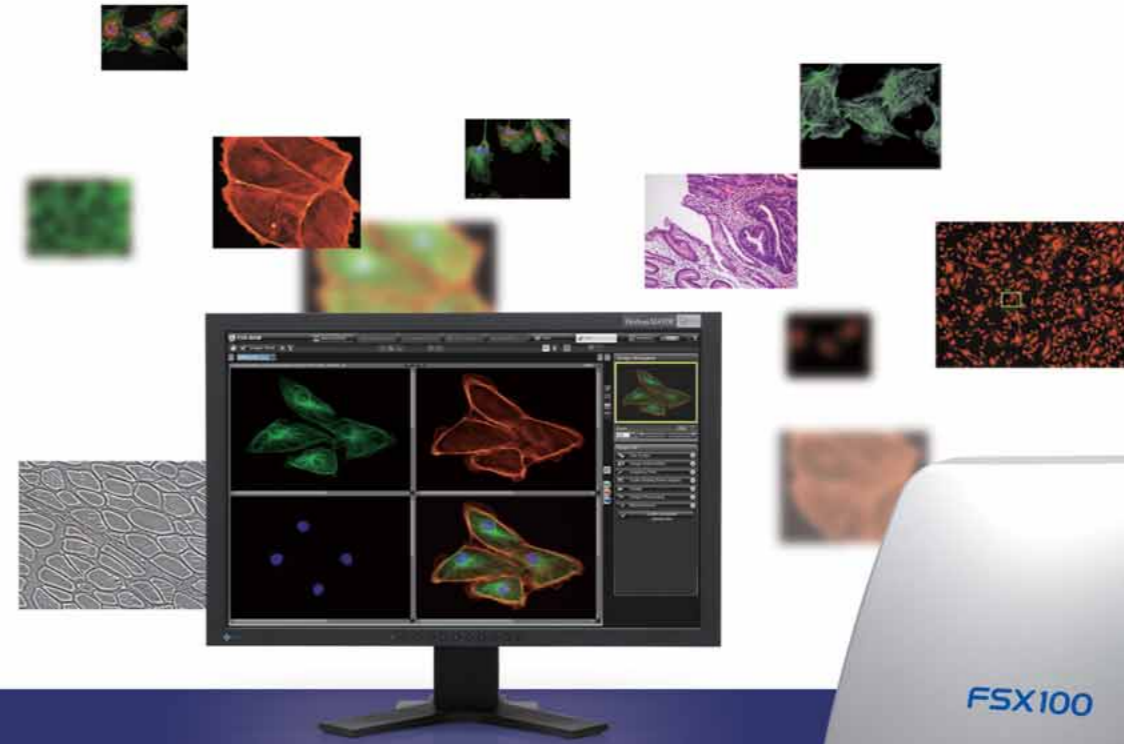


OLYMPUS®

Your Vision, Our Future

Bio Imaging Navigator
FSX100

NEW



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Visit our Web site for on-line demonstration of FSX100.



ECO-PRODUCTS

FSX100 is the environmental conscious product according to OLYMPUS's own standards.

Main features of OLYMPUS Eco-products are as follows.

- Lead-free and arsenic-free Eco-glass for optics, such as lenses and prisms.
- Adoption of cardboard for packing materials without styrene foam for promoting the recycling.
- * Some accessories are inapplicable.

Please visit our web site for further information:
<http://www.olympus.co.jp/en/eco-products/>

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OLYMPUS CORPORATION has obtained the ISO9001/ISO14001
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World-leading optics

Printed in Japan M1675E-0809B

Innovation - All for the sake of researchers.

Bio Imaging Navigator
FSX100



The quality of microscope images is increasing everyday thanks to innovative advances in digital imaging technology.

Ease of Use was fundamental in the design of the new FSX100 Bio Imaging Navigator.

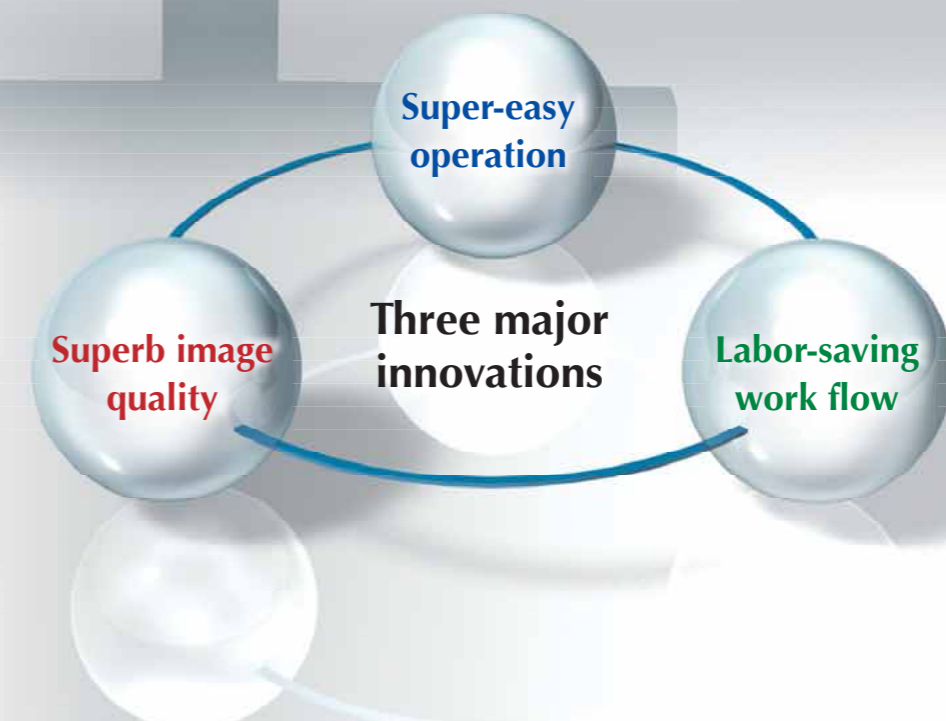
By removing complicated microscope adjustments and set up procedures,
the efficiency of research activities is dramatically improved.

Acquiring high quality fluorescence microscope images has never been easier.

Everyone in the Research Laboratory can now realize the value of
fluorescence and brightfield imaging in their documentation and data publishing work flow.

The ingenuity of the FSX100 allows you to take fluorescence images easily, even if you are a first-time user of a microscope.

With every click of the mouse, a whole new world of imaging opens at your finger tips.

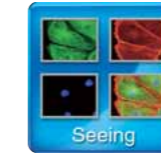




Setting



Shooting



Seeing

I N D E X

- Innovative and Proprietary User Interface.....5
- Four-step Digital Photomicrography.....7
- Combines High Quality Imaging and Ease of Use11
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- Flexible, Versatile Observation/Acquisition modes15
- Advanced UIS2 optical system.....17
- Advanced System Design.....20



FSX100 allows you to capture well-defined fluorescence and brightfield microscopy images in surprisingly simple steps.



Easy to operate using just the mouse
Just simply load your specimen and go

Forget the drawbacks and complicated operating procedures traditionally associated with fluorescence and brightfield microscopy. The simple operation, intuitive software, excellent ergonomics and PC control of the FSX100 brings fluorescence and brightfield microscopy to everyone, regardless of experience level. Getting started with the FSX100 is as easy as: 1) flipping the power switch, 2) opening the cover, 3) loading your specimen, and 4) closing the cover. All operations of the system are performed via the PC software.



Guiding you through image capture
Intuitive User Interface

Researchers new to microscopes or imaging are frequently concerned with the confusing operating process and optimizing their imaging system. With the FSX100, everyone can simply follow the intuitive workflow, and easily navigate through the easy-to-follow steps to capture images. Capturing high quality microscope images has never been easier.



Facilitating presentations and paper publishing
Image Management System

The FSX100 incorporates a library management system for captured images that allows easier access and classification of the images. All image capture conditions are automatically stored with each image file. Images can be edited, features measured and the data exported to Excel. This system helps you to efficiently produce high quality materials for presentations or scientific publications.



Impressive brightness and high-definition
High resolution and high contrast fluorescence images

The FSX100 is equipped with a 40x objective (Numerical Aperture 0.95). The high N.A. 0.95 gathers light more efficiently to provide sharp detail and clean images even of weakly fluorescent specimens.



