

BSDM-500 3D Super-Depth Digital Microscope



BSDM-500

Introduction

BSDM-500 3D Super-Depth Digital Microscope provides you 3D/Super-depth imaging, efficient and precise observation, unveiling a whole new dimension of the microscopic world for you. BSDM-500 has various observation modes, rich measurement functions, excellent image processing and convenient operational experience.

Feature

1. Automatic frame hovering and angle control

Utilizing clutch control technology, the frame achieves automatic hovering at any angle upon releasing the button. The frame supports a rotation angle range from -90° to 90° , enabling panoramic observation without tilting the sample. Built-in high-precision angle sensors ensure precise and reliable rotation angles.



2. Integrated controller operation

The controller contains various shortcut keys, enabling efficient and quick control of the microscope body and software.

Supported functions include: navigation, magnification switching, illumination mode selection, platform electric movement, automatic focusing, real-time depth synthesis, 2D/3D image stitching, glare elimination, high dynamic range (HDR) imaging, shake correction, photography, and data saving, etc.

3. Large travel, large rotation angle stage



In rotation priority mode, the stage has a movement range of 50mm x 50mm and can achieve $\pm 90^\circ$ rotation angles. It is equipped with built-in angle sensors so that even when rotating, the platform can still move in the direction seen in the image.

In travel priority mode, the stage expands to a movement range of 100mm x 100mm to meet the observation needs of larger samples.

4. Precision and adjustment of electric Z-axis

Optional attachment of grating ruler to enhance the measurement accuracy of the Z-axis.

The coarse and fine handwheels adopt a stepless speed regulation scheme, making the adjustment of the Z-axis smoother and more comfortable, enhancing the operational experience.

5. Transmitted illumination system



Equipped with LED transmitted illumination to observe transparent samples.

LED transmitted illumination can prevent sample damage from heat and extend the lifespan of the equipment.

6. Complete series of objective configuration



With a continuous zoom system and various APO lenses, it provides the best magnification, resolution, and working distance.

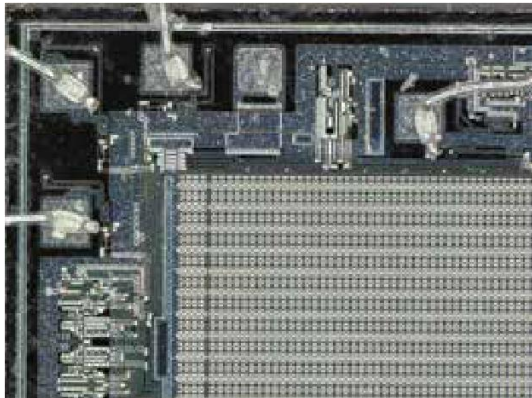
Users can quickly switch from macro-overview to detailed observation with just one click.

Five objective options are provided to meet the diverse needs of different users.

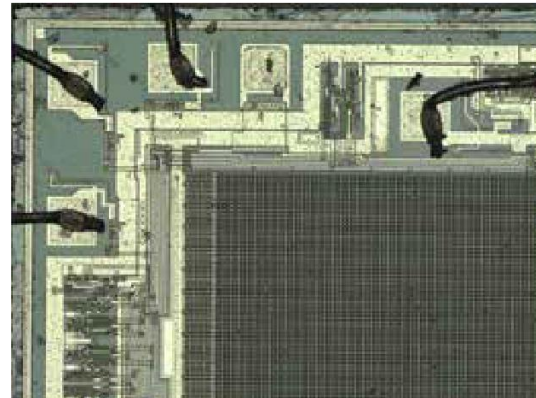
7. Integrated multiple illumination modes

The BSDM-500 integrates coaxial reflected illumination, coaxial oblique illumination, annular illumination, segmented annular illumination, mixed illumination and transmitted illumination. It can achieve bright field, dark field, MIX, polarized light, DIC, and other observation modes, providing flexible illumination solutions for observing samples with different attributes.

The unique four-zone illumination design allows users to illuminate one or more areas as needed to obtain the best observation results.



Ring illumination can restore the original color and stain status of the sample.

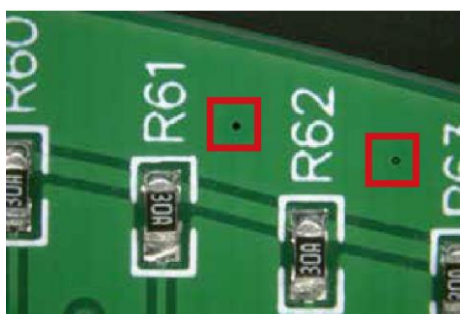


Coaxial illumination is suitable for observing the fine structure of flat samples.

