

OLYMPUS[®]

Your Vision, Our Future

Opto-digital Microscope

DSX500i

NEW

Discover another dimension

www.olympus-ims.com/opto-digital/



- OLYMPUS CORPORATION is ISO14001 certified.
- OLYMPUS CORPORATION is FM553994/ISO9001 certified.
- This device is designed for use in industrial environments for the EMC performance (IEC61326-1 Class A device). Using it in a residential environment may affect other equipment in the environment.
- All other company and product names are registered trademarks and/or trademarks of their respective owners.
- Images on the PC monitors are simulated.
- Specifications and appearances are subject to change without any notice or obligation on the part of the manufacturer.

OLYMPUS[®]

OLYMPUS CORPORATION
Shinjuku Monolith, 3-1, Nishi Shinjuku 2-chome, Shinjuku-ku, Tokyo, Japan
OLYMPUS EUROPA HOLDING GMBH
Wendenstrasse 14-18, 20097 Hamburg, Germany
OLYMPUS AMERICA INC.
3500 Corporate Parkway, Center Valley, Pennsylvania 18034-0610, U.S.A.
OLYMPUS (CHINA) CO., LTD.
11F, K. Wah Centre, 1010 Huaihai Rd(M), Xuhui District, Shanghai, P.R.C.

OLYMPUS KOREA CO., LTD.
Olympus-Tower, 114-9 Samsong-Dong, Gangnam-Gu, Seoul, Korea
OLYMPUS SINGAPORE PTE LTD.
491B River Valley Road, #12-01/04 Valley Point Office Tower, Singapore
OLYMPUS AUSTRALIA PTY. LTD.
31 Gilby Road, Mt. Waverley, VIC 3149, Melbourne, Australia
OLYMPUS LATIN AMERICA, INC.
5301 Blue Lagoon Drive, Suite 290 Miami, FL 33126, U.S.A.

www.olympus-ims.com

When You Need to See a New Dimension,
Olympus Provides the Answer



DSX500i, the opto-digital microscope is the new standard for industrial microscopes. Born of Olympus' leading-edge opto-digital technology, this scope offers operating simplicity and a level of reliability unheard of among so-called digital microscopes. Any operator, regardless of experience, can use Olympus DSX500i to get complete inspection and accurate metallurgy analysis every time.

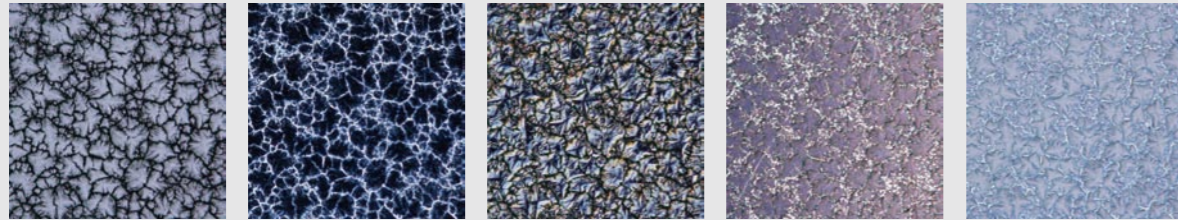
Superb Operating Simplicity  **Absolute Performance Reliability**

Opto-digital Microscope DSX500i

DSX500i Offers a New World of Observation and Analysis

Various Observation Methods with Simple Operations. Quickly Achieve the Image Definition You Need for Observation

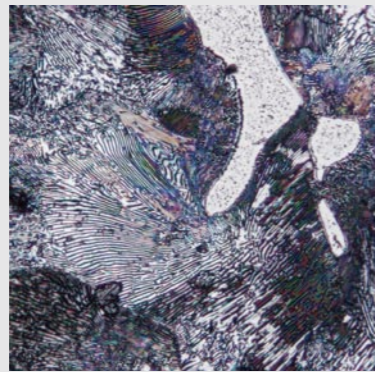
Can be used for any inverted metallographic microscopic observation method. Also, DSX500 Series scopes offer a new MIX observation method that combines BF and DF to detect even the tiniest defects and imperfections. And advanced optics ensure the high-definition images basic to observation and measurement. The DSX Series also offer a Multi-preview function that allows touch-screen selection of observation methods.



- BF**
Bright-field observation. The most common method with optical microscopes
- DF**
Dark-field observation. Illuminate from the side to emphasize imperfections. Best method for identifying defects.
- DIC**
Differential Interference Contrast observation. The method to use when inspecting uneven surfaces.
- PO**
Polarized Light Observation. With metal crystals, etc., the polarization characteristics result in a change of color.
- MIX (BF+DF)**
Use bright-field (BF) and dark-field (DF) observation methods at the same time, a mix of BF ease of observation and DF ease of detection.

Digital Clarity Exceeds the Naked Eye When Analyzing Metallic Structures or Cross-Sections of Electronic Components

In addition to advanced optics, use of HDR (High Dynamic Range) clearly shows hard-to-see microscopic textures as well as samples prone to halation, which were difficult to see before.



An image used of HDR

Panoramic Photos Include Areas beyond the Field of Vision

Panoramic photos let you easily take photos of areas beyond the field of vision, which are automatically synthesized into a screen image to show a very broad field in high definition. 2D, EFI, and 3D can all be synthesized.



Panoramic image



Page 08-09



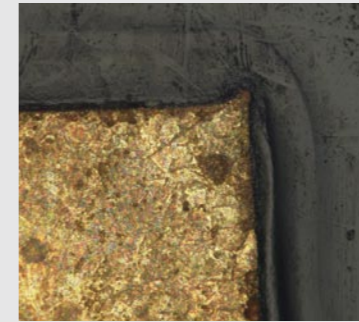
Page 08-09



Page 10-11

Sample Surface Shown Clearly and In Focus, Even If Uneven

Extended Focal Image (EFI) DSX500 maintains focus across the entire sample surface area, even if the material's structure or etching has caused unevenness.



