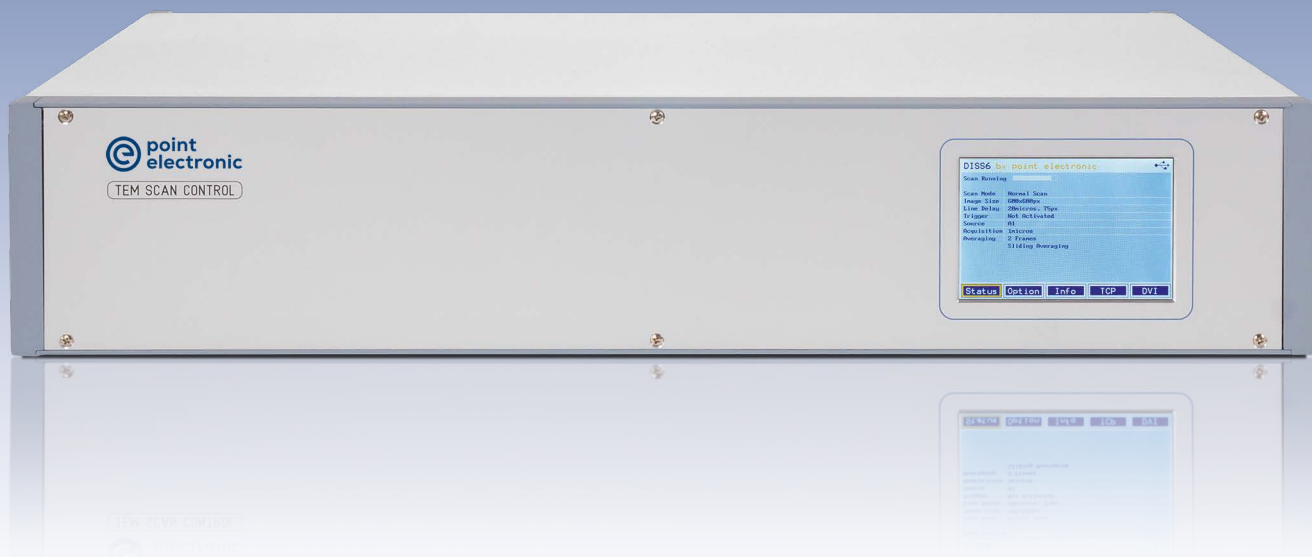


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# TEM Scan Controller

High performance external scan controller for TEM, with Software Development toolKit for independent development

# Our best ever Scan Controller

Designed to enhance your microscope capabilities and maximize efficiency, our external TEM Scan Controller offers highest performance in image scanning and processing, as well as flexible integration into your TEM and your workflows.

