Specifications (Hitachi Scanning Electron Microscope SU-1500)

[Specifications]

	Items	Description
	Resolution SE	3.0nm at 30kV (High Vacuum Mode)
	Resolution BSE	4.0nm at 30kV (Variable Pressure Mode)
	Magnification	x5 ～ x300,000
	Accelerating Voltage	0.3 ～ 30kV
	Low Vacuum Range	6 ～ 270Pa through graphic menu
	Image Shift	±50μm(WD=15mm)
	Maximum Specimen Size	153mm in diameter
Specimen Stage	X	0 ～ 80mm
	Y	0 ～ 40mm
	Z	5 ～ 50mm
	R	360°
	T	-20 ～ 90°
	Observable area	126mm in diameter
	Maximum Height	60mm (WD=15mm)
Electron Optics	Electron Gun	Precentered Cartridge Filament
	Objective Apature	Click Stop Movable Aperture with 4 openings
	Gun Bias	Quadrant Bias
	Detector	Secondary Electron Detector
		High Sensitivity Semiconductor BSE Detector
	Analytical Position	WD=15mm,TOA.=35°
Display	OS	Windows® XP
	Controls	Mouse, Keyboard
	Monitor	19 type LCD (subject to change without notice)
	Auto Alignment	Auto Beam Setting, Auto Axial Alignment
	Auto Image Adjustment	Auto Focus, Auto Stigmator/Focus
		Auto Brightness & Contrast
	Image Data Saving	640×480 pixels, 1,280×960 pixels
		2,560×1,920 pixels, 5,120×3,840 pixels
	Image Filing	Search Functions / Built-in Image Data Base with Image Processing Functions
	Filing Format	BMP, TIFF, JPEG
	Auto Data Display	Accelerating Voltage, Magnification, Micron Marker,
		Unit, Working Distance,Date/Time, Detector, Pressure
	Image Display Mode	Full Screen Display : 1,280×960 pixels
		Small Screen Display : 640×480 pixels
		Dual Image Display : 640×480 pixels x 2
		Signal Mixing
Evacuation System	Operation	Full Automatic Sequence
	Defusion Pump	380L /s x 1
	Oil Rotary Pump	135L/min (162L/min, with 60Hz) x 2
	Protection	Power Failure and Vacuum Failure

Items	Description
Auxiliary Functions	Raster Rotation
	Dynamic Focus / Tilt Compensation
	Dynamic Stigmonitor
	Free Layout Print Function
	3D Animation Maintenance Guide
	Operation Guide
	Easy Measurement
	Oblique image

[Optional Accessaries]

Detector and Analytical Tool
Low vacuum SE detector (ESED-Ⅱ)
Energy Dispersive X-ray Spectrometer (EDX) made by each manufacturerer
Chamber scope made by each manufacturerer
Specimen Stage and Holder
X-Y Axis Motor Drive
Cool Stage made by Deben UK Limited.
Software
3D-VIEW (3D Image View and Measurement software)
CD Measurement
Hi-Mouse (Common software for Mouse and Keybored)
Consecutive image recording function (Zigzag capture function),Stitch
Interface
External communication Interface, DBC
Others
Rotary Knob

[Dimension / Weight]

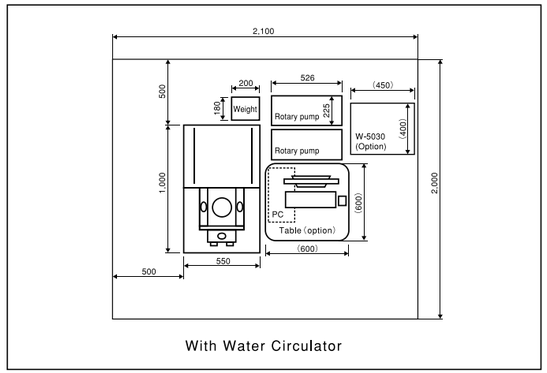
Items	Description
Main Unit	550 (W) ×1,000 (D) ×1,460 (H)mm, 380 kg
Oil Rotary Pump	526 (W) × 225 (D) × 306 (H)mm, 28 kg
Weight	200 (W) × 180 (D) × 160 (H)mm, 40 kg

[Installation Requirements]

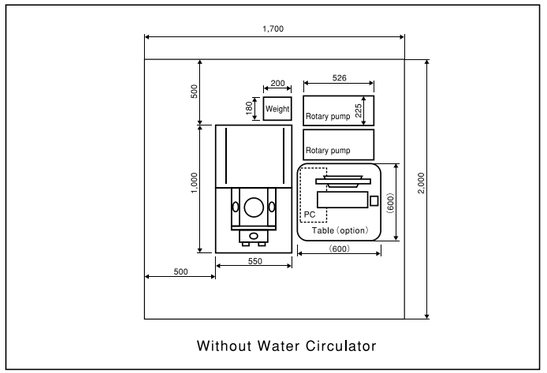
Items	Description
Room Temparerature	15 ～ 30℃
Humidity	70% or lower
Power Supply	Single Phase AC100, 110, 115, 200, 220 or 240V (±10%) 3.0kVA
Water	Flow : 1.0 ～ 1.5L/min, Pressure : $5x10^4$ ～ 1 x 10^5Pa
Power Cable	10 meters long with M5 terminal plate
Grounding	100Ω or better

●Windows®is a registered trademark of Microsoft Corp. in the U.S. and other countries.
●Observable area is restricted by specimen size.

