

Technical Data

Essential Specifications	LIBRA® 200FE	LIBRA® 200MC
Field Emitter	Schottky Field Emission System	Schottky Field Emission System with integrated OMEGA type monochromator
Accelerating voltage	200 kV	
Patented Koehler Illumination (parallel illumination)	<p>Three-lens condenser system for parallel and homogeneous TEM wide-field illumination independent of illumination intensity</p> <p>Quick and easy switching between TEM and Spot mode by push-button operation</p> <p>Reproducible and controlled illumination conditions in TEM and Spot mode</p> <p>Condenser aperture automatically selected depending on magnification (AIS mode)</p>	<p>Three-lens condenser system for parallel and homogeneous TEM wide-field illumination independent of illumination intensity</p> <p>Quick and easy switching between TEM and Spot mode by push-button operation</p> <p>Reproducible and controlled illumination conditions in TEM and Spot mode</p>
Spatial resolution	Truly symmetrical objective lenses = two variants:	
	HR (High Resolution)	HT (High Tilt)
Point resolution	0.24 nm	0.29 nm
Information Limit	0.14 nm	0.19 nm
STEM resolution	0.30 nm	0.45 nm
Energy resolution	≤ 0.7 eV	≤ 0.2 eV (Electrostatic OMEGA-shaped monochromator design, dispersion-free spot formation, 12µm/eV dispersion at filter slit plane, selectable slits with various widths)
Corrected OMEGA filter	Corrected for 2nd order and optimized for 3rd order aberrations	
Alignment	Factory alignment	
Dispersion	1.85 µm/eV @ 200 kV	
Distortion	< 1.5 %	
Magnification factor	1 (no magnification by filter)	
Elements	4 magnets and 7 multi-pole correctors	
Detectors	Selectable (4k x 4k SlowScan CCD camera possible)	
Acceptance angle	> 100 mrad @ ΔE = 10 eV slit width and 200 kV	
	> 150 mrad @ ΔE = 20 eV slit width and 200 kV	
Non-Ischromaticity	< 0.5 eV over Ø 2.5 µm field-of-view on sample	
Specimen stage	5-axes fully eucentric goniometer	
Tilt range	$\alpha / \beta \quad \pm 30^\circ / \pm 30^\circ$ (HR pole piece) $\alpha / \beta \quad \pm 70^\circ / \pm 30^\circ$ (HT pole piece) <i>both with double-tilt analytical holder</i> $\alpha \quad \pm 70^\circ$ (HR pole piece) <i>with special tomography holder</i>	
Imaging system	Two 3 lens projector groups in front and behind the energy filter	
Magnification	TEM	8x - 1,000,000x (for HR pole piece)
	STEM	2,000x - 5,000,000x
	EELS	20x - 315x (spectrum magnification)
Vacuum system	<p>Oil-free and differentially pumped vacuum system</p> <p>Pre-vacuum scroll pump with buffer tank</p> <p>TMP for viewing chamber, filter and airlock</p> <p>IGPs for the column</p> <p>2 IGPs for the emitter area</p>	
System control	WinTEM™ Graphical User Interface (GUI) based on Windows® XP, operated by mouse, keyboard and dedicated control panels	