8. Cross-field rapid measurement

When observing at high magnification, traditional methods require extensive dimensional measurements on stitched images, which not only consume time but also inaccuracies due to stitching errors.

BSDM-500 offers a solution for large-scale dimensional measurements, eliminating the cumbersome steps of conventional methods. Users can easily specify two points across the field of view, enabling quick and accurate measurement of the distance between these two points.



20X

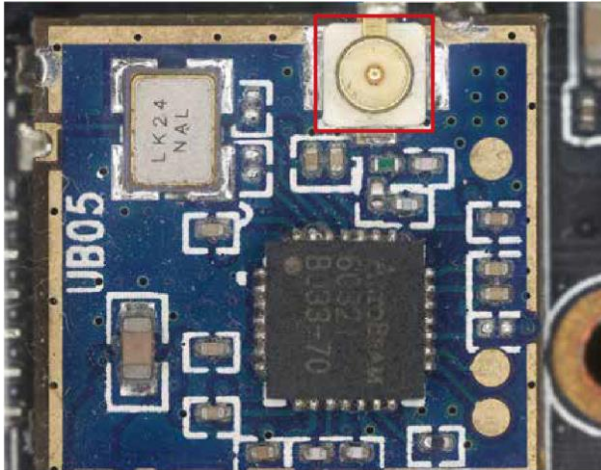


200X

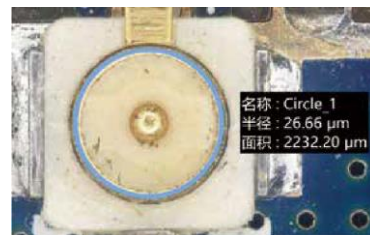
测量结果		
(单位: μm)		
标记点	坐标	
<input checked="" type="checkbox"/> 4	xyz: (3321.88,41211.9,2919.54)	
<input checked="" type="checkbox"/> 5	xyz: (11223.3,42880.4,2919.54)	
删除 清空		
名称	类型	结果
4_5	距离	8075.63
删除 清空		

9. Intelligent planar measurement

In order to solve the measurement errors caused by traditional manual selection of measurement points, the BSDM-500 integrates advanced edge grayscale recognition. Users only need to select the area to be measured, and the software automatically identifies feature positions and measures feature geometry information. This not only ensures measurement consistency between different operators but also avoids errors caused by manual operations, thus improving measurement accuracy and efficiency.



Smart Measurement



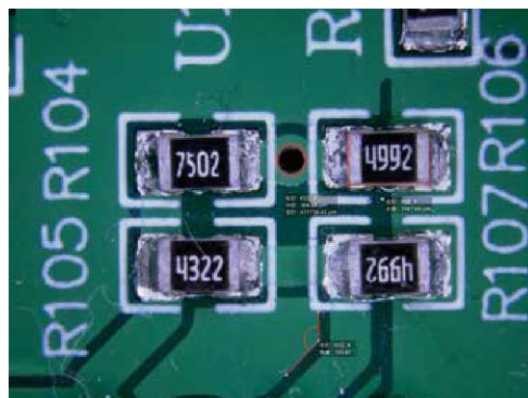
10. Rich measurement tools

Telecentric System

Through specific optical design, it places the entrance pupil of the lens at the focal plane to achieve low distortion and stable magnification. This improves imaging accuracy and ensures the accuracy and consistency of measurement results.

2D Measurement Tool Set

Provides diverse measurement functions such as point-to-point, point-to-line, parallel lines, angles, and areas, supports exporting data to Excel. Users can also customize settings (font size, line color, unit display) for an optimized measurement experience.

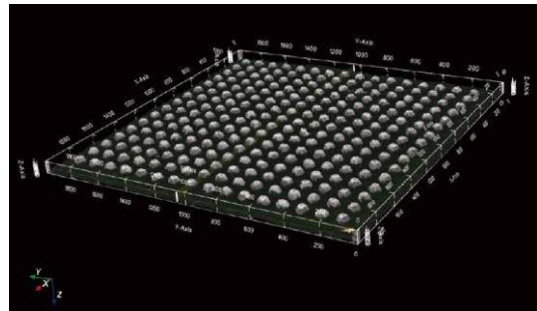
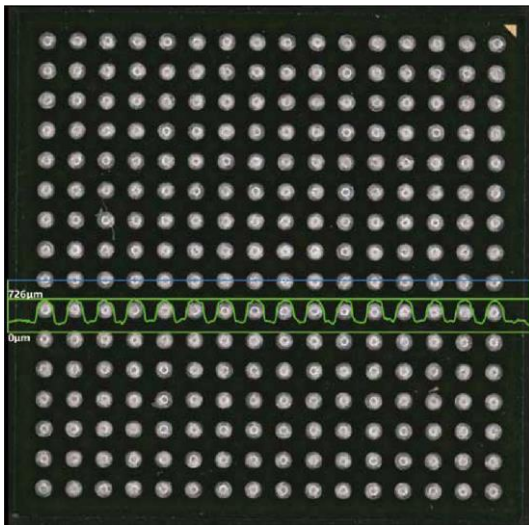


Automatic Template Measurement

Create and save measurement parameters that you frequently use for quick and accurate repetitive application.