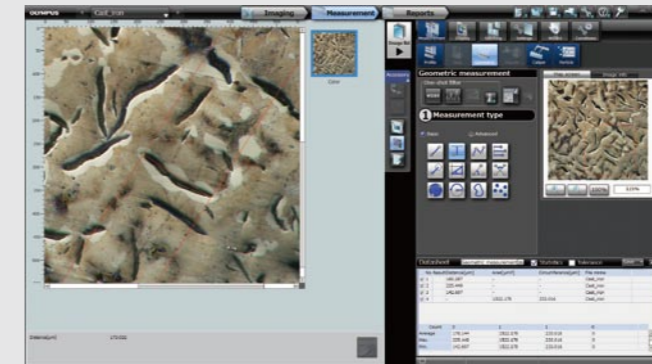
Even level differences on polished surfaces remain in focus in the screen image.



Page 10-11

Standard Features Enable a Huge Variety of Measurements, So All Your Measurement Objectives Are Met

All the measurement items possible with an inverted metallographic microscope are standard features, so it is easy to quantify measurement results. Particle and cast-iron analyses can be done with Olympus image analysis software OLYMPUS Stream.



Geometric measurement



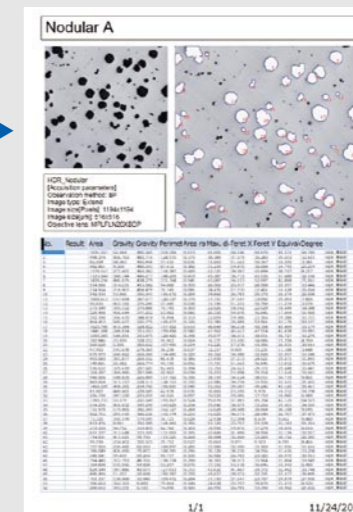
Page 14-15

Quick Simple Measurement with a Report Function

One click sets the report function in motion to record and create a report of the images and results of measurements and observations. The system can be set to follow applications and greatly improve efficiency.



A click can generate a report



Report output



Page 11



Operating Simplicity that Guides Operators to Optimum Output, Regardless of Their Experience

A new way to see. No peering through microscope eyepieces, because everything shows on the GUI screen. So you operate the scope with touch panel, mouse, or computer. What's more, virtually anybody can use this new operating system, whatever their experience. The screens guide the operator through the procedure, from inspection to measurement and analysis to final report. Short, simple steps. Quick results.

Tutorial Mode

Eliminates the confusing aspects of operating a microscope. Just follow the suggestions the system gives for excellent output every time.

Advanced Mode

Makes jobs super easy for the experienced operator. Laid out for action. Powered controls make operation much speedier.

Three Modes to Set According to Operator Experience and Job Demands

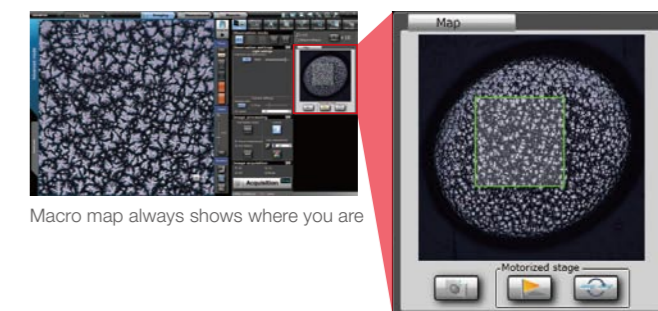
Select Tutorial Mode or Advanced Mode to match the experience of the operator and the job at hand. And Advanced Mode can be customized to match operator experience or to do routine work. The operator's ID and password open the application, and it automatically sets the scope to the operator's preferred observation, analysis, or measurement settings along with the screen visual the operator normally uses.

Macro-mapping Means You Never Lose Track of the Place You're Inspecting

Where conventional microscopes tend to lose focus in dark-field image, DSX500i stays in bright-field image mode even when changing observation methods. That means no confusion when increasing or reducing magnification. On the screen, a macro map shows the exact observing point. And the panoramic view function combines photos of several points into a single, larger image.

New User Interface Changes Thinking About Microscope Operation

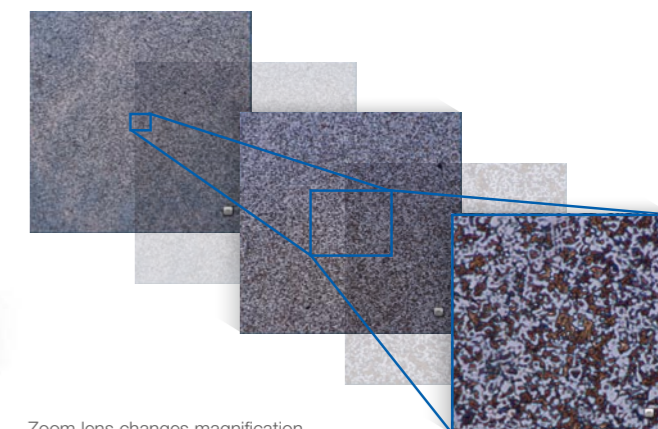
Where an operator had to make complicated adjustments before, with DSX500i, it's simple. Once the sample is in place, everything is controlled by computer mouse, joystick, or touch screen – inspection position, focus, zoom, illumination, and choice of several inspection and operation methods. And you can easily find the inspection position you want, just by moving the image on the touch screen with your finger until it is in the right place. What's more, pinching—enlarging by spreading two fingers, reducing by bringing two fingers together—work on the DSX500i touch screen as well. All controls are direct and easily performed. Furthermore, auto-focus/auto-gain make sure illumination of and focus on the sample are correct.



Macro map always shows where you are

Optical Zoom Gives Close-Up and Wide-Angle as Needed

Change magnification as needed, even by slight degrees, with the view automatically in focus by AF function as the change is being made. A single lens gives you optics of 13x and digital zoom for a maximum of 30x.



Zoom lens changes magnification



Operator Mode

This mode is customizable for speedy routine work. Most efficient when the same task is done repeatedly.