Simple operation and space saving
Darkroom-free

All of the necessary capabilities for fluorescence observation are packed into the FSX100 that even creates its own dark room. Together with its small footprint, the FSX100 can be installed on a standard laboratory bench. The days of having to go to a small, dark closet to use the fluorescence microscope are gone!



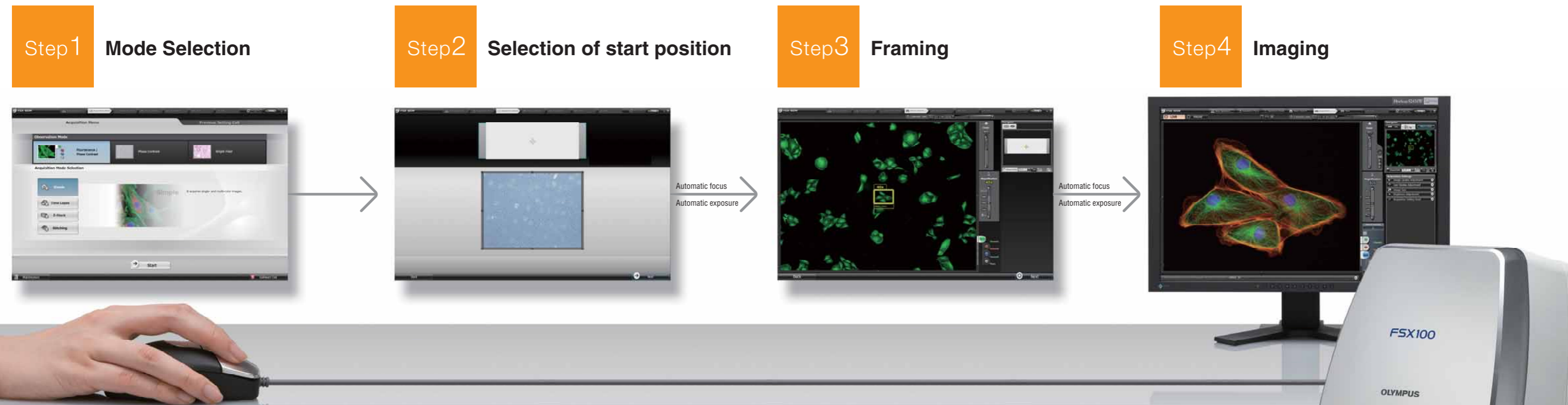
Minimizing time and effort
Simplified routine operation

Automatic focus and automatic exposure control eliminate the need for manual focus and brightness adjustments. Image magnification and fluorescence color selection are simplified and completed with only a couple of mouse clicks. Furthermore, image capture settings can be stored and later recalled by each operator, thus allowing consistent, repeatable imaging across experiments.

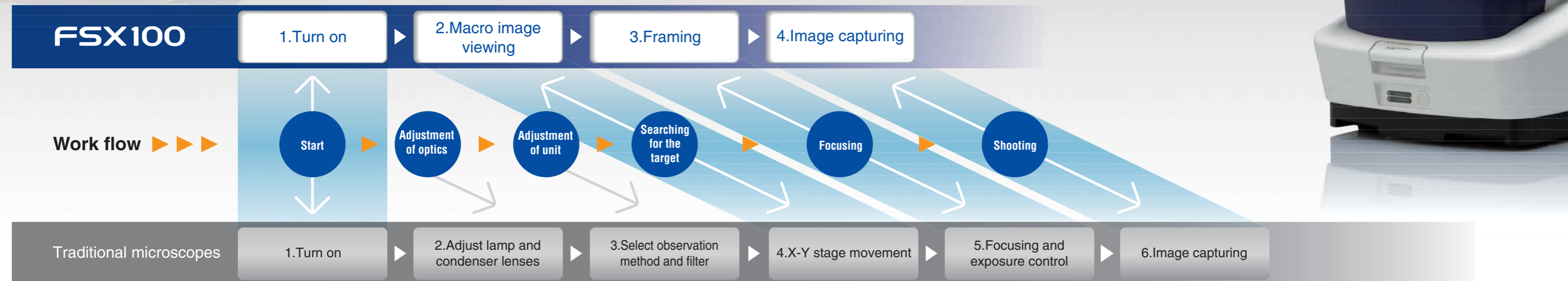
Crisp microscope images, consistently captured using only a computer mouse.

Clear, high-quality images can be easily captured by simply following the step by step instructions displayed one screen at a time.

The user interface is designed to allow users to capture high quality images, smoothly and successfully, every time. Follow the four easy steps: "Mode Selection" → "Selection of start position" → "Framing" → "Imaging". After loading your specimen, there is no need to touch the FSX100 any further during the imaging procedure.



Dramatically improved workflow, saving time and effort.



Even first-time users can capture high quality images by simply following these four easy steps.

Designed to provide high quality images through a simple user interface. Even new users can capture beautiful images, confidently.

Step 1 Mode Selection

FSX100 offers three microscope Observation Modes, 1) Fluorescence / Phase Contrast, 2) Phase Contrast, and 3) Brightfield, and also four Acquisition Modes, 1) Single, 2) Time Lapse, 3) Z-stack, and 4) Stitching, to meet a wide range of applications.