Typical installation room layout



With Water Circulator



Without Water Circulator

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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Hitachi Scanning Electron Microscope
SU-1500

Hitachi High-Technologies

Scanning Electron Microscope SU-1500

HITACHI

Compact & High-performance

Features

The footprint of the SU-1500 has been reduced by 20%(*1) so that the microscope can be installed in more restricted places than before.

To assist inexperienced users the SU-1500 includes an on screen operation guide that walks the user step by step through the complete imaging process - from vacuum mode selection to taking a picture. This unique feature allows users of all experience levels to quickly obtain high quality images.

The advanced technologies incorporated into the SU-1500 provide a guaranteed secondary electron resolution of 3.0nm (high vacuum mode) and a guaranteed backscattered electron resolution of 4.0nm (variable pressure mode).

For quick observation of non-conductive samples the SU-1500 utilizes variable pressure mode that eliminates negative charging, and provides the optimum conditions for both imaging and EDX microanalysis(*2). Switchover between high and variable pressure modes is completed quickly with a single click of the mouse and requires no hardware change by the user.

The specimen chamber and stage have been designed to accommodate samples as large as 153mm in diameter. Simultaneous EDX microanalysis and imaging can be completed on a sample that is 60mm in height at the analytical working distance of 15mm. Flexibility for sample size is a key feature of the SU-1500.

The ESED-Ⅱ(*3) is optionally available if secondary electron imaging in variable pressure mode is desired. This detector is integrated into the GUI of the SU-1500 and is completely software driven with all automatic features ready for instant use by the operator.

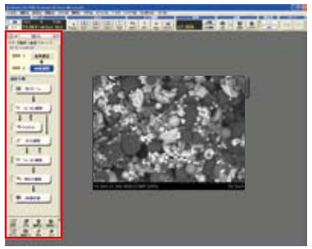
The unique analytical chamber of the SU-1500 includes two high take off angle ports on opposing sides of the chamber. This allows simultaneous mounting of any two EDX detectors chosen by the customer. When using the conventional EDS configuration during EDS mapping a shadow may be imparted in the areas facing away from the EDS detector. The SU-1500 can eliminate this effect by mounting two EDS detectors on opposing sides of the chamber. Less shadow in the EDS maps produces superior compositional data.

*1: When compared with Hitachi S-3000N SEM *2: Energy Dispersive X-ray microanalysis (option) *3: Environmental Secondary Electron Detector (option)

SU-1500

Performance – 1 Operation guide and 3D animation maintenance guide.

A step by step operation guide has been incorporated into the SU-1500 GUI that guides users through the complete imaging process - from sample insertion to image acquisition. This unique feature allows new or infrequent users to quickly obtain excellent imaging results. This is a key factor in maintaining the continuous workflow required in today' s multi-user environments. The SU-1500 also includes 3D animated video clips for routine maintenance procedures. Like the operation guide, the 3D animations walk the user step by step through the selected procedure - such as changing the filament.

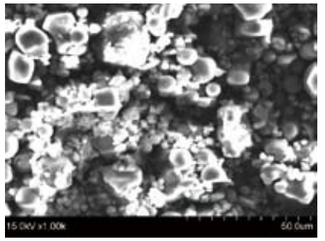


Operation guide

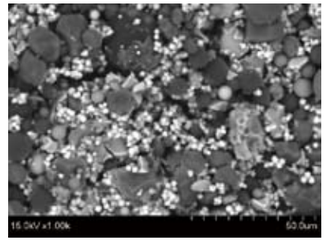
3D animation maintenance guide

Performance – 2 Variable pressure mode for imaging and EDS microanalysis of uncoated non-conductive samples.

When operating in the variable pressure mode, the incident electron beam and the secondary electrons leaving the sample, interact with the gas molecules in the chamber creating positive ions. These positive ions are attracted to areas of the sample that are negatively charged. The positive ions then combine with the negatively charged surface of the sample to neutralize the charging. The variable pressure mode increases productivity by allowing quick and easy imaging and EDS microanalysis of non-conductive samples.



High vacuum observation. Excessive brightness due to charge-up is seen.

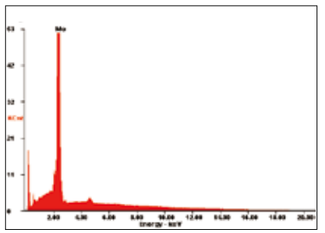


Variable pressure mode. An excellent charge free image can be obtained.

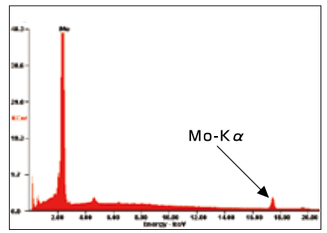
Specimen: Cosmetic powder

Performance – 3 Accelerating voltage adjustable from 0.3 to 30kV.

The wide range of available accelerating voltage expands the imaging and analytical capabilities of the SU-1500 by allowing the operator to choose the optimum voltage for their particular application. A low accelerating voltage could be used to visualize fine features of the sample surface while a higher accelerating voltage could be used to determine the elemental composition of the sample. Having the choice of a wide range of accelerating voltages can be especially important when performing EDX microanalysis of the sample. For example, the Mo-Kα line could not be detected with an accelerating voltage of 20kV but it could be done after the accelerating voltage was changed to 30kV.



EDX spectrum acquired at 20kV



EDX spectrum acquired at 30kV

With XFlash4010 made by Bruker AXS