Three user-selectable modes — Choose your mode according to the measurement environment

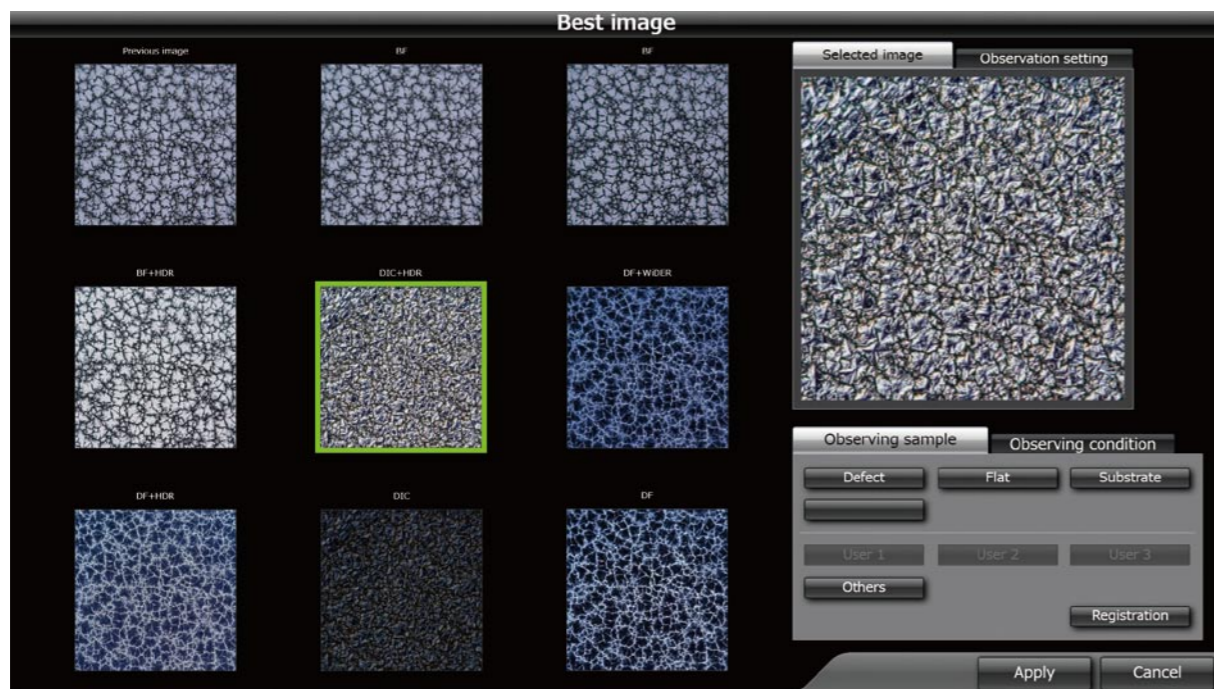


GUI enables a direct, comfortable operation



Operating Simplicity Lets even the Inexperienced Observe Samples They Couldn't Before

The leading-edge digital technology of this microscope lets you see more than any other microscope can. Here-fore, only experts with years of experience could adjust microscopes to achieve really good views of relevant samples. But DSX500i allows any operator to do that with a GUI screen. Now all it takes is a touch of the finger to follow a few easy steps to get exact output from inspection to diagnosis to pertinent reports.



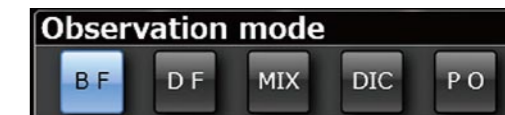
Best image — Just choose the image you want from the previews on the screen

Best Image Function Ensures Optimum Microscope Performance

Now you can operate your microscope just by choosing, and leave the inspection method up to the microscope. That ensures the best possible image, whether looking for defects, uneven surfaces, or foreign objects. Anyone can operate the system, beginner or expert, and it can be customized for operator or operation. Put the inspection methods in memory, and whoever operates the scope will get the same results; no scattering.

Change Observation Methods with One Click – No Presetting Necessary

With virtually every industrial inspection method at hand, it's easy to choose the proper one for the current task. Just choose the proper method with the click of a button. No complicated adjustments needed.



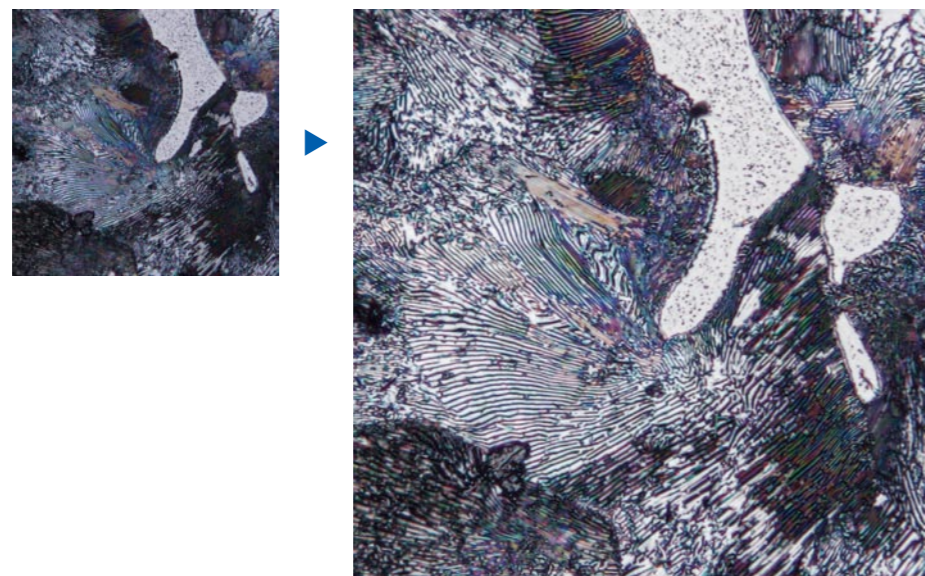
A click of a button gives you the image you want on screen

HDR Gives Ultra High-Definition Visuals that Go Beyond the Human Eye

Dark-field risks blackout and bright-field risks halation, but the HDR (High Dynamic Range) function of DSX500 scopes synthesizes several images taken at different exposures to eliminate such problems. HDR promises high-fidelity images in which textures stand out and there is no halation, so defects that were undetectable now stand out.

