

pointSEM LEO 430

Modernized Scanning Electron Microscope,
powered by point electronic GmbH



General description

This pointSEM based on the Zeiss LEO 430 is a Tungsten scanning electron microscope designed for analysis across materials science, microelectronics, and life sciences. It is enhanced by our state-of-the-art, high-performance electronics and powerful, versatile control software.

Key features

Image Processing

Resolution: up to 23,000 x 23,000 pixel
Dwell: 10 ns – 500 ms per pixel
Magnification range: 25 - 500k
Image shift range: +/-100 µm

Resolution @ WD = 8 mm and 30 kV

High vacuum: 4nm

Emitter

Tungsten Filament

Accelerating Voltage

0.3 – 30 kV

Probe Current (measured with a Faraday cup)

1 pA to 500 nA

Detectors

In-Chamber Everhart Thornley Detector (ETD): SE

Chamber

Height	190 mm
Width	300 mm
Depth	265 mm

Stage

Number of axis	5
X-range	100 mm (± 50 mm)
Y-range	125 mmm
Z range	35 mm motorized
Rotation	360°
Tilt	0° - 90°

pointSEM - features powered by point electronic

pointSEMs are high-quality, pre-owned electron microscopes from renowned manufacturers, modernized with completely new high-end electronics and powerful software for control - made by point electronic.

pointSEMs combine the reliability of the original column with innovative technology, optimized performance, a long-term warranty, and comprehensive service. Our components and technologies are based on over 30 years of experience in development and manufacture of high-performance instruments and innovations for electron microscopes.



BEST IMAGING SYSTEM ON THE MARKET: DISS 6

- Simultaneous acquisition of up to 20 signals
- Image resolution of up to 500 Mpx
- Scanning speed up to 10 ns dwell time
- Live signal mixing and processing
- Versatile triggers and synchronization (pixel/line/frame)



AUTOMATION OF ALL KEY PROCESSES

- Automated control for vacuum, gun, stage, and detectors
- Auto focus/stigmator and auto brightness/contrast
- Automated saving, e.g. for time series recordings
- Automated quantification of pixel values



ONE-STOP GUARANTEE AND SERVICE

- Comprehensively tested, quality-assured devices
- 10+ year spare parts guarantee for all point electronic parts
- warranty: 12 months for point electronic parts, 6 months for original parts*
- Delivery and installation
- Control Software training
- Flexible service and maintenance options

(** for enterprises; different for private individuals)



INTUITIVE CONTROL

- Fast, precise, and easy control
- Fine adjustment panels
- Configurable buttons
- Integration into GUI or API
- Optical sample navigation via photo (SamplePilot, optional)



MOST FLEXIBLE CONFIGURABILITY

- Flexibly configurable scan settings for parameters, workflows, and analyses
- Customizable buttons in display and parameters
- Individualizable project parameters for saving
- Software Development Kit for individual system integration (API and DLL)
- Additional analysis hard- and software on request



