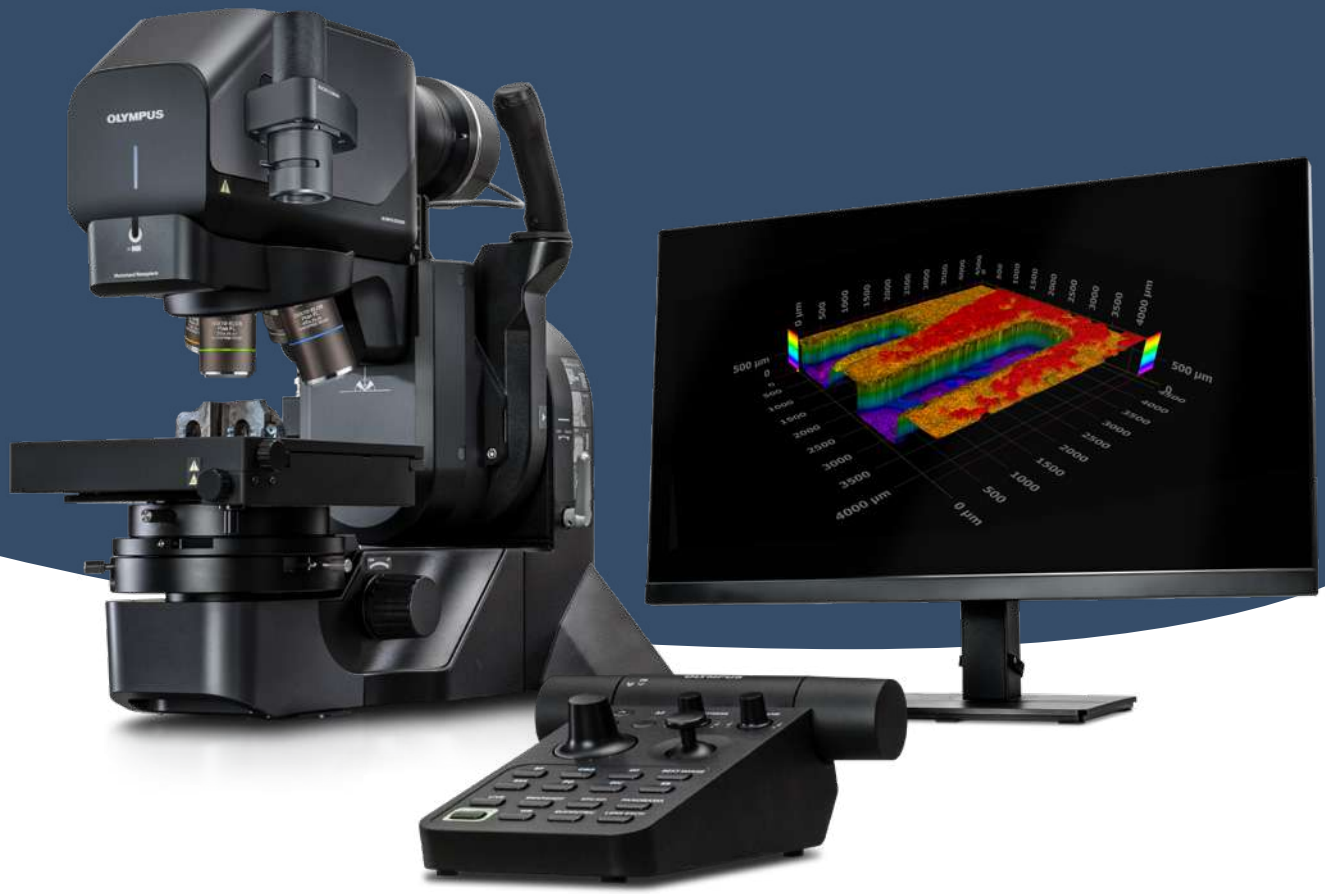
MATERIALS SCIENCE

Precision Made Simple

DSX2000 Digital Microscope



EVIDENT

Advanced Microscopy Designed for Every User

Precision Meets Simplicity

The DSX2000 digital microscope series simplifies tasks, boosts productivity, and streamlines work for researchers and QC lab professionals with smart tools, all-in-one imaging, and a customizable interface.

The DSX2000 microscope series with PRECiV™ software empowers your team to achieve fast, precise results and capture exceptional images. An intuitive, seamless experience enables users of all skill levels to operate the system with ease and confidence.

- **Simplify Operations with an All-in-One Solution**
  Get fast, reliable results with a fully integrated system for imaging, measurement, analysis, and reporting.
- **Improve Productivity with Smart Tools**
  Speed up inspections with custom workflows and AI-assisted analysis.
- **Assurance in Your Images and Measurements**
  See fine sample details in high resolution beyond 4K.

Choose Your Model

The DSX2000 digital microscope series includes motorized, universal, or standard zoom head options so you can customize the system to your exact imaging and workflow needs. Whether your team needs full automation, advanced functionality, or just the basics, the DSX2000 series has you covered.

Fully Motorized DSX2000 MZH

Full motorization simplifies tasks and boosts productivity so your team can navigate challenges with ease. The motorized zoom head with an automatic revolving nosepiece supports up to four objective lenses for effortless magnification changes and seamless macro to micro inspections. This model is ideal for high-resolution observations and inspection applications requiring efficient go/no-go decisions.

Versatile All-in-One DSX2000 UZH/SZH

Our universal and standard zoom head models enable seamless macro to micro inspections with a single system. The sliding nosepiece supports up to two objective lenses for seamless magnification changes. These models offer the flexibility to use a wide variety of objective lens types, including super long working distance options, and to image your sample from a wide range of angles.

Simplify Operations with an All-in-One Solution

See the Whole Picture

The DSX2000 microscope series offers a wide magnification range of 21X-7,300X, enabling you to complete macro and micro inspections with one system. With a lineup of 20 objective lenses, including super long working distance and high-resolution options, you can easily adapt your imaging to different samples and applications.

Fast and Flexible Macro Imaging

Quickly capture overview images of samples with the macro camera. This flexible accessory can be detached and held by hand to image large samples that cannot be placed on the stage. Switching to the macro camera view in the software is simple, making it easy to alternate between micro and macro imaging. Generate comprehensive reports faster with the required overview and magnified images.

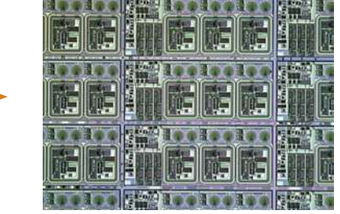
Macro image of sample

Switch Objectives Quickly and Easily

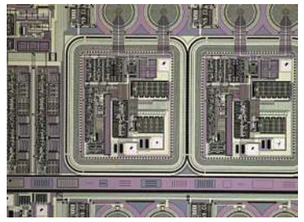
Quickly and easily change objectives on any DSX2000 model. The easy-to-replace lenses and adjustable settings in an ergonomic system let you work faster and maintain comfort.

Switch Automatically

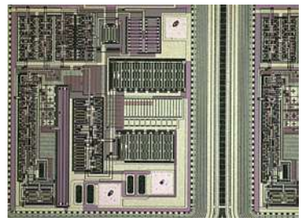
For systems with a motorized zoom head, you can control the automatic revolving nosepiece from either the console or your computer to make effortless magnification changes.



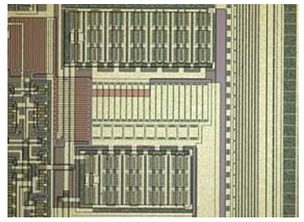
Objective lens 3X



Objective lens 10X



Objective lens 20X



Objective lens 40X

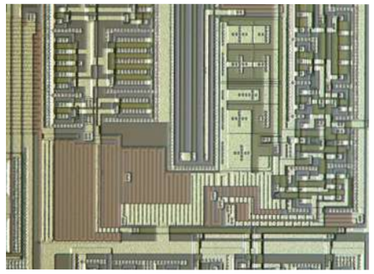
Switch with a Slider

Systems with standard or universal zoom heads also offer seamless magnification changes via the sliding nosepiece, where up to two objective lenses can be attached at the same time. Switch the magnification just by sliding the lens for fast macro to micro imaging. This system makes it easy to change lens types, providing flexibility for various inspection needs.

