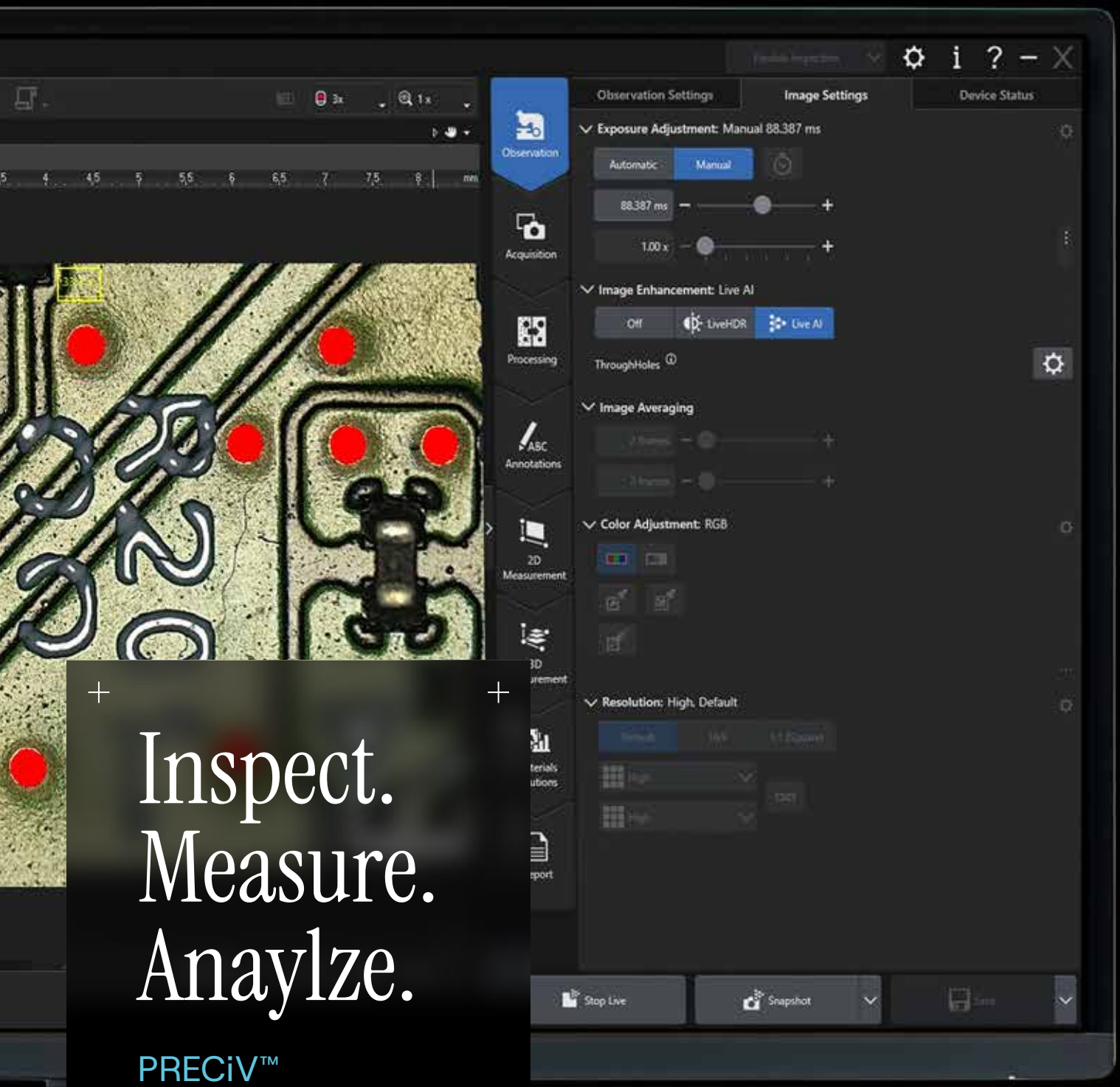
EVIDENT



Inspect. Measure. Anaylze.

PRECiV™

Imaging Microscopy Platform

Improve Efficiency Without Compromises

PRECiV™ software enables you to efficiently perform precise, repetitive measurements or conduct reproducible complex image analysis during your manufacturing process from R&D to final inspection.

Obtain results that comply with the latest industrial standards and create professional reports that can easily be exported to your company's network.

Take advantage of the software's powerful capabilities for automated optical inspection and advanced 3D measurement. Custom solutions are also available to expand PRECiV software's functionality to meet your unique needs.





Capture Images ▶



Measure and Analyze ▶



Share Results

Scalable Solutions for Evolving Needs

PRECiV™ software is a comprehensive platform dedicated to materials science and industrial microscopy. Perform imaging, measurement, and analysis for demanding industries in one easy-to-use interface. With AI-assisted measurements, EZ mode, and metallography dedicated workflows, PRECiV software improves efficiency without compromises.



4 – 7 ▶

Control Conventional Microscopes

Our conventional microscopes are highly modular to suit a wide variety of optical inspection tasks. PRECiV software supports all our conventional industrial microscope frames, cameras, and a broad range of third-party accessories for seamless integration and optimal results.



8 – 11 ▶

Digital Microscope Control

Our DSX series digital microscopes gain additional efficiency with PRECiV software's 2D/3D measurements, large image acquisition, AI technology, and standard-compliant automated workflows.



12 – 13 ▶

Flexible Automation

PRECiV software offers an automated panorama function, so you can easily acquire seamlessly stitched images of large samples with motorization. Choose from a wide selection of third-party motorized focus drives and stages with a scanning range from 50 mm to 300 mm.



14 – 15 ▶

Make 2D or 3D Measurements

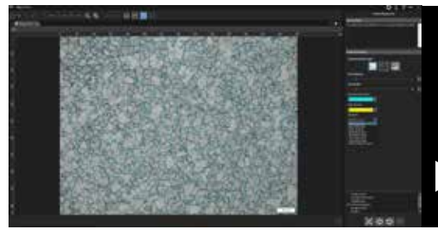
PRECiV measurements are powerful and precise. Assisted by edge detection and the high image resolution of our latest cameras, manual measurements have never been so simple.



16 – 19 ▶

Ready for Production, R&D, or Quality Control

PRECiV software adapts to your needs thanks to its flexible interface common to all our industrial microscopes. On the interface, choose between the predefined inspection in EZ mode for users of all skill levels and the flexible inspection mode for expert users.



20 – 23 ▶

Scalable Solutions for Evolving Needs

PRECiV™ software is a unified, intelligent platform for controlling Evident's full range of digital and conventional microscopes. Its modular design supports both system types and enables each department to choose the right software level, optimizing performance, efficiency, and investment.

For Conventional Microscopes

PRECiV Capture
PRECiV Capture is our entry-level solution for digital image acquisition and basic 2D measurements, transforming existing microscopes into digital workstations.

PRECiV Core
PRECiV Core is a cost-effective mid-level package for QA labs and inspection rooms, adding extended focus imaging and easy measurement export.

PRECiV Pro
PRECiV Pro is our most powerful microscopy software, built for QA/QC and failure analysis teams needing advanced reporting and validated measurements.



For Digital Microscopes

PRECiV DSX
PRECiV DSX provides full control of DSX digital microscopes, enabling advanced features like best image selection, shaded relief, and Live HDR.

PRECiV ADM
PRECiV ADM streamlines technical cleanliness analysis with guided workflows, automated particle detection, and clear reporting for accurate, repeatable results.



For Conventional and Digital Microscopes

PRECiV Solutions
PRECiV Solutions provide specialized analysis tools and support for national and international standards, offered as add-ons within the familiar PRECiV interface.

PRECiV Desktop
PRECiV Desktop enables users to process data and create reports on any network-connected PC, freeing the acquisition workstation for continuous imaging.

PRECiV Lite
PRECiV Lite is a free package that lets any PC user open, measure, annotate, and export PRECiV images. It runs on any PC without connected hardware.



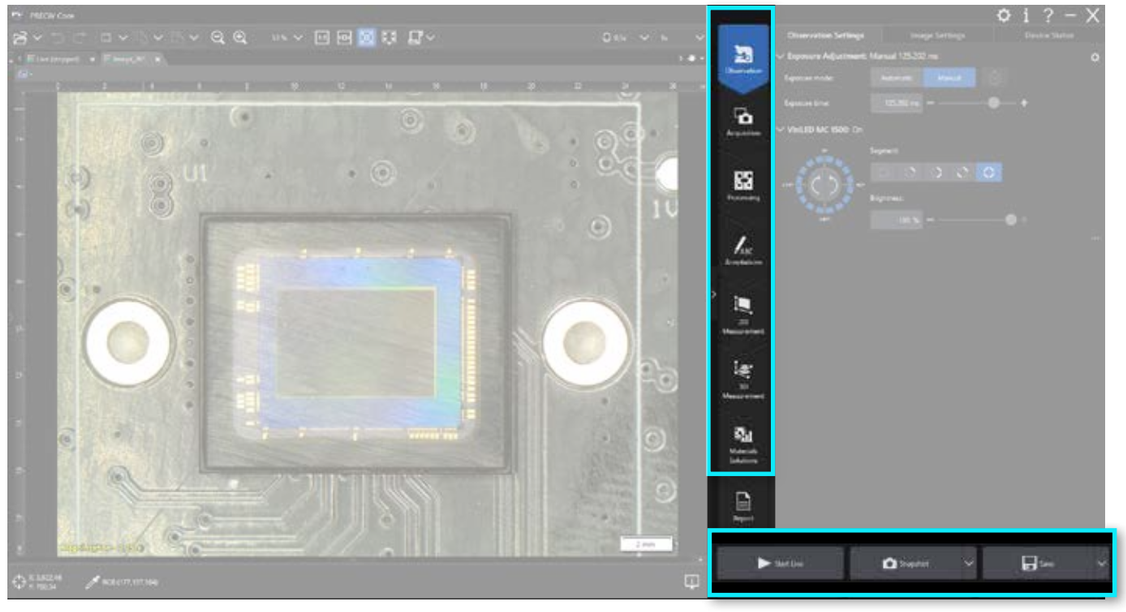
For System Solutions

PRECiV CIX
PRECiV CIX delivers reliable technical cleanliness analysis at industry-leading speed, making it ideal for high-throughput labs. It can be expanded with material analysis tools to further accelerate particle detection, classification, and reporting.



