Specifications

	Items	Description	
Resolution/Magnification	SE image resolution	0.4nm (30kV, Sample Height=1.0mm, 800kx) 1.2nm (1kV, Sample Height=2.0mm, 250kx) 0.34nm (30kV, Sample Height=0.0mm, Lattice image)	
	STEM image resolution		
		Mag on Photo∗1	Mag on Display∗2
	LM Mode	80 ～ 10,000x	220～25,000x
	HM Mode	800 ～ 3,000,000x	2,200～8,000,000x
Electron optics	Electron gun	Cold cathode field emission source	
	Accelerating voltage	0.5 ～ 30kV (0.1kV step)	
	Lens system	3-stage electromagnetic lens reduction	
	Objective lens aperture	Movable aperture (heating type. 4 openings selectable from outside of vacuum with fine adjustment)	
	Electrical image sift	±5μm (Sample Height = 0.0mm)	
	Beam blanking	Electrostatic type (synchronized with scanning signal)	
Specimen stage	Stage	Side entry goniometer stage	
	Stage traverse		
	Standard holder	X：±4.0mm、 Y：±2.0mm、 Z：±0.3mm、T：±40°	
		Bulk: 5.0mm x 9.5mm x 3.5mmH	
		Cross-section: 2.0mm x 6.0mm x 5.0mmH	
	Dedicated holder	Cross-section specimen holder: 2.0mm x 12.0mm x 6.0mmH	
		Double tilt cross-section specimen holder(L) : 0.8mm x 8.5mm x 3.5mmH	
Detector	Detector	Secondary electron detector	
		Top detector (option)	
		BF/DF Duo-STEM detector (option)	
		Energy dispersive X-ray detector (option)	
Image display	Monitor	24.1 type wide screen LCD (subject to change without notice)	
	Full screen display	1,280 x 960pixels	
	Single (Dual display)	800 x 600pixels (800 x 600pixcels x 2) 640 x 480pixels x 4	
	Quad screen display	Windows®7∗3	
Display system	OS	Mouse, Keyboard, Rotary Knob, Stage controller (Trackball and Joystick combined)	
	Operation system		
	Image data saving	640 x 480pixels, 1,280 x 960pixels, 2,560 x 1,920pixels, 5,120 x 3,840pixels	
	Saved image data management	SEM data manager (image database / image processing function) included	
Options	Dry pump	Anti-contamination trap unit	Video amplifier unit
	Air compressor	STEM holder	Photomultiplier power supply unit
	Water circulator	Faraday cup	

∗1 at 127mmx 95mm (4" x 5" Polaroid size)
∗2 at 345mm x 259mm (1280 x 960pixels)
∗3 Windows®7 is a registered trademark of U.S. Microsoft Corp. in U.S.A and other countries

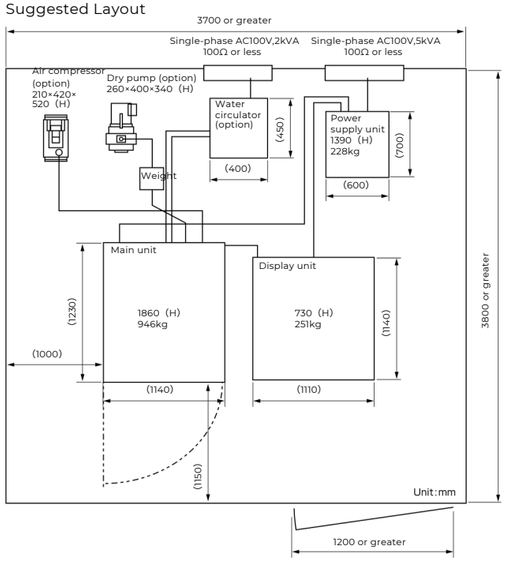
Installation condition

Items	Description
Room temperature	15 ～ 25℃
Humidity	60% RH or less (non-condensing)
Power	5kVA, 50/60Hz, Single phase AC100 ～ 240V ±10%
Grounding	100Ω or less
Cooling water flow	0.6 ～ 1.0 l/min
Pressure	50 ～ 100kPa
Temperature	15 ～ 20 ℃ (allowable fluctuations 0.5℃/10min or less)
Supply faucet	Rc3/8 tapered female thread x1
Drain port	(20mm dia. or more) x1 (Natural drain type located on floor)