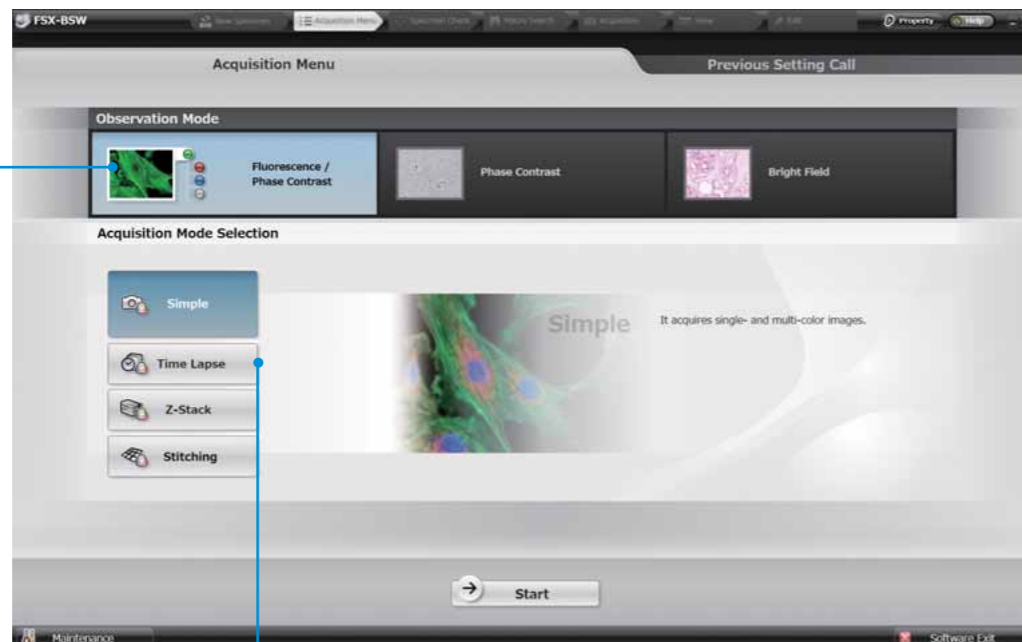
Observation mode selection



Fluorescence / Phase Contrast Phase Contrast Brightfield

Acquisition mode selection

Single/Time Lapse/Z-stack/Stitching

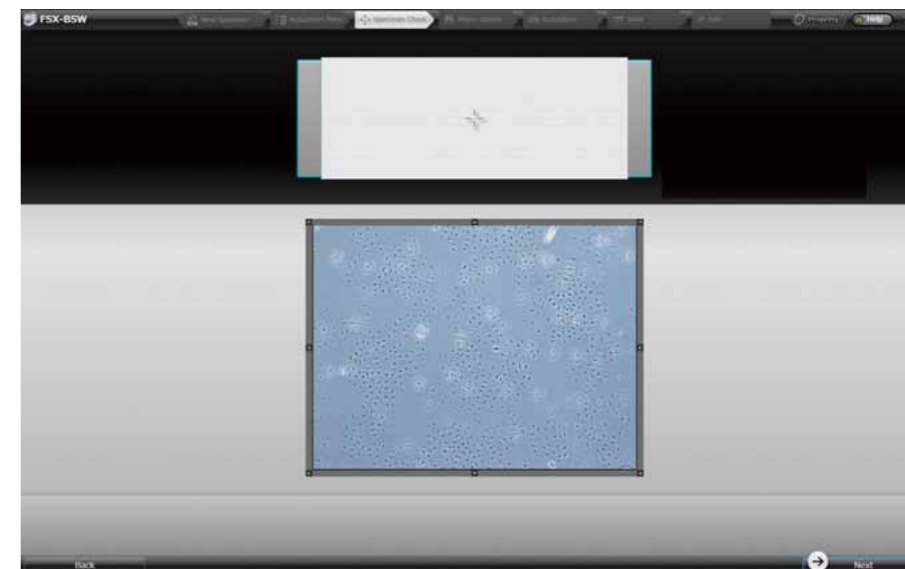


Step 2 Selection of start position

In this window, choose where you want to begin imaging by placing the crosshair over the area of interest on the specimen. After clicking the NEXT button, this area is displayed at low magnification (4.2x) and is the starting view for Step 3.

Displaying the observation range

The FSX100 automatically identifies the specimen holder and displays an outline of the specimen. Then move the crosshair to select the location to begin the framing process.



Displaying the live phase contrast image

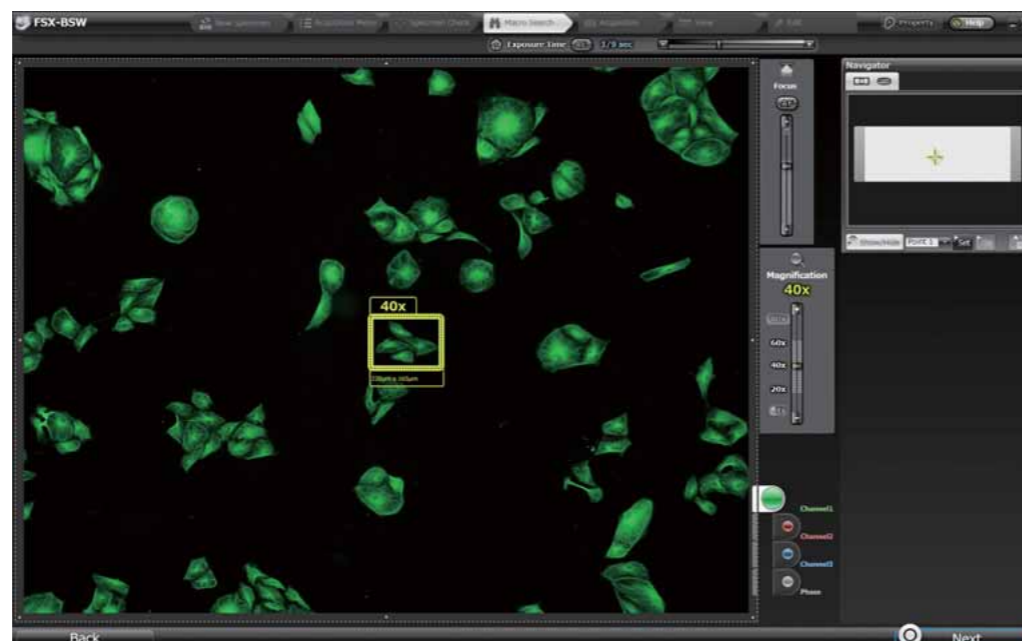
A live phase contrast image is displayed as the crosshair is repositioned around the specimen.

Mapping option

If desired, you can display an overview image of the entire specimen. This image enables the identification and selection of areas of interest for closer examination.

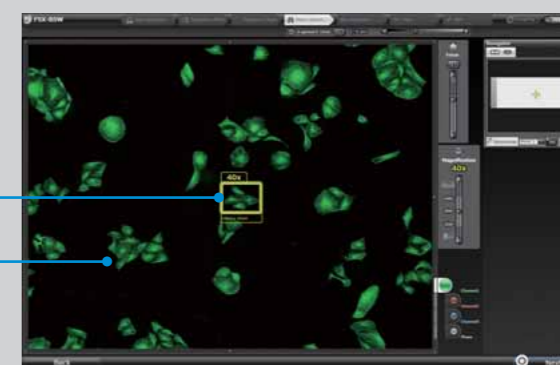
Step 3 Framing

The area selected in Step 2 is displayed and you can choose a region for closer examination. Simply position the small selection window, then adjust its size to specify the magnification at which to capture a high-resolution image in Step 4.



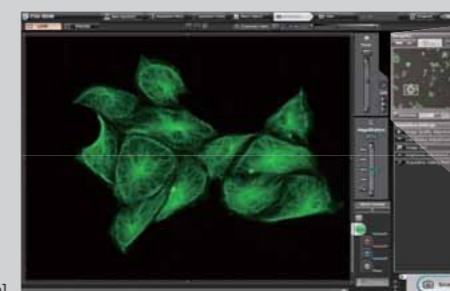
Macro image framing

The wide field of view for macro images allows you to rapidly identify and select areas for image capture.



Bookmark function

Up to 30 points of interest can be registered on a macro image. The registered points can then be imaged throughout the course of the experiment.



●Bookmark option [for registration]

Step4 Imaging

A high resolution image of the region of interest is displayed and you can make adjustments in focus and magnification. Color channels and acquisition settings are optimized. If necessary, specimen position and correction for cover glass thickness can also be adjusted.

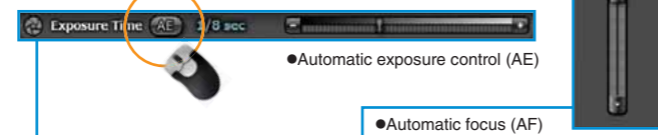
Specimen Protection

Fluorescence excitation light is very intense and potentially damaging to fluorescent molecules or the specimen itself. During periods of inactivity, the FSX100 automatically shuts the excitation light source to minimize the exposure to any one area of the specimen.



One-click AF and AE

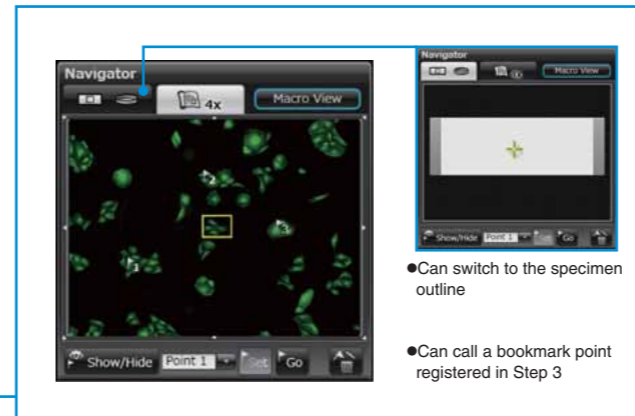
Focus and exposure adjustments are performed easily with a single mouse click. The adjustment can also be conducted using scroll bars.



- Automatic exposure control (AE)
- Automatic focus (AF)

Navigation

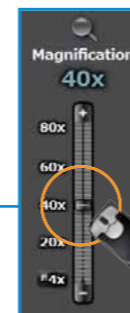
When you double-click a point of interest, the FSX100 automatically centers this point in the field of view, and maintains focus.



- Can switch to the specimen outline
- Can call a bookmark point registered in Step 3

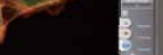
Optical zoom

Simple click-n-drag mouse operation and an elegant optical design allow you to easily select any optical magnification from 17x to 80x without having to change objectives.