3D Measurement Functionality

Easily calculate the volume, surface area, and height of objects.

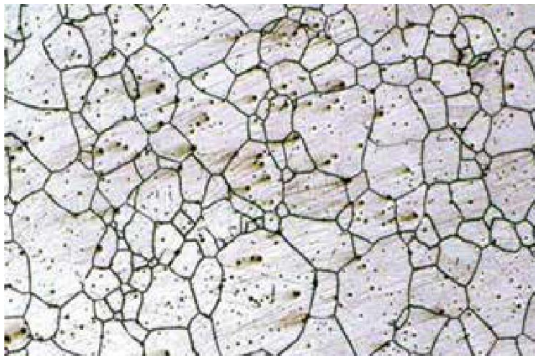


Contour Measurement

Precisely measure and analyze the shape of three-dimensional reconstructed objects.

Particle Counting and Analysis

Combining intelligent algorithms with grayscale recognition technology, automatically separate overlapping objects, and quickly count the particle area and quantity in the target area.



11. Image processing

Reflection Removal Processing

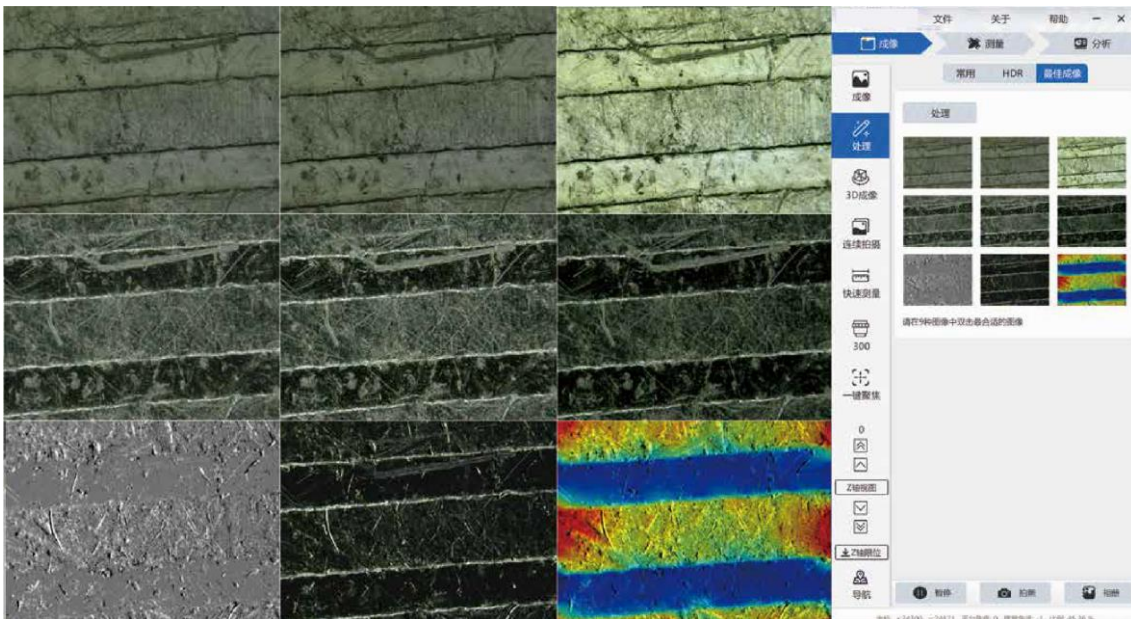


Optical Shadow Processing



One-click access to preview nine processing effects

In the optimal image mode, users can obtain nine preview effects (optical shadow, image sharpening, reflection removal, relief color, etc.). It is easy to compare and select the processing effect that best meets the needs to achieve the best quality of microscopic image.



Depth Fusion

The fusion of optics and algorithms presents clearer and more three dimensional images, bringing a richer observation experience.