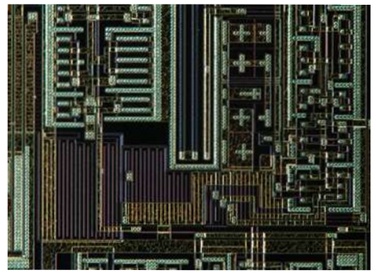
Simplify Operations with an All-in-One Solution

See What Matters with One Click

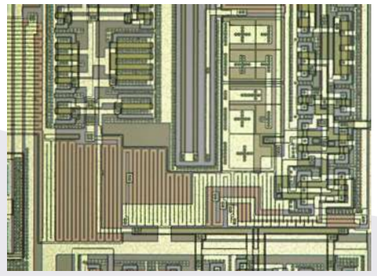
The DSX2000 microscope offers seven different observation methods at the click of a button. Find viewing conditions using brightfield (BF), oblique (OBQ), darkfield (DF), MIX (DF and BF), polarization (PO), differential interference contrast* (DIC), or our unique shaded relief (SR) method.



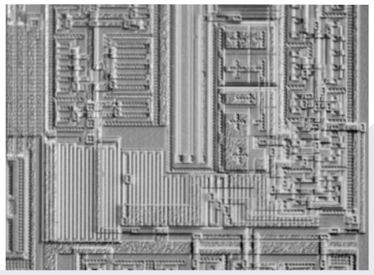
OBQ Oblique



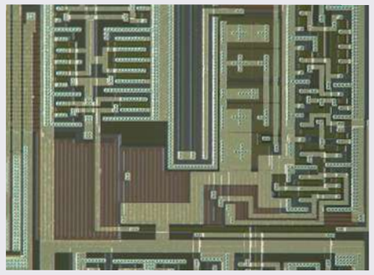
DF Darkfield



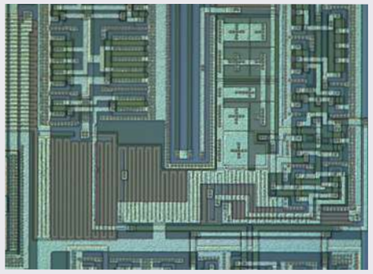
BF Brightfield



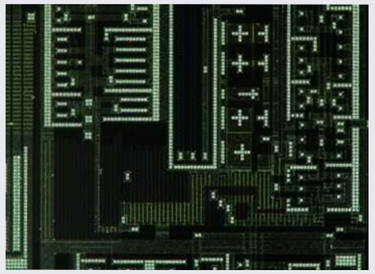
SR Shaded relief



MIX Brightfield + Darkfield

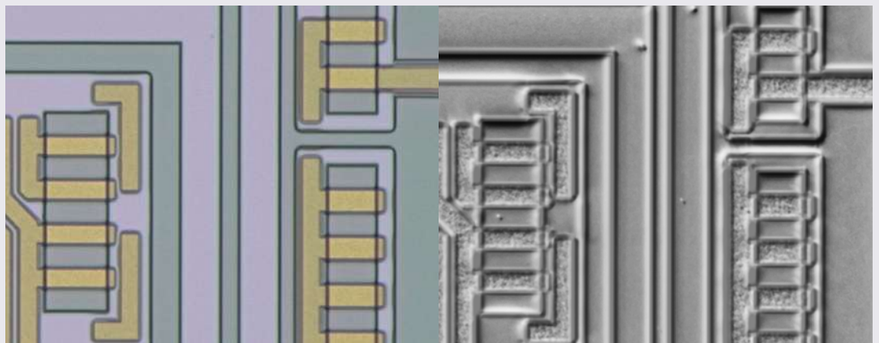


DIC Differential interference contrast



PO Polarization

BF Brightfield **SR** Shaded relief



Shaded Relief Observation Mode

Reveal ultra-fine, hard-to-see defects in real time, without post-processing delays. Move the stage and scan your sample seamlessly, viewing shaded relief images instantly for fast, thorough inspections.

* Not available on the SZH model.

Simplify Operations with an All-in-One Solution

Find the Best Image, Fast

The best image function reviews all available observation methods for your sample and identifies the best imaging mode for revealing what needs to be seen—all with a simple click.

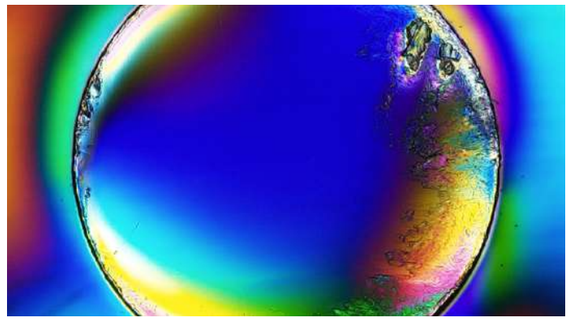
Adaptable Sample Positioning

The extended stage (up to 200 × 100 mm) accommodates multiple or large samples, while the tilting frame and rotating stage enable you to place your sample in the best observation conditions.

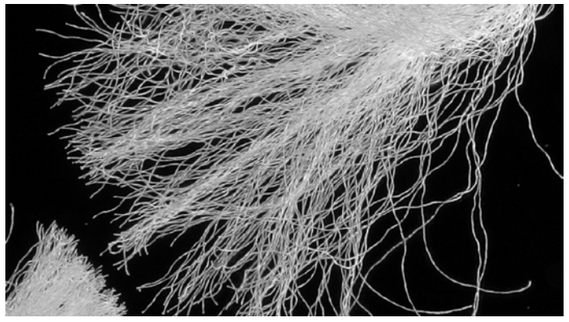
Tilting frame

Lighting Tailored to Your Sample

Observe internal details in transparent, semi-transparent, or thin samples with a variety of transmitted lighting and contrast options. Simply select cartridges according to the type and purpose of the sample.



Plastic molded product Polarization



Fibers Darkfield

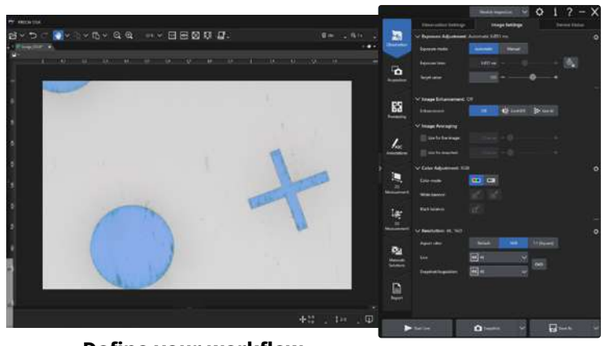
Rotational stage

Extended Stage

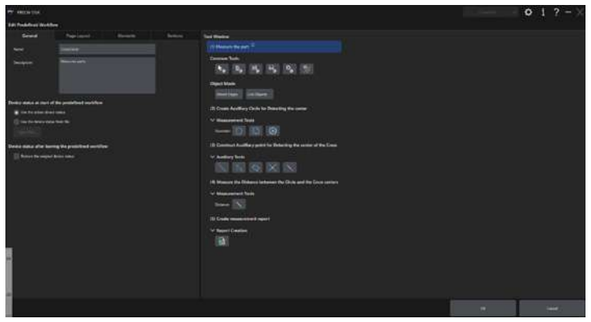
Improve Productivity with Smart Tools

Customized Workflows for Faster Operation

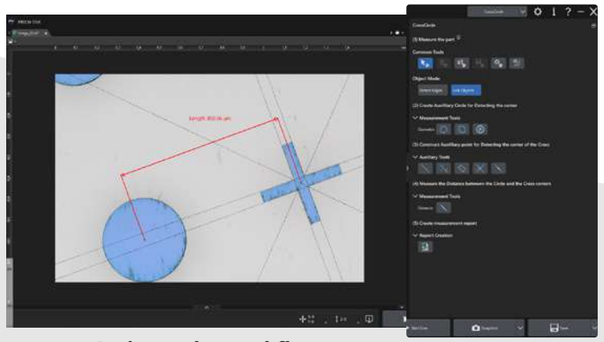
EZ



Define your workflow



Arrange the icons



Activate the workflow

The Power to Work Smarter

Customized workflows and AI capabilities on the DSX2000 digital microscope give you the power to work smarter, unlocking more efficient ways to perform routine inspections or conduct complex analyses.