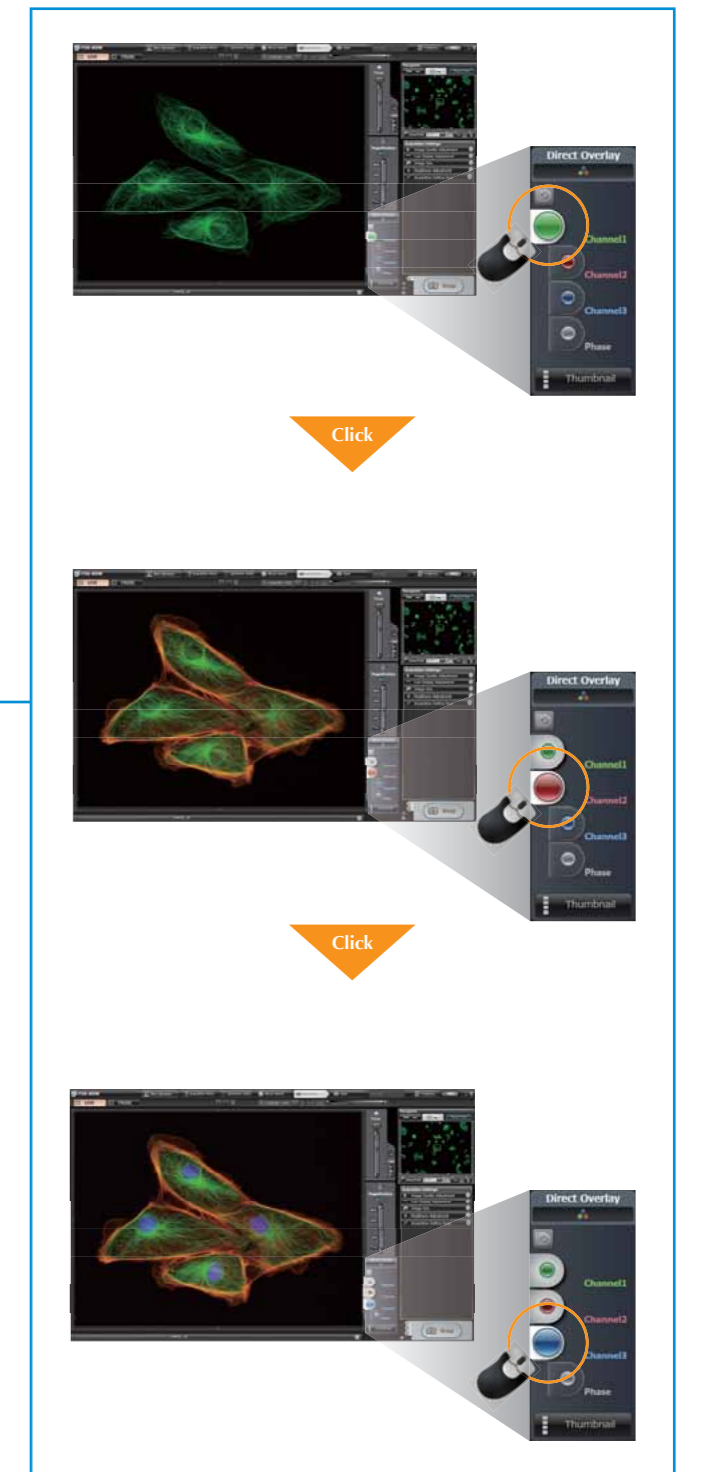
One-click fluorescence channel selection

With a single click of the mouse, you can change the fluorescence channel you want to display on the screen, and immediately start taking images.



Direct Overlay

With just one click Direct Overlay, an advanced and powerful feature of the FSX100, allows you to overlay captured images over a live image. Direct Overlay is particularly useful with multiple color fluorescence specimens. If the specimen position is changed, one simple click will capture all channels and update the Direct Overlay image.



Specimen movement

The specimen can be moved in any X/Y direction by clicking and dragging the cursor on the screen, or by double-clicking a target area to center it in the window.



Correction for cover glass thickness

Cover glass thickness can negatively impact image quality and result in lost resolution and clarity. The FSX100 features a one-touch button to correct for variations in cover glass thickness. Additional correction is afforded by manually adjusting the "+" and "-" buttons.

Why do we need to correct for cover glass thickness?

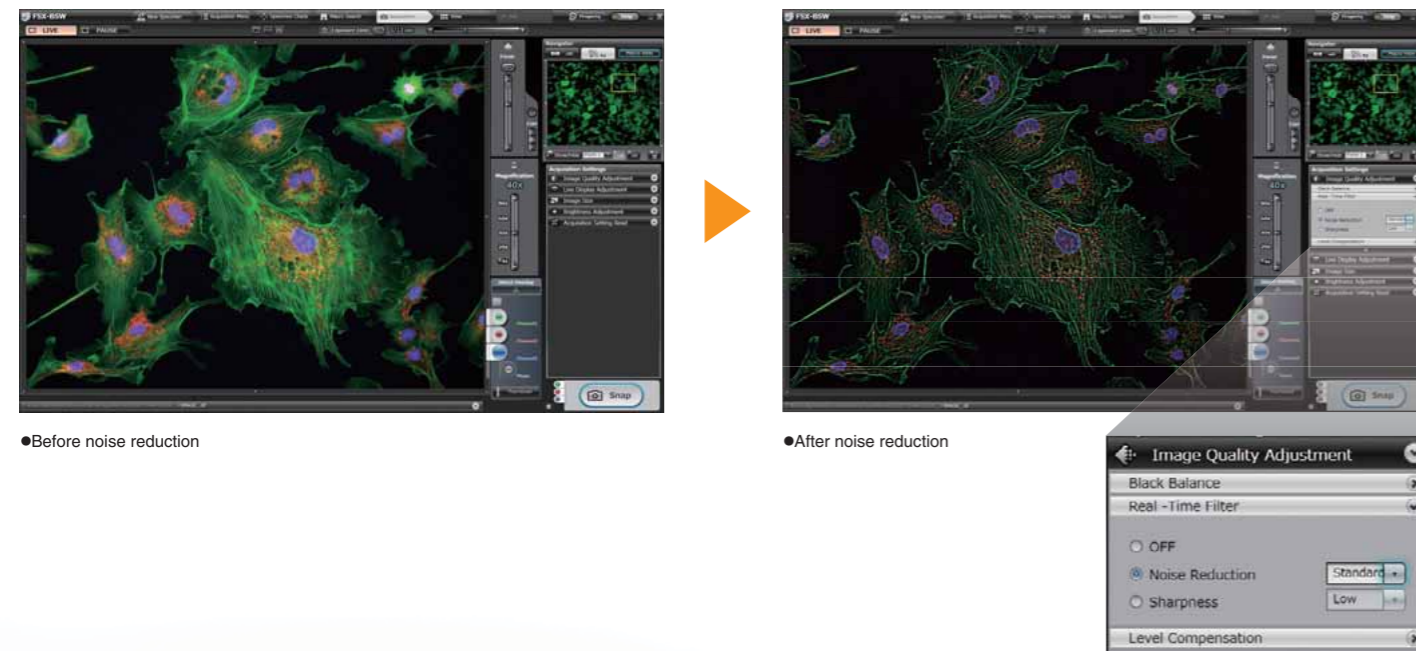
When the thickness of the cover glass covering the specimen differs dramatically from that which the objective was designed for, optical aberrations, such as spherical aberration, increase causing an adverse impact on resolution and contrast. This effect becomes particularly significant for objectives with a high N.A. (numerical aperture), and this impact can be corrected by adjusting the objective's internal optical elements via a correction collar on the outer housing. On the FSX100, this collar is motorized.

FSX100 combines ease of operation with high quality imaging to help you capture images efficiently.

Image resolution enhancement and operational friendliness benefit both beginners and experts.

Real-time noise reduction

The available Noise Reduction Algorithm helps remove fluorescence blur and emphasize edges on the live images. Noise reduction is available in three levels according to the specimen type and your particular needs.