MIX Observation Method Easily Detects Defects and Imperfections

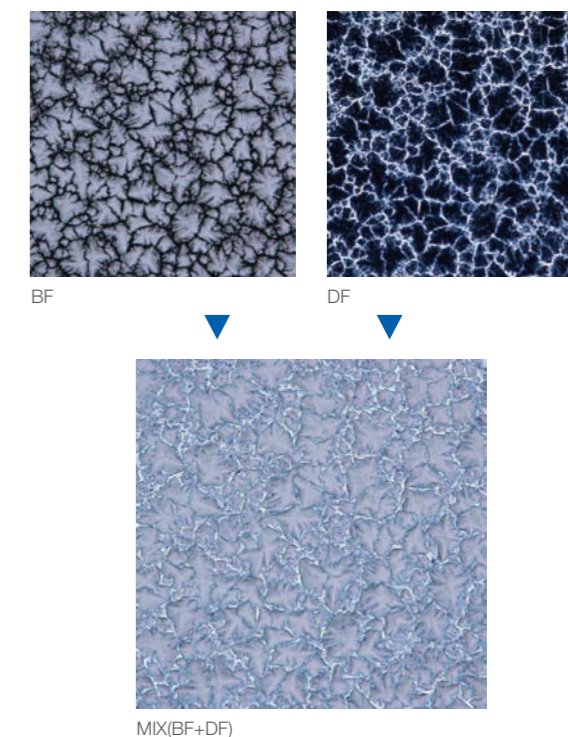
MIX combines bright-field (BF) measurement with dark-field (DF) LED illumination, something conventional microscopes cannot. With bright-field visibility and added dark-field detection capabilities, defects and imperfections can be detected while observing the sample.



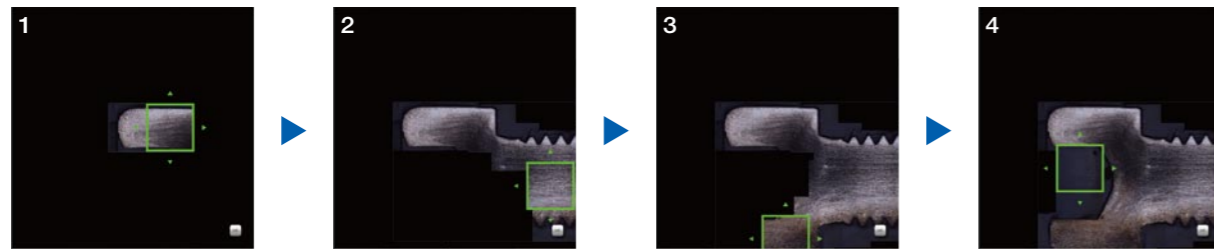
HDR — enables ultra high-definition inspection in dark-field and DIC images with one click

WiDER Provides Easy Inspection of Samples with High Luminance Difference

If the shadowed areas black out, merely upping the illumination power is often not enough, because then halation occurs. Olympus intelligent image processing technology eliminates these problems with WiDER, a proprietary system ready to go at the click of a button. It takes care of the high contrast problems without reducing the frame rate. No blackouts. No halation.



A Simple Operation Lets You See Now What You Couldn't See Before



Panoramic photos — With a bolt cross-section, for example, use the mouse or your finger to select what you want in the view, and it's all linked together on screen

The DSX500i requires no extensive knowledge or special techniques to show you exactly what you want to see. By calling on leading-edge electronic technology, you can now see what was unclear or impossible before. Of course, there are no difficult processes either. Just press the buttons on the menu to see what you want.

Panoramic Photos Include Areas beyond the Field of Vision

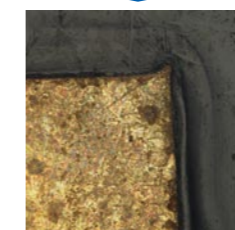
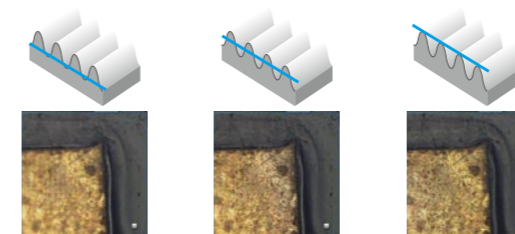
No such thing as “outside the field of vision.” Just move the observation position on the screen, and the motorized stage will move the sample to that place. As the stage moves, the system automatically stitches images into a single large field of view, in real time. Where conventional microscopes reduce field area with increases in magnification, Panoramic View maintains the original field while giving close-up clarity – with 2D, expanded focus, or 3D, or any combination of one or all.

Makes Your Routine Work More Efficient

You can set the image movement (up, down, left, right, slanted, etc.), the display position and method, and the sample stage will automatically obey those settings as it starts to work. This significantly shortens the takt time when observing or measuring the same kind of samples one after another.

Every Part of Samples with Uneven Surfaces is in Focus with EFI (Extend Focal Image)

For example, even the most carefully polished sample may show unevenness where different materials meet. With conventional scopes at high magnification, such unevenness is out of focus and indistinct. DSX Series scopes move the focus to the higher portion of the sample and synthesize an image of the entire field that is perfectly in focus.



EFI image

Color Enhancement Feature Shows Only What You Want to See

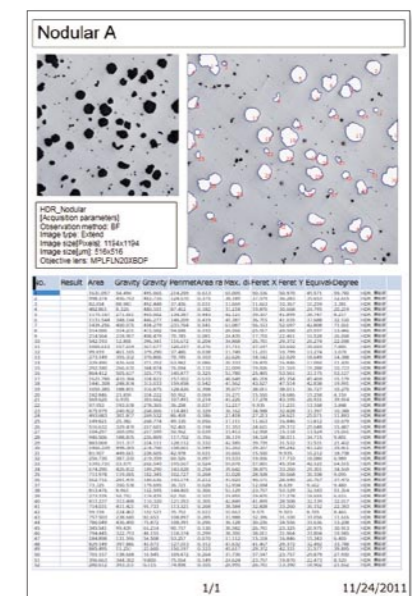
If you put what you need to see in color and leave the rest in monochrome, it's much easier to find defects, if any exist. And you can photograph just that part, too, which makes reports even more effective.

The Report Function Gathers the Results Together Efficiently

With DSX500i, you can do observation or measurement, and the operator's workflow includes preparation of relevant reports that can be output in rich text (rtf), or PDF formats.



A click can generate a report



Report output



DNA from Olympus Gives DSX Microscopes the Ability to See What Digital Microscope Cannot

Olympus guarantees the reliability of all DSX500i microscopes because they are born of Olympus optics and opto-digital technology. Halation is minimal and color reproduction is real. And to make sure of that, Olympus uses the perfect combination of CCD chips and graphic boards. The sample is reproduced with such accuracy it's like a new dimension.