Intuitive and Collaborative

The PRECiV™ interface provides simple workflows while keeping the option for full functionality. Easily select between the predefined inspection in EZ mode for less experienced users and the flexible inspection mode for expert users. View the interface on an ultra-high-definition (UHD) monitor for an even deeper immersion into the microscope world. The software connection to your network lets the team immediately exchange data and information.



The user interface groups functions according to their purpose.

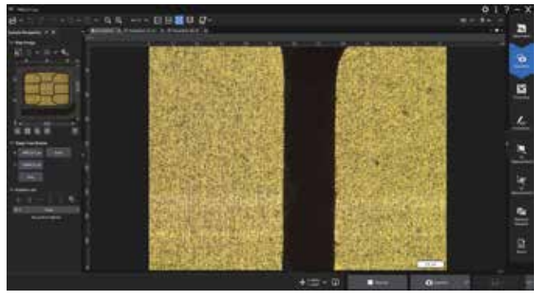


Image acquisition layout—sample navigation.

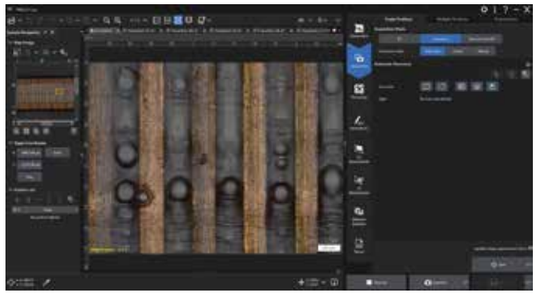
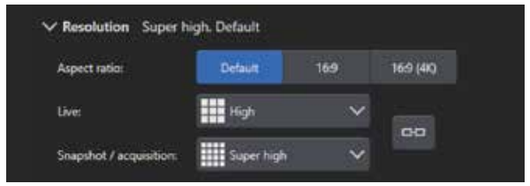


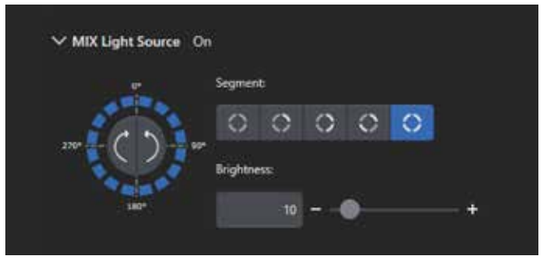
Image acquisition layout—automatically acquire panorama images.

Requires Minimal Training

By following a predefined inspection in EZ mode, everyone on the team can perform an efficient microscopy analysis with minimal training. The interface also offers full control to expert users in the flexible inspection mode for more advanced analyses.

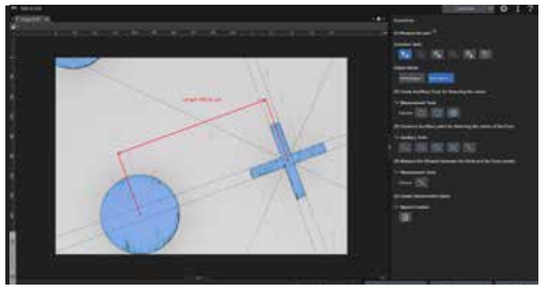


Easy-to-use functions make controlling the live image conditions simple and efficient.



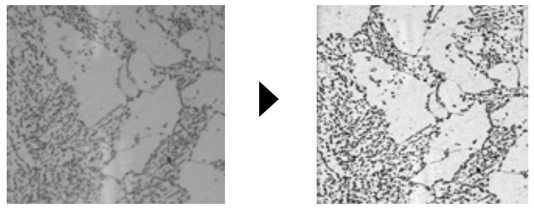
EZ Mode: Customized Workflows for Faster Operation

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.



Powerful Imaging Filters

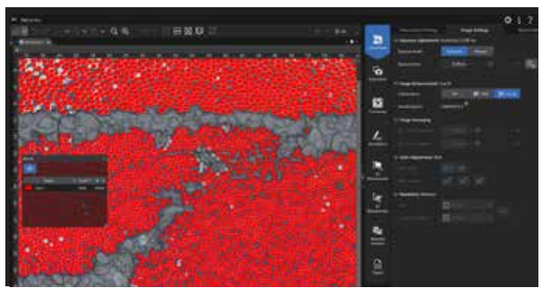
Perform image enhancement on live and recorded images using most common imaging filters and dedicated PRECiV™ filters, such as differential contrast enhancement. All imaging filters can be applied on 4K and larger images.



Enhanced contrast using the differential contrast enhancement filter. Sample: steel with intragranular corrosion.

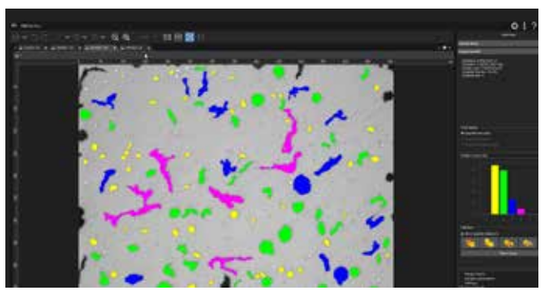
AI-Assisted Image Analysis

Integration of our TruAI deep learning technology brings new capabilities to image analysis for phase and porosity measurements. After a short and simple training, neural networks can be directly applied to new images to streamline complex analyses.



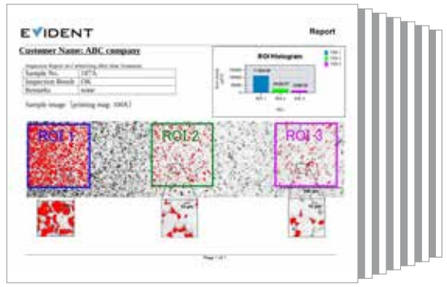
Simple-to-Use Advanced Measurement and Analysis Tools

PRECiV software facilitates inspection, measurement, and analysis with a simple and reliable workflow. The software's dedicated 2D/3D measurement and analysis functions give you the tools to meet your production and inspection challenges.



Efficient Report Creation

With the integration of Microsoft 365 and OneDrive, report creation using standards tools is simple—no need for additional training.



Professional report that summarizes particle count data, including image details using digital zooming.

Guided Workflows for Compliant Measurements

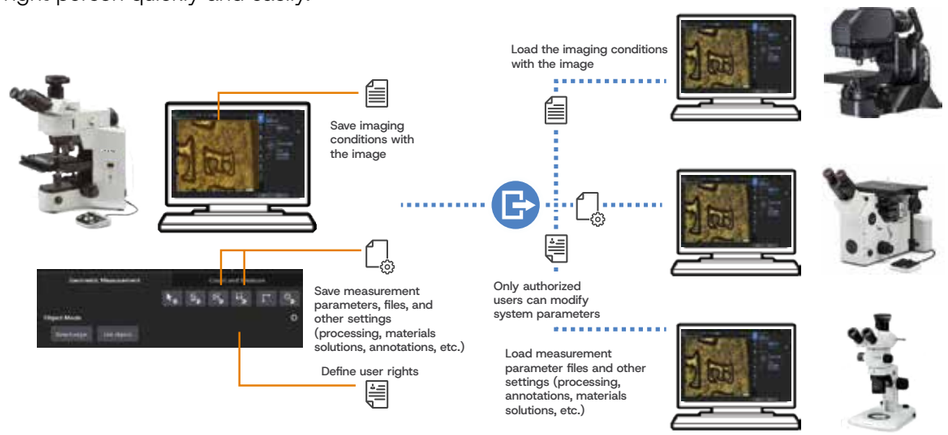
For metallographers and materials scientists, PRECiV™ software offers optional Materials Solutions. These guided workflows simplify daily tasks that require reports according to most international standards, including ISO, ASTM, and JIS. Choose from workflows such as Grain Size, Cast Iron, Non-Metallic Inclusions, and Dendrite Arm Spacing.



Materials Solutions guide users through each step, from image acquisition to creating reports that comply with international standards.

Connectivity That Enables Efficiency

With a connected workstation, you can easily save images and configuration files to the cloud or a network drive, receive automatic software updates and security patches, use a floating license, and upgrade to new versions. You can save and load images in multiple formats or save JPEG images with the calibration information for traceability. Sharing methods and configuration files—such as measurements, image processing settings, and Materials Solution settings—between connected workstations makes it possible to get the right information in front of the right person quickly and easily.



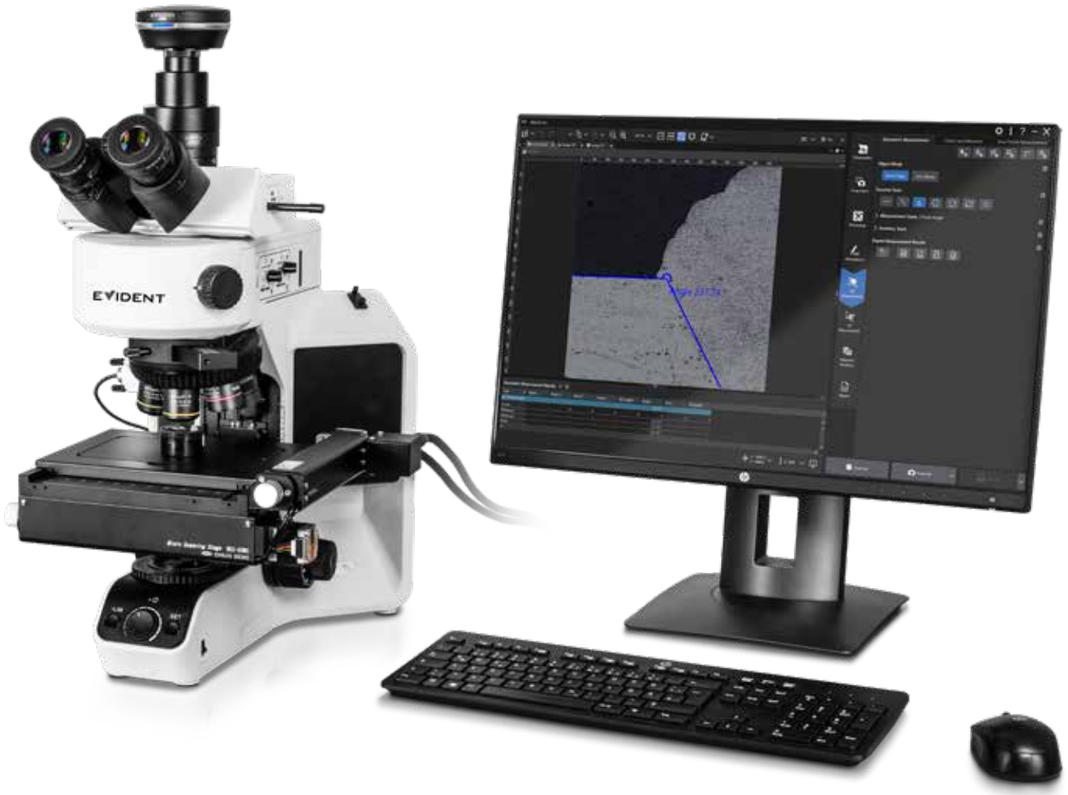
Sharing results and methods over your network improves results and reproducibility.

