JEM-F200
Multi-purpose Electron Microscope

JEM-F200/F2 is a multi-purpose electron microscope of the new generation to meet today's diversified needs. For F2, a user-oriented integrated-control-environment has been developed without sacrificing excellent performance and while maintaining a variety of functions.
Entirely revolutionized TEM F2

High-resolution analytical systems, such as transmission electron microscopes (TEM) and scanning transmission electron microscopes (STEM), are attracting increased attention. Higher resolution and higher efficiency are required for modern systems, along with upgraded ease of operation. To meet these needs, JEM-F200 (nickname: F2) has been developed as a next-generation electron microscope.

High resolution STEM HAADF image

Surface plasmon resonance by STEM-EELS* with DeScan system*

3D-EDS tomography*

* option
Smart design

The operation and appearance of F2 have been built under the design concept “Smart”. A new user interface focusing on intuitive operation has been developed for analytical electron microscopy. By applying knowledge of mechanical and electrical stabilities accumulated over the long history of JEOL to the design of F2, the stability of the new TEM has dramatically improved.

Quad-Lens condenser system

Modern TEMs must satisfy a wide range of applications, including bright-field (BF) & dark-field (DF) TEM and STEM, as well as analysis from various types of detectors. To meet such sophisticated needs, F2 incorporates the Quad-Lens condenser system to realize independent control of electron-beam intensity and convergence angle.

Advanced Scan system

F2 is equipped with a new scanning system “Advanced Scan System”, which incorporates a descan system in the imaging lens system in addition to the standard probe scanning mechanism. This achieves a wide-field energy filtered STEM.

Pico Stage drive

F2 comes with an ultra-fast, high-precision “Pico stage drive”, as well as a super-high-precision piezo drive mechanism. This enables the operator to move a field-of-view smoothly over a wide spatial-scale range from millimeters to picometers.
**SPECPORTER**

>>F2 incorporates an automated mechanism “SPECPORTER” for smoother holder insertion and retraction.
The mechanism allows us to insert or extract a specimen holder by simply pushing a button.

**Improved Cold FEG**

>>F2 is equipped with an improved cold FEG (cold field emission gun) as an electron source.
The narrow energy spread of the CFEG enables high-energy resolution EELS, which may identify chemical-bonding states of specimens.
A high brightness and stable electron beam produced from the CFEG enables dramatically-reduced analysis time.
Good temporal and spatial coherence from the CFEG provides higher quality atomic resolution images.

**Dual SDD**

>>Two large-sold angle silicon drift detectors (SDDs) with high analytical sensitivity can be simultaneously installed into the microscope column,
leading to X-ray analysis with higher sensitivity and throughput.

**Environmental friendly**

>>F2 is the first TEM to come with an ECO mode. The ECO mode system saves energy when the instrument is not used by keeping the microscope under good standby conditions.
This mode suppresses energy consumption to approximately 1/5 of that compared to when the microscope is used.
A scheduling function is also included in the ECO mode that allows the microscope to be recovered from ECO mode to ready-to-use states at a designated time.
Specifications

Resolution
- Point to point: 0.19 nm
- TEM lattice image: 0.10 nm
- STEM-HAADF image: 0.14 nm

Magnification
- TEM: x20 to x2.0 M
- STEM: x200 to x150 M

Electron gun
- Schottky field emission gun or Cold field emission gun

Accelerating voltage
- 20 to 200 kV

Max. specimen tilt angle
- ±80° (with Specimen High Tilting Holder)

Optional accessories
- Energy Dispersive X-ray Spectrometer (EDS), Electron Energy Loss Spectrometer (EELS), Digital Camera

Installation Room Requirements

Room temperature
- 5 to 25 °C (drift 1 °C/h or less)

Humidity
- 60% or less

Microscope power supply
- Single phase 200 V, 10 kVA

Cooling water
- Flow rate: 10 L/min. Temperature: 15 to 20 °C (fluctuations 0.1 °C/h or less)

Footprint
- 4,000 mm (W) x 5,000 mm (D) or more

Ceiling height
- With TFEG: 3,000 mm or more, With CFEG: 3,200 mm or more

Entrance
- 1,000 mm (W) x 2,000 mm (H) or more

Microscope main console
- With TFEG: 2,633 x 1,279 x 1,248 x 1,900 kg
- With CFEG: 2,763 x 1,279 x 1,248 x 2,100 kg

High-voltage tank
- With TFEG: 1,639 x 1,000 x 1,210 x 480 kg
- With CFEG: 1,719 x 1,000 x 1,300 x 570 kg

PS console
- 1,750 x 570 x 800 x 322 kg

Card console
- 1,750 x 570 x 800 x 112 kg

LD console
- 900 x 700 x 456 x 60 kg

Rotary pump
- 270 x 470 x 180 x 25 kg

Air compressor
- 514 x 415 x 210 x 16 kg

* The optional air compressor can be used only in Japan.