Ultra High-quality Optics Let You See Into Another Dimension

Olympus DNA includes superior engineering and design capabilities as well as proven manufacturing quality. In the clear images produced by the DSX500i opto-digital microscope, you'll find neither flare nor distortion. That's something no digital microscope can claim.

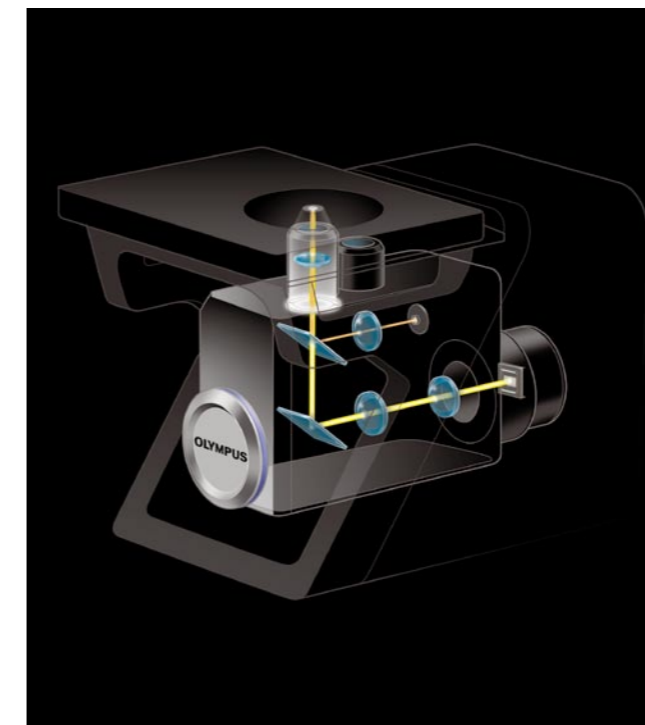
18MP Images Reproduced in Very High Resolution with High-Performance CCD*

As the engine that shows exactly what the high-quality optics reveal, exceptionally high-performance CCD reproduces the colors precisely. The image shift function ensures very high fidelity with fine detail processing of images, so the detail clarity extends from corner to corner.

*4800x3600 pixels, 3CCD mode conversion triples the pixel count



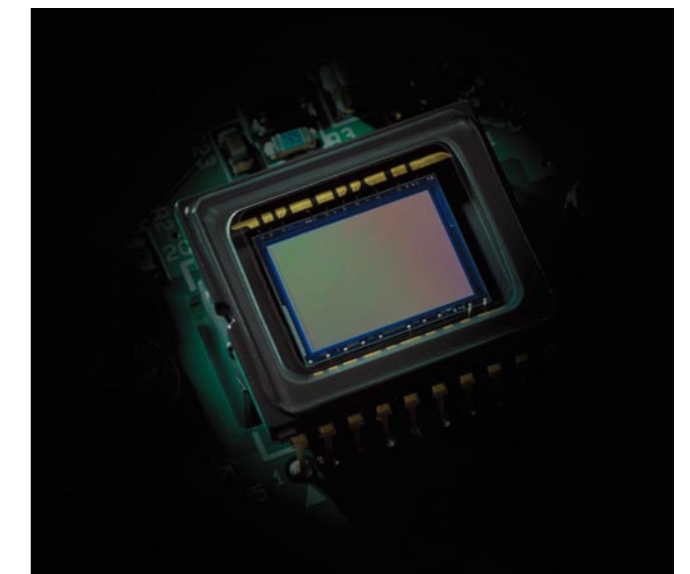
The optics technology and dedicated lenses — Complete with Olympus DNA



The optics technology and dedicated lenses – complete with Olympus DNA

Dedicated DSX500i Field Lenses Make High-Grade Image Dissection a Simple Matter

These new lenses (10x, 40x) were especially designed for DSX500i scopes. And they put high NA and low-magnification wide-field observations together, enabling efficient observation and measurement over a broad range of situations. What's more, you can use UIS2 lenses, which provide high resolution and contrast.



