make · explore · discover

DISS 6

The most powerful and versatile Digital Image Scanning System (DISS)

point electronic

Experience and performance

Built on decades of SEM expertise, DISS 6 is a proven SEM imaging and control platform, trusted by researchers and OEMs worldwide to deliver precise, synchronized acquisition, and the flexibility to grow from routine imaging to advanced analytical workflows without changing systems.

6th
generation

Digital Imaging Scanning System (DISS) generation 6, is the latest generation and highest performance scan generator and image acquisition system for SEM and scanning devices.

30+
years of experience

DISS has been at the core of point electronic's high-performance instruments and technologies portfolio since 1992, representing more than 30 years of engineering and development experience.

~100
microscope models

DISS systems have been successfully installed on about 100 different microscope models.

50+
countries

With installations in over 50 countries worldwide, point electronic is proud to join customers on their journey of scientific and analytical exploration and discovery.

~3,500
installations

Installed on approximately 3,500 SEMs worldwide, DISS systems enable unprecedented flexibility and speed in SEM operation, making them a trusted solution for advanced workflows.

Our best ever imaging system for SEM and FIB-SEM

DISS 6 is the highest performance and most versatile scan generator for active controlled, completely flexible scanning and synchronized data and image acquisition for all scanning systems – integrated in one device.

Highest image resolution

up to 500 mpx
flexible from 1 pt

Ultra-fast scanning speed

down to 10 ns dwell time
flexible from 500 ms

Simultaneous acquision

of up to 20 signals
flexibly analog and digital, including single electron counting and lock-in amplification signals

Versatile triggers and synchronization

pixel, line, frame, or beam blank control; operates as **master** (active scan generation with synchronized acquisition) or **slave** (external trigger input)

Broad compatibility

for all scanning devices:
ion beam
electron beam
laser scanning
gamma emitter

DISS 6 - Powerful and most versatile all-in-one Digital Image Scanning System

One controller, multiple signals, flexible possibilities

PRECISE — High-speed, calibrated acquisition and control

FLEXIBLE — Fully configurable scans and timing

UNIVERSAL — Compatible with all microscopes and detectors

Digital Image Scanning System

point electronic

DISS 6

ACQUISITION OF VERSATILE SIGNALS

Analog inputs

4x Ultra-fast analog inputs
12 Bit | 100 Msps | 10 ns dwell

Up to 16x slow analog inputs (optional)
12 Bit | 5 Msps | 200 ns dwell

For multiple signals

SE | 4Q BSE | CL | BSE

Acquisition of multiple detector signals and detectors simultaneously and synchronized

1x High-resolution input (optional)
20 Bit | 1.6 Msps | 625 ns dwell

For multiple signals

EBIC | EBAC

Lock-in amplifier (optional)

Digital inputs

12x Digital pulse inputs
100 MHz

2x Ultra-fast digital inputs (optional)
1 GHz

For multiple signals

PULSE

Digital pulse signals, e.g. for single electron counting

CONNECTION AND CONTROL

USB | TCP/IP

easy integration

point electronic GUI

Intuitive software for image acquisation, controls, visualization and export

SDK (optional) and API

Integration of DISS6 into own software (DLL, examples, full documentation)

CONTROL AND SYNCHRONIZATION OF MULTIPLE SIGNALS AND DEVICES

2x Calibrated analog scan outputs (x/y)
16 Bit

4x TTL trigger/clock in/outputs
Adjustable trigger inputs for pixel, line and frame; clock outputs for pixel, line, frame, beam blanker, external scan and external blank

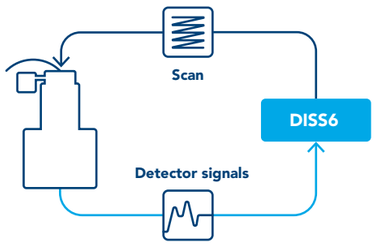
Sawtooth scan (standard) and free scan modes (optional)
Sawtooth scans; optional scan modes with SDK like subpixel, chopped, vector, upload of custom pixel maps