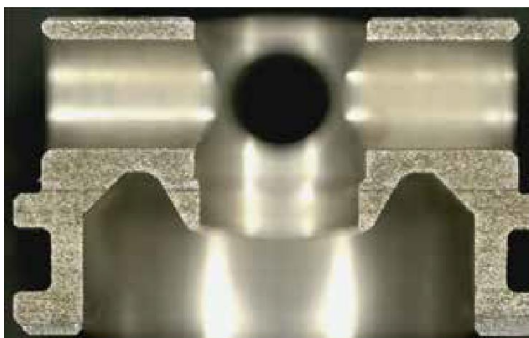
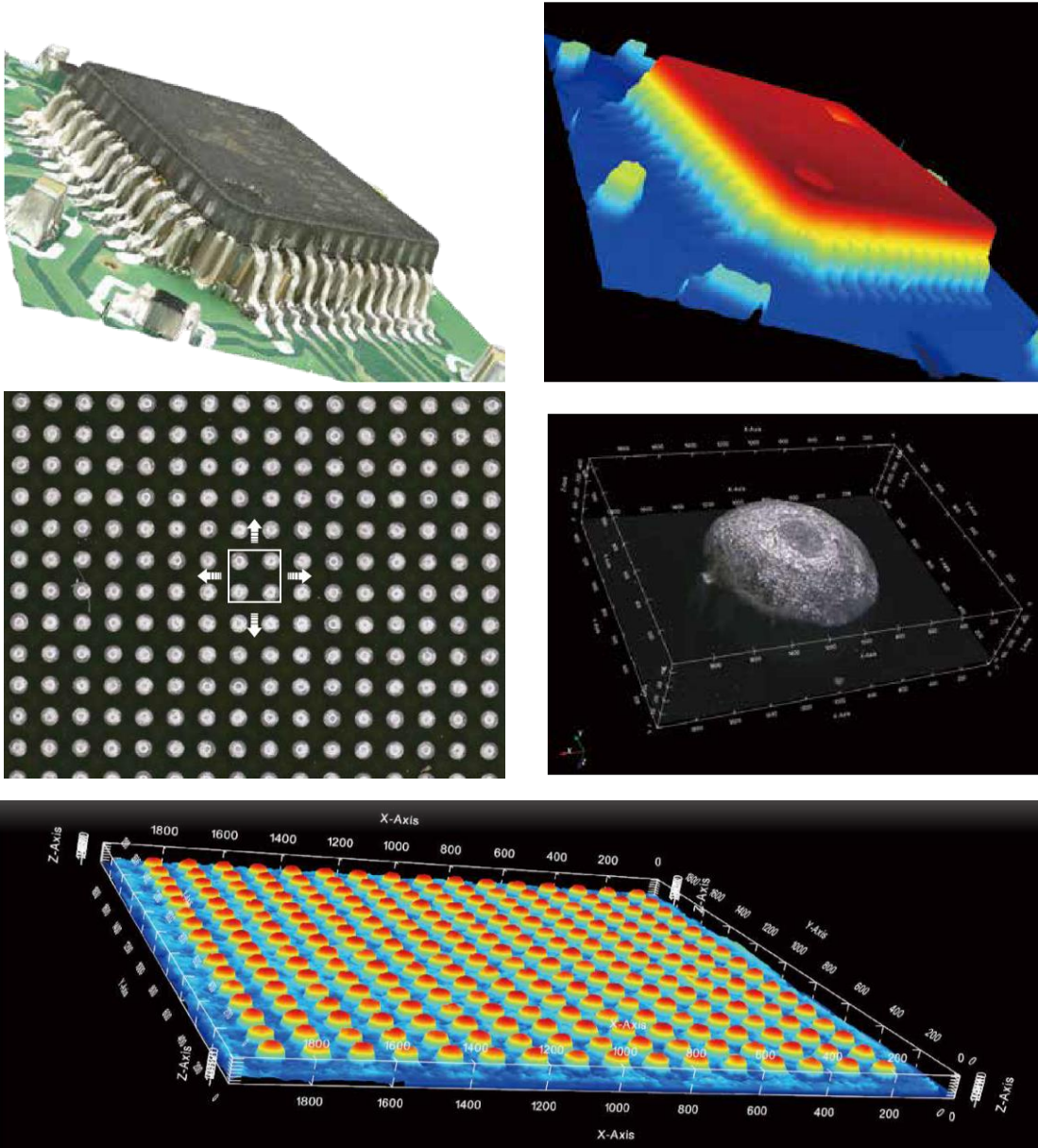


Image Stitching

Seamlessly stitch multiple images to create a perfect visual experience.