Control Conventional Microscopy

PRECiV™ Capture, Core, and Pro packages work seamlessly with our conventional industrial microscopes (manual and automated), as well as our cameras and accessories. Use this integrated technology to visualize samples under a wide range of imaging conditions, including brightfield, darkfield, polarization, MIX illumination, and differential interference contrast (DIC).

Easy Setup

PRECiV Capture, Core, and Pro integrate your microscope, Evident camera, stages, controllers, focus drives, and accessories. All the necessary drivers are included when you install your PRECiV package, making it easy to change which products you're using.



Supported Microscope Frames

PRECiV Capture, Core, and Pro support most of our conventional microscope frames.



Conventional

- BX41M-LED
- BXFM
- BX51
- BX51M
- BX53M
- BX3M-CB
- BX3M-CBFM
- GX41
- GX51
- GX53
- GX71
- MX63/
- MX63L
- MX51



Stereo

- SZ61
- SZX7
- SZX9
- SZX10
- SZX12
- SZX16

Supported Cameras

PRECiV™ Capture, Core, and Pro support our most popular digital microscope cameras



		Outstanding Performance	Best Lateral Resolution	High-Quality Inspections with 4K	High-Quality Images	Monochrome Images	Excellent Cost Performance	For Infrared (IR) Observation
		DP75	SC180	DP28	DP23	DP23M	LC35	HAMAMATSU C12741-03
Image Sensor		1.1 inch Color CMOS	1/3 inch Color CMOS	1 inch Color CMOS	1/1.8 inch Color CMOS	1/1.8 inch Monochrome CMOS	1/2.5 inch Color CMOS	2/3 inch Monochrome InGaAs
Pixel Density (megapixels)		12–49	18.1	8.9	6.4	6.4	3.5	640 × 512
Pixel Size (µm)		3.45 × 3.45	1.25 × 1.25	3.45 × 3.45	2.4 × 2.4	2.4 × 2.4	2.64 × 2.64	20 × 20
Frame Rate (fps)		60–22	59–10.5	64–32	60–45	60–45	40–19	60
Connection		USB 3.1. Gen 2	USB 3.0	USB 3.1 Type-C	USB 3.1 Type-C	USB 3.1 Type-C	USB 3.1 Type-C	USB 3.0
Windows 10/11—64-bit		Y	Y	Y	Y	Y	Y	Y
Special Features		Switchable IR-cut filter	Focus peaking, Smart image averaging	Global shutter	Rolling shutter	Rolling shutter	Rolling shutter	Peltier cooled
ADC* *Analog-to-digital converter; the actual bit depth of the camera depends on the software used.		10-bit	12-bit	10-bit	10-bit	10-bit	10-bit	14-bit
Observation	Bright conditions (e.g., brightfield)	●	●	●	●	●	●	-
	Low-light conditions (e.g., darkfield, polarized light, DIC observation)	●	●	●	●	●	-	-
	Very dark light conditions (e.g., fluorescence)	●	-	-	-	●	-	-
	IR	● Up to 1000 nm	-	-	-	● Up to 1000 nm	-	●
Measurement/ Analysis	Find minute differences at low magnification	●	●	●				
	High-accuracy measurement/analysis	●	●	●	●		-	
	Thresholding analysis (B/W mode)	●	-	●	●	●	-	●

Supported Motorized Devices

Using the optional motorization module, PRECiV Core and Pro software can control several third-party X, Y motorized stages and third-party motorized Z focus drives for advanced image acquisition.

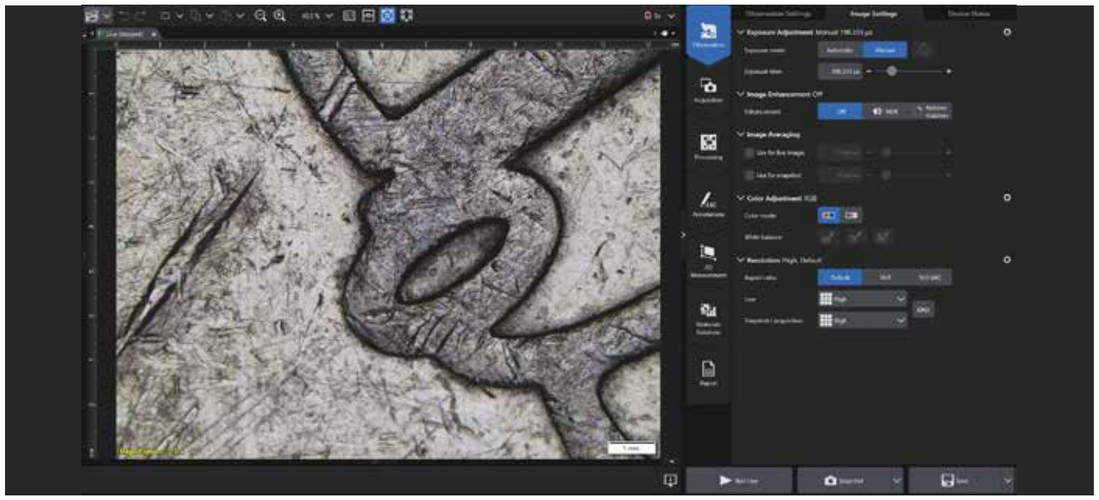


	CHUOSEIKI	LUDL	MÄRZHÄUSER	PRIOR
Electronics	QT-ADM3 [RS-232]	MAC6000 [RS-232 or USB*]	TANGO [RS-232 or USB*, PCI-e]	PROSCAN 3 [RS-232 or USB*]
BX3M X,Y Stage	MSS-50C-OB 50 × 50 mm MSS-50WC-OB 100 × 50 mm	96S100 100 × 75 mm (+adapter)	SCAN 75 × 50 SCAN 130 × 85 SCAN 225 × 76	H101BX 114 × 75 mm
MX63 / MX63L X,Y Stage	MSS-150C 150 × 150 mm MSS-300C 300 × 300 mm	99S103-6-LE 204 × 204 mm (+adapter) 99S105-6-LE 305 × 305 mm (+adapter)	SCAN 200 × 200 SCAN 300 × 300	H105 154 × 154 mm H112 302 × 302 mm
GX53 X,Y Stage		96S106-03-LE 120 × 100 mm	SCAN IM 114 × 70	H117 114 × 75 mm
Motorized Focus Drive	MSS-FM1	96A404	MFD-2 (BX3M only) MFD	PS3H122R

* Virtual COM port [driver needs to be installed, supplied on the PRECiV setup disk]

Designed for Conventional Microscopy

All our conventional industrial microscopes can capture sharp and focused images that suit the demands of the task. PRECiV™ software supports all observations conditions (brightfield, darkfield, oblique, MIX illumination, differential interference contrast (DIC), polarization) and camera modes, including live image enhancement and video recording. Optimize live images with convenient tools such as live measurement, digital reticle, and crosshair overlays in all PRECiV packages.



Control the live observation conditions for outstanding images

Integrated Camera Control

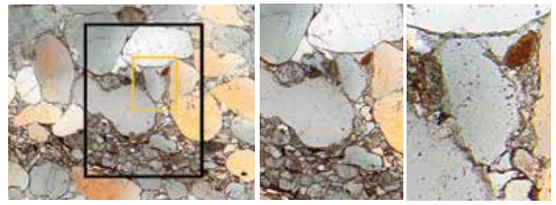
PRECiV software supports our extensive range of digital cameras that can be adapted to our conventional industrial microscope frames. Auto exposure, auto white balance, and focus indicator functions simplify image acquisition. You can adapt the camera mode and resolution to the imaging conditions (monochrome or high color fidelity) and use a focus-aid to capture sharp images. Use the software with multiple screens for enhanced image clarity and sharing.



Image of a coin: acquired with the DP75 camera in a single image

Resolution and Color Fidelity

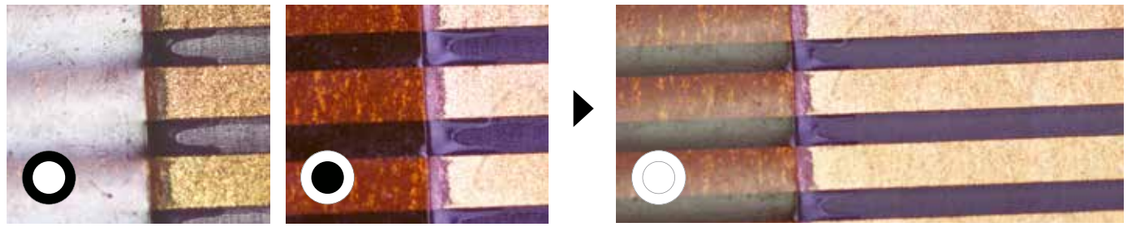
True-to-life images are important for reproducible and high-quality images measurements. Excellent spatial resolution combined with a high pixel count exploit the full optical resolution of the objectives and enable small structures and details within the samples to be imaged, even with low magnification objectives. High-resolution images acquired with PRECiV™ software let you make observations exclusively on screen without using the eyepieces, making the system a truly digital microscope.



The low-noise, high-resolution images of an 8.9-megapixel sensor enable the user to zoom deep into the sample, revealing its structures (sandstone).

MIX Observation

MIX observation uses a MIX slider that can be inserted into any DIC slit on our compatible nosepieces. Use this imaging method to enhance sample surface texture and remove the glare on highly reflective samples.