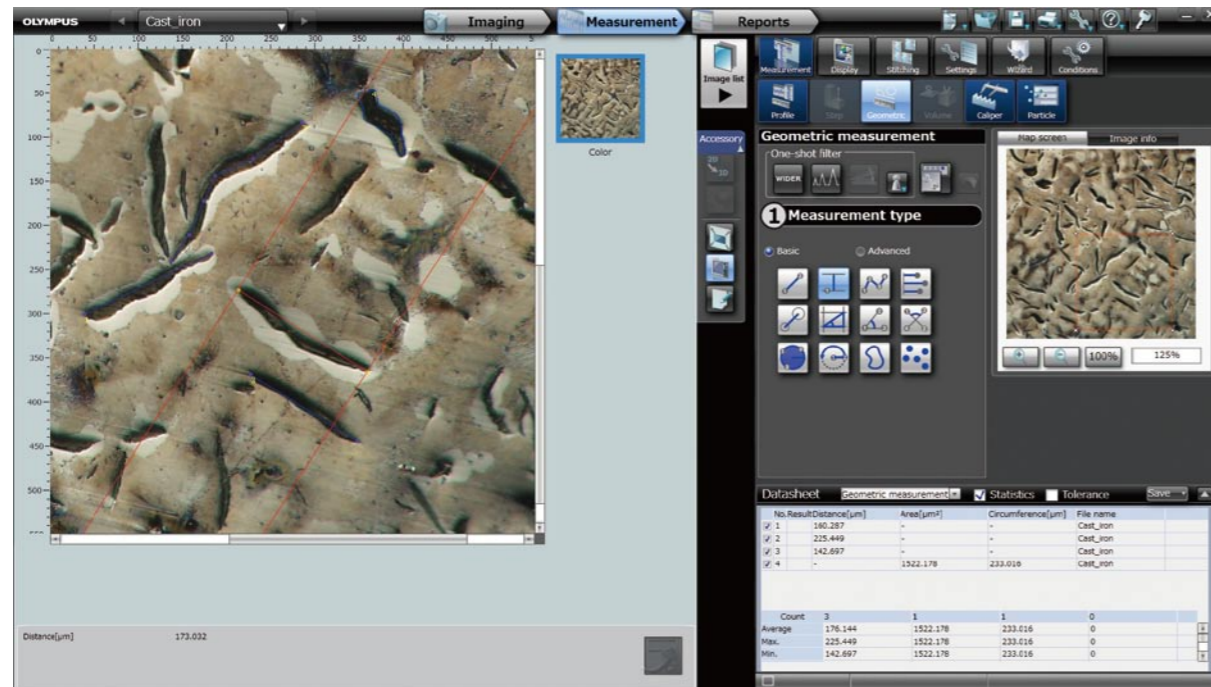
High performance CCD

LED Illumination Gives Picture-Perfect Inspection With Much Less Energy

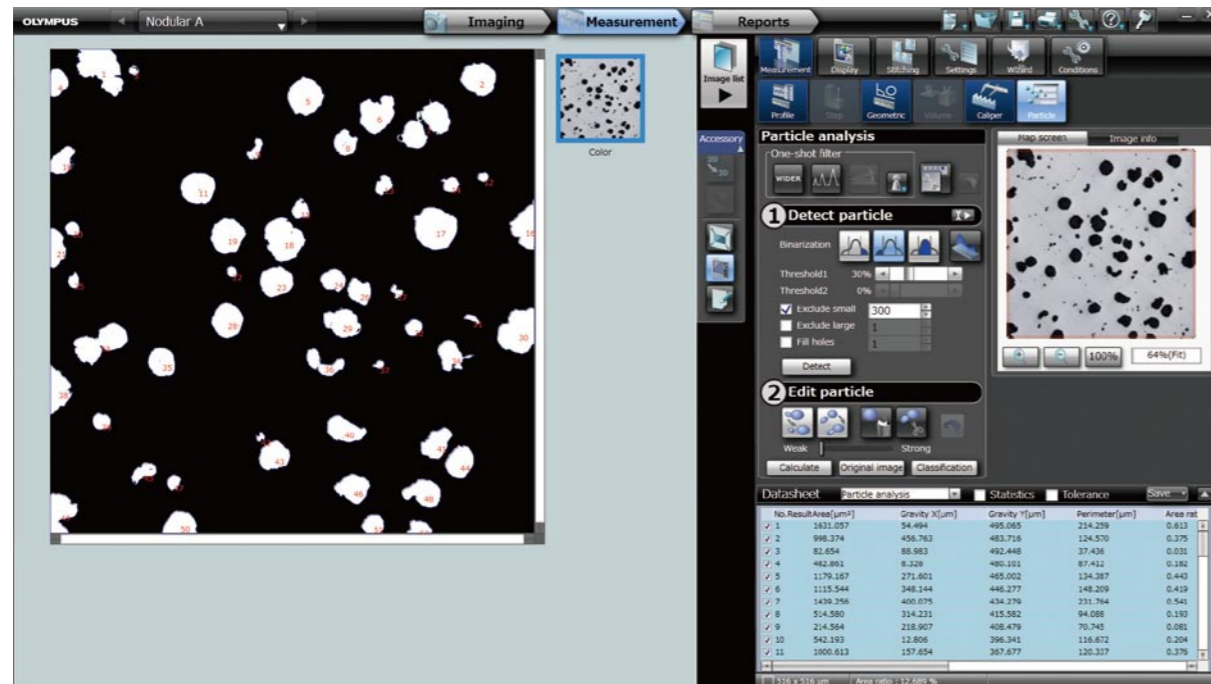
New LED illumination not only assures accurate observation, but also achieves both energy conservation and lower running costs. What's more, the light color temperature does not change with intensity. And the long working life of the elements means the scopes are virtually maintenance free.



Precision Measurement with Absolute Reliability that Cannot Be Matched by Conventional Digital Microscopes



Basic measurements includes distance between two points, polygonal curve, perpendicular, distance between centers of circles, angle, area of a circle, free hand



Analysis functions include particle analysis, flat measurement, and caliper measurement

A wide-range of measurement items — enable measurement from every side for various applications

DSX500i scopes show Olympus' dedication to accurate measurement with its telecentric optics and frame design. The measurement capabilities are far and away more accurate than digital microscopes, with much greater reliability. The measurements are true and consistently repeatable, the test for reliable accuracy, always.

Accuracy and Repeatability Guaranteed

The DSX500i provide precise and repeatable measurements. Everything from an objective lens to the frame is manufactured in an Olympus factory under strict inspection criteria. The accuracy is guaranteed under the traceability system connecting to national standard.

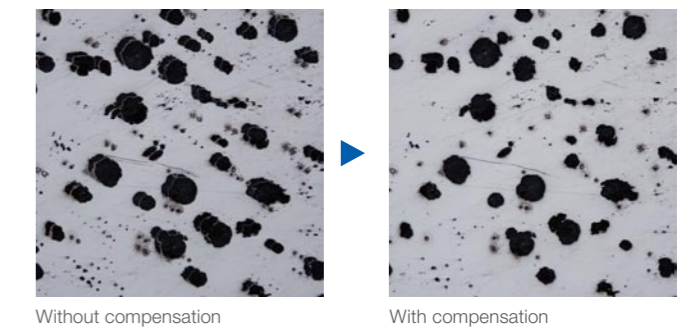
*Calibration by Olympus or dealer specialists necessary



A traceability diagram from a DSX500 series opto-digital microscope

Vibration Compensation Perfects the Observation/Measurement Environment

The frames absorb any vibration that might affect inspection or measurement at high magnification, and they adjust for any vibration-caused blur. This software technology ensures accurate measurement at any time.