3D Reconstruction

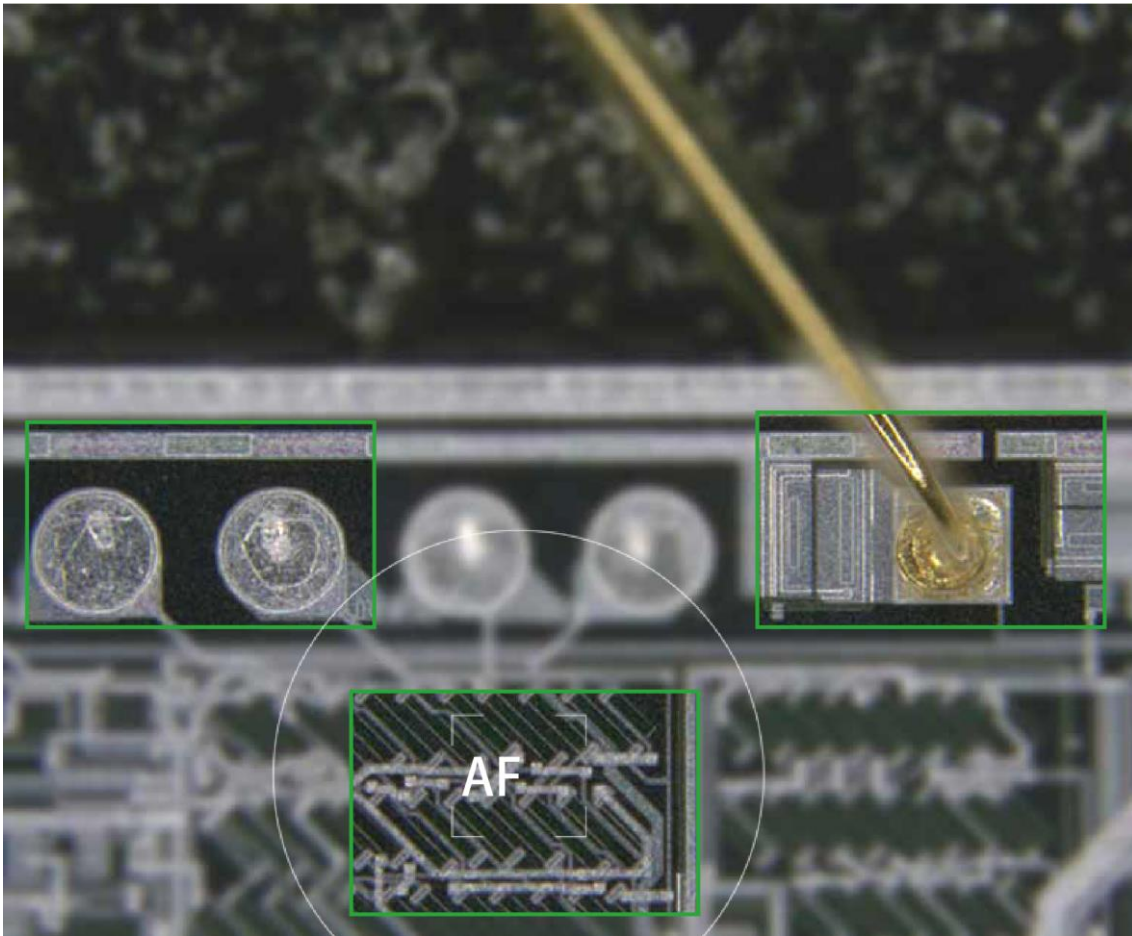
Collect Z-series images within the current field of view for 3D reconstruction.



12. Rapid focus and navigation

Quick automatic focus

The automatic focusing is equipped with intelligent auto-focus function, which can quickly and accurately adjust the focal length, ensuring that you capture every detail. Whether observing biological samples or researching material structures, our auto-focus technology can help you obtain clear, high-quality images.

