

Analytical UHR FE-SEM

SU-70

In order to meet with the demand to perform comprehensive analysis requiring large probe current and ultra-high resolution observation in one instrument, Hitachi has developed the SU-70. Using Hitachi's field proven semi-in-lens technology for ultra-high resolution combined with a Schottky emission electron source we have developed an uncompromising solution to open the door for new advances in exploration of the nanoworld.

1. Large probe current of 100nA

Probe currents up to 100nA available from the newly developed Schottky emission electron source.

2. Versatile analytical specimen chamber

Multiple ports have been prepared for large variety of applications.

Simultaneous analysis options: EDX, WDX, EBSP, STEM, BSE, CL, Cryo stage, Chamberscope.

3. Field Free mode (FF mode)

FF mode for the imaging of magnetic samples and EBSP in a UHR SEM.

4. Ultra-high resolution 1.0nm/15kV, 1.6nm/1kV**

Ultra-high resolution is available according to field proven Hitachi's semi-in-lens technique.

5. Super ExB for controlled SE/BSE signal detection

Reduction of charge-up effect in the image and signal filtering.

6. Ultra-low landing voltage for shallow surface observation**

Beam deceleration technology enables high resolution ultra-low voltage imaging.



Analytical work and
Ultra-high resolution
in one SEM!

Standard Specifications

Secondary electron image resolution

- 1.0nm (15kV, WD=4.0mm)
- 1.6nm (1kV, WD=1.5mm, Deceleration mode^{*1})
- 2.5nm (1kV, WD=1.5mm)

Magnification

- LM mode 20 ~ 2,000x
 - HM mode 100 ~ 800,000x
- (Magnification range varies with WD and HV)

Electron optics

- Electron gun ZrO/W Shottky emission electron source
- Probe current 1pA ~ 100nA
- Accelerating voltage 0.5 ~ 30kV (normal mode)
- Landing voltage 0.1 ~ 2.0kV (deceleration mode)^{*1}
- Lens system 3-stage electromagnetic lens system
- Objective lens aperture Variable type (4 openings selectable and finely adjustable from outside the vacuum)
- Stigmator coil Octapole electromagnetic system
- Scanning coil 2-stage electromagnetic deflection

Specimen stage

- Stage control 5-axis motor drive
- Movable range
 - X 0 ~ 110mm
 - Y 0 ~ 110mm
 - Z 1.5 ~ 40mm
 - T -5° ~ +70°
 - R 360°
- Sample size 150mm dia. (standard)
- (maximum) 200mm dia. (option)

Electrical image shift ±20μm (WD = 15mm)

Detectors

- Secondary electron detector
- Backscattered electron detector (option)
- STEM detector (option)
- Faraday cup (option)
- Energy dispersive X-ray detector (option)
- Wavelength dispersive X-ray detector (option)
- EBSF detector (option)
- Cathodoluminescence detector (option)

Display unit

- PC/OS PC/AT compatible
- OS : Windows XP Professional^{*3}
- Monitor 19 type LCD (subject to change without notice)
- Image display mode
 - Full screen display 1,280 × 960 pixel
 - Reduced area display 640 × 480 pixel
 - Reduced area display 320 × 240 pixel
 - Dual image display 640 × 480 pixel × 2

Evacuation system

- Auto evacuation Fully automatic pneumatic valve control system
- Ultimate vacuum Electron gun chamber : ~10⁻⁷Pa
- Specimen chamber : ~10⁻⁴Pa
- Vacuum pumps Ion pump 40L/s × 2
- Turbomolecular pump 300L/s × 1
- Oil rotary pump 135L/min [162L/min]^{*2} × 1

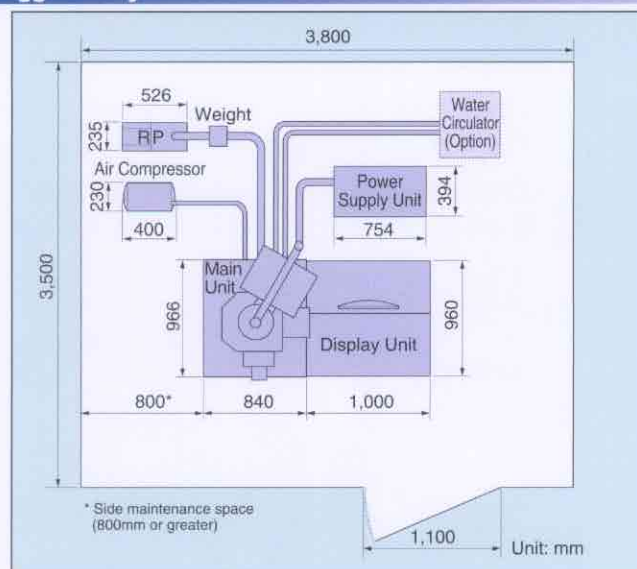
Dimension & Weight

	Width	Depth	Height	Weight
Main unit	840	966	1,660mm	650kg
Display unit	1,000	960	1,200mm	205kg
Oil rotary pump	526	235	306mm	28kg
Air compressor (option)	400	230	550mm	18kg
Weight	200	180	160mm	40kg

Utility requirements

- Temperature 15 ~ 25°C
- Humidity 60%RH or less
- Power Single phase AC100 ~ 240V ±10%, 4kVA
- Grounding 100 Ω or less
- Cooling water
 - Flow 1.0 ~ 1.5L/min
 - Pressure 50 ~ 100kPa
 - Temperature 10 ~ 20°C (allowable fluctuations 0.5°C/10min or less, difference from Room temperature must be within 7°C)
- Supply faucet RC3/8 tapered female thread × 1
- Drain port (20mm dia. or more) × 1
(Natural drain type located on floor)

Suggested layout



- *1 : Deceleration mode (option)
- *2 : 50Hz (60Hz)
- *3 : Windows XP is a trademark of Microsoft Corp., U.S.A.

NOTICE: For proper 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.

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