Automate Repetitive Tasks

Automate live measurements, edge detection, and other repetitive processes, minimizing operator input and variability while speeding up inspections.

Collect Data Quickly

Powerful interactive measurement tools include edge-detected circles, magic wand, auxiliary lines, object linking, and more.

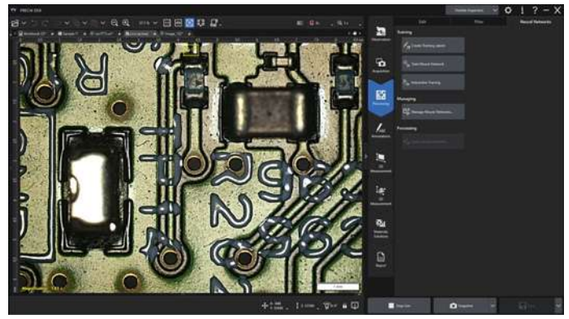
Unlock Efficiency with AI

PRECiV™ image analysis software equips all Evident industrial microscopes—including the DSX2000 system—with our unique Live AI.

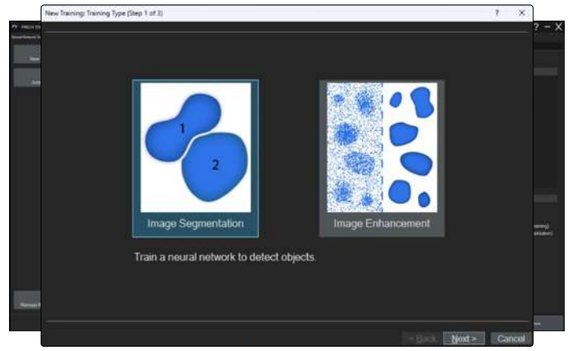
This powerful tool instantly reveals hidden details and highlights key features on live images without the need for additional processing.

AI-assisted decision-making frees your experts from the need to double-check images.

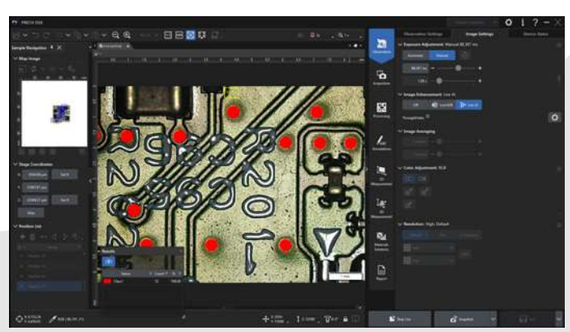
AI



Live image



Train the neural network (5 minutes)



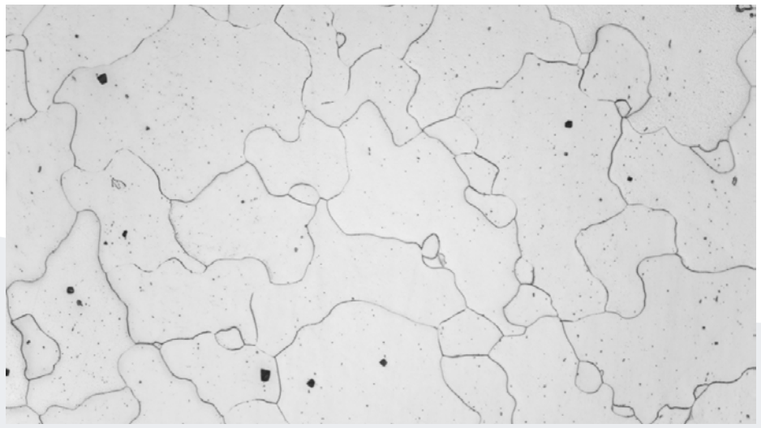
Apply the neural network to the live image

EZ mode simplifies the interface by displaying only essential functions. Supervisors can create custom workflows for operators, limiting available buttons for consistency and ease of use. Operators can get to work quickly with minimal training while reducing the potential for errors.

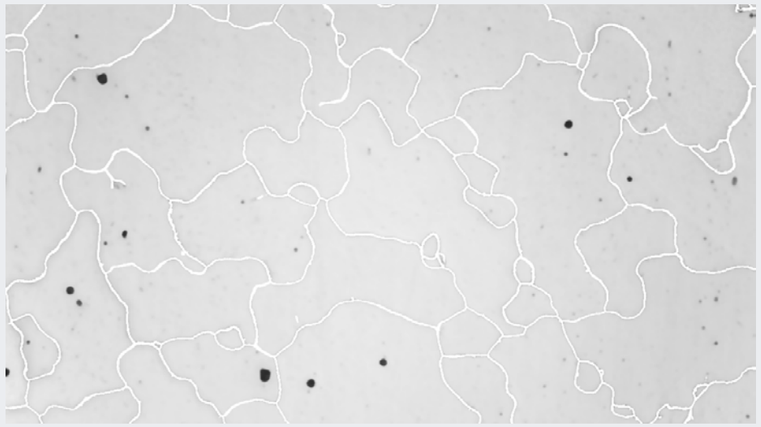
Improve Productivity with Smart Tools

Eliminates unimportant scratches or elements that could obscure critical information or be mistakenly counted by the AI.

Automatic Image Improvement



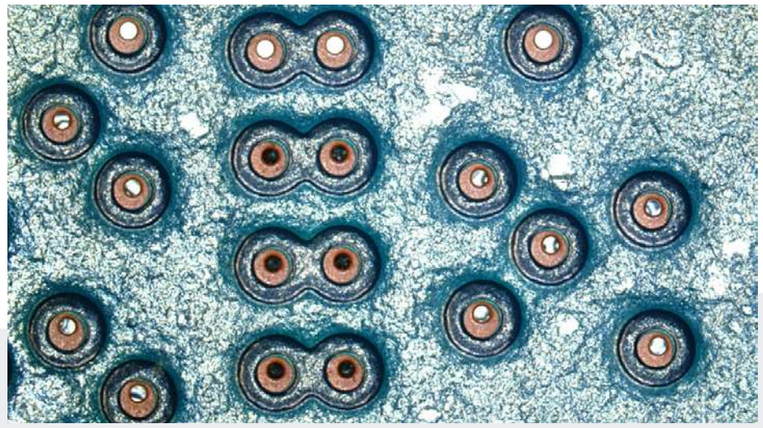
Steel microstructure



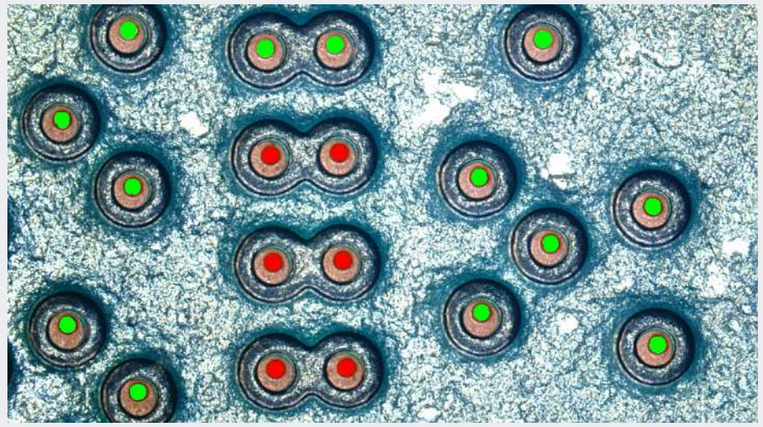
Live contrast enhancement with grain boundaries highlighted

Image segmentation enables the AI, with minimal training, to identify and count different object types in your sample.