●Before noise reduction

●After noise reduction

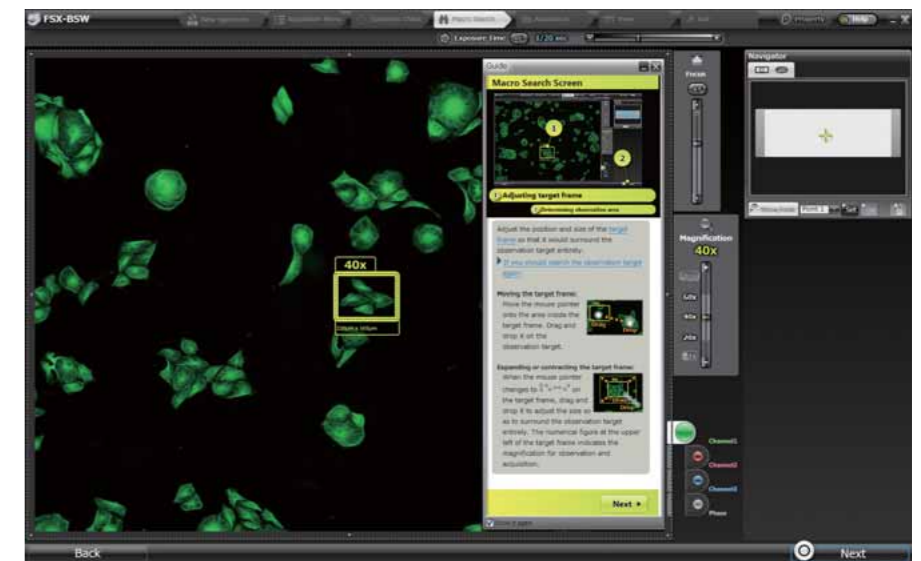
Black-balance Correction

The FSX100 performs black balancing without any additional selection of points and/or areas.



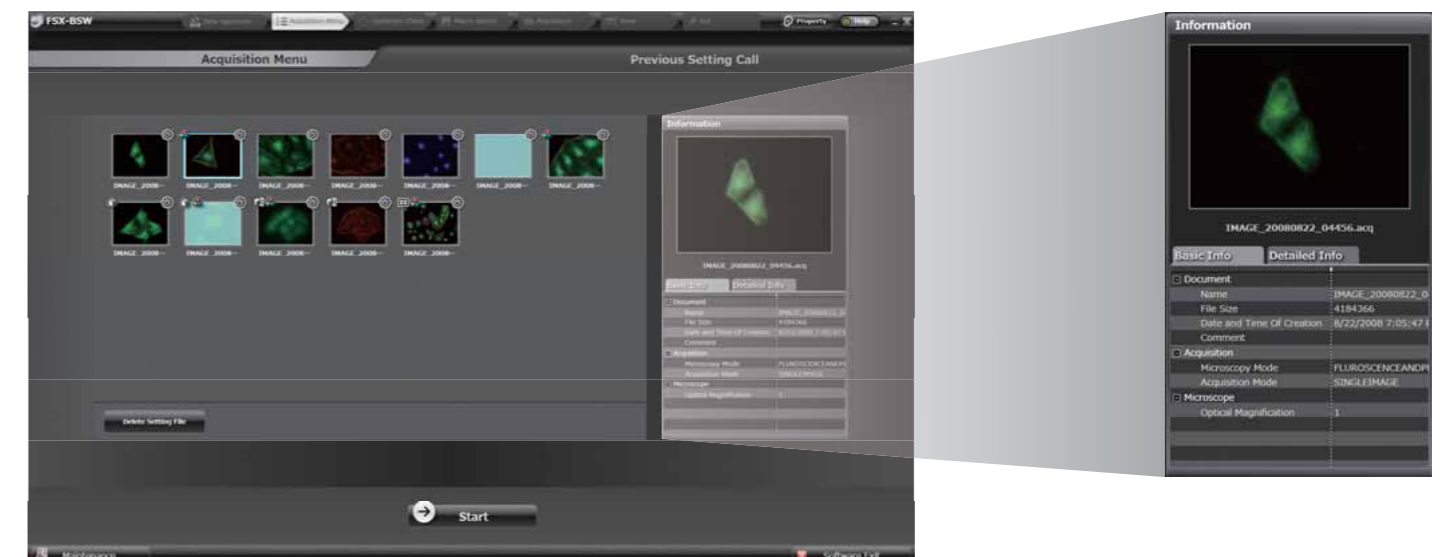
Real time operation guidance window

The FSX100 displays context-sensitive operation guidance in a separate window to help the user every step of the way. This assistance can be disabled as you become more familiar with the FSX100.



Recalling of individual user settings and imaging conditions

After logging into the PC operating system, your individual user-defined settings are automatically loaded when the FSX100 application is launched. For repeatability, you can use the Settings File Recall option to load image capture settings from a previous experiment into a new one.



Automatic creation of Save Folder

Each time specimens are changed, a new Save Folder is created. This folder automatically stores captured images by specimen, thus facilitating image recall for viewing and editing while saving time and labor.

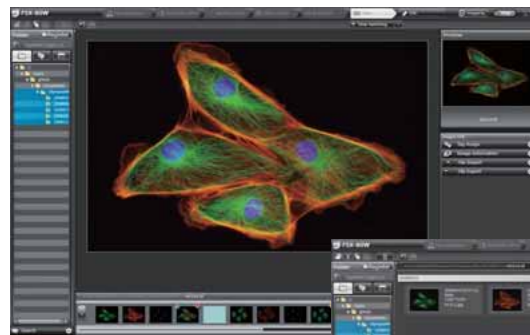
Organizing, viewing, measuring and processing captured images is easy and intuitive.

The FSX100 comes with a library management system and a variety of editing capabilities for captured images, thus facilitating the efficient creation of high quality materials for presentations or scientific publications.

View Window

Library management of captured images is available in four modes: "Photo View," "Scale-Down View," "Thumbnail List," and "Detailed View." You can quickly select and edit the image of interest using one of these options.

Photo View



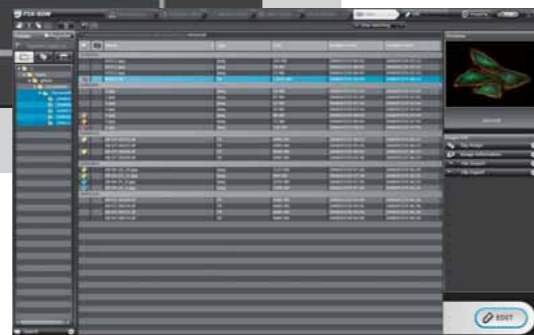
Scale-Down View



Thumbnail List



Detailed View

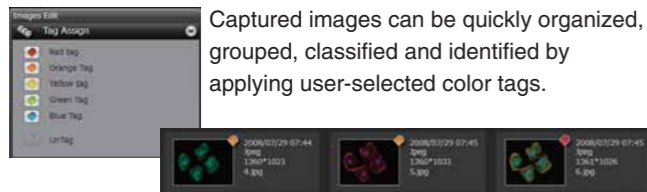


Display image information

Conditions for the selected captured images are displayed to enable the identification of magnification, camera settings and other parameters used to acquire those images.

Color tags

Captured images can be quickly organized, grouped, classified and identified by applying user-selected color tags.



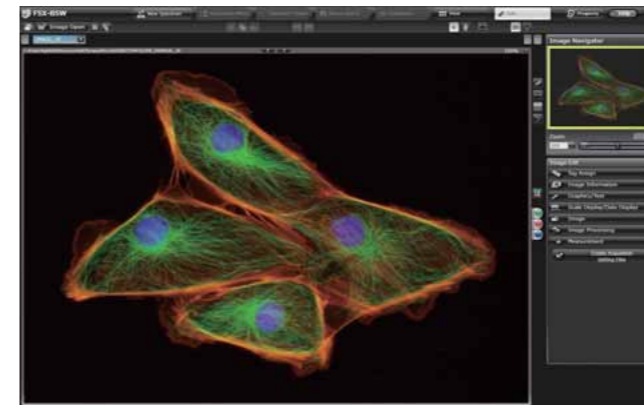
Viewer software provided

FSX100 software can be installed on separate computers so they can serve as viewing and editing platforms for FSX100 images.