Dimensions and weight

Items	Width(mm)	Depth(mm)	Height(mm)	Weight(kg)
Main unit	1,140	1,230	1,860	946
Display unit	1,110	1,140	730	251
Power supply unit	660	700	1,390	228
Dry pump (option)	260	400	340	25
Air compressor (option)	210	420	520	16
Weight	200	320	170	20
Water circulator (option)	400	450	670	73

Suggested Layout



Notice: For correct operation, follow the instruction manual when using the instrument.

Specifications in this catalog are subject to change with or without notice, as Hitachi High-Technologies Corporation continues to develop the latest technologies and products for our customers.

Bringing the frontier to the forefront.

Hitachi High-Technologies Corporation

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Hitachi UHR FE-SEM
SU9000

Hitachi High-Tech

Authorized Distributor in the Philippines:

SIGMATECH
Committed To Your Success

Ultra-high Resolution Scanning Electron Microscope

SU9000

HITACHI

Bringing the advances of SEM to the forefront

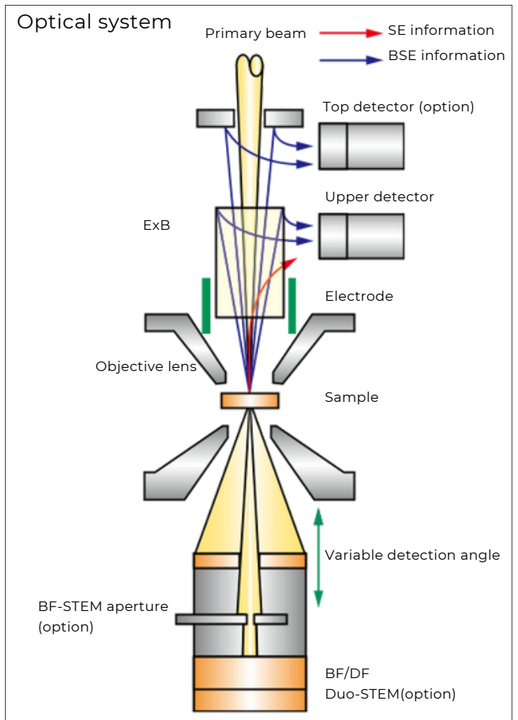
Technological advances in the Semiconductor Industry are occurring at a rapid pace and pushing design and manufacturing tolerances to the nano-scale. These advances require direct observation of the surface structures of the materials at this size scale. Hitachi has a proven track record for providing cutting edge reliable and that meet the strict imaging requirements of the Semiconductor Industry. Hitachi has now introduced a new line of instruments with improved CFE gun technologies that further reduce the already low aberration artifacts of existing Hitachi CFE technology. The new CFE Gun technology featured in the SU9000 achieves the highest SEM resolution in the world. (0.4nm at 30kV)

The reduced aberration effects make high resolution, low accelerating voltage observations possible for beam sensitive materials without the need for deceleration technology. (1.2nm at 1kV) The SU9000 also features STEM (option) performance that guarantees 0.34nm resolution as confirmed through the imaging of graphite lattice ((002) d=0.34nm) Hitachi is bringing superior fundamental performance such as stable operation, high throughput, and high resolution to the forefront of technology.

The world highest resolution featured in the SU9000: 30kV acceleration voltage condition, has been implemented as of April, 2011

Features

- Superior low-kV performance for observation of beam sensitive materials.
- Next generation Hitachi In-lens SEM optics allows for routine observation at 1 million times.
- Newly designed CFE GUN provides high brightness and extremely stable emission current.
- Improved vacuum technology that allows for ultra-high vacuum levels for reduced sample contamination.
- Highly engineered instrument enclosure featuring both superior strength and stability to allow for high resolution imaging in a broad range of environmental conditions
- Newly designed objective lens provides for high resolution imaging at low acceleration voltage.
- Side entry sample exchange system increases throughput by reducing the time required to change samples and by automatically positioning the sample at the correct WD.