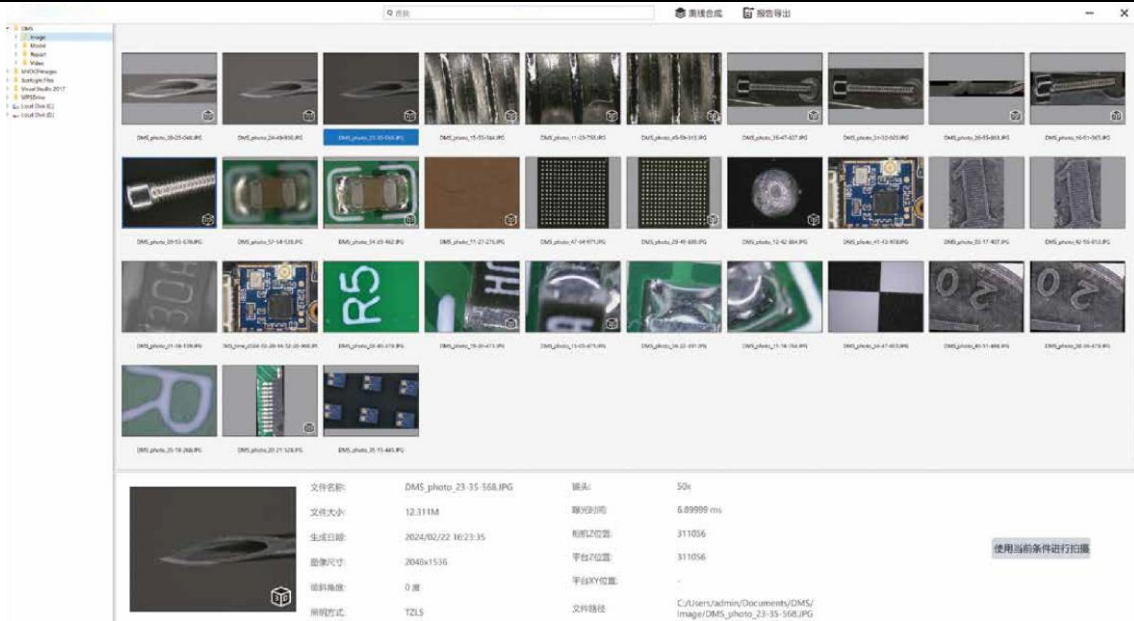


Intuitive navigation system

With the navigation window, you can accurately locate the area you want to observe at any magnification.

Saving and reporting

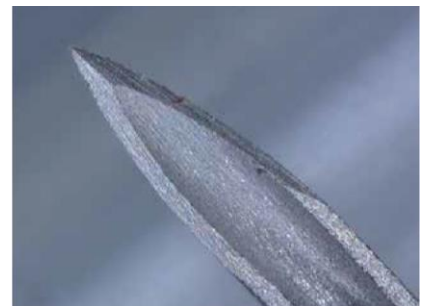
Powerful scene reproduction feature enables you to accurately reproduce the shooting conditions of the images. The reporting function helps you easily generate professional and accurate reports. No need for manual data organization and formatting, just click to generate complete report content. The auto-generate report function supports custom templates and styles, meeting your various needs.



