Thermo Fisher
S C I E N T I F I C

Take the next step in 120 kV transmission electron microscopy

Upgrade to Talos 12 TEM

Are you interested in replacing your aging technology?

Upgrading from a Tecnai T12 Transmission Electron Microscope (TEM) or other legacy TEM to a Thermo Scientific™ Talos™ 12 TEM offers a significant leap in capabilities with state-of-the-art features that enhance performance, ease of use, and long-term stability.

Proven performance designed for you

The Talos 12 TEM has been upgraded inside and out to better support your research. Inside, the latest cameras and application software combine to provide outstanding optical performance, reproducible resolution, faster data acquisition, and an enhanced user experience.

Outside, the new, robust enclosure offers a smaller footprint, high stability, and a widened sample loading area and transfer deck to support tools and holder loading stations. Plus, LED lights surrounding the sample loading area convey system status through color and provide a working light for sample exchanges in dark rooms. Light animations help you insert holders properly and alert you to low liquid nitrogen levels or other system issues.

| Key features |
|---|
| Digital control over hardware components makes operation more convenient |
| The robust, highly stable system enclosure fits more lab spaces and delivers improved vibration and thermal stability |
| LEDs communicate operational status and provide user guidance |
| Remote operation with long-duration cooling and stability support unattended data collection over nights and weekends |
| The constant power objective lens coupled with integrated detectors designed with high sensitivity and fast electronics deliver outstanding optics |
| Automated functions, alignments, and workflow-based application software improve accessibility and simplify training |
| Compatibility with Windows 11 facilitates seamless workflow integration |
| The latest software and automation features prepare the system for a long life of future updates |

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Velox Software
Routine imaging, STEM and Elemental mapping and analysis for EDS
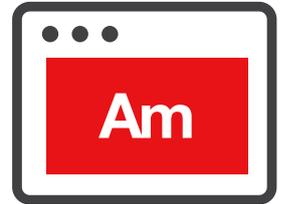
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MAPS Software
Large area multi-scale automated batch acquisition and collaborative analysis

EPU
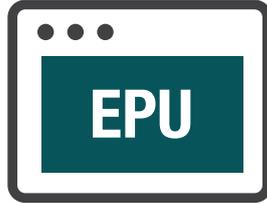
EPU Software
Easy-to-use, automated data acquisition software for single particle analysis

To

Tomography 5 Software
Automated data acquisition and analysis for 3D tomography

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Amira Software
AI-driven segmentation, reconstruction and analysis

Thermo Scientific electron microscopy software streamlines workflows, improves user onboarding, and reduces time to results.

Effortless remote operation and powerful system management

One of the Talos 12 TEM's most transformative advancements is the switch to digital control of the hardware. This shift enables a high degree of automation, allowing for more efficient, precise, and remote operation. Automated routines can handle complex imaging and analytical tasks, reducing the potential for user error and increasing unattended throughput.

Digital control also facilitates remote operation, operate the microscope and analyze data from virtually anywhere. This capability is particularly valuable for collaborative projects and for maintaining productivity in scenarios where on-site access is limited.

Modern software and hardware

The Talos 12 TEM features built-in compatibility with modern software and hardware, including full support for Windows 11, to seamlessly integrate into your current workflows. Continuously developed and maintained application software packages provide. stability and future innovation.

Expand your user base

The Talos 12 TEM supports a broader range of applications, from materials science to biological research, making it a versatile tool for cutting-edge investigations in multi-disciplinary laboratories. It can be configured as a conventional system for routine TEM imaging of cells and tissues, an advanced system for sample characterization by different STEM and EDS detectors, or an entry-level cryo-EM imaging platform. Its modular design helps it meet the diverse needs of research labs and core facilities. The latest software and automation features has prepared the system for a long life of future updates.