Noise reduction
Customizable pixel, line and frame averaging

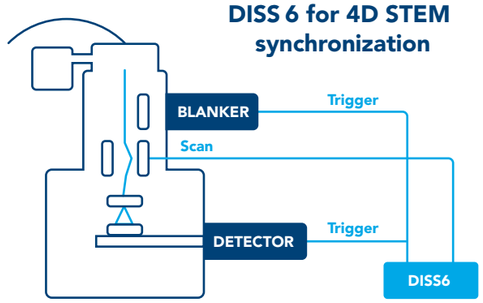
BUILT FOR VERSATILE USE CASES

Examples of applications

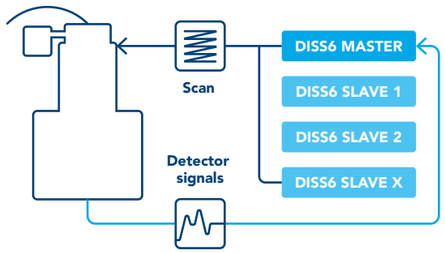
DISS 6 for standard SEM



DISS 6 for 4D STEM synchronization



DISS 6 for 1...100+ channels



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Full control of all scan and imaging parameters

Optical sample navigation (optional)

Navigation of samples based on optical navigation with reference images or acquired image, including graphical creation of areas

Multi-page TIFF

Storage of several bitmaps in a 8 Bit multipage TIFF file during a continuous scan

Simultaneous live mix of signals

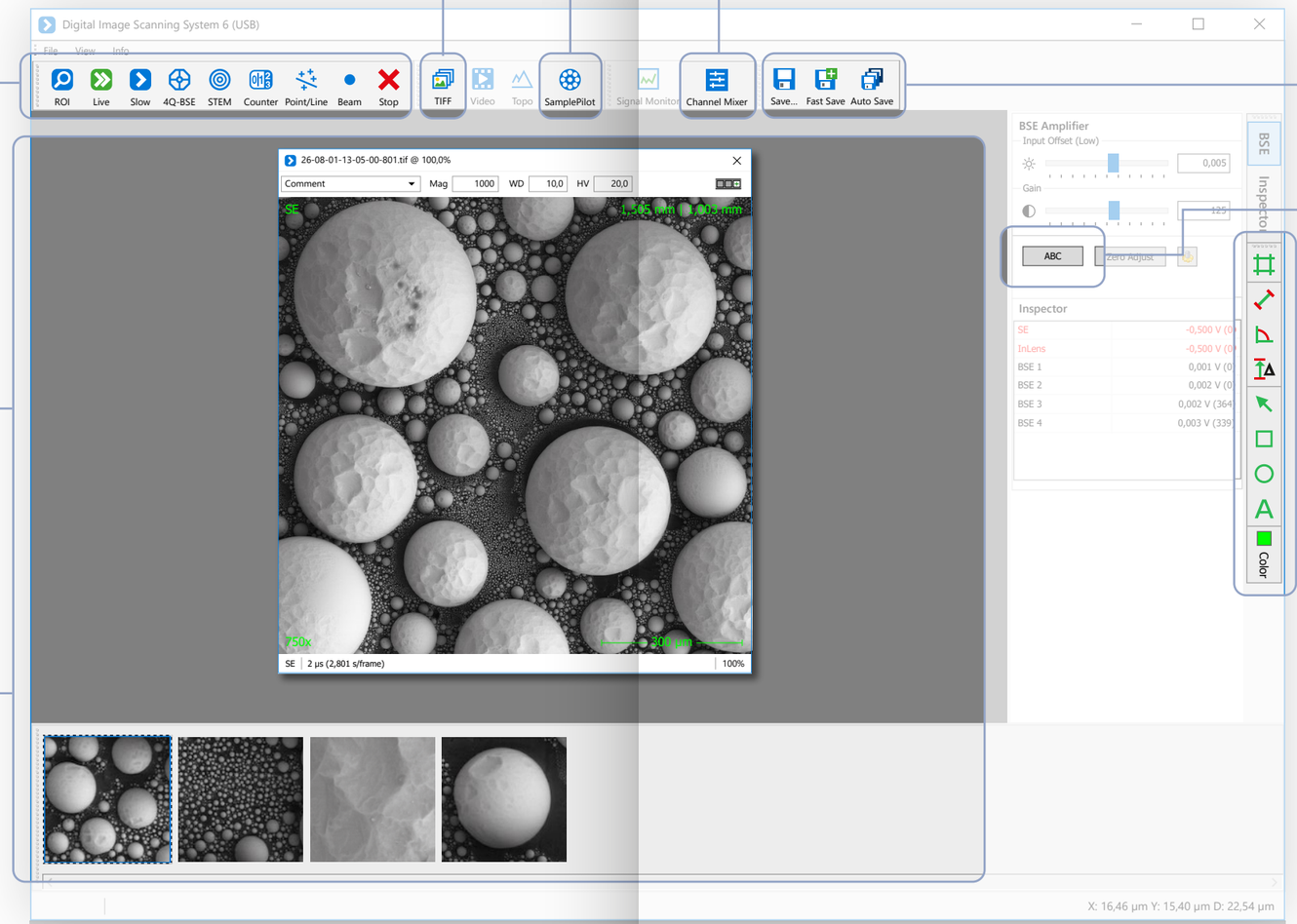
Simultaneous mix and display of all channels