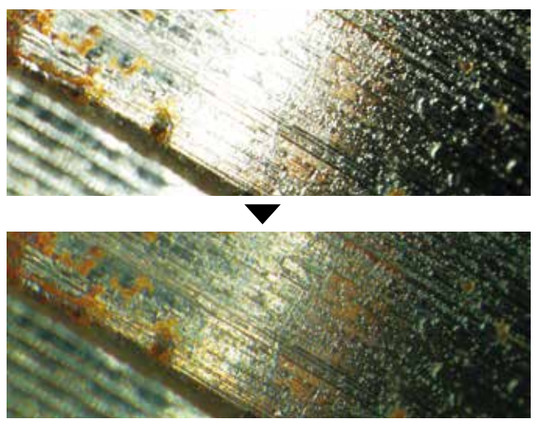
Brightfield | Darkfield | MIX: brightfield + darkfield

Conventional: brightfield shines the light straight down on the sample while traditional darkfield highlights scratches and imperfections on a flat surface by illuminating the sample from the side of the objective.

Advanced: MIX is a combination of brightfield and directional darkfield from a ring of LEDs; the LEDs can be adjusted to select which direction to illuminate from.

Enhanced Contrast

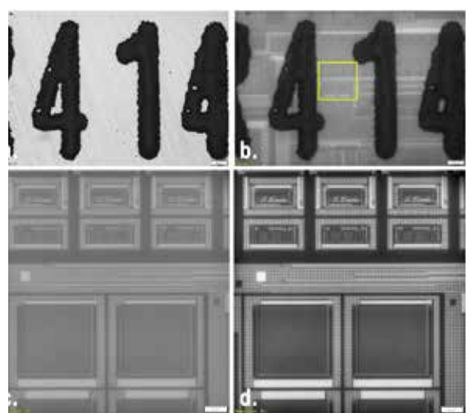
High dynamic range (HDR) imaging improves contrast in difficult conditions (very bright areas and very dark areas in the same image). All cameras supported by PRECiV software can be used in this mode, and dedicated cameras have an available live mode.



Clearly exposed for both dark and bright parts using HDR (sample: fuel injector bulb).

Reveal More with Infrared Imaging

Cameras that are sensitive to the infrared (IR) and shortwave infrared (SWIR) wavelength (900–1700 nm) are supported in PRECiV software. A live frame rate is important for IR imaging, and PRECiV software supports up to 60 fps with our compatible cameras for clear, smooth observation on your monitor.



a. Brightfield image 5x, b. IR image 5x (BP1100 nm filter), c. Cropped detail 20x IR, d. Cropped detail 20x IR with DCE filtering.

Digital Microscope Control

PRECiV DSX enables you to control our DSX series digital microscopes. The software streamlines your inspection workflow with control of macro-to-micro observation, multiple observation methods at the push of a button, and easy objective lens changes.



Supported Hardware (Frames, Zoom Heads, Stages, and Console)

PRECiV DSX works with all our DSX digital microscope models, including configurations with the tilting and upright frames; universal, standard, and motorized zoom heads; DSX console; and a variety of motorized stages.

DSX2000 Digital Microscope Series



DSX2000 Console



Fully Motorized DSX2000 MZH



Versatile All-in-One DSX2000 UZH

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.

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.

Large Selection of Objective Lenses

Our DSX series digital microscopes deliver high image quality with a wide selection of top-quality objective lenses (SXLOB, XLOB, and UIS2 series). These objectives are all supported in PRECiV™ software, and their optical parameters are used to optimize image acquisition.

Shaded Relief Observation Mode

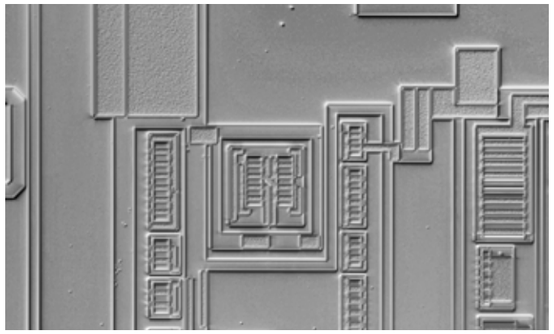
Reveal ultra-fine, hard-to-see defects in real time, without post-processing delays. Move the stage and scan your sample seamlessly, viewing shaded relief images instantly for fast, thorough inspections.

Supports Best Image Observation

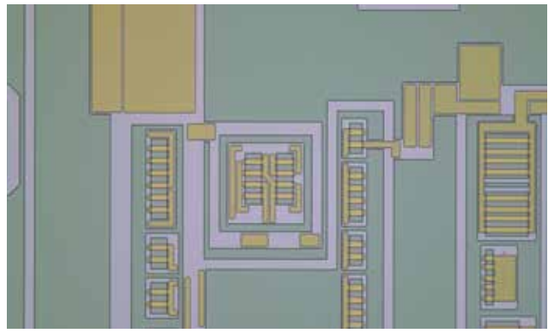
With a single click, PRECiV DSX can instantly switch between all available observation conditions (brightfield, oblique, darkfield, polarization, MIX illumination, differential interference contrast (DIC), and shaded relief), guiding you to the best image possible for the sample under analysis.



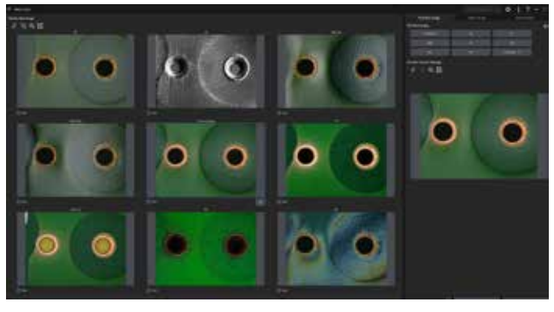
Objective lenses for the DSX series.



Shaded Relief



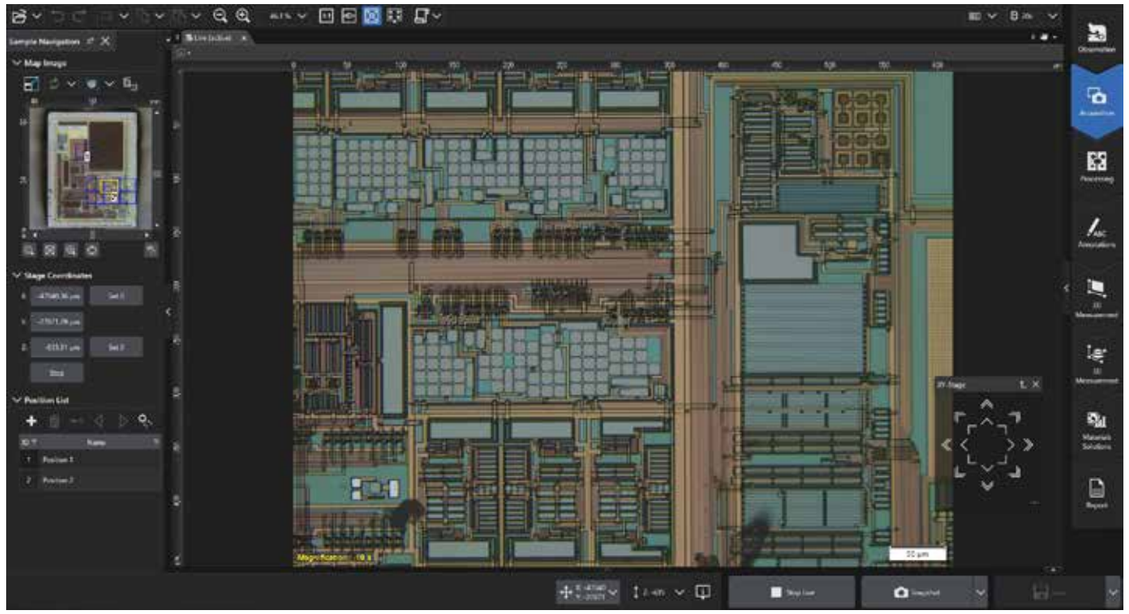
Brightfield



Built-In Motorization Support

Motorized devices expand the capabilities of our conventional and digital industrial microscopes. The PRECiV™ interface fully integrates the control of motorized stages and motorized focus drives, making many automated solutions possible:

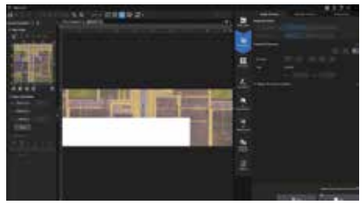
- Image map functionality for full control of motorized stages
- Editable stage coordinate dialogues
- Position list and stage alignment
- Easy navigation between panorama/multiple positions or other modes
- Focus mode with automatic sample tilt correction using three points or the focus map technique



Acquire Combined Panorama and EFI Images

In PRECiV software, you can acquire large images using the manual or motorized panorama function when online or offline. Create very large images (more than 100,000 × 100,000 pixels) thanks to our proprietary virtual slide imaging (VSI) format. Acquisition of in-focus images using the focus variation technique is also integrated into PRECiV software for manual and motorized microscopes. The EFI function is optimized to the selected optical parameters, enabling the creation of precise 3D data.

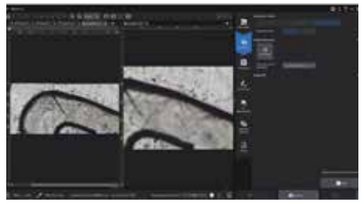
In addition to acquiring very large panorama images, PRECiV software can combine the panorama and the EFI functions to create macro images with 3D information, automatically.



Easily access panorama mode to automatically or manually acquire panoramic images.



EFI enables you to quickly acquire all-in-focus images manually or automatically.

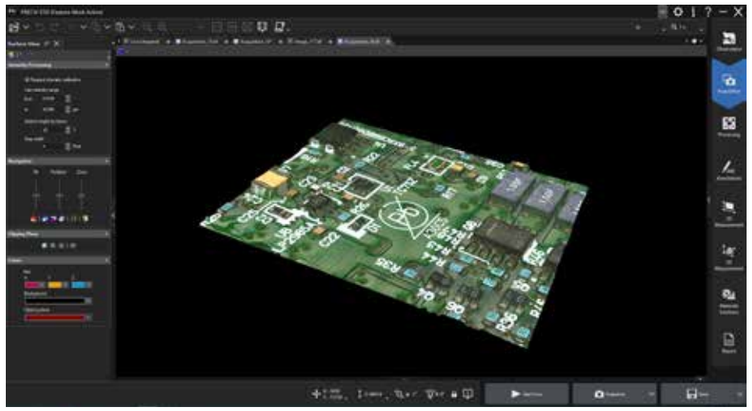


Combine the panorama and EFI functions to obtain large, fully in focus images.