Application



80X Screw – 3D Stitching



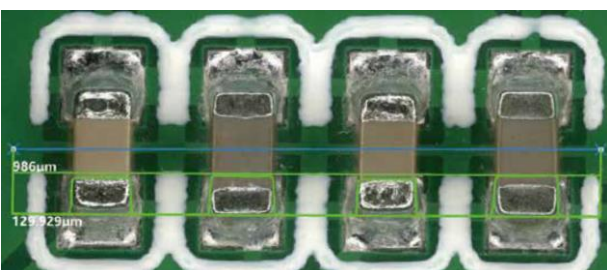
80X Needle – Depth Fusion



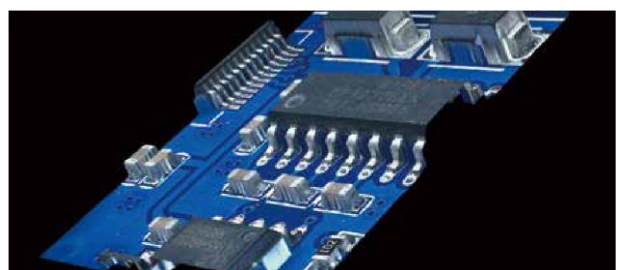
200X Screw – 3D Reconstruction



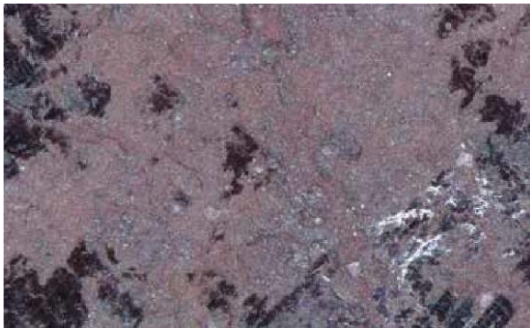
80X Beetle – 3D Stitching



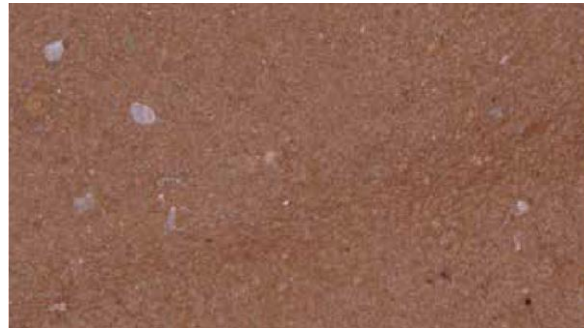
80X Circuit Board – 3D Measurement



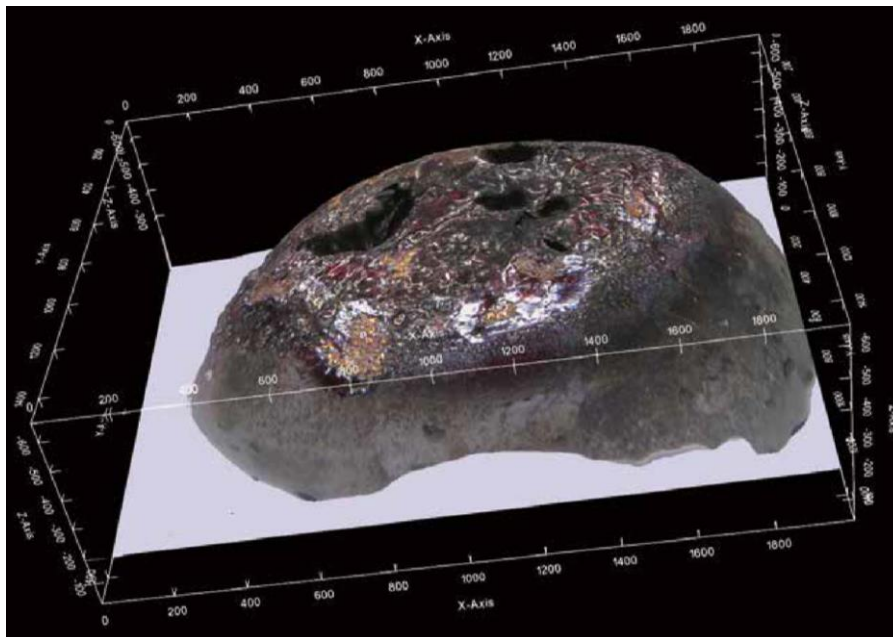
80X Circuit Board – 3D Stitching



400X Metal Surface – Ring Illumination



400X Leather – Ring Illumination



200X Metal Bead – 3D Measurement

Specification

Item	Specification	BSDM-500
Zoom Lens	Zoom lens, built-in continuous zoom system, zoom ratio 10:1, can simultaneously carry 4 objectives, motorized switchable magnification. Built-in coaxial reflected illumination, with four-zone independent control. Built-in 3.2 mega-pixel color camera: 1/1.8 inch, frame rate 50fps (max), resolution 2048*1536. Equipped with polarizer & analyzer slot, DIC slot, supporting bright field, dark field, MIX, polarization, DIC observation. Weight 6.6kg.	•
	High-resolution zoom lens, built-in continuous zoom system, zoom ratio 10:1, can simultaneously carry 4 objectives, motorized switchable magnification. Built-in coaxial reflected illumination, with four-zone independent control. Built-in 20 mega-pixel color camera: 1/1.8 inch, frame rate 50fps (max), resolution 5120*3840. Equipped with polarizer & analyzer slot, DIC slot, supporting bright field, dark field, MIX, polarization, DIC observation. Weight 6.6kg.	Developing
Objective	Plan apochromatic objective, magnification 20-100X, built-in dark field illumination with four-zone independent control, with magnification recognition device, WD=15mm,	•