Automatic Object Discrimination



Through holes in printed circuit board



Live detection of filled through holes and empty through holes

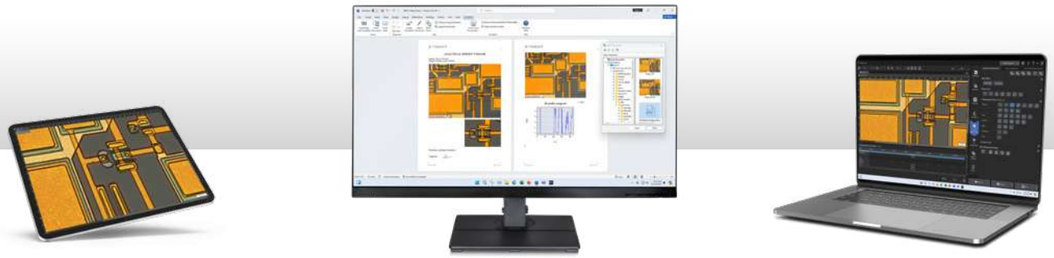
Improve Productivity with Smart Tools

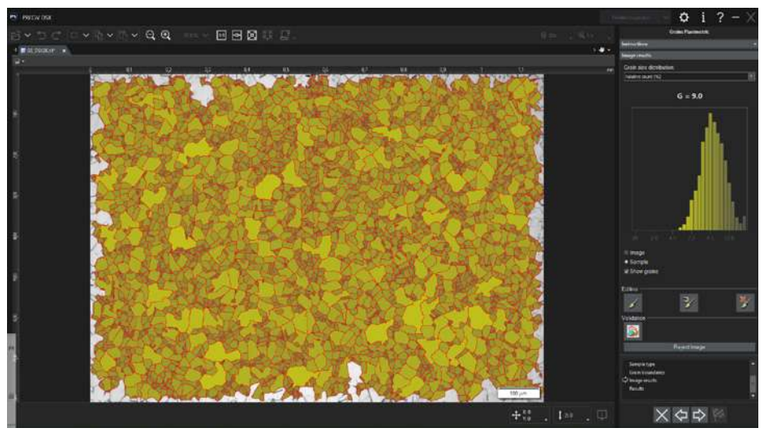
Simplify Tasks with Unified Software

PRECiV™ software operates the same way on all our industrial microscopes, creating a cohesive analysis environment. Access tools for 2D/3D measurements, image enhancement, macro recording, AI-assisted analysis, and more.

Maximize Throughput

Analyze images on any PC equipped with PRECiV software. This frees up the DSX2000 microscope for image acquisition, increasing workflow efficiency.





Compliant Measurements in a Few Clicks

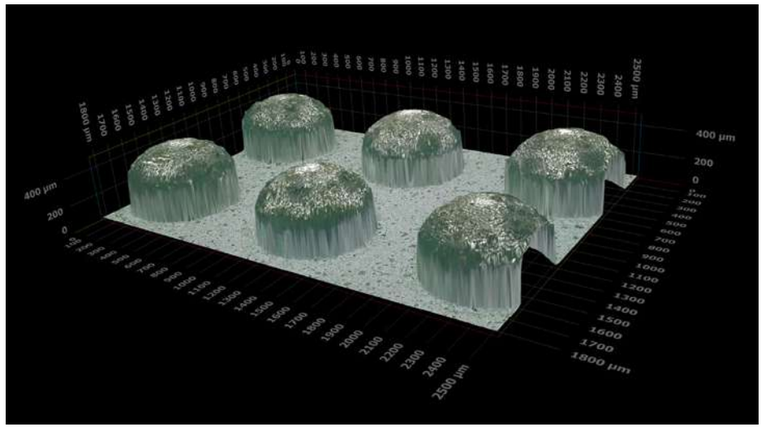
Simplify daily tasks for material analyses with standard-compliant automated workflows. Choose from options for grain sizing, cast iron analysis, phase analysis, non-metallic inclusion rating, and more.

Seamless Network Integration

Easily connect the DSX2000 microscope to your company network for IT compliance and quick image sharing.

Easier Imaging, Measurement, and Analysis

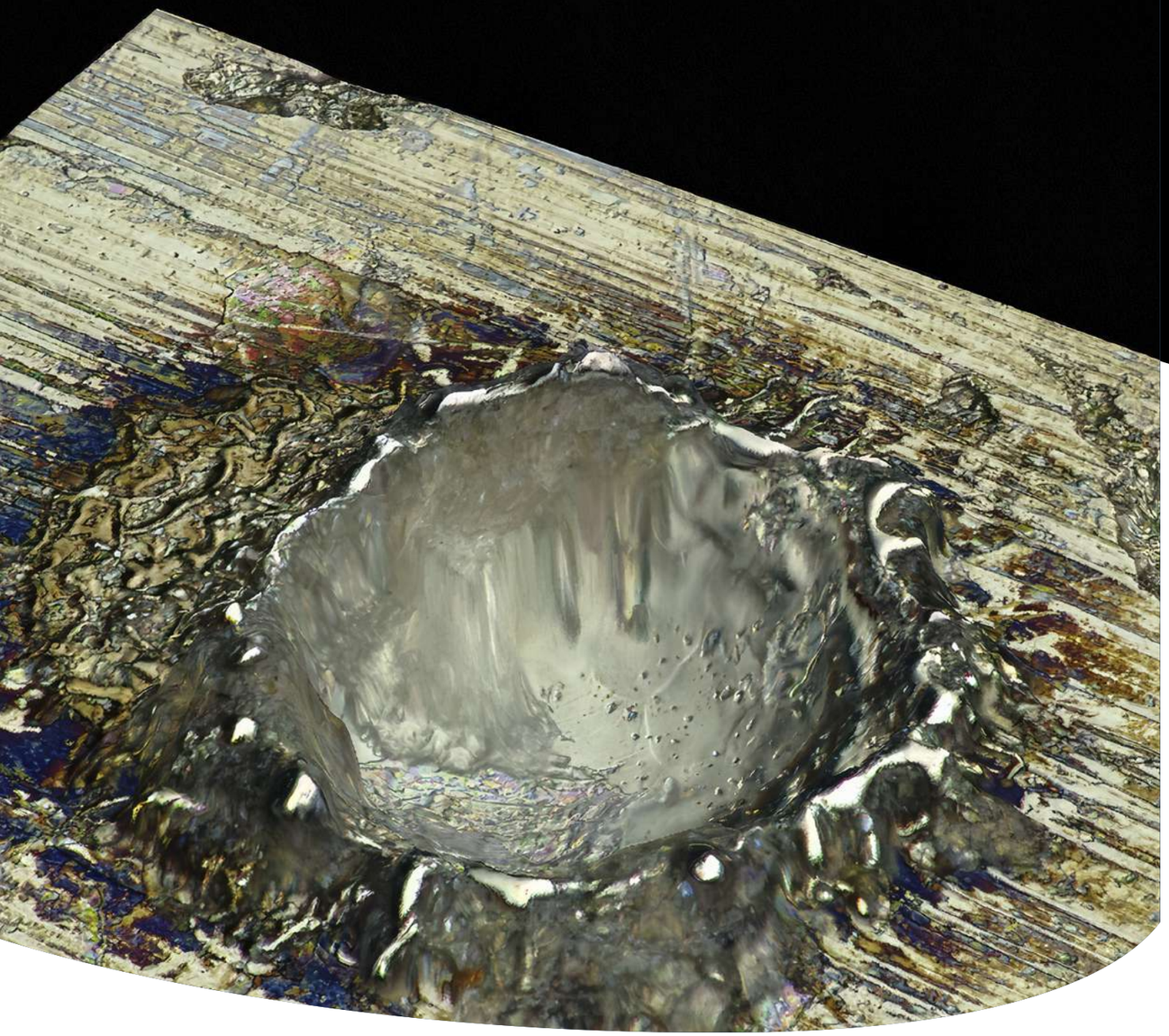
Access tools for 2D/3D measurements, image enhancement, macro recording, AI-assisted analysis, and more.