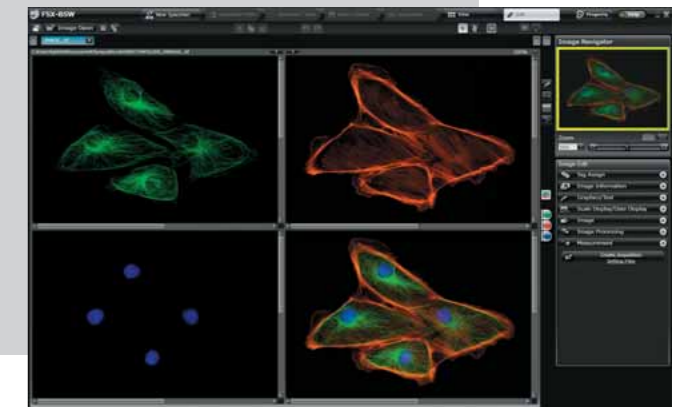
Edit Window

The FSX100 incorporates a full range of editing capabilities such as library management of captured images, thereby facilitating the generation of high quality images for use in presentations and scientific publications. Individual channels of multiple color images can be displayed and edited, separately.

Single image viewing

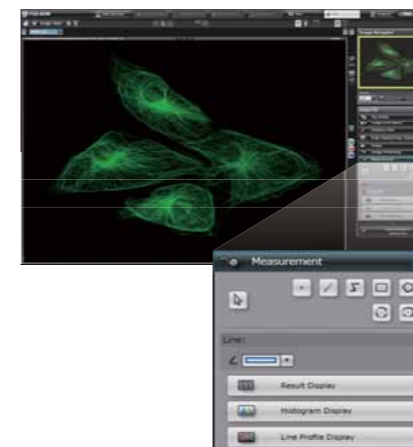


Color channel viewing



Measurement

A variety of measurements are possible, including length, area, brightness, etc. Results can be exported to Excel for further analysis, or for presentation or publication purposes.



Graphics and text

Images can be freely annotated with graphics and text, and then stored. Overlays are non-destructive and can be removed without losing image data.

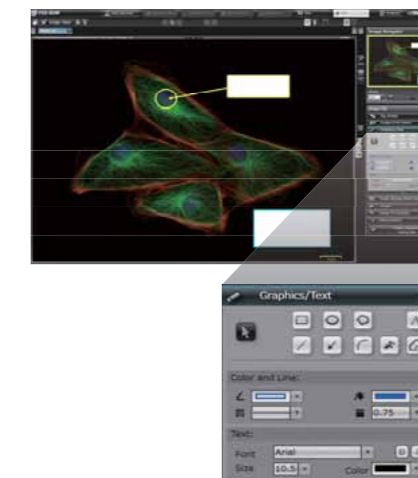
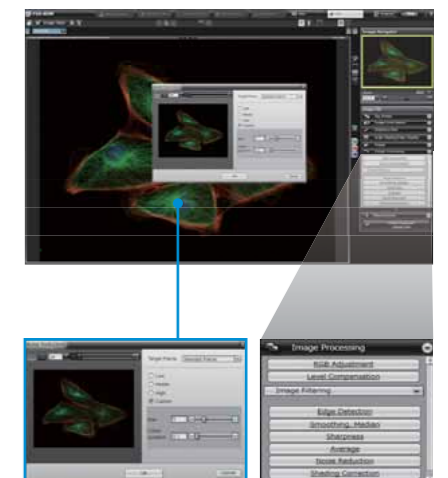


Image processing

A variety of image processing filters allow the user to emphasize desired regions and generate well-defined images.

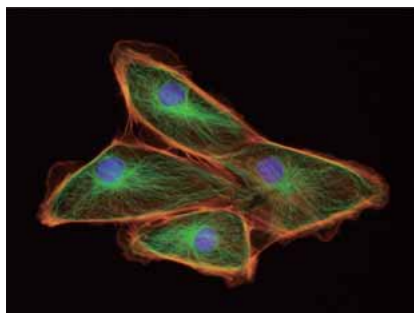


Versatile observation modes for a variety of research purposes.

Three established microscopy modes to accommodate experiment requirements and differences in specimen type.

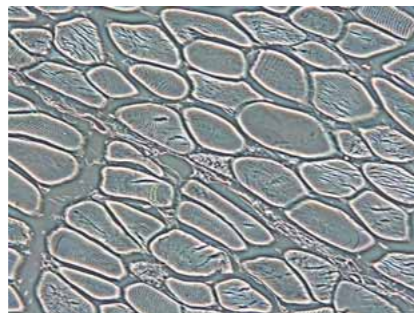
Fluorescence

Three excitation filters -- U, B and G -- are standard equipment for fluorescence microscopy and are standard on the FSX100. High N.A. objectives provide high signal-to-noise. An optional filter cube may be installed to accommodate imaging at a specific wavelength, substituting for any of the other three wavelengths on an overlay image.



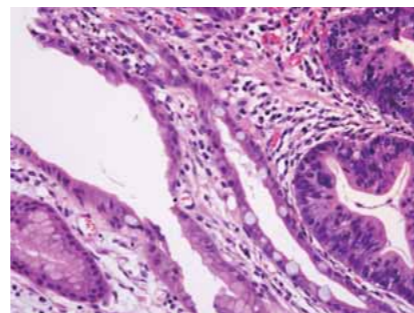
Phase contrast

Phase contrast enables imaging of cultured and other transparent specimens. The pre-centered illumination design eliminates the need for troublesome alignment of the phase rings, and facilitates the capture of high-contrast phase contrast images.

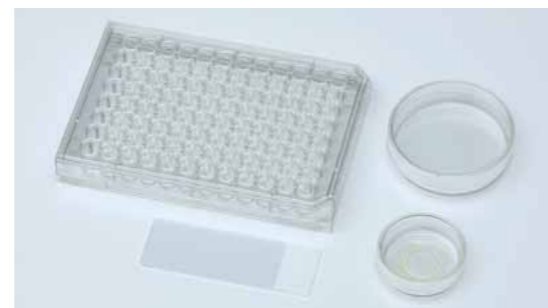
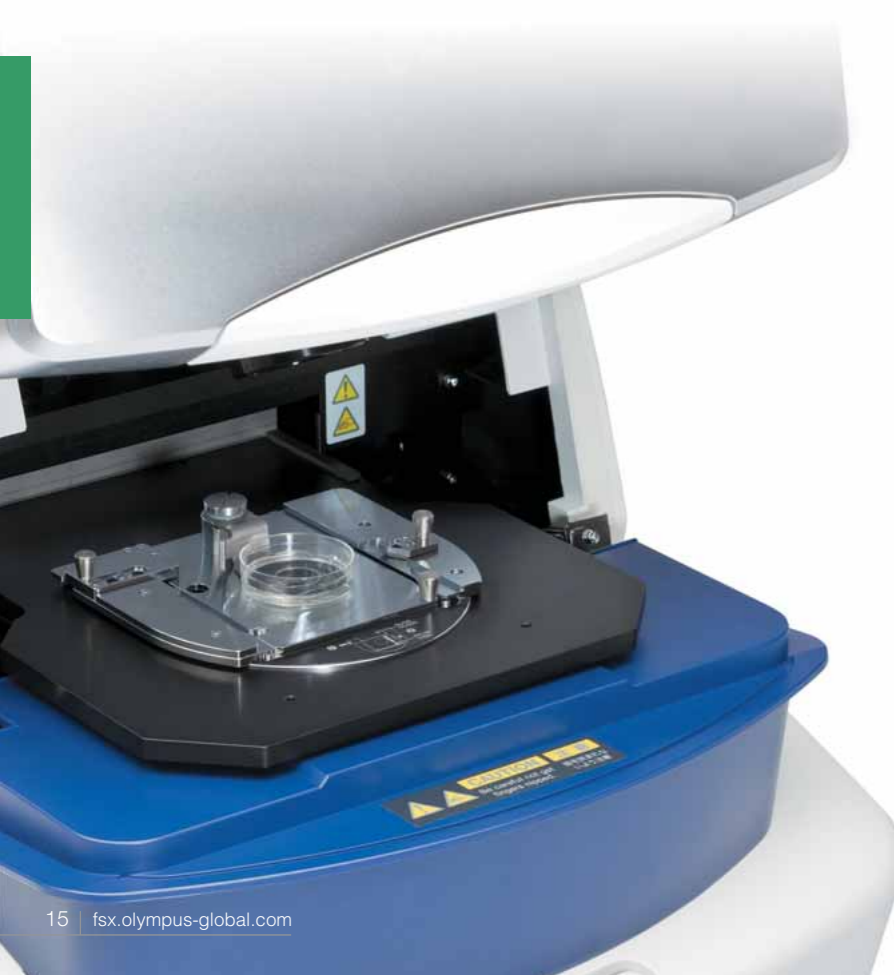


Brightfield

Designed for brightfield imaging of stained specimens, the FSX100 takes full advantage of its color camera and superb color reproducibility. The FSX100 delivers a sharp brightfield image without the trouble of white balancing or other color adjustments.