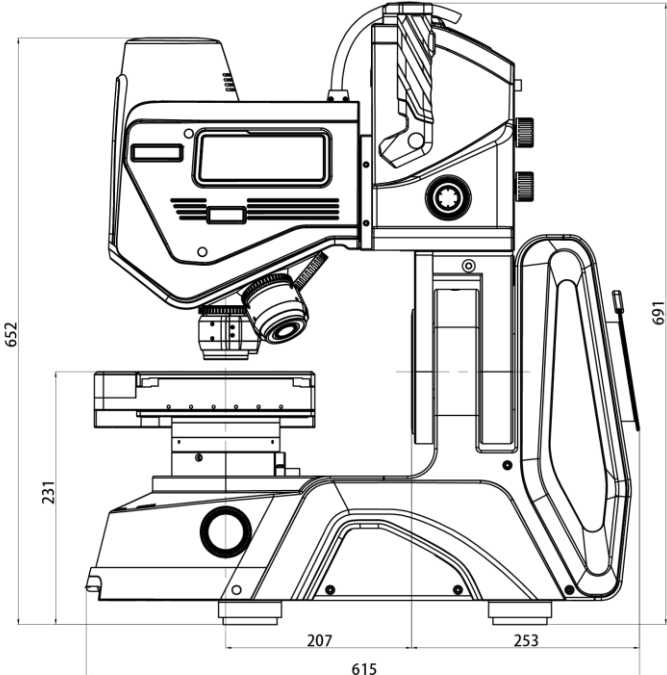
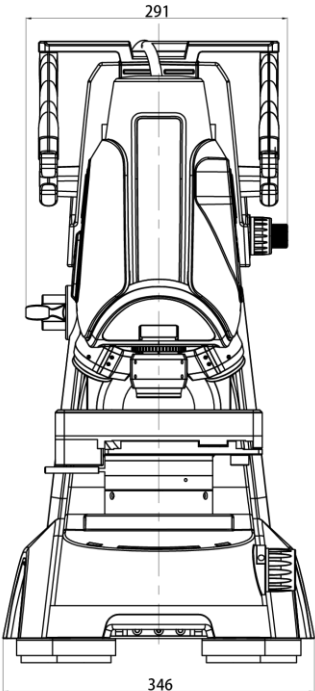
	weight 0.39kg	
	Plan apochromatic objective, magnification 100-500X, built-in dark field illumination with four-zone independent control, with magnification recognition device, WD=32mm, weight 0.36kg	○
	Plan apochromatic objective, magnification 200-1000X, built-in dark field illumination with four-zone independent control, with magnification recognition device, WD=15mm, weight 0.4kg	●
	Plan apochromatic objective, magnification 500-2500X, with magnification recognition device, WD=6.3mm, weight 0.42kg	○
	Plan apochromatic objective, magnification 2500-7500X, with magnification recognition device, WD=1.5mm, weight 0.51kg	Developing
Stage & Frame	Motorized stage, stage size: 230mm*245mm. In rotation priority mode, movement range: 50mm*50mm, ±90 ° manual rotation angles. In travel priority mode, movement range: 100mm*100mm, ±90 ° manual rotation angles. Travel precision 0.1μm, maximum moving speed 20mm/s, rotation precision 1°. Equipped with 3W LED transmission illumination system, color temperature 4750-5500K, brightness adjustable. Equipped with 132mm glass stage board/ black and white board. Load capacity of 5kg, weight 6.5kg.	●
	Motorized Z-axis, used for lifting and lowering the zoom lens, with fine and coarse coaxial handwheel. Travel range: 51mm, precision: 0.1um, maximum moving speed 17mm/s. Including Z-axis external cable (0.7m). Weight 6.2kg	●
	Coarse handwheel lifting stage, stroke 50mm, precision 1um, maximum moving speed 10mm/s. Swing arm ±90 ° rotatable, rotation precision 1 °, with angle recognition function. Includes 3C power cable, direct connection cable (0.5m), USB-CAN card. Weight 27.7kg.	●
Controller	Controller, used to control motorized Z-axis, display, illumination, imaging, etc. Weight 0.56kg	●
Polarizing Attachment	Polarizer, 360° rotatable	○
	Analyzer, 360° rotatable	○
DIC	DIC kit	Developing
Software & PC	Circular standard board, supporting automatic calibration with the software	○
	Offline software (not connected to the microscope) for imaging observation and data measurement, with a USB dongle for offline software authorization.	Developing
	All in one computer, 28 inches monitor, resolution: 4K, CPU: i7, GPU discrete graphics, memory: 32GB, hard drive capacity: 512GB+1TB, including USB docking station. Weight 12.3kg	●
	Software, used for microscope imaging observation (connected to microscope). It can achieve illumination control, 2D and 3D image shooting, image optimization, plane measurement, contour measurement, area/volume measurement, particle counting, and includes one USB encryption dongle.	●
Other	Internal hexagonal Spanner M4	●
	Internal hexagonal Spanner	●
	Paper box with pearl cotton, dust cover	●

Note: ● Standard Outfit, ○ Optional

Configuration Chart

Item	Specification	
Optical System	Telecentric Continuous Zoom System	
Comprehensive Magnification	20-7500X	
Magnification Switching Method	Electric Switching	
Camera	1/1.8 inch, 3.2MP, max frame rate 50 fps	
	1/1.7 inch, 12MP, max frame rate 30 fps	
Illumination Methods	Coaxial episcopic, coaxial oblique, annular illumination, segmented annular illumination, mixed illumination, transmitted illumination	
Stage	Stage Size	230*245mm
	Travel Range	Maximum 100*100mm
	Rotation Angle (with angle recognition)	Maximum $\pm 90^\circ$
	Load Capacity	5 kg
Microscope Frame	Upper Z-axis Travel	51mm
	Upper Z-axis Movement Method	Electric, handwheel, controller, software control
	Lower Z-axis Travel	50mm
	Lower Z-axis Movement Method	Electric, handwheel, control
	Tilt Angle (with angle recognition)	$\pm 90^\circ$
Controller	Controls the linkage of various components	
Computer	28-inch 4K Ultra HD LCD monitor. CPU: i7. Memory: 32 GB. Hard Drive: Solid State Drive + Mechanical Hand Drive	
Software	Imaging	2D imaging
		3D imaging
		Image processing
		Stitching imaging
		Multi-area shooting
	measurement	Rapid measurement
		Cross-field measurement
		Planar measurement
		Point height measurement
		Automatic measurement
		3D measurement
		Contour measurement
		Particle counting
Power Voltage	100-240VAC 50/60HZ	
Device Size	602*346*692mm (excluding computer and controller)	

Dimension



Unit:mm