Create Compliant Reports Easily

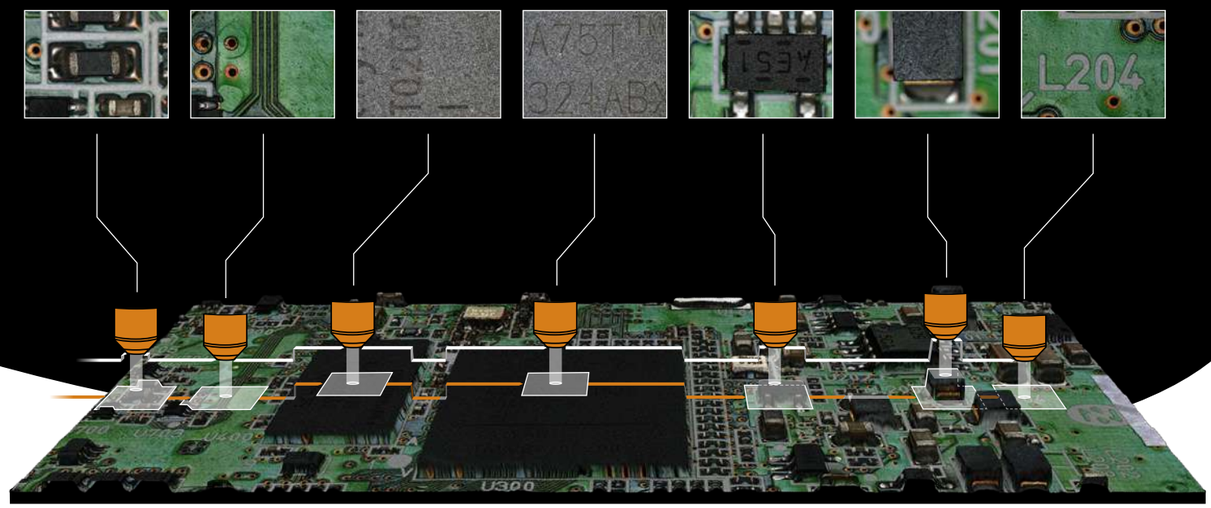
When it's time to present your results, the DSX2000 microscope makes reporting easy. Use the plug-in for Microsoft 365 to design your own reports in Microsoft Word, Excel, or PowerPoint.

Assurance in Your Images and Measurements



Confidence in Every Detail

Be confident in your results knowing that the DSX2000 digital microscope produces exceptional images and precise measurements that meet the exacting demands of quality control, failure analysis, and R&D.



Continuous Autofocus

The objective lens automatically moves up and down to match the unevenness of the object, providing a live image that is always in focus even when the observation location changes. By eliminating the need to adjust focus manually, the DSX2000 microscope helps your lab improve analysis and inspection efficiency.

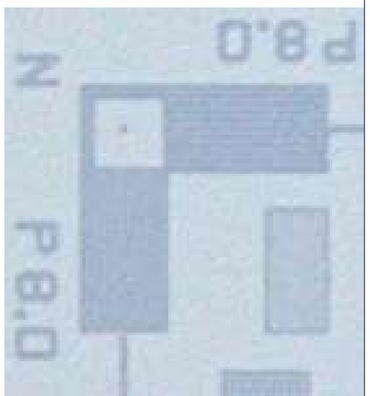
High-Resolution Imaging Beyond 4K

* Resolution beyond 4K is not available on the SZH model.

The DSX2000 microscope empowers inspections with image quality that surpasses standard 4K resolution*, delivering enhanced clarity and coverage across sample types—whether large, thin, thick, rough, reflective, or transparent. Pair the system with, for example, a 32-inch 4K monitor, to further enhance sample details for observation and analysis.

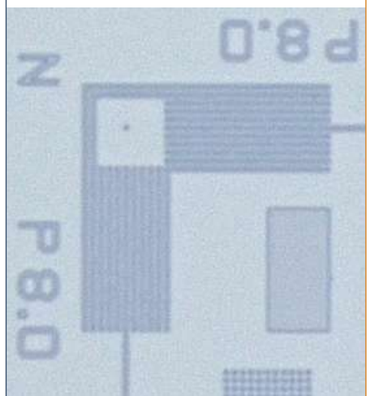
HD

Full High Definition Mode



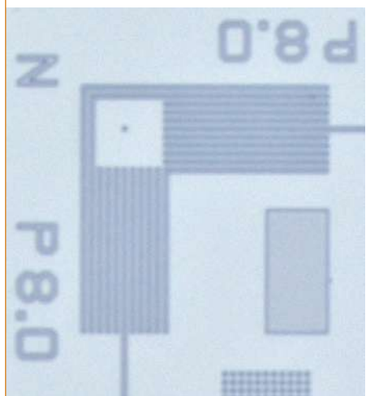
4K

4K Mode

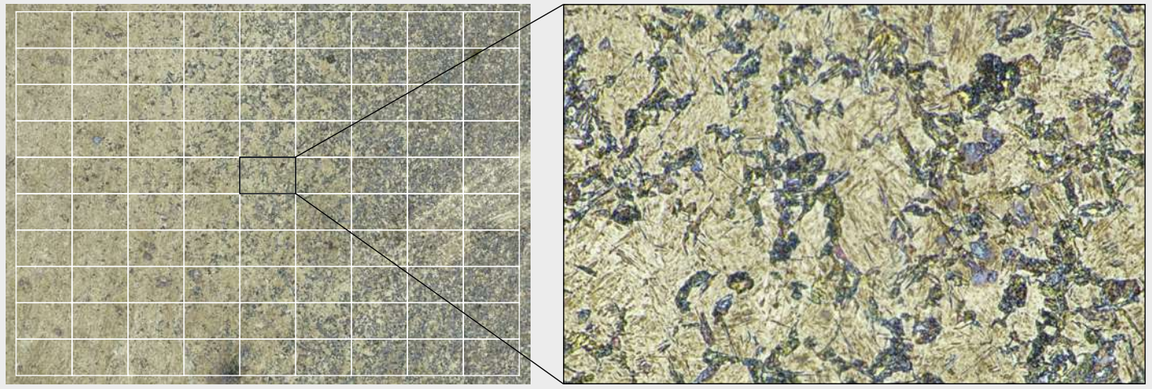


8K

Ultra Mode



Unlimited Image Size



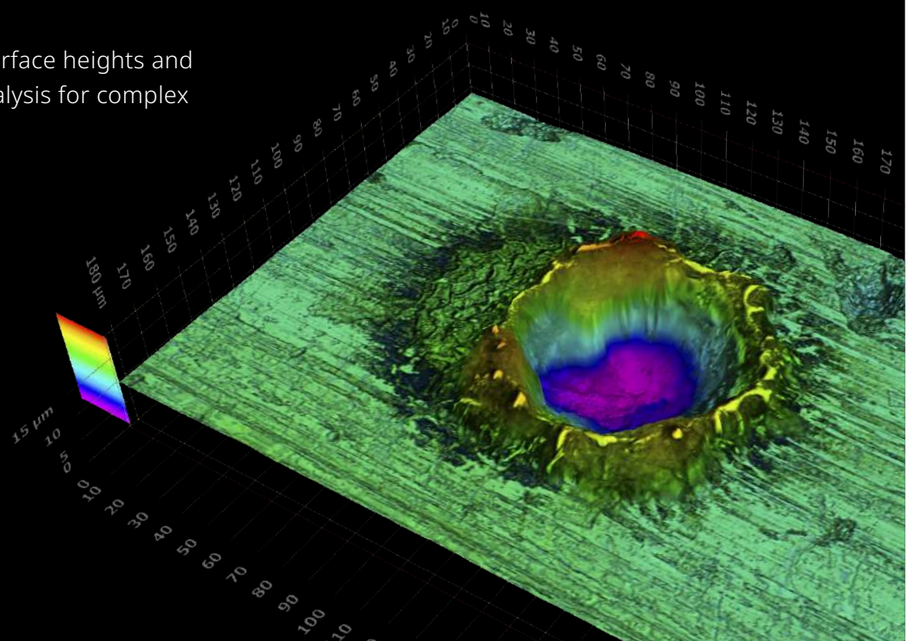
Seamless stitching quickly creates large macro images, enabling analysis of large samples in less time. Create macro images as large as you want—the only limits are your hard drive space and stage travel range.

Save and Recall Observation Conditions

Captured images automatically record their settings, so you can easily recall and reuse conditions with a single click for consistency and repeatability.