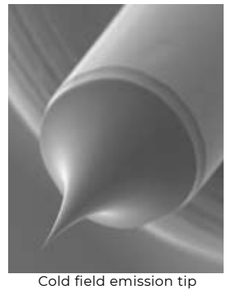


Signal detection system

SU9000 signal detection system makes it possible to tune the electron imaging signal to select the optimal imaging mode. ExB, the core technology of the high efficiency SE detection system, creates enhanced surface imaging to reveal fine surface structures and morphologies. Super ExB, an energy based signal filtering system, works to eliminate the charge up phenomena in the SEM image and provides composite information about the sample surface – even at low voltages around 500V. Duo-STEM detector (option) located under the specimen allows BF and DF image acquisition at the same time.

Spectacular Cold FE Gun that have has high brightness and stability.

A new CFE Gun design has increased the source brightness by a factor of 2 or more while also increasing the stability and still maintaining the unsurpassed low energy spread of the standard CFE gun. This added brightness increases S/N adding to the overall ease of use.


Cold field emission tip

In-lens objective lens

Lens designed to improve low voltage imaging, achieving high resolution without deceleration technology

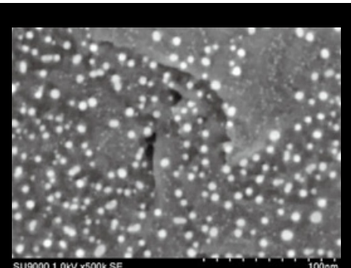
High throughput observation

The side-entry exchange automatically positions the specimen holder at the correct position for high resolution imaging. The specimen chamber and side-entry exchange allow for an extremely low vacuum level to be achieved immediately, reducing contamination effects during low voltage observations.

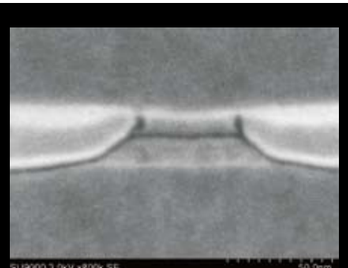

One touch, spring action, specimen mounting

Comfortable operation system

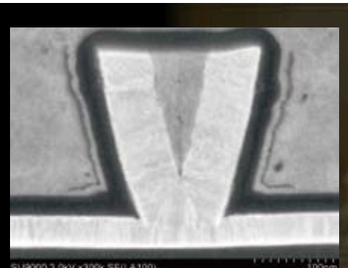
Trackball and joystick are combined in a single unit. A trackball is suitable for fine moving, while a joystick works well in situations requiring constant stage movements – such as cell counting. A 24.1 type wide screen LCD allows for the display of 4 different live signal images at the same time.



Sample : Gold on carbon



Sample : Hard disc



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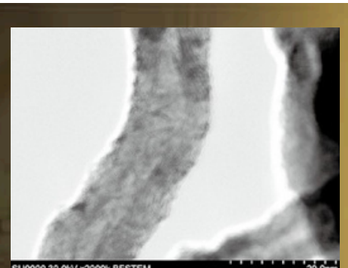
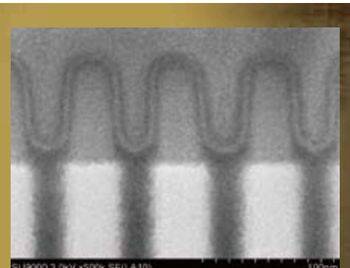
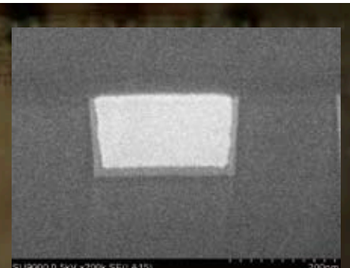


Sample : Carbon nanotube (STEM image)



Sample : NAND flash memory (cross-section)



Sample : Copper interconnection (cross-section)