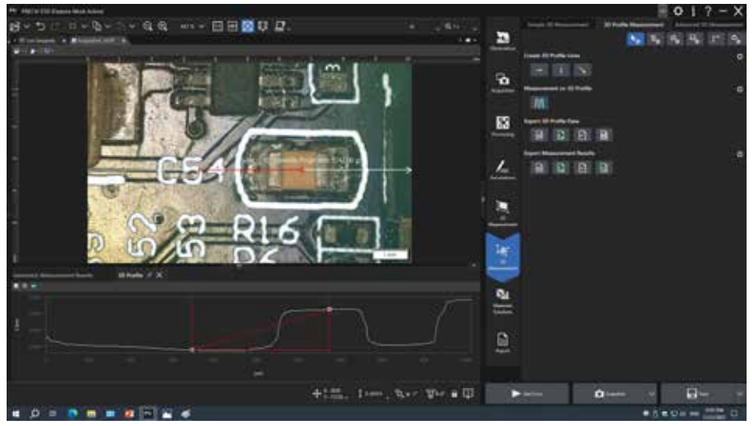
3D Solution

Measurements of 3D profiles and surface roughness are also available in PRECiV™ software. The basic 3D solution extracts the 3D profile from any 3D image acquired with EFI, any 3D Z-stack, or any file containing height information. Working with all microscopes, this powerful method evaluates the surface condition of the sample.

For advanced 3D measurements, it is possible to connect your acquired images with the expert 3D analysis application for all roughness measurement techniques on the profile or areal level. PRECiV software can export data using the OIR file format for better compatibility with systems such as our LEXT™ series laser confocal microscopes.



3D surface view.



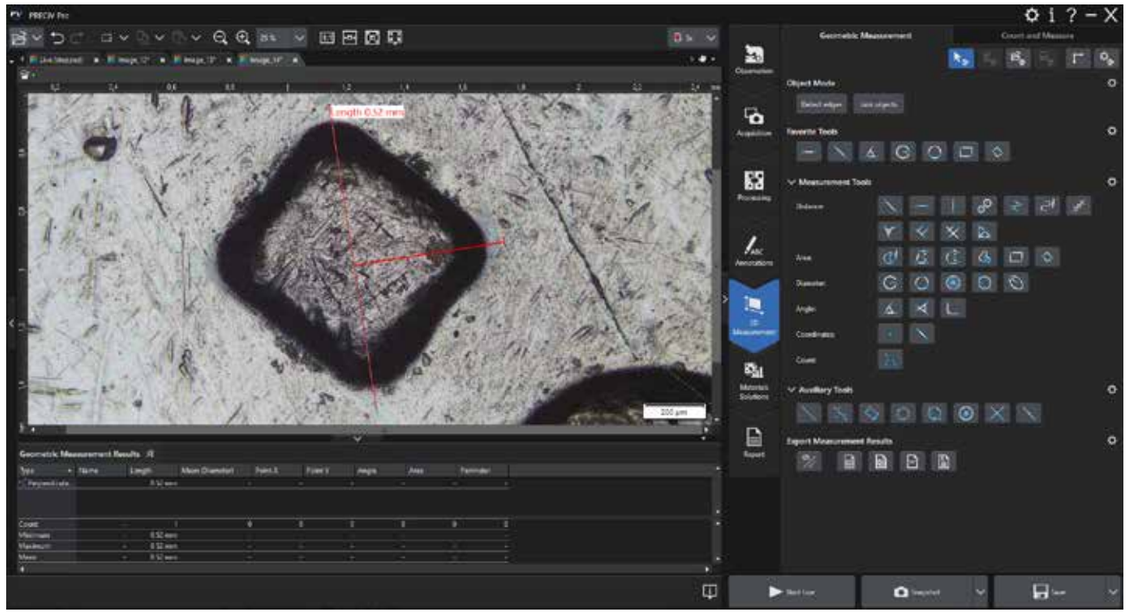
3D profile measurement.

Customized Software Solutions Supporting X,Y,Z Motorized Stages

The following solutions were specially developed for X,Y,Z motorized stages.

Macro to Micro	Navigate on Wafer	Measuring with Stage
Take advantage of your X, Y, Z motorized stage		
Detect structures from an overview image and transform their outline into a scan area for acquisition at higher magnification and further processing.	Define points of interest on a wafer and navigate to various points for image acquisition. Reposition the sample, apply three-point alignment, and navigate using the row and column index on wafers with dies.	The coordinates from a motorized or coded stage are read to set the start and end points of an individual length measurement. The result of the 2D measurement includes the X, Y, Z positions.

Advanced Measurement and Analysis

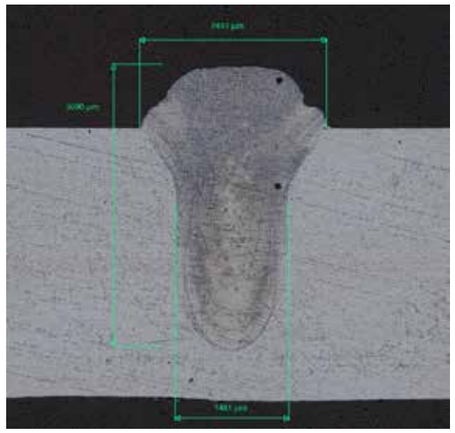


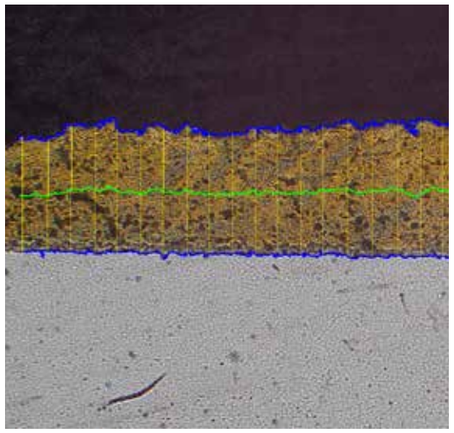
Helpful measurement functions include auto edge detection, edge-detected circles, and auxiliary lines.

Reliable 2D Measurements

All PRECiV™ packages offer a broad range of 2D measurements, including simple tools to decrease operator variability:

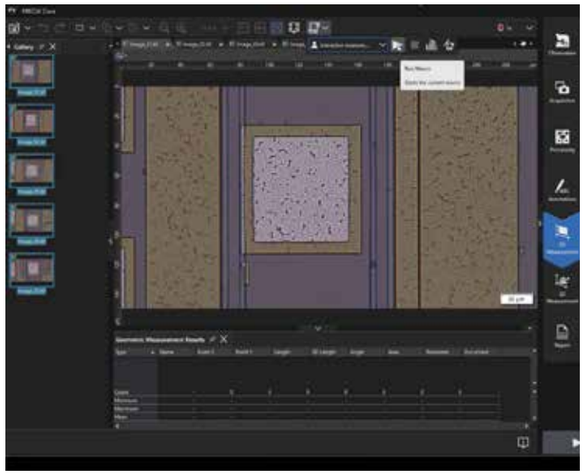
- Edge-detected circles
- Magic wand for automatic area detection
- Auxiliary lines* to easily make complex geometric measurements
- Ability to link objects to connect existing measurements
- Measurement results can be compiled in a workbook and easily exported to Excel
- Solution measurement sequence: Define and execute a geometric measurement with fixed parameters and a quality index (OK/NOK).





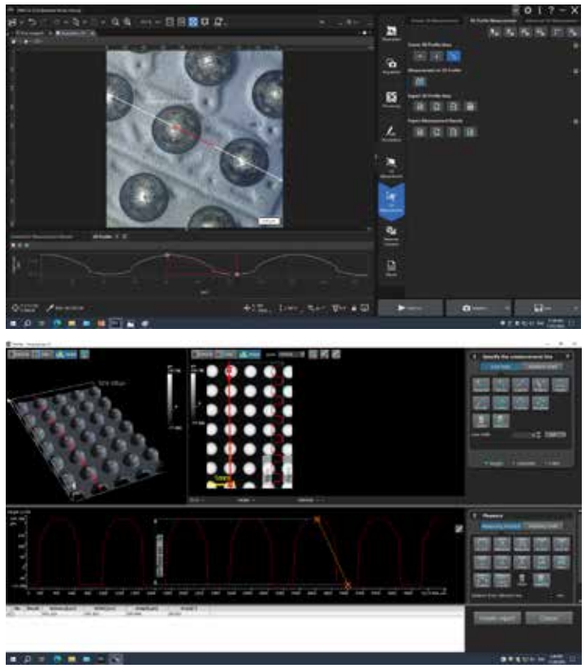
Create Simple Macros

Macros (succession of simple operations) can be recorded and applied on single images or on series of multiple images automatically. Use the macro recorder to record and play macros easily.



3D Roughness Analysis

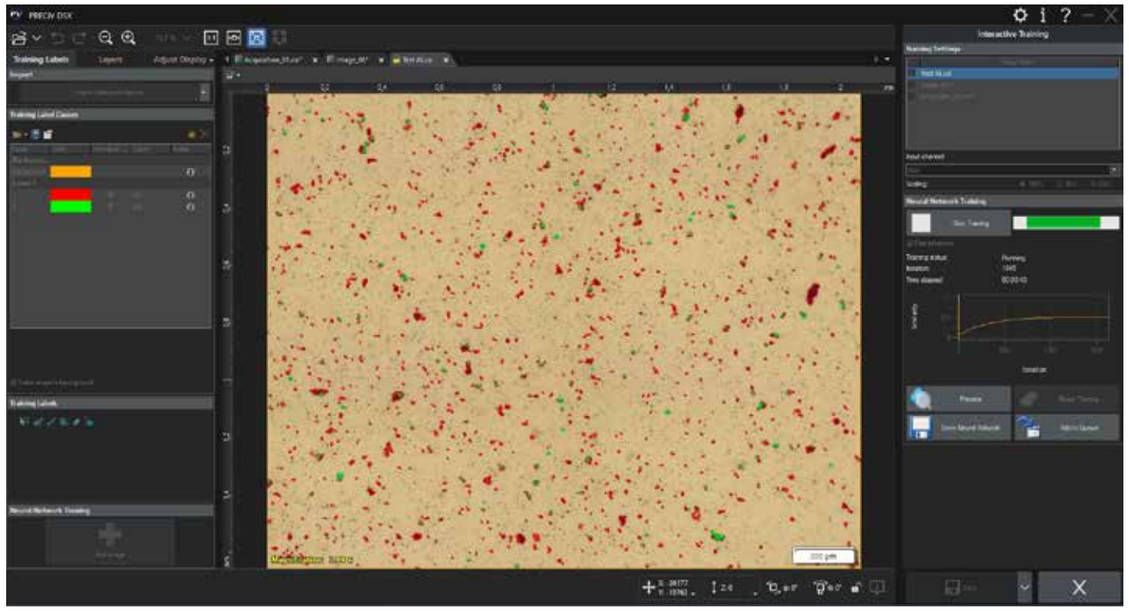
PRECiV™ software supports 3D line profile measurements, advanced 3D measurements, and surface roughness analysis of 3D images acquired with DSX series digital microscopes using an analysis program we developed for our LEXT™ OLS5100 laser scanning microscope. The image is automatically transferred from PRECiV DSX to the 3D analysis application.