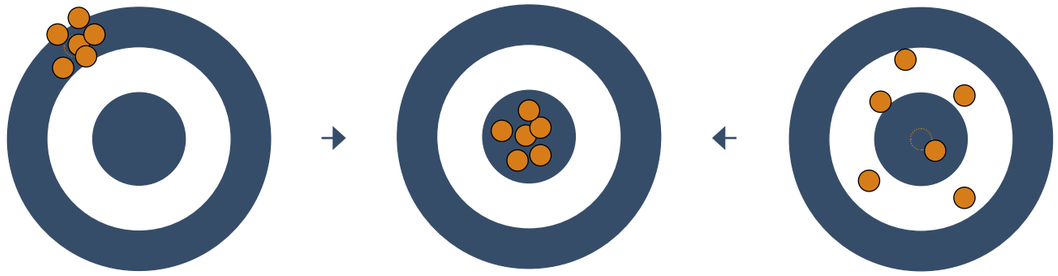
Advanced 3D Measurements

Get detailed insights into surface heights and features with precise 3D analysis for complex inspections.



Guaranteed* Accuracy and Repeatability

Telecentric optics and traceable calibration ensure precise measurements and alignment with metrology standards. On-site calibration and service plans keep your DSX2000 microscope compliant at predictable costs, mainly with bundled multi-year plans.



Repeatability **Repeatability and Accuracy** **Accuracy**

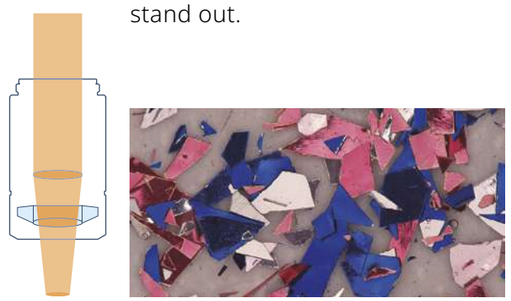
*The guaranteed accuracy and repeatability apply only if the device has been calibrated according to the manufacturer's specifications and is in defect-free condition. Calibration must be performed by an Evident technician or an Evident-authorized specialist.

Integrated Observation Methods

Easily switch between brightfield (BF), oblique (OBQ), darkfield (DF), MIX (BF and DF), simple polarization (PO), differential interference contrast (DIC), and shaded relief (SR). This flexibility enables you to handle almost any microscope inspection task.

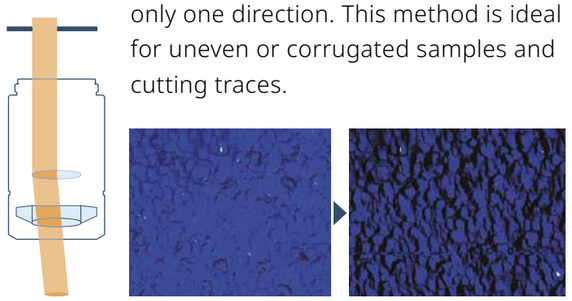
BF
Brightfield
Good for flat samples

On a mirrored surface, scratches look dark against the surface, helping them stand out.



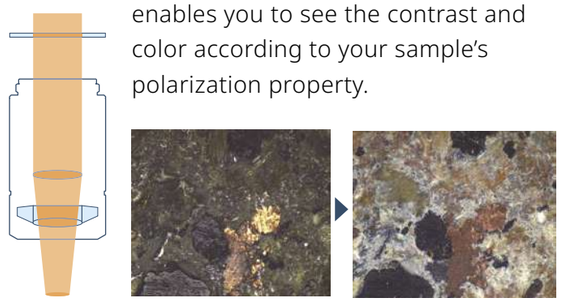
OBQ
Oblique
Enhance your surface's unevenness

Use this method to enhance a surface's unevenness by shining the light from only one direction. This method is ideal for uneven or corrugated samples and cutting traces.



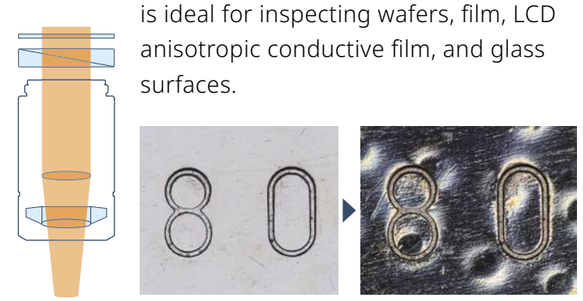
PO
Polarization
Designed for polarizing samples

By orthogonally laying out two polarization filters, this method enables you to see the contrast and color according to your sample's polarization property.



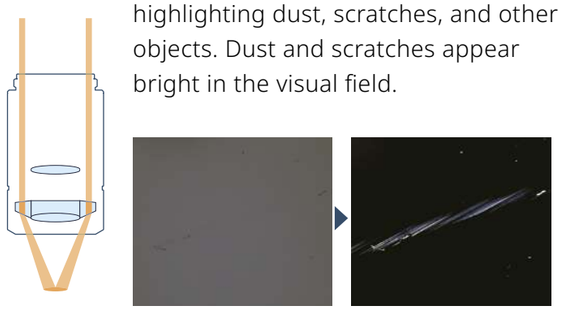
DIC
Differential Interference Contrast
Visualize defects at the nano level

This method enables you to visualize surface unevenness at the nano level. It is ideal for inspecting wafers, film, LCD anisotropic conductive film, and glass surfaces.



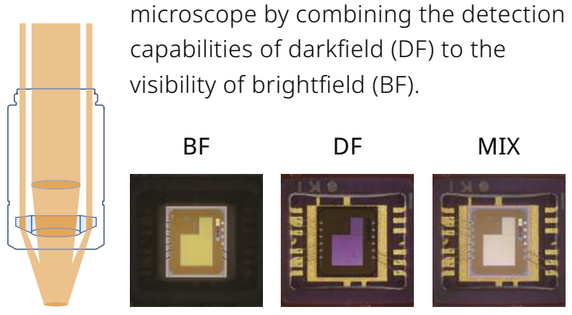
DF
Darkfield
For scratches and similar defects

Scattering or reflected light is obliquely irradiated on the sample's surface, highlighting dust, scratches, and other objects. Dust and scratches appear bright in the visual field.



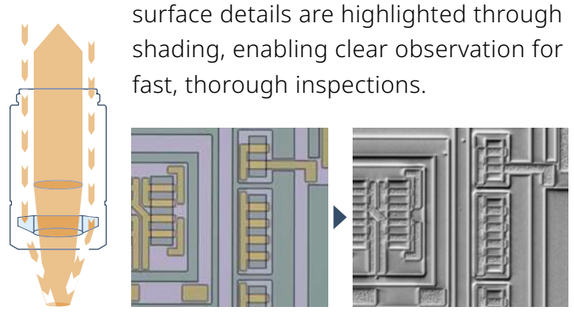
MIX
BF+DF
Light comes from around the lens

Easily detect scratches and defects that can be hard to find with a conventional microscope by combining the detection capabilities of darkfield (DF) to the visibility of brightfield (BF).



SR
Shaded Relief
Reveal defects in real time

Illuminates the sample from different directions, revealing defects as the image is created in real time. Fine surface details are highlighted through shading, enabling clear observation for fast, thorough inspections.



Objective Lenses

Super long working distance objective lenses
Provides a long working distance between the lens and sample