LaB_6 or tungsten electron source

Tunable electron accelerator

Motorized apertures
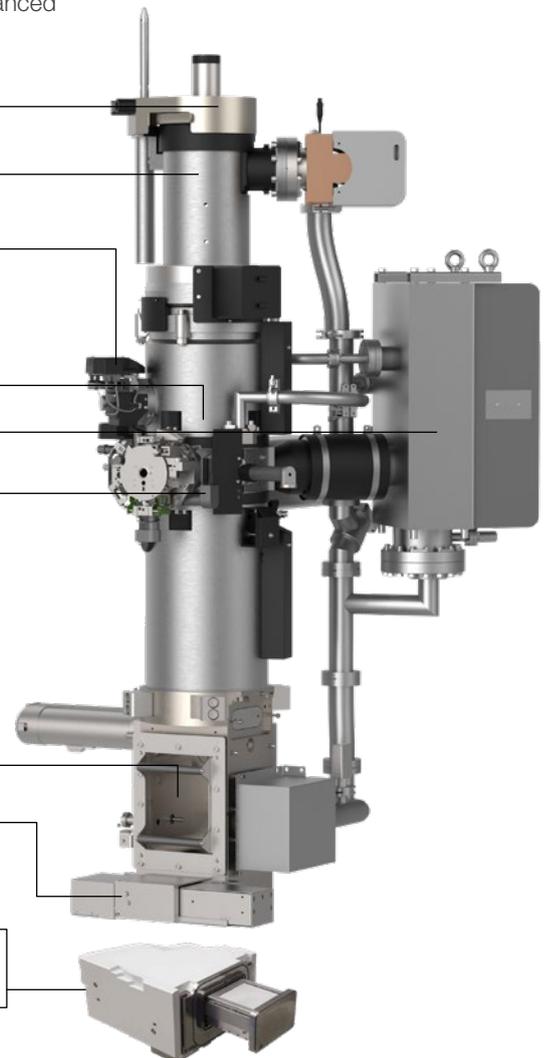
Constant power objective lens

Large ion getter pump

Auto-retractable cryo-box

SmartCam Camera

BF/DF STEM detectors

Ceta CMOS Cameras

Falcon C Direct Electron Detector

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Velox Software

An accessible imaging UI with scripting functionality

The Talos 12 TEM is equipped with Thermo Scientific Velox™ Software, a workflow-based user interface ideal for both novice and expert TEM and STEM users alike. Velox Software combines comprehensive access to microscope optics and detectors, providing superior experimental control for high reproducibility. All daily TEM tunings have automatic functions, easing the learning curve for novice operators and improving time-to-data for experienced users.
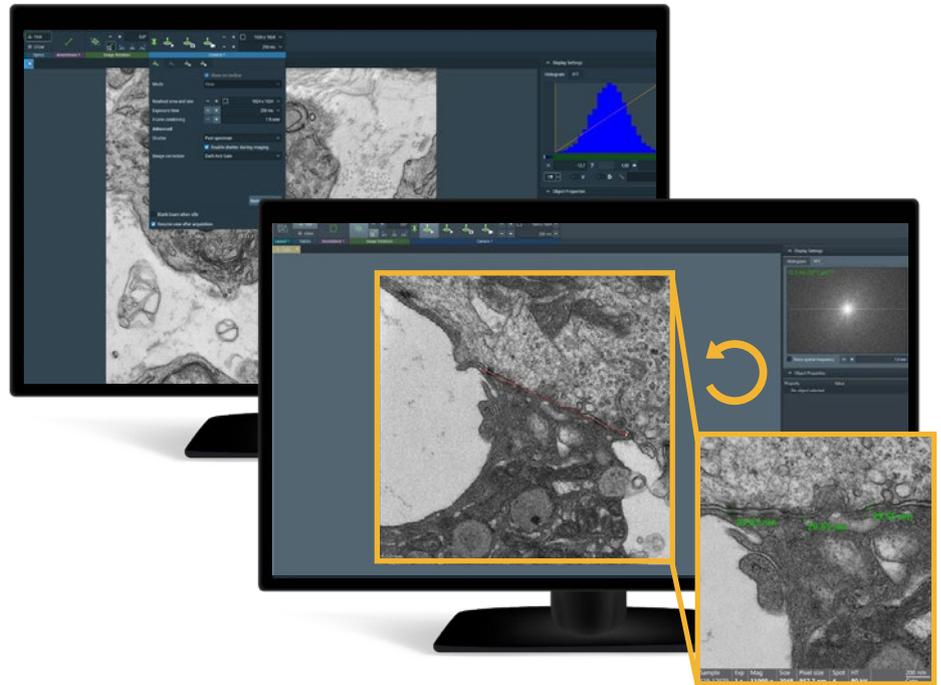

Live TEM rotation adjustment: Velox Software allows you to get a better view of your sample without removing it from the microscope, as you can easily rotate your sample image with your mouse. The software also enables automatic stage-direction adjustments while keeping all raw data.