Simple 3D measurements (line profile) are available in PRECiV software on all images with height information. For advanced measurements (e.g., surface roughness, volume measurement) PRECiV software can export images directly to the 3D analysis application.

Enhance Your Microscopy Experience Using AI

PRECiV™ software with TruAI deep-learning technology offers image analysis beyond classical algorithms. You can apply a trained neural network to your samples for higher reproducibility and more robust analysis. Choose between semantic or instance segmentation methods for improved neural network training, enabling you to tackle difficult applications in just one step.



Live AI

Live AI is a powerful tool for everyday use. It displays detected features directly on the live image using an overlay. This lets you easily screen the sample for any wanted or unwanted blobs without altering the image itself. Live AI can also be used to improve the image quality, such as removing unwanted scratches, for enhanced analysis.

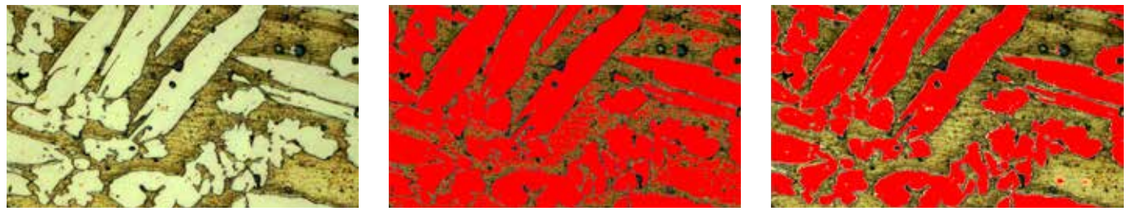


Neural Network Integration (AI)

PRECiV™ software's AI can be used on a PC even when it is offline.* The training is performed on the supplied dataset,
and the resulting quality of the AI analysis depends on the images provided for the training.

- Ideal solution for demanding applications requiring complex image analysis
- Use trained neural networks for image segmentation in Count and Measure and selected Materials Solutions
- Use trained neural networks to create a probability map for image feature discrimination
- Train neural networks using semantic (focusing on phase detection) or instance (focusing on object counting segmentation methods
- Simple interactive training interface for quick training of the neural network when a small number of objects needs to be detected
- Remove unwanted scratches or texture on the observed live image without altering the original data

*PRECiV AI technology does not use generative AI. PRECiV AI is independent from the network and can be used on a PC that is disconnected.

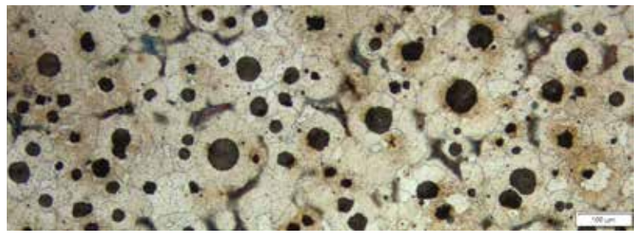


Multiphase analysis of composite materials is a typical industrial image analysis application using deep-learning technology. After image deep-learning segmentation with PRECiV software, different phases can be distinguished and detected accurately. Combined with the PRECiV Count and Measure solution, users can easily extract repetitive and quantitative results out of the samples. Left: original image of an etched copper. Middle: image segmentation using conventional thresholding methods. Right: deep-learning image segmentation.

Count and Measure Solution

The PRECiV Count and Measure solution detects and classifies particles and objects using advanced thresholding techniques, including AI. This powerful solution can handle a very large number of particles (> 2 million) on very large images.

More than 50 object measurement and classification parameters are available, including shape, size, position, and pixel properties.



Cast iron microstructure with spheroidal graphite.



Pan and zoom to a wrongly detected object.

Manually select the object and automatically split it.

Two objects are then properly measured.



Solutions for Metallography

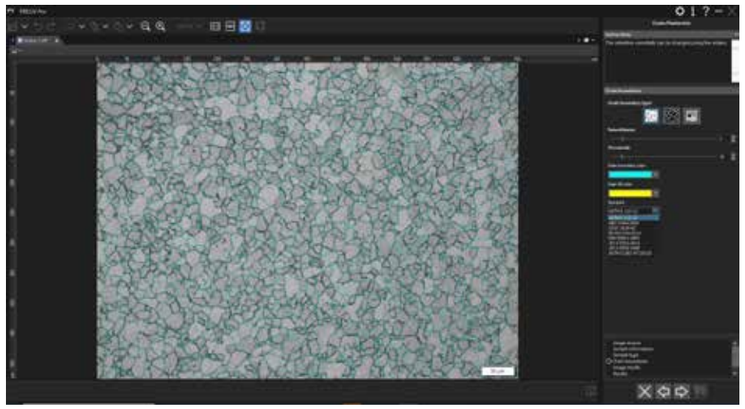
PRECiV™ software has guided workflows to streamline materials science analyses. These step-by-step instructions enable reproducible and reliable results. A range of optional Materials Solutions can be added with dedicated workflows for material qualification and evaluation. These solutions enable you to conduct an analysis according to common international standards (ISO, ASTM, JIS, and DIN) to check their quality before and after manufacturing processes.

Grain Size

For metals and ceramics, grain size is one of the most significant metallographic measurements due to its direct effect on mechanical properties. PRECiV software calculates the grain size number using standardized methods, such as:

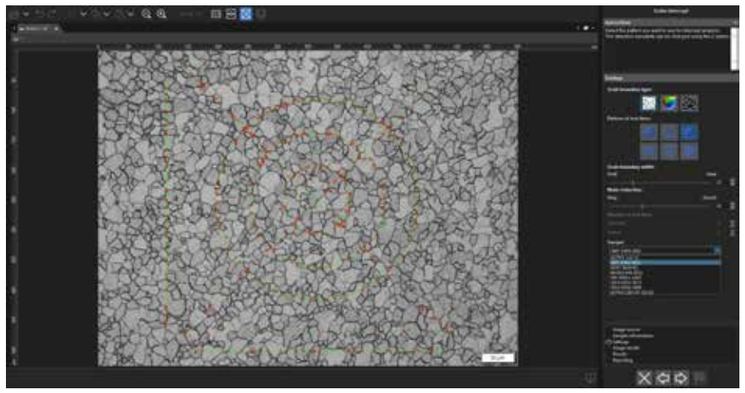
Grain Sizing Using the Jeffries Planimetric Method

This solution is for manual ferritic or austenitic grain size measurement of steel. It gives a single averaged value using the different available standards: ASTM E 112-13 (2021), EN ISO 643:2020, DIN 50601:1985, JIS G 0551:2020, JIS G 0552:1998, GB/T 6394-2017, GOST 5639-82, ASTM E1382-97 (2015).



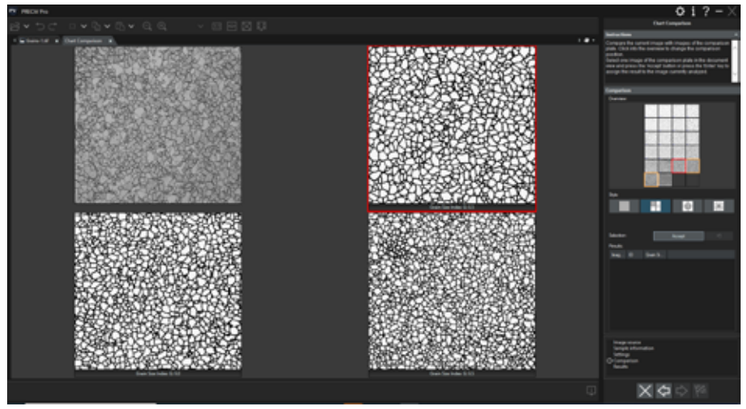
Grain Sizing Using the Heyn Intercept Method

This solution is for automatic grain size distribution measurement on etched microstructures (it also works on aluminum microstructures) using the different available standards: ASTM E 112-13 (2021), EN ISO 643:2020, DIN 50601:1985, JIS G 0551:2020, JIS G 0552:1998, GB/T 6394-2017, GOST 5639-82, ASTM E1382-97 (2015).



Grain Sizing Using the Chart Comparison Method

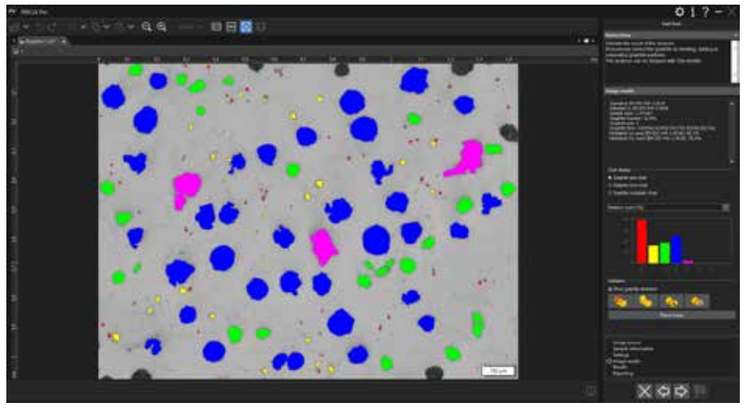
Easily compare live or captured images with autoscaled reference images. This solution includes reference images in each available chargeable set: ASTM E112:2010, ASTM E112:2013 (2021), ISO 643:1983, ISO 643:2012, DIN 50602:1985, ISO 945:2008, ISO 945:2019, SEP 1520:1998, SEP 1572:1971, SEP 1572:2019, EN 10247:2007, EN 10247:2017, and ISO 4505:1978.



Graphite Nodularity Evaluation

In the metallographic laboratory, the task of analyzing cast iron for graphite nodularity, size, form, and distribution parameters, as well as the ferrite-to-pearlite ratio, is extremely important from a quality control perspective.