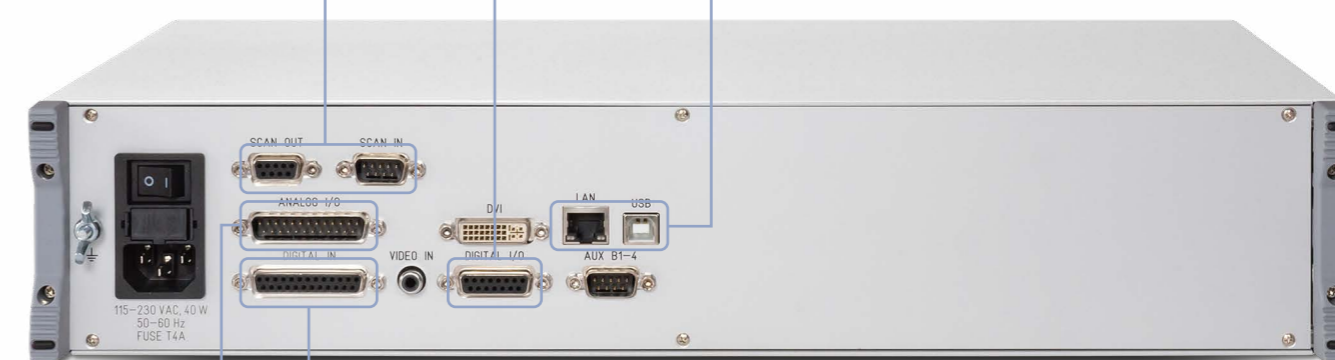


## DISS6 scan engine

6th generation Digital Imaging Scanning System

## Control display

Designed for independent development and service



## Scan signals

Analog outputs for all major TEM external scan interfaces

## Synchronization

Adjustable TTL trigger inputs and outputs for 4D STEM cameras

## Control interfaces

Standard control and data interfaces, for Windows and Linux

## Pulse signals

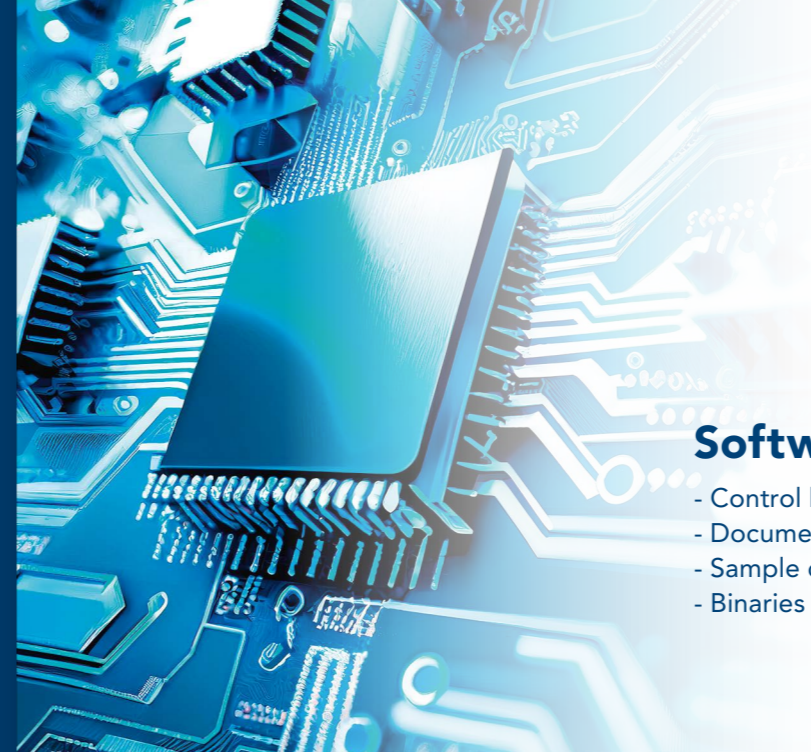
Digital inputs for pulse processors with single electron counting

## Detector signals

Analog inputs for standard BF and HAADF detectors

# To the cutting edge

Use standard imaging software  
or develop own code

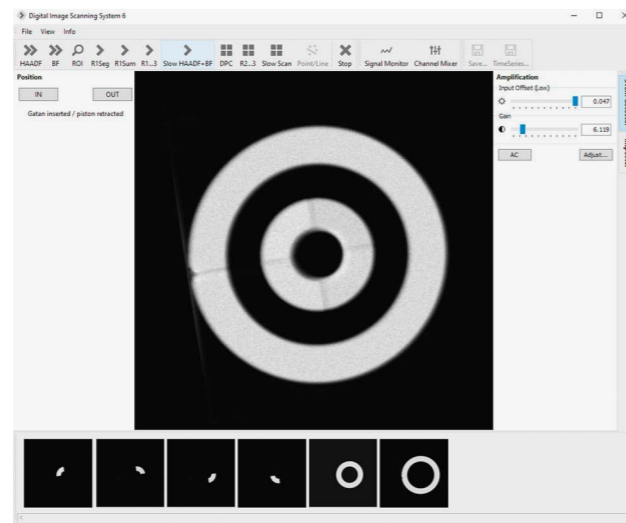


## Software Development toolKit

- Control library that encapsulates hardware details
- Documentation of available functions and parameters
- Sample code for new beginners
- Binaries for Windows and Linux

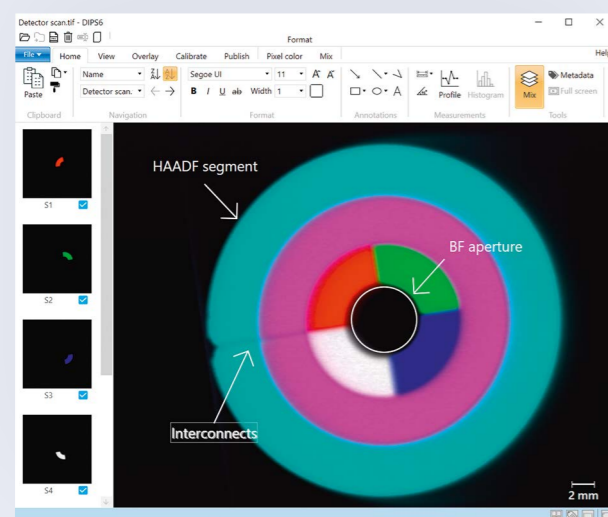
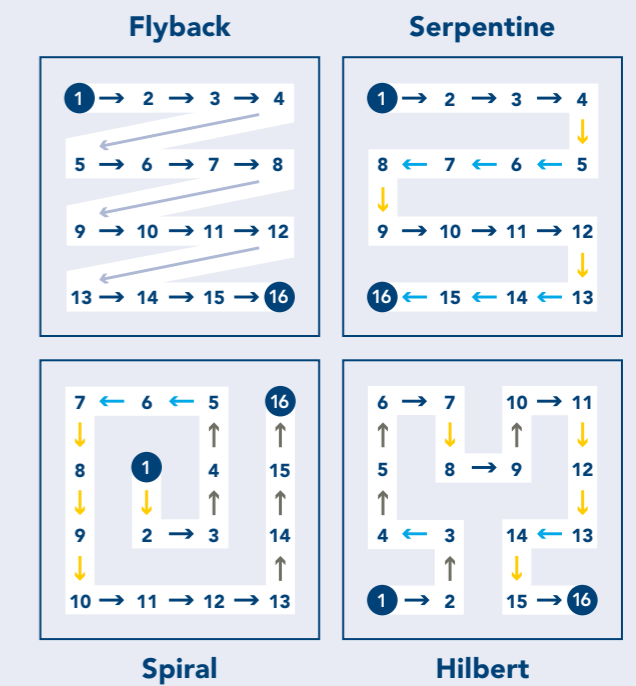
## Image acquisition software

