thermo scientific

DATASHEET

Talos F200X S/TEM

Fast chemical analysis in multiple dimensions

The Talos F200X scanning/transmission electron microscope (S/TEM) delivers the fastest, most precise, quantitative characterization of nanomaterials in multiple dimensions. With innovative features designed to increase throughput, precision and ease of use, the Talos F200X S/TEM is ideal for advanced research and analysis across academic, government, and industrial research environments.

High resolution imaging for better-quality data

The Thermo Scientific™ Talos™ F200X S/TEM combines outstanding high-resolution S/TEM and TEM imaging with industry-leading energy dispersive x-ray spectroscopy (EDS) signal detection, and 3D chemical characterization with compositional mapping. The Thermo Scientific Velox™ S/TEM control software significantly improves imaging with a Smart Scanning engine, four-channel integration based on multiple STEM detectors, and Differential Phase Contrast (DPC) imaging for resolving electro-magnetic structures. Gain high speed and superior accuracy for EDS data processing and quantification applications.

The X-FEG high brightness electron source delivers high total current—up to five times the beam current of a standard Schottky FEG—while keeping the convergence angle small. You gain improved signal-to-noise ratio and exceptional image resolution for STEM, EDS, and high resolution TEM applications. Stability and a long lifecycle enable the X-FEG to deliver superior imaging efficiency.

See more, faster

Fast TEM imaging on Talos D/TEM supports high-resolution and *in situ* dynamic observations. The Thermo Scientific Ceta 16M™ camera displays a large field of view and captures images at a fast rate of 25 fps, while the piezo stage ensures high sensitivity, drift-free imaging and precise sample navigation, saving time and allowing you to capture more data from each sample.

Accelerate nanoanalysis for faster answers

The Talos F200X S/TEM includes the Thermo Scientific Super-X™ patented, integrated EDS system with four silicon drift detectors (SDDs) for superior sensitivity and mapping capabilities of up to 105 spectra/sec. Integration with the X-TWIN objective lens maximizes collection efficiency while delivering outstanding output count rates for a given beam current—even for low intensity EDS signals.

Key Benefits

Better image data High throughput STEM imaging with simultaneous, multiple signal detection delivers better contrast for high quality images

Faster time to chemical composition data Rapid, precise quantitative EDS analysis reveals nanoscale details

Space for more Add application-specific *in situ* sample holders for dynamic experiments

3D EDS tomogram of P-Zn-In nanotubes.
Sample Courtesy of Dr. Reza Shahbazian Yassar, Michigan Tech University.

ThermoFisher SCIENTIFIC

thermoscientific

Make research easier

The Talos S/TEM makes imaging and analysis workflows accessible to a broader community of scientists, with a friendly digital user interface and class-leading ergonomics. Fast image acquisition combined with the easy-to-use operating platform allows even less-experience operators to collect results quickly. Implement full remote operation for greater ease of use and enhanced environmental stability. And to assure that productivity is maintained, the Talos S/TEM is equipped with the new Health Monitor that collects key instrument parameters to facilitate remote diagnostics and support.

Features

- Class-leading optical performance: Constant-power X-TWIN objective lens
- Maximized ease-of-use: Fast, easy operation switching, fits for multi-user environments
- Ultra-stable platform: Constant power objective lens, piezo stage, robust system enclosure, and remote operation ensure maximum stability
- SmartCam camera: Digital search-and-view camera improves the handling of all applications and allows daylight operation
- Fully integrated fast detector: Ceta 16M pixel CMOS camera provides large field of view and high read-out speed (25 fps @ 512 × 512)
- Full remote operation: Automatic aperture system in combination with the Ceta and SmartCam camera supports full remote operation
- Extended analytical capabilities: the Talos S/TEM extends analytical capabilities to 3D volumes using EDS tomography

Installations Requirements

Refer to preinstall guide for detailed data.

Talos F200X	
Brightness of X-FEG	1.8 × 10^9 A/cm^2 srad (@200kV)
Total beam current	> 50nA
Probe current	1.5 nA @ 1 nm probe (200 kV)
Super-X EDS system	4 SDD symmetric design, windowless, shutter-protected
Energy resolution	≤136 eV for Mn-Kα and 10 kcps (output)
Fast EDS mapping	Pixel dwell times down to 10 µs

X-Twin	
STEM HAADF resolution	0.16 nm
EDX solid angle	0.9 srad
TEM Information limit	0.12 nm
Maximum diffraction angle	24˚
Maximum tilt angle with double tilt holder	±35° alpha tilt / ±30° beta tilt
Maximum goniometer (stage) tilt angle	±90˚

Find out more at **thermofisher.com/EM-Sales**

ThermoFisher SCIENTIFIC