Compatible with a variety of specimens



The FSX100 is compatible with glass slides, 35mm glass bottom dishes, microplates, plastic Petri dishes, and a variety of other specimen vessels.



Two specimen holders are provided with the FSX100. One accepts glass slides and 35mm dishes. The other accommodates specimen vessels of other shapes and sizes.

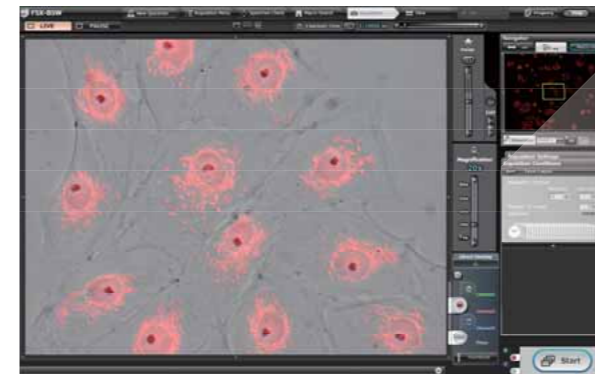
* Use with optional objective LCAHCN40XPH

Versatile acquisition modes for more efficient laboratory experiments.

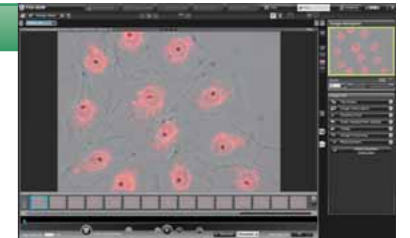
Each acquisition mode uses the same stepwise workflow as the simple mode resulting in improved efficiency in imaging experiments.

Time Lapse mode

Capture live events occurring over time by specifying the number of images to capture and time interval between them.



*A time lapse movie of the captured images can be integrated into a file for viewing/editing using the dedicated viewer

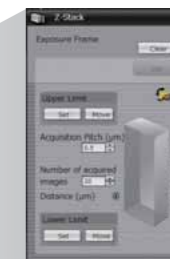
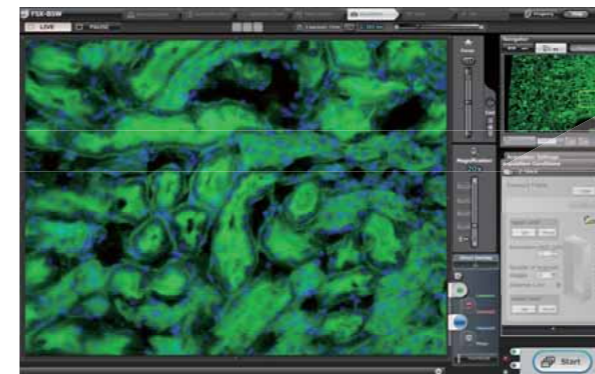


*Choose the regions of interest using the same process as in the Single mode, then click START.

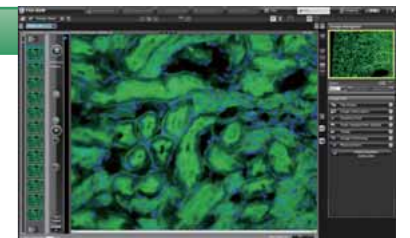


Z-stack mode

A series of images can be captured along the Z-axis (X and Y position is fixed) by defining the change in pitch between images. The extended focus function merges these images to provide a clear, high focal depth image of the specimen in sharp focus - perfect for thick specimens.



- (1) Select the point for observation using the same procedure as in the Single mode.
- (2) Specify the upper and lower end positions.
- (3) Select the pitch for shifting along Z-axis or the number of images to acquire, then click START.

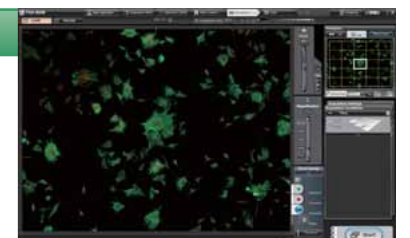
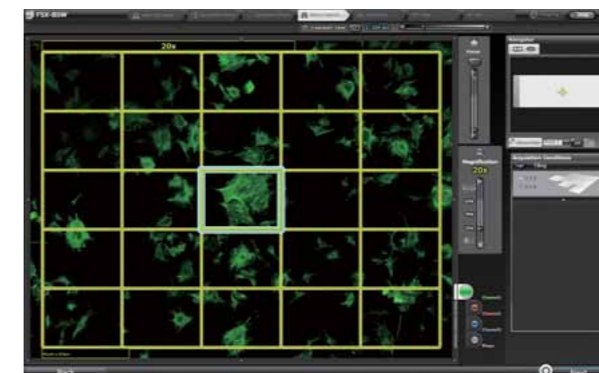


*Movies of Z-stack images can be integrated into a file for easy viewing/editing in the dedicated viewer.



Stitching mode

Easily generate a 3X3 or 5X5 image montage using the Stitching Mode.



*On the macro search screen, place the stitching mode frame around the area for imaging.
*Images of 4x to 20x equivalent magnifications can be captured and stitched together.

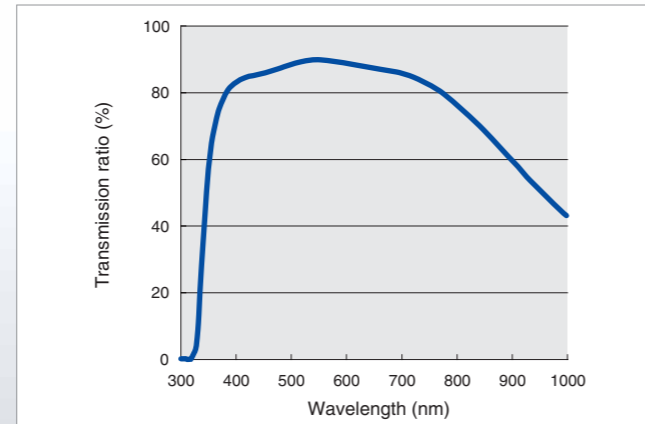
Olympus' proprietary UIS2, Opto-Digital Technology, is the foundation for the FSX100's outstanding image quality.

High N.A. objective ideally suited for fluorescence imaging

The FSX100 comes equipped with a UIS2 40x objective boasting the world's highest N.A. (numerical aperture) 0.95 for a dry system. The objective efficiently collects fluorescence emission and greatly improves the FSX100's sensitivity for low light level specimens.



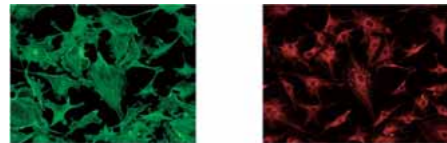
High transmittance over a wide range of wavelengths



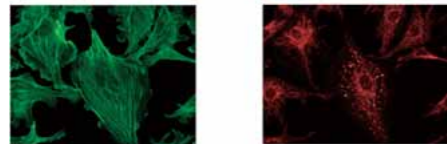
Projection phase contrast

Projection phase contrast is adapted to effect phase contrast microscopy on the FSX100. In fluorescence mode, the phase plate is retracted from the optical path thus permitting maximal fluorescence capture by the objective and camera.

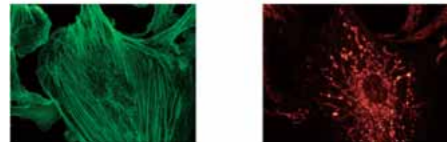
17x



40x



80x



Optimized optical system for digital imaging

Optical zoom

A 0.42x to 2x zoom lens is provided as standard. When combined with the 40x objective, FSX100 allows true optical zooming from 17x to 80x and maintains excellent image quality throughout the zoom range.

