cartridge	X	X
SPEC-4500 RDTS-863	Saving ini files in superx tuning tool is not working	X	X
SPEC-4673 RDTS-860	PEOUI crash in Super-X OCX	X	X
ST-301 RDTS-547	HT-shutdown 200kV (Semicon systems)	X	
VMR-180 RDTS-857	Vacuum firmware connection lost		X

10   Known Issues

ID	Description	Titan	Talos
AUTSTR-1847	AutoCTF plugin not loaded when no cameras available	X	X
AUTSTR-2351	AutoCTF results are displayed in bold characters in Sherpa Results window	X	X
AUTSTR-2412	APM must not be available for regular and expert users	X	X
AUTSTR-2529	Spotsize 1 cannot be selected after save/load alignments	X	X
AUTSTR-2667	AFIS – image shift compensation with stage position not working on Talos	X	
CAMERA-5769	F4: Timeout in acquisition with 'gap' in varidistant fractionation scheme	X	X
CAPPPS-3016	F4: AMC7 stays disconnected after cable interruption between CMTS and MPC	X	X
DBOPTICS-1008	DiffStig excitation must be extended to increase distortion correction range. Does not work on system with SALVE.	X	
DBOPTICS-1967	F4: Beam too early unblanked beam during mag change causes the reactive dose protector to kick (Cont. Acq.)	X	X
SCOIADGAT-2009	Server Busy Messages may pop-up when closing GMS (Workaround: wait 1 minute, then retry)	X	
SCOIADGAT-2105	OneView becomes unavailable on TEM side if GMS is restarted with EF-CCD selected. Workaround: select BM-OneView in GMS.	X	
SCOIADGAT-2244	Continuum1065/1066 It is not possible to lower exposure time for Capture in LD mode below View value. According to Gatan, this is expected behavior.	X	X
TT652982 TT736864 TT767667 TT767671	FeiAutoStarServer.exe server still running, after Sherpa and TEM server stopped. Find Beam button in Monochromator (Expert) OCX does not function. STEM Auto Tuning functionality cannot be added to the workset.	X	X
TT682665	Optimono: BioQuantum (Quantum 967) doesn't support EELS	X	
TT718847	Correct Objective Stigmator gives HRESULT 80004005	X	

ID	Description	Titan	Talos
TT725645	Find Beam routine: in TEM mode (3-condenser mode) does not work properly	X	
TT733615 TT821401	AutoCTF is very slow and irresponsive. CTF estimation 'freezes' AutoCTF run	X	X
TT751977	Inconsistent (incomplete) error messages when no camera present	X	X
TT751980	AutoCTF fails when starting at a too high defocus	X	X
TT752118	Auto coma: fails after first iteration, because image is then set to focus	X	X
TT754769 TT760558	TEM servers installation aborted at CEOS SW installation step. Work around is available.	X	
TT760647	Task cannot be stopped during image acquisition	X	X
TT761235	Sluggishness on Themis 1 after S-CORR upgrade. Work around is available.	X	
TT772811	Incorrect FFT fit reliable for AutoCTF	X	X
TT780477	AutoCTF hangs	X	X
TT785183	Preconditions Center Objective Aperture alignment ignored when no 100u aperture	X	X
TT785186	No user feedback when missing 100u objective aperture in APM	X	X
TT792457	APM: UI issues	X	X
TT794507	APM Fails when filling system with LN2	X	X
TT801222	Sherpa hangs since CTF estimation algorithm cannot handle incorrect pixel sizes	X	X
TT821740	AFIS alignment shows misleading error message	X	X
TT824931	Sherpa stop button remains active after a (manual) APM run	X	X
TT838769	APM rotation centre validation does not work in fringe free mode	X	X
TT844339	APM: 200kV saved as 300kV	X	X

ID	Description	Titan	Talos
TT848747	Run AlignBeamShift on APM from Sherpa let the Sherpa application hang	X	X
TT849040	APM: camera settings not read from AutoCTF settings file	X	X
TT851908	AFIS alignment: wrong (confusing?) error message shown to user	X	X
TT855189 RDTS-76	Sherpa CTF fit not correct, while being OK	X	X
TT873751	AutoCTF: wrong results displayed when measurement fails during coma correction	X	X
TT885724	Missing elements in Sherpa UI for supervisor and user account	X	X
--	Sherpa: In versions <= 7.5.x, there is an incorrect value in the APM settings. After upgrade to 7.6.0 a warning appears: 'Incorrect parameter in the APM settings: [FocusCorrection].maximum_number_of_iterations with value: "5.0"'. This warning is shown only once. the incorrect value will be replaced by the default value after first startup of Sherpa.	X	X

Descriptions and workarounds for a selection of Known Issues is available:

● In Fluid Topics.

● On the Service CD.

For an overview of the described Known Issues per Titan, Talos and Tecnai software version, refer to 307271.