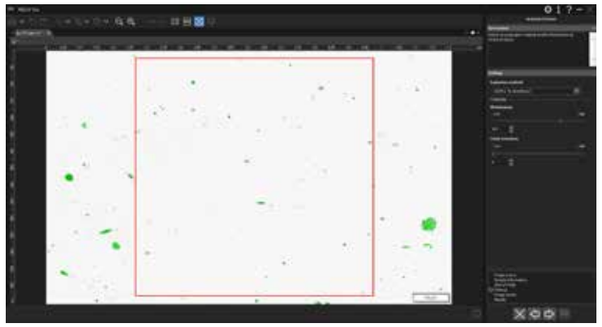
PRECiV™ software offers a workflow to analyze the following cast iron characteristics: graphite form, graphite distribution, graphite size, graphite nodularity, percent graphite, and percent ferrite to pearlite. (EN ISO 945-1:2019, ASTM A 247-19, JIS G 5502:2001, KS D 4302:2006, GB/T 9441-2009, ISO 16112:2017, JIS G 5505:2020 (compacted vermicular), NF A04-197:2017, ASTM E 2567-16a (for nodularity only).



Rating Non-Metallic Inclusion Content in Steel and Alloys

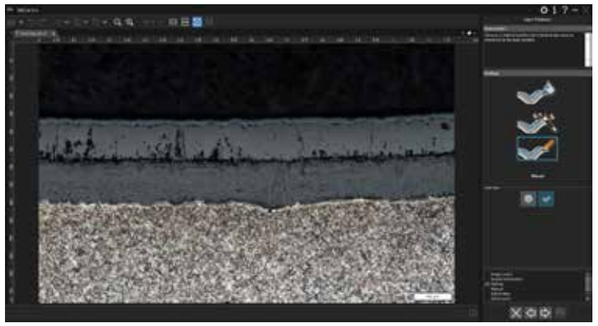
Non-metallic inclusions (NMI) are compound materials embedded inside steel during the manufacturing process. Inclusions have a different chemical origin and give different mechanical properties to steel, such as formability, toughness, machinability, and corrosion resistance. As a general rule, the fewer or less severe the inclusions, the higher the quality of the steel. PRECiV™ software offers a guided workflow solution for non-metallic inclusion rating in steel. This solution includes two different rating methods:

- **Worst Field:** ASTM E45-18a: Method A, ISO 4967:2013: Method A, EN 10247:2017: Method M, EN 10247:2017: Method P, EN 10247:2007: Method M, EN 10247:2007: Method P, DIN 50602:1985: Method M, JIS G 0555:2003: Method A, GB/T 10561:2005: Method A, UNI 3244:1980: Method A, SEP 1571:2017: Method M
- **Average (Inclusion) Content:** ASTM E45-18a: Method D, ISO 4967:2013: Method B, EN 10247:2017: Method K, DIN 50602:1985: Method K, SEP 1571:2017: Method K



Layer/Coating Thickness Measurement

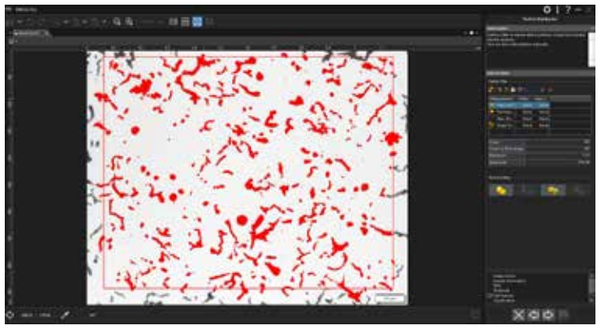
Many industries, such as automotive, aerospace, and oil and gas, use a multi- or monolayer coating as a protective layer against corrosion, fire, heat, stress, and ultraviolet (UV) light. Coatings can also be applied to add functional surface properties, such as waterproofing, and to fulfill decorative purposes, such as adding color and special texture to the surface. Producing a homogenous coating of a certain thickness is critical for product quality. PRECiV software offers a special workflow to measure coating layer thickness.





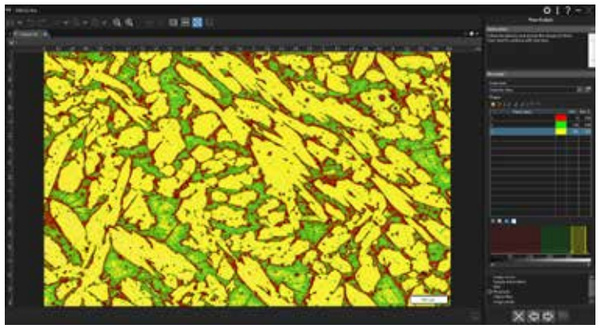
Particle Distribution

In cleanliness inspections and many manufacturing processes, such as additive manufacturing, powder atomization, sintering, and powder metallurgy, a reliable analysis on powder particles is a crucial quality assurance step before starting the manufacturing process. PRECiV™ software offers a workflow for threshold-based and neural network-based detection and classification of individual particles with the creation of user-defined histograms. The analysis provides morphological information, such as area, perimeter, shape factor, and the minimum and maximum ferret diameter. The result also contains a distribution diagram.



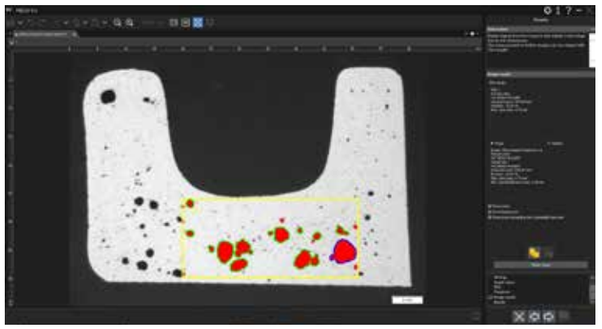
Phase Analysis

In many metal alloys, such as steel and cast iron, different phases can be seen in the microstructure. Phase analysis helps to quantify the ratio of the existing phases and provides important information for the materials scientist to make decisions about the manufacturing process, quality of the part, and post-processing steps, such as heat treatment. PRECiV software offers a reproducible workflow for phase analysis based on thresholding and neural networks.



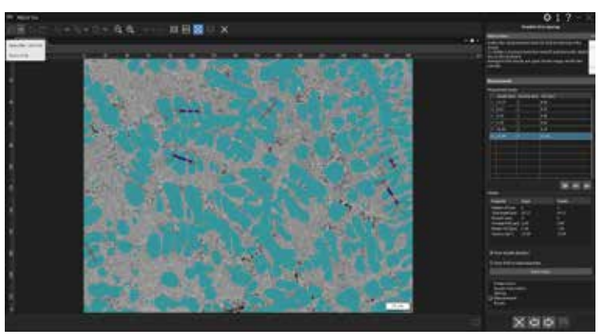
Pore Fraction

Porosity is a persistent and common complaint of casting users. Porosity in casting parts can affect product quality, as well as component performance, design, and reliability. As a result, an accurate, reliable porosity analysis is essential. PRECiV software offers a reproducible workflow for porosity analysis based on thresholding and neural networks.



Dendrite Arm Spacing

Monitoring solidification time is a key factor for improving mechanical properties, such as tensile strength and elongation. The Dendrite Arm Spacing solution in PRECiV software automatically measures the mean secondary dendrite arm spacing in lightweight aluminum casting to monitor solidification time.



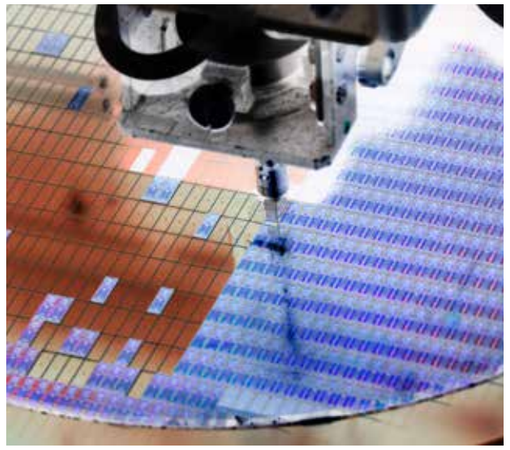
One Imaging and Measurement Software Solution for Manufacturing, Inspecting, R&D, and Quality

PRECiV™ software is designed for you. Whether you work in quality control, production, or materials science, PRECiV software offers versatile, simple-to-use functions and high-end techniques such as artificial intelligence. This broad functionality enables you to:

- Acquire stitched images from multiple stage positions in panorama mode (with or without motorized support)
- See everything clearly in focus, even samples that exceed your focal depth, with the all-in-focus extended focus image (EFI) mode
- Record planar and height information
- Analyze your samples manually, semi-automatically, or fully automatically
- Take advantage of dedicated, ready-to-use workflows for multiple industries and industrial standards via dedicated Materials Solutions

Semiconductors

- Defect detection (Materials Solutions, macros, Count and Measure, neural networks)
- Packaging (2D measurement with edge detection, IR imaging)
- Wafer navigation—Define points of interest on a wafer and navigate to these points for image acquisition, simple 3-point alignment of multiple samples for reliable navigation to row and column index (on wafers with dies)
- Microscope control (reliable 2D measurements based on magnification calibration and compliant to international standards, edge detection measurement)
- Simple 3D measurements with coded or motorized Z



Electronics

Printed Circuit Board Assembly

- Manual visual inspection for documentation with standardized and customizable reporting
- Extended focus imaging (EFI) to clearly image thick parts
- Micro sectioning (2D measurements, 3D measurements)
- Solderability and defect testing

Contamination Defect Testing

- Search for corrosion, degradation, metallization, or rapid deterioration of wire bond interconnects



Metals

Macrostructural Analysis

- Test for macrostructural fractures of samples (grain flow, porosity, and cracks) using 2D measurements, Materials Solutions, panorama imaging, and EFI

Microstructural Analysis

- Simple parameter determination (grain size, coating thickness, cast iron nodularity, ferrite/pearlite ratio, phase analysis, Count and Measure, potentially supported with AI)
- Evaluate abnormalities, defects, and failure mechanisms (non-metallic inclusions, segregation, extent of carburization and decarburization)



Aerospace

Machined and 3D Printed Parts

- Validate quality (porosity) and document all individual parts in a standardized report

Carbon- or Glass-Fiber-Reinforced Plastics (CFRP or GFRP)

- Measure the fiber orientation in cross-sections (Count and Measure)
- Reconstruct large sections (automatic panorama and EFI with a motorized stage)

Pipes, Tubes, and Fluids

- Failure analysis searching for leakage (contamination analysis)