- Configure and run conventional image scans
- Acquire simultaneous images
- Save images to standard TIF format
- Embed metadata in XMP format



## Advanced scan patterns

- Prepare a list of coordinates and times
- Upload to the scan controller
- Run and download digitized values
- Make an image, display and repeat



## Image processing software

- View images with calibrated scale and intensity
- Annotate and publish to resolution and size
- Measure geometry and pixel values
- Add pseudo-color and mix in colour



## Options and peripherals

- Add more video signals with MICS amplifier
- Enable beam testing with Lock-In Amplification
- Count single electron pulses with TurboTEM 'PULSE'
- Quantify STEM signals with Opal detector

## TEM scan controller (DISS6)

<b>Standard inputs</b>	2x4 calibrated analog inputs (A1...A4, B1...B4)
	12x digital inputs (D1...D12)
	3x trigger inputs (Pixel, Line and Frame)
	Pause/resume input
<b>Standard outputs</b>	2x calibrated analog scan outputs (X, Y)
	2x calibrated analog magnification outputs (X, Y) (optional)
	2x external control outputs (Blank and Scan)
	4x clock outputs (Pixel, Line, Frame and Blank)
<b>Control interfaces</b>	USB2
	ETH
<b>Scan modes</b>	Sawtooth scan mode
	Pixel map mode
	Chopped scan mode
	Subpixel scan mode
<b>Scan generator</b>	16-bit $\pm 3.5 \dots \pm 12V$ analog X, Y scans (unbalanced)
	16-bit, $+2.2V \dots 7.5$ ( $+0.65 \dots 2.2V$ ) analog X, Y scans (balanced)
	16-bit $3.5 \dots 12V$ analog X, Y magnifications
	10-bit $\pm 1.8V$ analog X, Y shifts
	Gnd., 5V, 15V external bank/scan
	TTL pause/resume
	TTL clock and synchronization
	0.5 GPixels maximum frame size (software limit)
	10 ns...10 s pixel dwell time (selection dependent)
	0...256x frame average
0...50x line average	
	Mains frequency synchronization
<b>Signal digitization</b>	12-bit for analog A1...A4, B1...B4
	16-bit for TTL D1...D12
	32-bit for TTL D1...D6 (optional)
<b>Electron counting (optional)</b>	2x counter inputs (ECL1...ECL2)
	2x threshold level outputs
	1 GHz bandwidth
<b>Lock-in amplifier (optional)</b>	1x calibrated analog input (LIA)
	TTL reference frequency output
	20-bit digitization
	1 $\mu s \dots 10$ seconds pixel dwell time
<b>MICS amplifier (optional)</b>	16x calibrated inputs (M1...M16) maximum
	-1...1 V input offset M1...M16
	1x ... 1,800x gain M1...M16
	-1...1 V output offsets M1...M16
	3.4 MHz...34 Hz low-pass filter

	4x averages M1...M4, M5...M8, M9...M12, M13...M16
	Automated 4Q global brightness and contrast
	Automated input offsets (dark correction)
	Automated gain normalization (bright correction)
	Automated low-pass filter (matching pixel dwell time)
<b>Touch display</b>	Scan status overview
	Installed options list
	Scan detailed information
	ETH connections settings
	DVI output settings
<b>Housing</b>	19-inch rack-mountable

## PC/Laptop, display (optional)

<b>PC/Laptop</b>	Intel Core i3 minimum
	1x USB 2.0 minimum, Windows 11...7
	network is recommended for remote support
<b>Display</b>	1,280 x 1,024 resolution minimum

## Parts and cables

<b>TEM scan controller (DISS6) unit</b>	standard 1x
<b>Imaging cable, Power cable, USB cable</b>	standard 1x
<b>USB flash drive</b>	standard 1x
<b>PC, keyboard, mouse</b>	optional 1x
<b>Displays</b>	optional 1x

## Software packages

<b>Drivers</b>	PE USB
<b>Libraries</b>	DISS6Control
<b>Software</b>	DISS6 app, DIPS6 app, EMGateway server

## Weight and dimensions

<b>TEM scan controller</b>	typ. 23.5 x 8.7 x 29.5 cm, typ. 4 kg
<b>Shipping</b>	typ. 36 x 32 x 60 cm, typ. 5 kg

## Site requirements

<b>Power</b>	1x mains 105/240 VAC single phase 50/60 Hz
	on the same earth as the microscope
<b>Connections</b>	1x external scan interface at TEM
	1x video signals outputs at TEM
<b>Space</b>	TEM scan controller should be placed in a TEM rack

## Our design principles

We look back on 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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