OLYMPUS Stream Can Analyze DSX500's Data

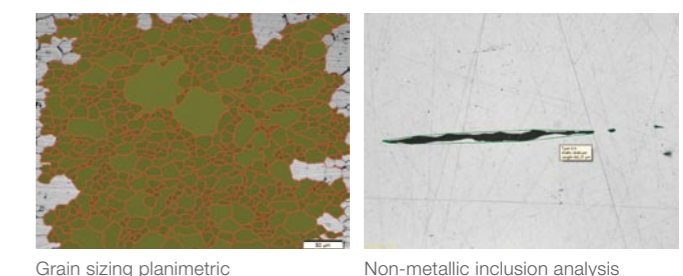
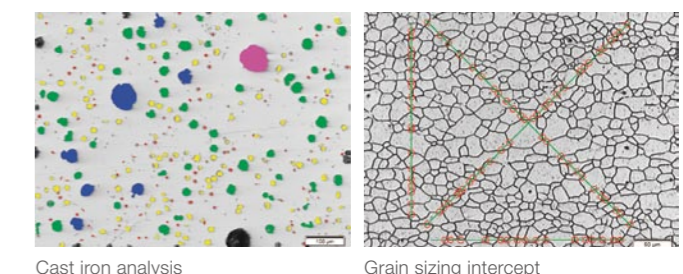
Granularity analysis, cast iron analysis, non-ferrous metal inclusions analysis, chart comparisons—virtually every analysis necessary in metallographic evaluation can be done with OLYMPUS Stream, an image-processing program. It accesses all data in the DSX500 data files, including basic calibration data, and offers a diverse and flexible work flow that moves from measurement to analysis to report production.

Auto-Calibration Eliminates Setup Scatter

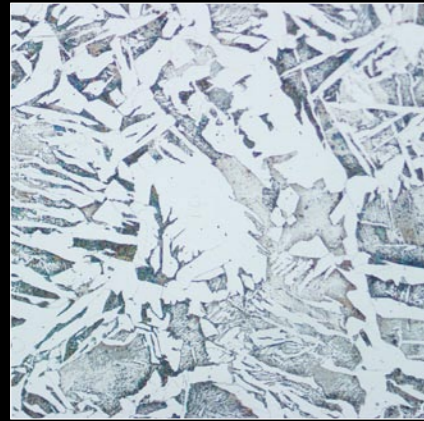
Proper calibration is basic to precise measurement, and with Olympus DSX500i, any operator can calibrate simply and accurately. This eliminates scattering that naturally comes when different operators calibrate, and naturally increases reliability of read-outs. In addition, the system's calibration report shows who did the calibration and when.



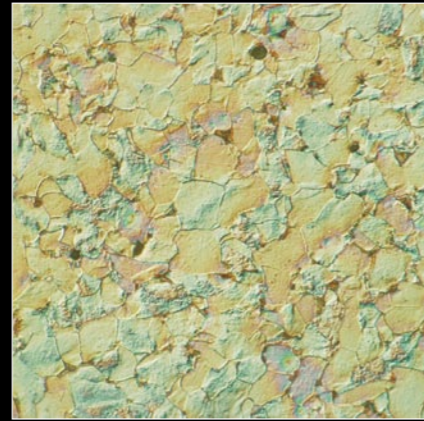
*A special calibration sample is necessary



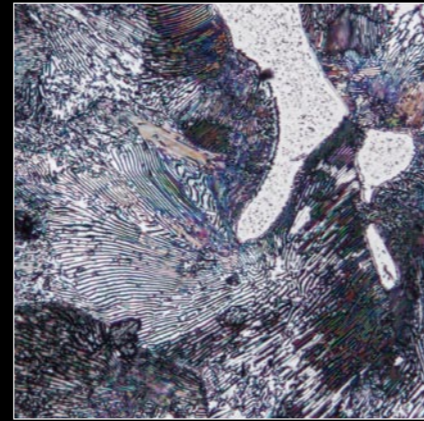
DSX500i Opto-digital Microscope Offers Operating Simplicity and Ultra High-resolution Visuals that Cannot Be Matched by Other Industrial Microscopes or Digital Microscope Systems



Metal
(Brightfield)



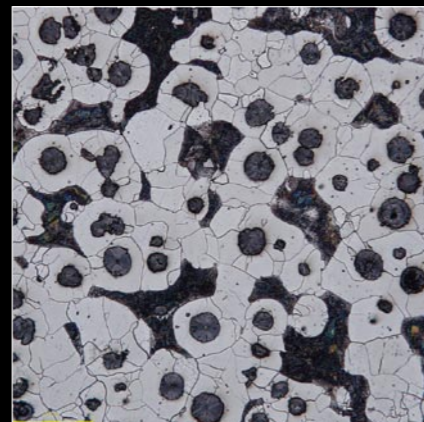
Metal
(DIC)



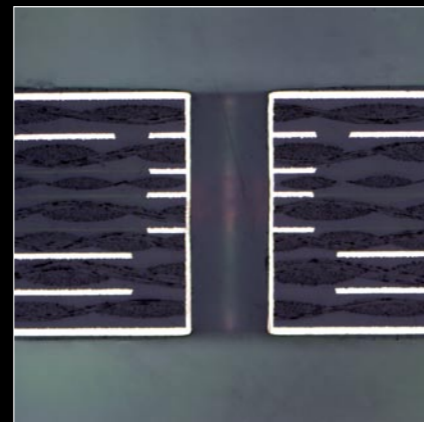
Metal
(Brightfield +HDR)



Cast iron
(Brightfield)