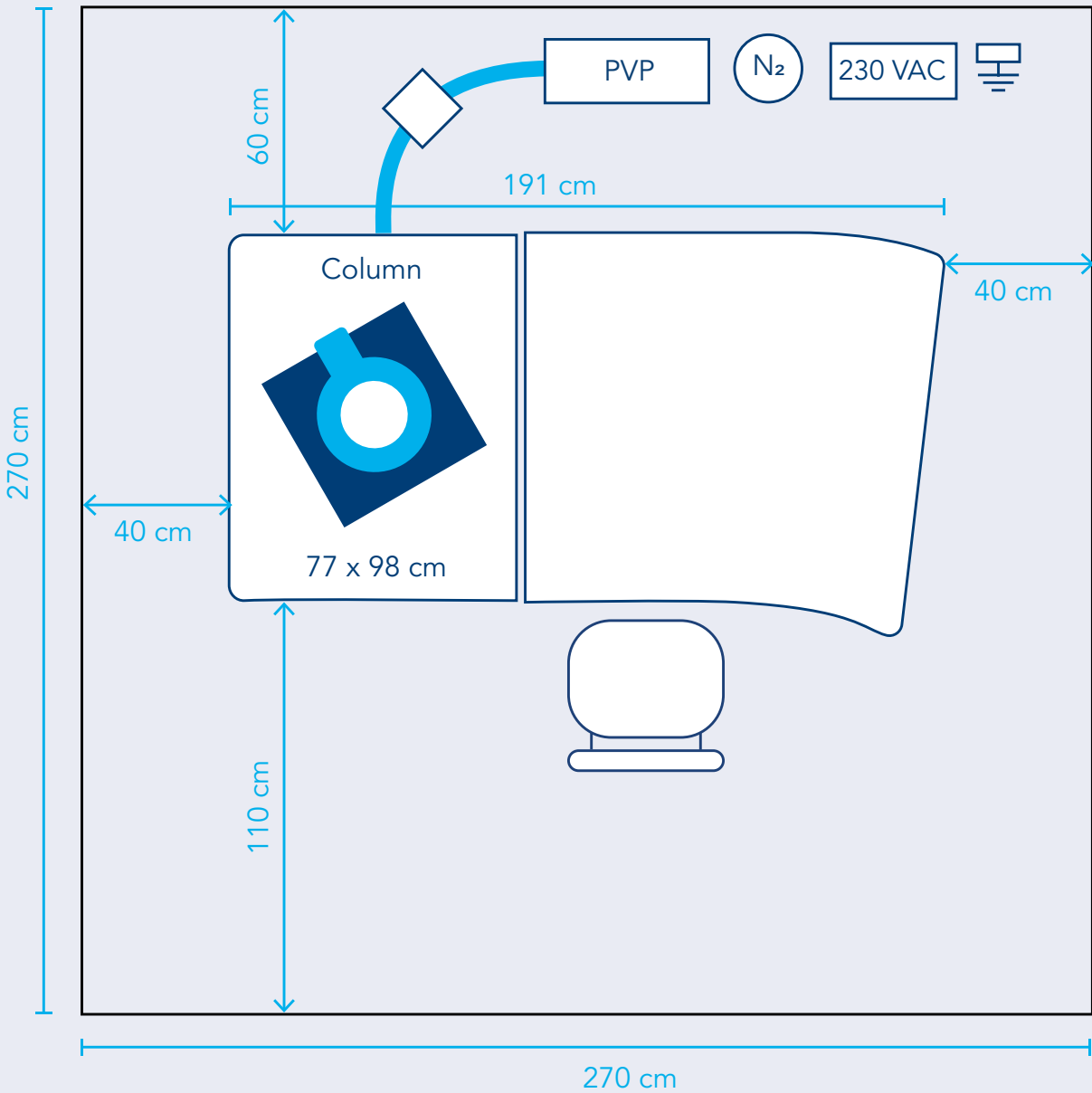
SUSTAINABILITY AND RESOURCE EFFICIENCY

- Significantly extended lifetime thanks to reliable electron columns, service, and warranty
- Up to 70% energy savings*
- Cost-efficient due to lower investment and operating costs*

(*compared to the original or new device)

Room requirements

The minimum room size is 2.7 x 2.7 m², with a ceiling height of minimum 2.30 m.
The minimum door opening and passageway width is 0.4 m over the whole length of the microscope.



Environmental requirements

Ambient Temperature	15 - 30°C
Relative Humidity	Less than 70%
AC Magnetic Fields	Less than 3 mG peak to peak at 50 Hz/60 Hz
Vibration	Velocity Level: Less than 6 µm/sec rms. to 30 Hz Less than 12 µm/sec rms. from 30 Hz

Site survey with electromagnetic stray fields, mechanical vibrations (floor vibration) and acoustic noise measurements are recommended and can be ordered optionally.

Utility requirements

Power	220 - 240 V 50/60 Hz Single Phase
Consumption	Max. 1.5 kVA (0.1 kVA in Standby / 0.7 kVA + P _{chiller} +P _{PC} turned on)
Nitrogen	0.2 - 0.3 bar, 2 l/min; purity 99.996%

The **environmental and utility requirements** shall be the responsibility of the customer and shall be provided at the time of installation.