Auto-save and project management

Project parameters for save and auto-save, routine workflows, and custom voltage and magnification settings

User-creatable and customizable scan buttons

Fully configurable scan profiles as buttons, including live scan or high resolution acquisition



Automated brightness and contrast

Automated adjustment of image intensity range for easy image improvement

Flexible integration

JSON-RP remote control interface for automation, and SDK for OEM integration

Live measurement and annotation

Live measurement function of any line, point or area on the sample (pixel intensity, distances, angles), and annotation of circles, arrows or text anywhere in the acquisition window

Raw image data versatility

Image data storage as 16-bit raw files with XMP metadata containing all control parameters, enabling flexible processing, analysis, and reprocessing

Full-featured scan generator and image acquisition

Digital Imaging Scanning System (DISS) can simultaneously acquire 4 analog and 12 digital inputs, expandable by up to 16 additional analog inputs via optional MICS amplifier.

Digitization

Digitization of analog image signals (SE, BSE, CL, EBIC, EBAC)

Broad SEM compatibility

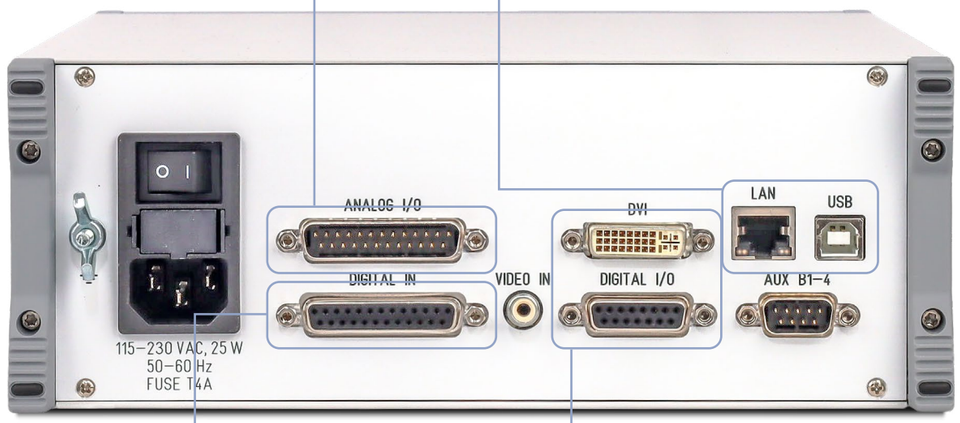
Connection via SEM's external scan interface, and compatible with all major scanning microscope models

Simultaneous acquisition

Synchronized multi-channel acquisition of ultra-fast and slow analog inputs with 12-bit digitization

Network compatibility

Seamless network integration via TCP/IP and USB interfaces, with automated scan switch



Versatile triggers and synchronization

Adjustable TTL trigger inputs, and clock outputs for synchronization with cameras or detectors

Digital pulse inputs

Simultaneous 100 MHz digital counter inputs

Open system architecture for maximum OEM integration

Engineered for seamless integration into OEM plattforms, combining open interfaces, scalability, and flexible customization.

Custom software integration

- Software Development toolKit (SDK) for development of custom software, including access to all hardware functions, API, demo applications and DLL control library
- JSON-RPC remote control interface for seamless integration with any system
- Custom software branding

◆ CreateImageScanJob()

```
DC_API DISS6RetCode_t DC_CALLCONV CreateImageScanJob ( uint32_t                  channelCount,
                                                       const DISS6ChannelInfo_t * channelConfig,
                                                       uint16_t &                 ScanId )
```

This function creates an image scan job with default parameters.

Parameters

[in] **channelCount** Count of channels in channelConfig array
[in] **channelConfig** Channel configuration array
[out] **ScanId** Generated scan job ID

Returns

Return code (see **DISS6RetCode_t**)

See also

CreatePixelMapScanJob()

Custom hardware integration

- Custom housing branding
- Scalable form from board-level integration to 19-inch rack-mount systems
- Secure TCP/IP connectivity across modern and legacy microscope systems

Options

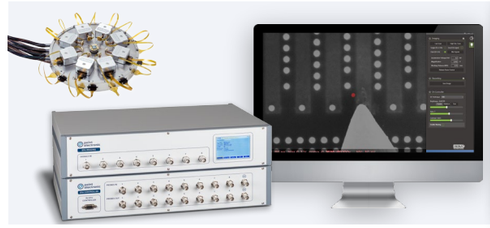
DISS 6 complementary systems from point electronic for enhanced microscope capabilities.