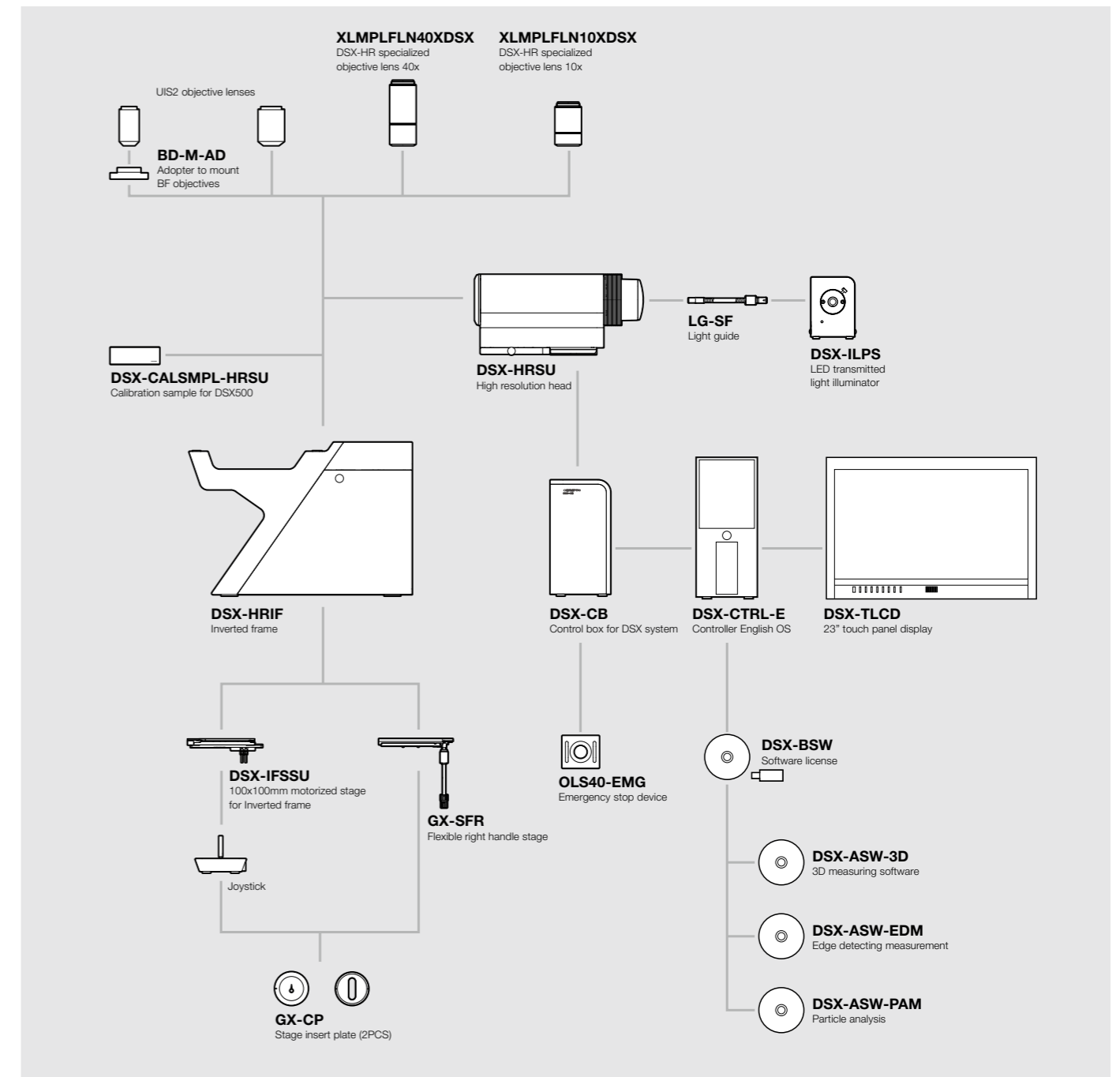


Nodular graphite (Etched surface)
(Brightfield +HDR)



Multilayer board (through-hole inspection)
(Brightfield)

DSX500i System diagram



DSX500i Specifications

	Zoom ratio	13.5x optical zoom (0.26x-3.5x), 30x with digital zoom
Mountable objective lens	DSX Dedicated objective lens	XLMPFLN10X, XLMPFLN40X
	UIS2 objective lens	MPLFLN1.25X, MPLFLN2.5X, MPLFLN5XBDP, MPLFLN10XBDP, MPLFLN20XBDP, MPLFLN50XBDP, LMPLFLN10XBD, LMPLFLN20X, LMPLFLN50X, MPLAPON50X
Illumination	Embedded standard	Bright field: LED, Dark field: LED
	Optional illumination	High intensity LED
Main frame	Image sensor	1/1.8 inch, 2.01 megapixels, Color CCD (Total pixels : 2.10 megapixels) Total pixels : 1688(H) x 1248(V) Available pixels: 1628(H) x 1236(V) Effective pixels : 1600(H) x 1200(V)
	Cooling method	Peltier colling
Camera	Scan mode	Progressive scan
	Frame rate	15 fps / 27 fps with banning mode
	Image resolution	Normal : 1194x1194(1:1)/1592x1194(4:3) Fine : 1194x1194(1:1)/1592x1194(4:3) Super fine : 3594x3594(1:1)/4792x3594(4:3)
Focusing part	Sensitivity	ISO100 / 200 / 400 / 800 / 1600 equivalent
	Stroke	35 mm
	Resolution	0.01 μm
Motorized stage	DSX-IFSSU (Motorized)	Stroke : 50x50 mm Load capacity : 1 kg
	GX-SFR (Manual)	Stroke : 50x50 mm Load capacity : 1 kg
LCD Monitor	Size	23" with Touch panel and Full HD color LCD monitor
	Resolution	1920(H)x1080(V)
Weight	Approx. 44.1 kg (Main frame, Motorized stage, LCD Monitor, Control box, PC)	
Input rating	100-120V/220-240V, 185VA, 50/60Hz	

*1 Cannot be used with the embedded standard LED.

DSX Series



DSX500
High-resolution
Upright scope



DSX100
Free-angle
Wide zoom scope

DSX500i Series Objective Lens

Series	Model	Perforal distance	N.A.	W.D. (mm)	Actual F.O.V. (μm) *3	Total Magnification *4
DSX dedicated objective lens	XLMPFLN10XDSX *1	75 mm	0.3	30.0	1,960-151	139x-1,803x
	XLMPFLN40XDSX *1		0.8	4.5	490-38	555x-7,211x
UIS2 objective lens	MPLFLN1.25X *2	45 mm	0.04	3.5	15,684-1,206	17x-225x
	MPLFLN2.5X *2		0.08	10.7	7,842-603	35x-451x
	MPLFLN5XBDP		0.15	12.0	3,921-302	69x-901x
	MPLFLN10XBDP		0.25	6.5	1,960-151	139x-1,803x
	MPLFLN20XBDP		0.4	3.0	980-75	277x-3,606x
	MPLFLN50XBDP		0.75	1.0	392-30	693x-9,014x
	LMPLFLN10XBD		0.25	10.0	1,960-151	139x-1,803x
	LMPLFLN20XBD		0.4	12.0	980-75	277x-3,606x
	LMPLFLN50XBD		0.5	10.6	392-30	693x-9,014x
	MPLAPON50X *1		0.95	0.35	392-30	693x-9,014x

*1 DF and MIX are not available *2 Available for BF only *3 At aspect ratio 1:1 (with factory default value) *4 At aspect ratio 1:1

DSX500i Dimensions