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Maps 3 Software

Large-area, multi-scale 2D imaging

Thermo Scientific Maps 3 Software is an add-on for the Talos 12 TEM that facilitates automated data collection for large area imaging. Easily navigate large tissue sections, find your region of interest, and set up batch acquisition of multiple tile sets to acquire high-resolution data in context. Navigation and data collection of your sample is easy and intuitive, even for new users.
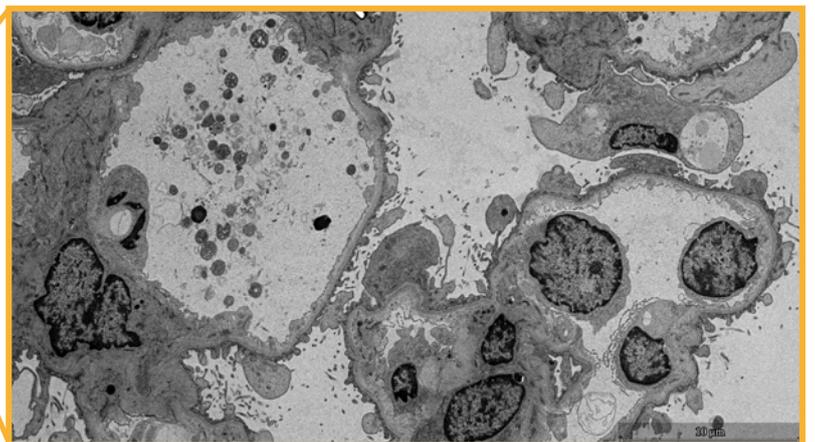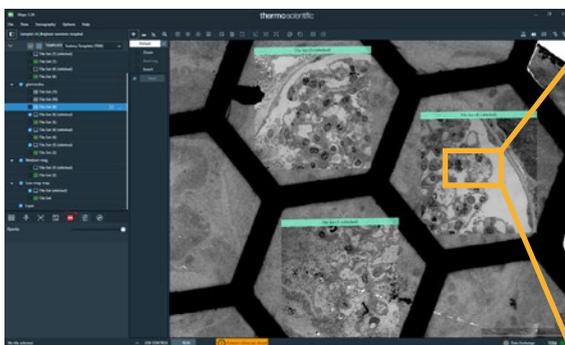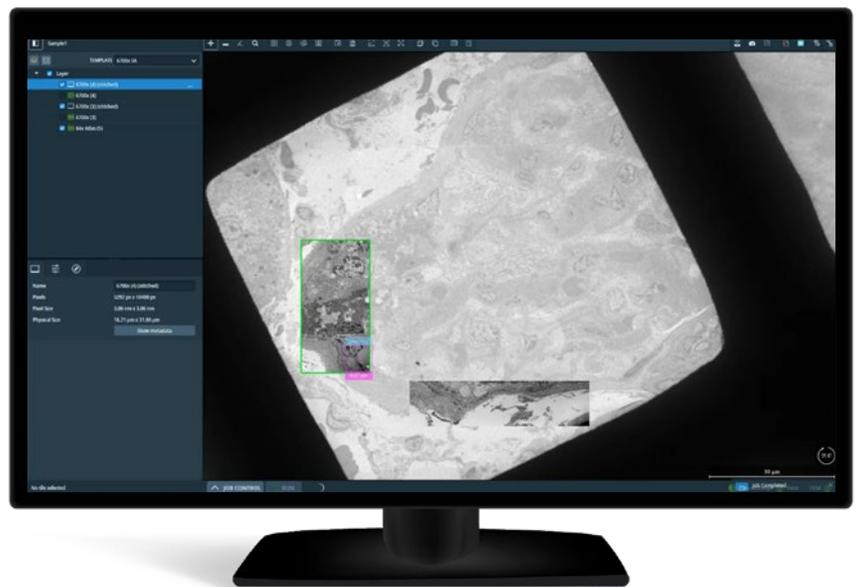
Large area imaging of resin-embedded kidney tissue sample. Maps 3 software enables batch acquisition of multiple tiles for multi-scale imaging. Zoom in to identify regions of interest—such as glomerular basement membrane (GBM)—for further analysis. Sample courtesy of Department of Renal Pathology, Brigham and Women's Hospital, USA.

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Tomography for visualization of 3D structures

The Talos 12 TEM can be powered by Tomography 5 Software for automated tilt-series acquisition using integrated workflows.

Search map acquisition enables the mapping of entire grid squares using medium magnification, offering increased data collection throughput and improved navigational accuracy. Several regions of interest can then be identified for automatic multi-site batch acquisition of 3D data for tomography.