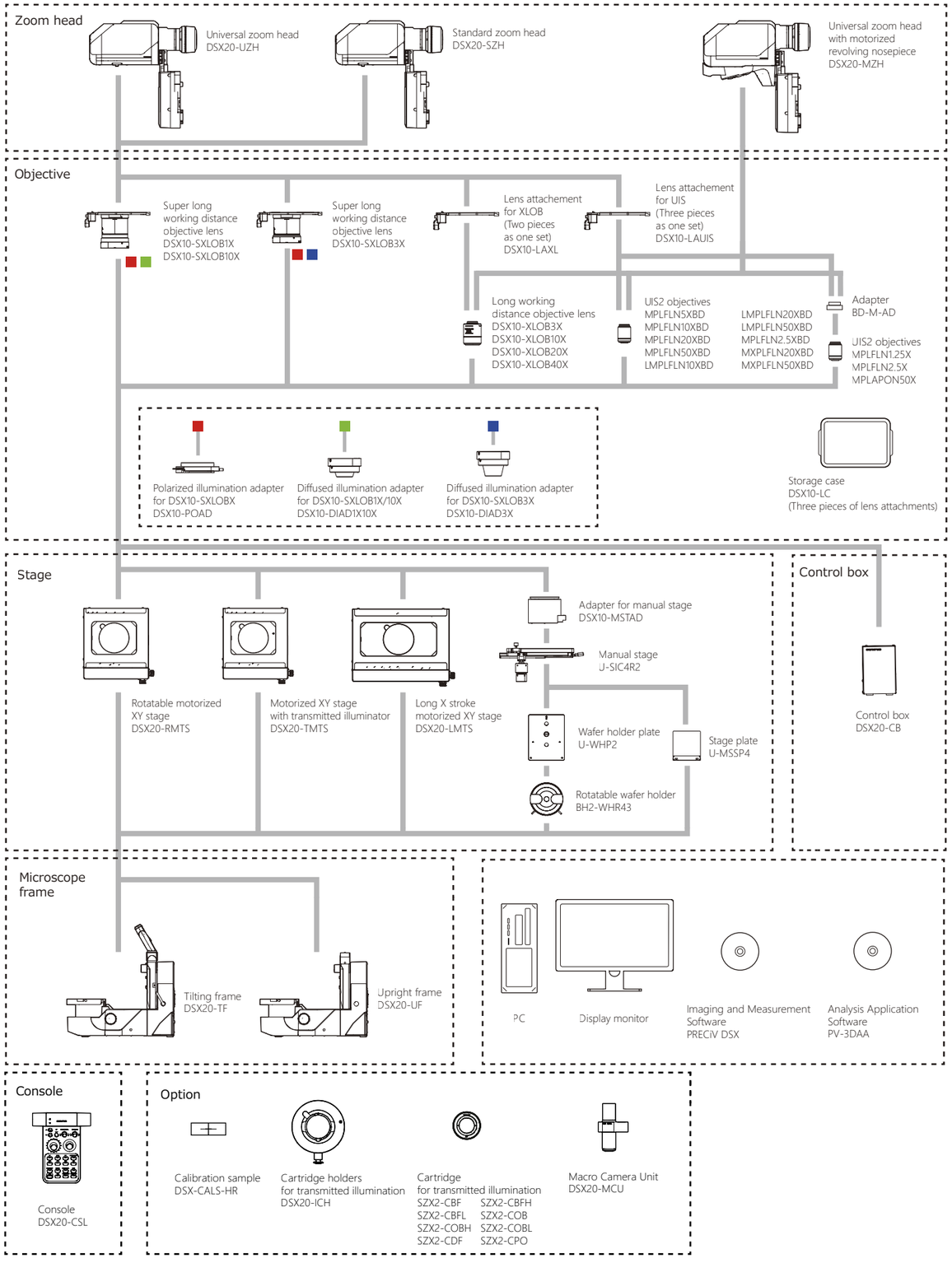
High-resolution, long working distance objective lenses
Delivers both high resolution and a long working distance

High-performance, high NA objective lenses
Delivers high performance at the nanoscale

Objective lens model	20X 40X 100X 200X 500X 1,000X 3,000X 6,000X 10,000X	Working Distance (mm)	NA	Field of View[1] (µm)
DSX10-SXLOB1X[2]	20.9–146.1X	51.7	0.03	18182 × 13317 µm 2597 × 1902 µm
DSX10-SXLOB3X[2]	43.8–438.4X	66.1	0.09	8658 × 6341 µm 866 × 634 µm
DSX10-SXLOB10X[2]	146.1–1,461X	41.1	0.20	2597 × 1902 µm 260 × 190 µm
DSX10-XLOB3X[2]	43.8–438.4X	30.0	0.09	8658 × 6341 µm 866 × 634 µm
DSX10-XLOB10X	146.1–1,461X	30.0	0.30	2597 × 1902 µm 260 × 190 µm
DSX10-XLOB20X	292.3–2,923X	20.0	0.40	1299 × 951 µm 130 × 95 µm
DSX10-XLOB40X	584.5–5,845X	4.5	0.80	649 × 476 µm 65 × 48 µm
MPLFLN1.25X[4]	26.1–182.7X	3.5	0.04	14546 × 10654 µm 2078 × 1522 µm
MPLFLN2.5X[4]	39.1–365.3X	10.7	0.08	9697 × 7102 µm 1039 × 761 µm
MPLFLN2.5XBD[5]	39.1–365.3X	8.7	0.08	9697 × 7102 µm 1039 × 761 µm
MPLFLN5XBD	73.1–730.7X	12.0	0.15	5195 × 3805 µm 519 × 380 µm
MPLFLN10XBD	146.1–1,461X	6.5	0.30	2597 × 1902 µm 260 × 190 µm
MPLFLN20XBD	292.3–2,923X	3.0	0.45	1299 × 951 µm 130 × 95 µm
MPLFLN50XBD	730.7–7,307X	1.0	0.80	519 × 380 µm 52 × 38 µm
MPLAPON50X[3]	730.7–7,307X	0.35	0.95	519 × 380 µm 52 × 38 µm
LMPLFLN10XBD	146.1–1,461X	10.0	0.25	2597 × 1902 µm 260 × 190 µm
LMPLFLN20XBD	292.3–2,923X	12.0	0.40	1299 × 951 µm 130 × 95 µm
LMPLFLN50XBD	730.7–7,307X	10.6	0.50	519 × 380 µm 52 × 38 µm
MXPLFLN20XBD	292.3–2,923X	3.0	0.55	1299 × 951 µm 130 × 95 µm
MXPLFLN50XBD	730.7–7,307X	3.0	0.80	519 × 380 µm 52 × 38 µm

[1] Magnification and field of view are based on a 27-inch 4K monitor, scale setting: 175%, anti-vibration mode: off, fit to window mode, image aspect ratio: 4:3.
[2] The DSX10-SXLOB1X, 3X, 10X, and DSX10-XLOB3X do not support PO observation.
[3] The MPLAPON50X does not support DF, MIX, or SR observations.
[4] The MPLFLN1.25X and 2.5X do not support DF, MIX, PO, DIC, or SR.
[5] The MPLFLN2.5XBD does not support PO or DIC observations.

DSX2000 System Chart



DSX2000 Specifications

			Standard (DSX20-SZH)	Universal (DSX20-UZH)	Motorized (DSX20-MZH)
Zoom Head	Optical system		Telecentric optical system	Telecentric optical system	Telecentric optical system
	Optical zoom ratio		From 1X to 10X	From 1X to 10X	From 1X to 10X
	Optical zoom magnification method		Motorized	Motorized	Motorized
	Calibration		Automatic	Automatic	Automatic
	Nosepiece		Manual sliding nosepiece	Manual sliding nosepiece	Motorized revolving nosepiece
	Number of objectives that can be attached		Up to 2 objectives	Up to 2 objectives	Up to 4 objectives
	Accuracy and repeatability (X-Y plane)	Accuracy*	±3%	±3%	±3%
		Repeatability 3 σn-1	2%	2%	2%
	Repeatability (Z axis)**	Repeatability σn-1	1 µm	1 µm	1 µm
Camera	Image sensor		1.1-inch 12.37-megapixel color CMOS image sensor, global shutter	1.1-inch 12.37-megapixel color CMOS image sensor, global shutter	1.1-inch 12.37-megapixel color CMOS image sensor, global shutter
	Cooling		Peltier cooling	Peltier cooling	Peltier cooling
	Frame rate		60 fps (maximum)	60 fps (maximum)	60 fps (maximum)
	Ultra (pixel shift mode)		Not available	6000 × 6000 (1:1), 8192 × 6000 (4:3)	6000 × 6000 (1:1), 8192 × 6000 (4:3)
	Super high (3CMOS mode)		Not available	3000 × 3000 (1:1), 4096 × 3000 (4:3)	3000 × 3000 (1:1), 4096 × 3000 (4:3)
	Super high		3000 × 3000 (1:1), 4096 × 3000 (4:3)	3000 × 3000 (1:1), 4096 × 3000 (4:3)	3000 × 3000 (1:1), 4096 × 3000 (4:3)
	4K mode		3840 × 2160 (16:9)	3840 × 2160 (16:9)	3840 × 2160 (16:9)
	High		1500 × 1500 (1:1), 2048 × 1500 (4:3)	1500 × 1500 (1:1), 2048 × 1500 (4:3)	1500 × 1500 (1:1), 2048 × 1500 (4:3)
	High (binning 2 × 2)		1500 × 1500 (1:1), 2048 × 1500 (4:3)	1500 × 1500 (1:1), 2048 × 1500 (4:3)	1500 × 1500 (1:1), 2048 × 1500 (4:3)
	Full HD mode		1920 × 1080 (16:9)	1920 × 1080 (16:9)	1920 × 1080 (16:9)
Illumination	Color light source		LED	LED	LED
	Lifetime		60,000 h (design value)	60,000 h (design value)	60,000 h (design value)
Observation	BF (brightfield)		Available	Available	Available
	OBQ (oblique)		Available	Available	Available
	DF (darkfield)		Available LED ring divided into four divisions	Available LED ring divided into four divisions	Available LED ring divided into four divisions
	MIX (brightfield + darkfield)		Available Simultaneous observation of BF + DF	Available Simultaneous observation of BF + DF	Available Simultaneous observation of BF + DF
	PO (polarization)		Available	Available	Available
	DIC (differential interference contrast)		Not available	Available	Available
	SR (shaded relief)		Available	Available	Available
	Mechanical aperture for contrast settings		Available	Available	Available
	Mechanical aperture for depth of focus		Not available	Available	Available
Focus	Focusing		Motorized	Motorized	Motorized
	Stroke		101 mm (motorized)	101 mm (motorized)	75 mm (motorized)