Failure to comply with these conditions may adversely affect the performance figures quoted in this specification.

Imaging - powered by point electronic's DISS 6

Magnification range	20 - 500k
Resolution	Up to 23,000 x 23,000 pixel
Electromagnetic image shift range	+/-50 µm (at WD = 15 mm and 10 kV)
Signal digitization	12 bit and 16 bit signal digitization for processed (Inlens, SE) and diode based detectors (BSE, STEM) respectively
Scan generator	Simultaneous signal acquisition for all detector signals
	Pixel-, line- and frame averaging of signal with freely adjustable pixel dwell time: 10 ns – 500 ms
	Live mixing of all inputs for enhanced image information
	Electronic scan rotation and tilt correction
	External scan interface for accessory systems
File formats	Images are saved in 8 bit or 16 bit .tiff file format, including all SEM parameters in the metadata
Digital LockIn amplifier (optional)	20-bit digitization
	1 µs...10 milliseconds pixel dwell time

Vacuum system

Backing pump	Rotary pump
Turbomolecular pump	280 litre/sec water cooled
Ultimate high vacuum	The ultimate vacuum in the specimen chamber is better than 5.0 x 10 ⁻⁵ mbar
Gauge	Penning gauge
High vacuum evacuation time	Normally better than 15 minutes, dependent upon specimen outgassing and atmospheric humidity

Chamber

Indication	Vacuum readings, vacuum ready and valve status, are shown in the vacuum menu.
Chamber view	Infrared CCD camera

Electron gun

Emitter	Tungsten Filament
	0.1 kV – 30k V

Electron optics

Beam control	Double condenser system for continuous regulation of sample beam current in the range 1 pA to 500 µA
	Electromagnetic filament and Beam alignment
	Eight pole stigmator for Astigmatism removal
	Auto Focus and Stigmator adjustment
	3 manual adjustable final apertures for precise aperture alignment

Detectors

In-Chamber Everhart Thornley Detector (ETD)	EDT detector with a Collector bias adjustable from -250 V to +400 V for SE detection
EDS Detector (optional)	For further information please contact us
Solid State Backscattered Electron Detector (SSD-BSE, optional)	Four quadrant SSD-BSE detector for topographic imaging and material contrast
	Software module for 3D-Reconstruction available
Detector related software features	Auto Brightness-Contrast function for the detectors

General

As per general conditions of sale, the performance figures quoted in this specification are those typically obtained on **test in our factory** under specific test conditions.

They do not constitute guaranteed „on site“ figures unless specifically stated in the contract of sale.

A scanning electron micrograph (SEM) of a human skull, rendered in a dark blue color scheme. The image shows the intricate details of the skull's structure, including the eye sockets, nasal cavity, and jaw. The texture is highly detailed, showing the porous nature of the bone.

Our design principles

We look back on over 30 years of experience in development and manufacture of high-performance instruments and technologies for microscopy.

We are driven by an ambition to expand abilities and to improve performance of electron microscopes.

Our aspiration is to make the best quality tools and to join our customers on their journeys of scientific exploration and discovery.

Performance

Microscopy must be a reliable and enjoyable experience

- Design for highest speed and resolution at the lowest noise
- Develop smart independent controllers for live optimization
- Support new users with simple and automated controls
- Assist advanced users with access to all parameters

Efficiency

Microscopes must provide an uninterrupted focus

- Use standard microscope controls and data formats
- Give instant feedback with live image mixing and processing
- Add bespoke software tools and algorithms for repetitive tasks
- Enable more developers with libraries and documentation

Environment

Products and technologies must be sustainable

- Reduce power consumption through smart design
- Minimize material use, embrace reuse where possible
- Save weight and volume for shipping and maintenance
- Enable everyone to develop sustainable innovations

Quantification

Data and control must be in physical units

- Calibrate, in production, for measured inputs and outputs
- Provide samples, procedures and software for calibration
- Give all control parameters in device independent values
- Ensure safe operation according to IEC61010-1 and IEC 61326-1

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