Example – proteoliposome architecture

Tomography imaging of FraC proteoliposomes shows how 3D cryogenic analysis with the Talos 12 TEM, powered by Tomography 5 Software, can reveal fine details of actinoporins within the membrane environment of large unilamelar vesicles (LUVs).
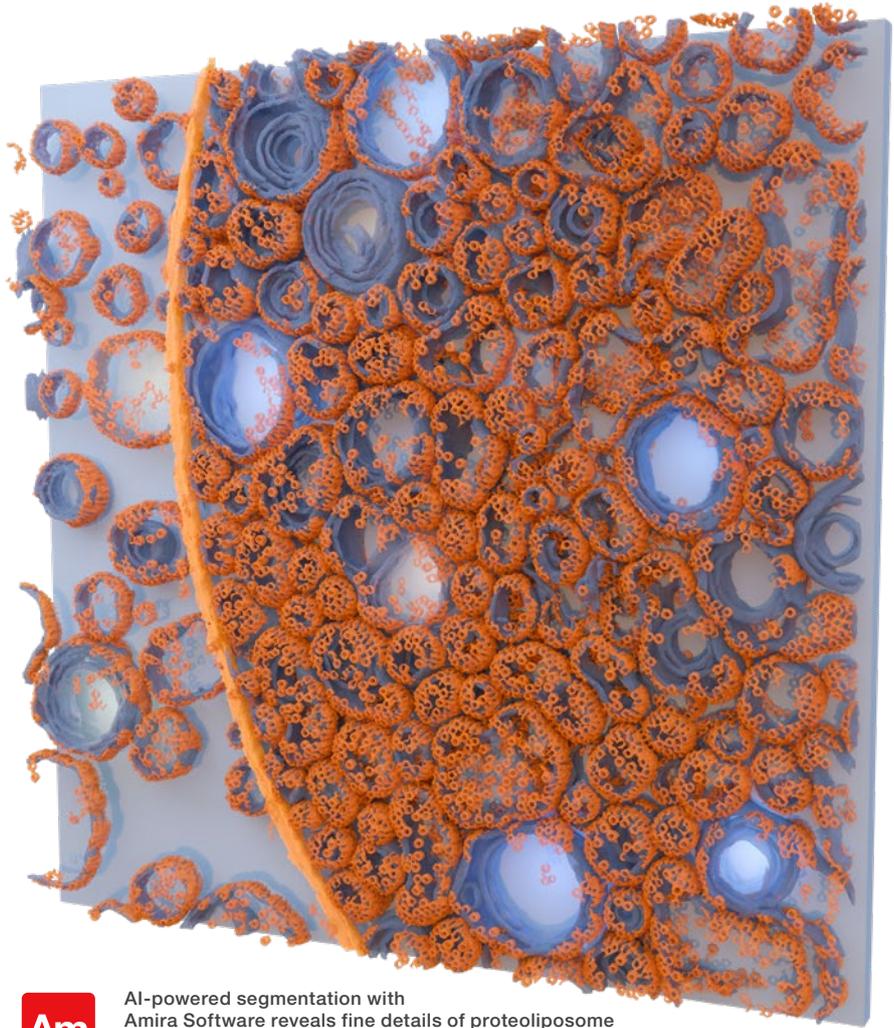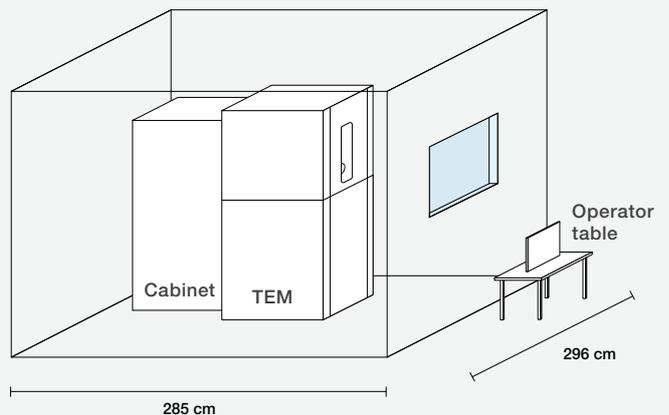

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AI-powered segmentation with Amira Software reveals fine details of proteoliposome architecture. Sample courtesy of Dr. Sara García-Linares and Dr. Alvaro Martínez-del-Pozo, Complutense University of Madrid, Spain, and Dr. Jaime Martín-Benito Romero, CNB-CSIC, Spain.

Talos 12 room requirements

Operator table

Cabinet TEM

296 cm

350 cm
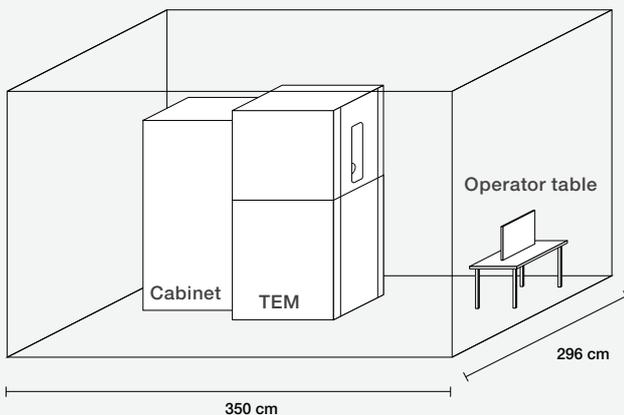
Room configuration option A
10.4 m² = 3.5 x 2.96 m

Operator table

Cabinet TEM

296 cm

285 cm

Room configuration option B
8.4 m² = 2.85 x 2.96 m

Learn more at **thermofisher.com/talos12**

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