* Calibration by an Evident or a dealer service technician is necessary. To guarantee the accuracy of XY, calibration with a DSX-CALS-HR (calibration sample) is required.
** When used with a 20X or higher objective.

			DSX10-SXLOB	DSX10-XLOB	UIS2
Objective lens	Maximum sample height	DSX20-UZH, DSX20-SZH	50 mm	115 mm	145 mm
		DSX20-MZH		71 mm	101 mm
	Maximum sample height (free-angle observation)		50 mm	50 mm	50 mm
	Parfocal distance		140 mm	75 mm	45 mm
	Total magnification***		20.9X–1461X	43.8X–5845X	26.1X–7307X
	Actual FOV		18182 × 13317 µm 260 × 190 µm	8658 × 6341 µm 65 × 48 µm	14546 × 10654 µm 52 × 38 µm

*** On a 27-inch 4K monitor, scale setting: 175%, anti-vibration mode: off, fit to window mode.

		DSX20-TMTS	DSX20-RMTS	DSX20-LMTS	U-SIC4R
Stage	XY stage: motorized/manual	Motorized	Motorized	Motorized	Manual
	XY stroke	100 × 100 mm	Stroke priority mode: 100 mm × 100 mm Rotation priority mode: 50 mm × 50 mm	200 × 100 mm	100 × 105 mm
	Transmitted lighting	Integrated (PO, DF, BF, OBQ modes optional)	Not available	Not available	Not available
	Rotation angle	Not available	Available Stroke priority mode: ±20° Rotation priority mode: ±90°	Not available	Not available
	Display rotation angle	Not available	GUI	Not available	Not available
	Maximum load capacity	5 kg (11 lb)	5 kg (11 lb)	5 kg (11 lb)	1 kg (2.2 lb)

		DSX20-UF	DSX20-TF
Frame	Z-axis stroke	50 mm (manual)	50 mm (manual)
	Tilt observation	Not available	Available: ±90°
	Tilt angle display	Not available	GUI
	Tilt angle method	Not available	Manual, fix/release handle

Macro camera	Image sensor	1/2.5-inch color CMOS image sensor, rolling shutter
	Image size	1:1 display, 1944 × 1944 4:3 display, 1944 × 1458 Full HD display, 1920 × 1458
	Size of the field of view (horizontal)	81 mm to ∞

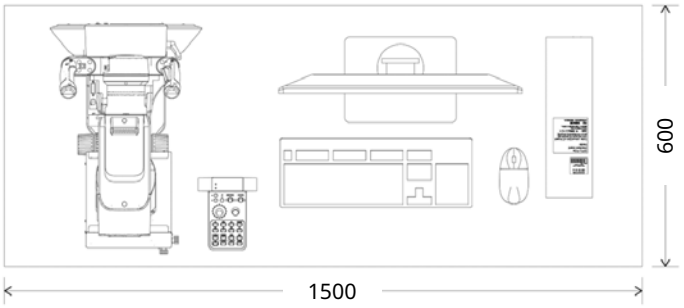
DSX2000 Specifications and Dimensions

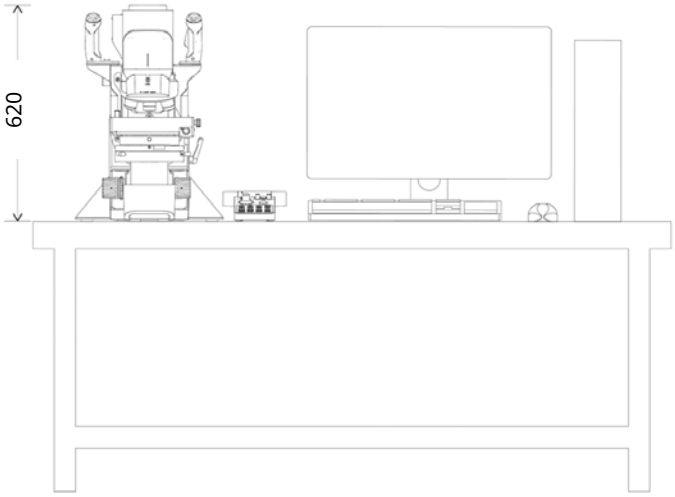
		DSX20-UF	DSX20-TF
Display	Screen size	27 inch / 32 inch	
	Resolution	Full HD: 1920 × 1080; 4K: 3840 × 2160	

		Upright frame system	Tilt frame system
System total	Weight (frame, head, motorized stage, display, and console)	54.7 kg (120 lb)	51.7 kg (113 lb)
	Power consumption	100–120V / 220–240 V, 1.1/0 .54A, 50 Hz/60 Hz	100–120V / 220–240 V, 1.1/0 .54A, 50 Hz/60 Hz

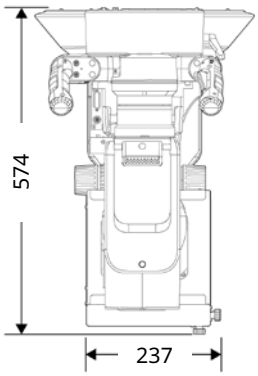
Software	
PRECiV DSX	Included: device control, video recording, time-lapse imaging, large panorama acquisition, extended focus imaging, 3D image acquisition, Z-stack acquisition, position list navigation, best image function, extended 2D measurements, 3D measurements, reporting tools, neural network processing, macro recorder
Operating system	Windows 11-64 bit
Network connectivity	Compatible with most popular antiviruses, Windows security updates allowed, images can be saved directly to OneDrive.
Reporting application	Microsoft 365, Office 2021
Optional software	Count and Measure, Neural Network Training, Materials Solutions (Grain Size, Cast Iron, Phase Analysis, Porosity, Particle Size Distribution, Non-Metallic Inclusions, Layer Thickness, Coating Thickness).
Customization	Included: customizable user interface for predefined workflow creation Optional: wafer navigation, automated analysis on specific samples

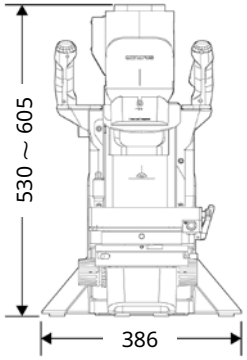
Dimensions

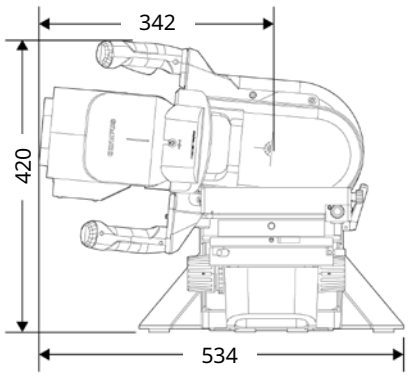




DSX20-MZH / DSX20-RMTS / DSX20-TF







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