Automotive

Powertrain

- Examine all parts of the engine, transmission, and brake system (2D and 3D measurements, material validation, report creation)
- Inspect the transmission system (suspension, wheel barrel and brakes) in electric vehicles

Clips, Bolts, and Fasteners

- Quality control on parts produced by third-party suppliers

Welded Parts

- Weldment measurement and control (chassis, body)
- Coolers and heaters



PRECiV™ Version 3.2 Specifications

Image Acquisition ● Standard Feature ● Optional Feature — Not Available	Capture	Core	Pro	DSX	ADM	CIX	Desktop
Basic image acquisition from Evident cameras, including autocalibration	●	●	●	—	—	—	—
Extended image acquisition, including HDR, Live HDR (with the DP74 and DP75), and position navigator	●	●	●	—	—	—	—
Halation removal using the MIX slider (microscope) or LED ring light (stereo microscope)	—	●	●	●	●	—	—
Best image function (all modes, SR, BF, OBQ, DF, MIX, PO, DIC)	—	—	—	●	●	—	—
Video recording	●	●	●	●	●	●	—
Time-lapse acquisition	—	●	●	●	●	—	—
Extended focus imaging (EFI) using manual or instant mode	—	●	●	●	●	●	—
Large-size image acquisition (panorama) using manual or instant mode	—	●	●	●	●	●	—
Combined EFI and panorama using manual mode	—	●	●	●	●	●	—
Automatic EFI using motorized devices, including quick scan mode	—	●	●	●	●	●	—
Automatic panorama using motorized devices	—	●	●	●	●	●	—
Sample navigation and position list management using motorized devices	—	●	●	●	●	●	—
Combination of automatic EFI and panorama using motorized devices (including rapid scan)	—	●	●	●	●	●	—
Continuous autofocus*1	—	—	—	●*1	●*1	—	—
Imaging and Customization Tools							
User interface with functions grouped by purpose	●	●	●	●	●	●	●
Overlay information layer (scale bar, crosshair, digital reticle)	●	●	●	●	●	●	●
On-screen magnification	●	●	●	●	●	●	—
Macro Manager	—	●	●	●	●	●	●
Static annotations	●	●	●	●	●	●	●
Live zoom	●	●	●	●	●	●	—
Measurements / Image Analysis							
Basic interactive geometric measurements (horizontal line, vertical line, arbitrary line, polyline, 3-point circle, rectangle, rotated rectangle, 3-point angle, 4-point angle, perpendicular line, parallel line distance, polygon area, XY distance, distance between two crosslines, circle-to-circle distance, linear ruler, point coordinates)	●	●	●	●	●	●	●
3D line profile measurement and simple 3D measurements	—	●	●	●	●	●	●
3D analysis application: 3D line profile roughness, advanced 3D measurements, and surface roughness analysis of 3D images	—	●	●	●	●		●
2D line profile measurements	—	●	●	●	●	●	●
Advanced interactive geometric measurement, including auto-edge detection and auxiliary lines (angle ruler, 2-point circle, rotated ellipse, closed polygon, magic wand, interpolated polygon, multiple perpendicular lines, asymmetry lines, throat thickness)	—	●	●	●	●	●	●
Neural network labeling	—	●	●	●	●	●	●
Live AI	—	●	●	●	●	●	—
Offline EFI, offline panorama	—	●	●	●	●	●	●
Image enhancement filters (edge detection filters, smoothing filters, and sharpening filters), intensity and contrast adjustment, shading correction and background subtraction, dynamic contrast enhancement, morphological filters	—	●	●	●	●	●	●
Technical cleanliness analysis	—	—	—	—	●	●	—
Reporting							
Data export to an Evident workbook	●	●	●	●	●	●	●
Data export to Microsoft Excel	—	●	●	●	●	●	●
Report and presentation creation in Microsoft 365/Microsoft Office 365 (32-bit/64-bit), Office 2021 (32-bit/64-bit), and Office 2019 (32-bit/64-bit)	—	●	●	●	●	●	●
Device Support*2							
Evident microscopes*3 and Evident cameras*4	●	●	●	—	—	—	—
SZX2-ZMS zoom magnification sensor for SZX7, SZX10, and SZX16 stereo microscopes	●	●	●	—	—	—	—
Third-party X,Y motorized stages (Ludl, Prior, Märzhäuser, Chuo Seiki)*5	—	●	●	—	—	—	—
Third-party X,Y motorized focus drives (Ludl, Prior, Märzhäuser, Chuo Seiki)*5	—	●	●	—	—	—	—
Third-party SWIR camera	—	●	●	—	—	—	—
DSX2000/DSX1000 system, console, and macro camera	—	—	—	●	●	—	—

Optional Add-Ons ● Standard Feature ● Optional Feature — Not Available	Capture	Core	Pro	DSX	ADM	CIX	Desktop
Motorization	—	●	●	●	●	—	—
3D Acquisition	—	●	●	●	●	—	—
Count and Measure	—	●	●	●	●	●	●
Grain Sizing	—	●	●	●	●	●	●
Non-Metallic Inclusions	—	●	●	●	●	●	●
Cast Iron	—	●	●	●	●	●	●
Layer Thickness	—	●	●	●	●	●	●
Measurement Sequence	—	●	●	●	●	●	●
Porosity	—	●	●	●	●	●	●
Particle Distribution	—	●	●	●	●	●	●
Coating Thickness	—	●	●	●	●	●	●
Phase Analysis	—	●	●	●	●	●	●
Neural Network Training	—	●	●	●	●	●	●
Dendrite Arm Spacing	—	●	●	●	●	●	●
Chart comparison on select standards for grain size, graphite evaluation, non-metallic inclusions, and hard metals	—	●	●	●	●	●	●
Customized software solutions	—	●	●	●	●	●	●

1 DSX2000 only
2 Please contact Evident for supported device information.
3 Supports BX41M-LED, BX51, BX51M, BX53M, GX41, GX51, GX53, GX71, MX51, MX63, MX63L, SZ61, SZX7, SZX9, SZX10, SZX12, SZX16, BX3M-CB, BX3M-CBFM, BXFM, DSX1000, and DSX2000.
4 Supports the LC30, LC35, DP22, DP23, DP23M, DP27, DP28, DP73, DP73 WDR, DP74, DP75, SC30, SC50, SC100, SC180, and UC90 microscope cameras.
5 Supports Chuo Seiki: QT-ADM3, MSS-50C-OB, MSS-50WC-OB, MSS-150C, MSS-399C, MSSS-FM1; Ludl: MAC6000, 96S100, 96S109-LE, 96S103-6-LE, 96S106-O3-LE, 96A404; Märzhäuser: TANGO, SCAN 75×50, SCAN130×85, SCAN 225×76, SCAN 200×200, SCAN 300×300, MFD-2; Prior: ProScan 3, ES111, H101F, H105, H112, H117, PS3H122R.

PC Requirements for PRECiV Capture/Core/Pro/Desktop v. 3.2

CPU	Intel Core i5, Intel Core i7, Intel Xeon
HDD	10 GB hard disk space for installation Min. 50 GB for saving images and data
RAM	16 GB RAM (2 x 8 GB RAM) Special requirements to the memory for certain functionality: Training of neural networks: 32 GB RAM 3D analysis application: 32 GB RAM
Operating system	Windows 10 (64-bit), Windows 11 (64-bit); Editions: Pro, Pro for Workstations, Enterprise
.Net framework	Version 4.8.1 or later
Optimized resolution	1920 × 1080 (Full HD) 3840 × 2160 (4K), 27/32 in. (150% display scaling)
License activation	Using an Internet connection or code-based
One-time migration from OLYMPUS Stream	Migration from former OLYMPUS Stream original licenses to selected PRECiV license
Graphics card	64-bit graphics board with 2 GB RAM Special requirements to the graphics board for certain functionality
OS languages	English, Simplified Chinese, Spanish, Japanese, Portuguese, Korean, French, German, Polish, Czech, and Russian

PC Requirements for PRECiV DSX v. 3.2

CPU	Intel Core i5, Intel Core i7, Intel Xeon
HDD	10 GB hard disk space for installation Min. 50 GB for saving images and data
RAM	32 GB RAM (2 × 16 GB RAM) Special requirements to the memory for certain functionality: Training of neural networks: 32 GB RAM 3D analysis application: 32 GB RAM
Operating system (OS)	Windows 10 (64-bit), Windows 11 (64-bit); Editions: Pro, Pro for Workstations, Enterprise
.Net framework	Version 4.8.1 or higher
Optimized resolution	1920 × 1080 (Full HD) 3840 × 2160 (4K), 27/32 in. (150% display scaling)
License activation	Using an Internet connection or code-based
One-time migration from existing DSX1000 system	Migration from DSX-BSW-V1 and DSX-BSW-V2 to PRECiV DSX
Graphics card	64-bit graphics board equivalent to NVIDIA Quadro P620 / T600 / T400 / T1000 / A400 / A1000 with minimum 4 GB RAM Special requirements to the graphics board for certain functionality: • Training of neural networks: • NVIDIA graphics board compatible with CUDA 11, 8 GB RAM
OS languages	English, Simplified Chinese, Spanish, Japanese, Portuguese, Korean, French, German, Polish, Czech, and Russian

PRECiV™ Advantages

Simple

- Simple-to-use imaging and measurement software
- Precise, repeatable 3D measurements
- Modern interface with the most used functions always visible
- Hide advanced functions to stay on task

Modular and Versatile

- Works with a wide range of imaging conditions using Evident and third-party products
- Control all Evident conventional manual microscopes
- Control all Evident digital microscope cameras
- Many software solutions updated to the latest standards
- 3D profile measurements and 3D analysis for surface roughness

Safe

- Meets the latest standards in cybersecurity
- Share data over your local network or Office 365 cloud
- Digital solutions for secure data sharing

Efficient Image Analysis

- Optional Materials Solutions with dedicated workflows
- Includes advanced neural network training and programming
- Simple macro recorder for repetitive inspections
- Neural networks supported in selected Materials Solutions
- Live AI

Semiautomatic Inspection

- User-friendly functions and interface improve efficiency
- Integration of DSX series digital microscopes
- Supports third-party motorized stages and focus drives
- Motorization support for Materials Solution workflows

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• Images on the PC monitors are simulated.
• Illumination devices for microscope have suggested lifetimes. Periodic inspections are required. Please visit our web site for details.
• Specifications and appearances are subject to change without any notice or obligation on the part of the manufacturer.

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