Stage Controller including SamplePilot

Smart controller of motorised sample stages for up to 6 motors or steppers, touch alarm, and optical sample navigation with stage control (SamplePilot).

Topography system

Live quantitative and calibrated measurement of surface height, with live 3D visualization in Scanning Electron Microscopy, designed for multivendor environments.



Electrical Failure Analysis and Nanoprobing system

Fast, precise sample navigation and characterization, low-noise signal acquisition, and multi-channel failure detection with in-situ pre-amplifiers and live color-coded signal overlay.

High-Temperature BSE

Detector with unique light-blind sensor for in-situ/ in-operando SEM, embedded amplification, touch display panel, and app with remote control interface for automation and SDK for OEM integration.

SEM Modernization

Modernization of existing SEM columns with completely new electronics, software and control systems to achieve state-of-the-art performance and flexible maintenance and service options.

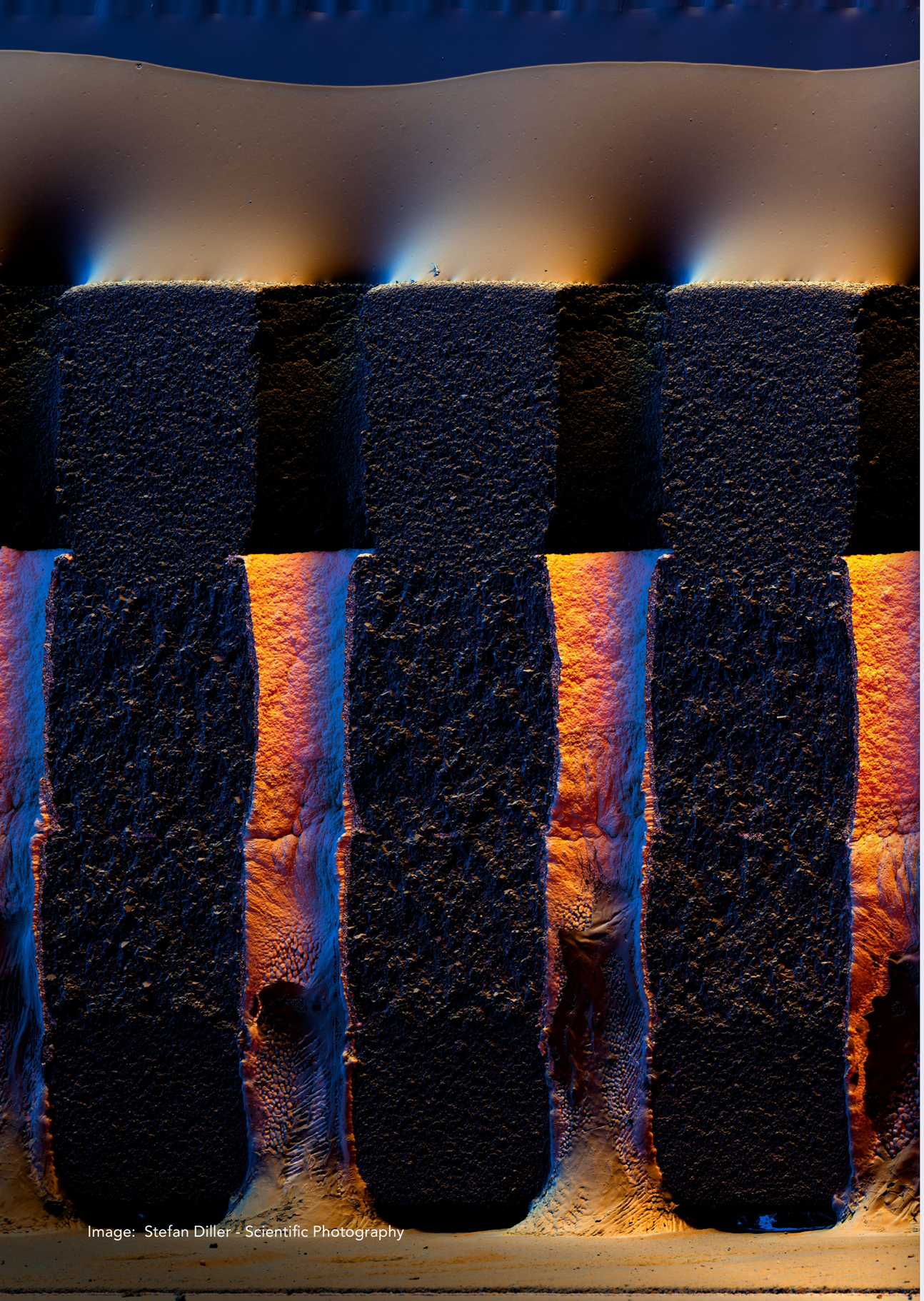


Image: Stefan Diller - Scientific Photography

Hardware

Standard inputs	8× calibrated analogue inputs (A1…A4, B1…B4)
	12× digital inputs (D1…D12)
	3× trigger inputs (Pixel, Line and Frame)
	Scan pause/resume input
Standard outputs	2× calibrated analogue scan outputs (X, Y)
	2× external control outputs (Blank and Scan)
	3x clock outputs (Pixel, Line, Frame and Beam Blank)
	DVI display output
Control interfaces	USB2
	TCP/IP
Scan modes	Sawtooth scan mode
	Vector scan mode (with optional SDK)
	Chopped scan mode (with optional SDK)
	Subpixel scan mode (with optional SDK)
Scan generator	16-bit ±3.5…±12V analogue X, Y scans
	16-bit 0…12V analogue X, Y magnifications (optional)
	10-bit ±1.8V analogue X, Y shifts (optional)
	Gnd., 5V, 15V external bank/scan
	TTL pause/resume
	TTL clock and synchronisation
	0.5 GPixels maximum frame size (software limit)
	10 ns…500 ms pixel dwell time (selection dependent)
	0…256× frame average
	0…50× line average
	1…32,000× pixel average (oversampling)
	Mains frequency synchronization
Signal digitization	12-bit for analogue A1..A4, B1…B4
	16-bit for TTL D1…D12
	32-bit for TTL D1…D6 (optional)
Electron counting (optional)	2× counter inputs (ECL1…ECL2)
	2× threshold level outputs
	1 GHz bandwidth
CCD-video input (optional)	1x PAL video input
Lock-in amplifier (optional)	1× calibrated analogue input (LIA)
	TTL reference frequency output
	20-bit digitisation
	1 µs…10 milliseconds pixel dwell time
MICS amplifier (optional)	16× calibrated inputs (M1…M16) maximum
	-1.25…1.25 V input and output offset M1…M16
	1× … 3,200× gain M1….M16
	3.4 MHz…34 Hz low-pass filter
	4× averages M1…M4, M5…M8, M9…M12, M13…M16
	Automated 4Q global brightness and contrast

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	Automated input offsets (dark correction)
	Automated gain normalisation (bright correction)
	Automated low-pass filter (matching pixel dwell time)
Touch display (optional)	Scan status overview
	Installed options list
	Scan detailed information
	TCP connections settings
	DVI output settings
Housing	9.5-inch desktop
	19-inch desktop (optional)
	19-inch rack-mountable (optional)

Software

DISS6 imaging control	Configurable scan profiles
	Signals, pixel size, speed, averaging, sync
Image file formats	TIFF (8 / 16 bit, grayscale / RGB), JPG
Inspector tool	Automatic quantification of pixel values
	Editable formula files
Software Development toolKit (SDK) (optional)	Windows and Linux control libraries
	Library API documentation
	DLL control library
	Demo applications

PC/Laptop, display (optional)

PC/Laptop	Intel Core i3 minimum
	1× USB 2.0 minimum, Windows 10/11
	Internet is recommended for remote support.
Display	1,280 × 1,024 resolution minimum

Parts and cables

DISS 6 unit	Standard 1×
Imaging cable, Power cable, USB cable	Standard 1×
USB flash drive	Standard 1×
PC, keyboard, mouse	Optional 1×
Displays	Optional 1×

Software packages

Drivers	PE USB
Libraries	DISS 6 Control
Software	DISS 6

Weight and dimensions

DISS 6 unit	Typ. 23.5 × 8.7 × 29.5 cm, typ. 4 kg
Shipping	Typ. 36 × 32 × 60 cm, typ. 5 kg

Site requirements

Power	1× mains 105...240 VAC single phase 50/60 Hz
	On the same earth as the microscope
Imaging	1× external scan interface at SEM
	1× video signals outputs at SEM
Space	DISS 6 unit may be placed on the SEM table

Image: Stefan Diller - Scientific Photography

Our design principles

We look back on more than 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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