Fluorescence illumination using Fly-eye lenses

The FSX100 incorporates fly-eye lenses in its fluorescence illuminator to ensure the uniform distribution of excitation light across the specimen, all the way to the edges of the field of view. Even illumination maximizes image quality in all capture modes, especially Stitching.



Advanced auto-focusing for fluorescence microscopy

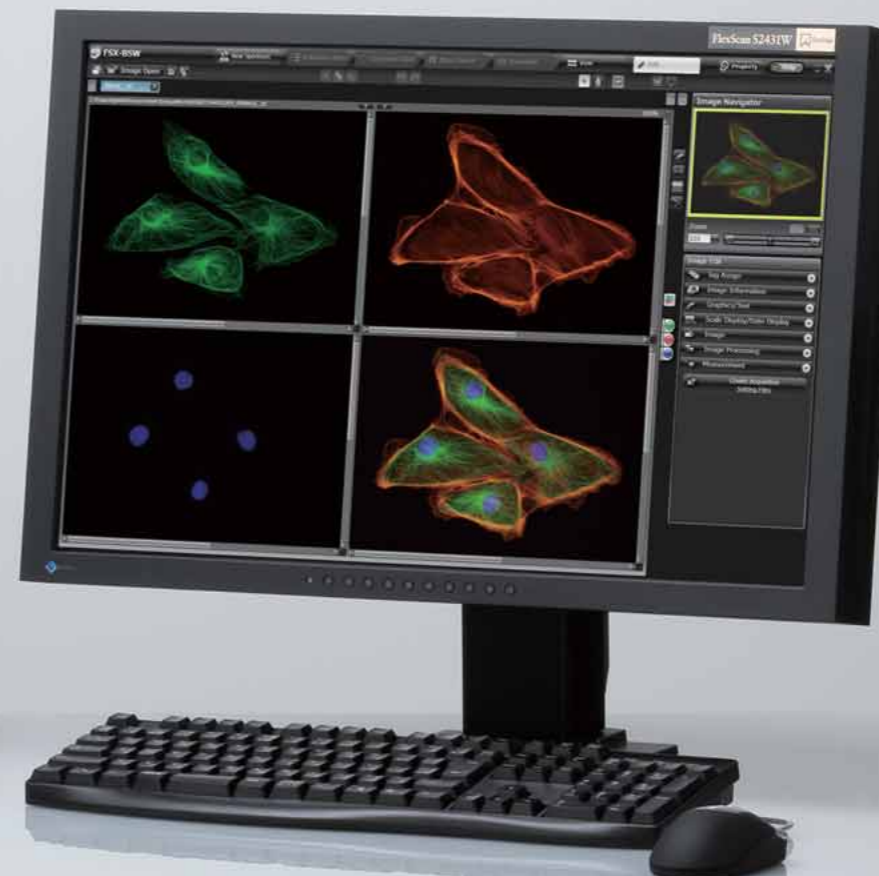
Advanced auto-focusing is incorporated in all imaging modes for ease-of-use and to relieve the operator of this tedious task.

Real-time automatic exposure control

As image frame and magnification settings change, exposure time is automatically adjusted to allow the capture of images in the best possible brightness for each observation mode.

Superior color reproducibility

The FSX100 features a high-performance, 12.5 megapixel color camera, that is designed and manufactured by Olympus. With superior color reproducibility and an ISO 1600 equivalent sensitivity, excellent images are easily obtained thanks to proprietary Olympus know-how.



With its sleek exterior shape and superb image quality, the FSX100 delivers "sophisticated performance" and is at home on any laboratory bench.



Bio Imaging Navigator
FSX100

The clean external design, small footprint and extended lifespan components allow the FSX100 to be installed in smaller spaces with less maintenance than conventional microscopes.

No Darkroom Needed & Space saving

Darkroom-free

When you close the front cover, the FSX100 creates its own dark room environment shielding the specimen from ambient light. Unlike with conventional microscopes, you can now perform fluorescence imaging in the open laboratory with the lights on.

Space saving

The clean, sleek outer housing and compact optical design afford the FSX100 its small footprint. The FSX100 can be installed in locations previously considered too small for a conventional microscope.

Extended life-span design

No lamp to change with the transmitted LED light illumination

The LED transmitted light source used for phase contrast and brightfield imaging has a life expectancy of approximately 16,000 hours. Users will realize consistent performance for years with this white LED system.

Long-life fluorescence lamp

The pre-centered, 2,000-hour fluorescence excitation lamp system in the FSX100 is designed for stable performance and easy bulb replacement. Intelligent lamp design notifies the user when the bulb is nearing the end of its life cycle.

Fluorescence illumination light source



Image Capture Assistance

Objective correction collar

The 40x N.A. 0.95 objective includes a motorized correction collar that can be adjusted automatically or manually to correct for varying cover glass thicknesses and improve image quality.

Switching between fluorescence and projection phase contrast

The fluorescence filter or projection phase contrast plate is automatically and rapidly selected according to the chosen observation mode and fluorescence wavelength.

Specimen protection

Automatic light intensity control

When conducting fluorescence imaging, a neutral density filter automatically attenuates the amount of excitation light to optimize the live displaying speed. This feature helps protect specimens from photo damage.

Field Stop

The FSX100 uses a rectangular aperture (field stop) to automatically set the illumination area of the specimen to the imaging area of the camera. The field stop limits fluorescence illumination to the imaging area, thus protecting the specimen from photobleaching outside of the field of view.

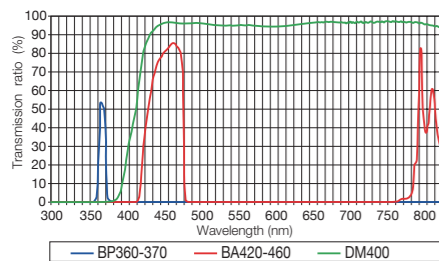
Specifications

Item	Specifications
Observation mode	Fluorescence/Phase contrast, Phase contrast, and Brightfield
Acquisition mode	Single, Time Lapse, Z-stack, and Stitching (fluorescence multicolor imaging possible for all)
Bookmarks	Up to 30 positions can be selected and recalled
Automatic focus (AF)	Automatic during the screen transition with one click operation
Exposure control	Auto (with exposure adjustment), Manual
Real-time image processing	Noise reduction (3 adjustment levels), Sharpness (2 adjustment levels)
Image overlay	Direct overlay function (live image)
White balance, Black balance	Pre-set/Manual, Acquisition/Manual
Image format	BMP, JPG, TIFF, AVI
Specimen Protection	Automatically shuts OFF excitation light when the system is left without any operation for a certain period of time Field Stop automatically set to field of view
Auto image library	Automatically creates a new folder with every specimen change
Operation tutorial	Context-sensitive operation guidance display function, user switchable ON/OFF
Settings restore function	Multi-user settings storage/reproduction, imaging conditions recording/reproduction functions
Image playback	Display switching (Photo View, Scale-Down View, Thumbnail List, Detailed View) Time-lapse / Z-stack dedicated viewer Categorization function with the color tag
Image editing	4 segmented display dedicated to multicolor fluorescence image, full screen display, print, adding figures and text, scale display, date and time display, image rotation, image trimming, image size change, image processing filters, RGB color adjustment (16 bits, 8 bits), gray scale conversion, overlay compensation, level adjustment, measurement (possible to export to Excel)
Specimen holders	Accepts 1"x3" slide, 35mm dia. dish 50mm dia. hole opening all metal construction
Standard objectives	Capture: 40x N.A.0.95 (17x to 80x with optical zoom) Macro: 10x N.A.0.40 (4.2x fixed with optical zoom)*3
Optical zoom	0.42x to 2.0x
Motorized correction collar	with focusing assist
XY stage	Stroke: 56 x 26mm (with slide glass), 11 x 11mm (with 35mm dish), 18 x 18mm (with 50mm hole plate) (Automatically recognizes the specimen holder.)
Focus range	9mm
Transmitted illumination	Condenser lens NA0.55, Working distance 27mm, Phase contrast slit
Transmitted illumination light source	White LED light source, average lifetime 16,000 hours
Fluorescence illumination	Fly-eye lens, Field stop (working with optical zoom), ND filter (automatic switching), Shutter
Fluorescence illumination light source	Metal halide lamp (pre-centered design), average lifetime 2,000 hours
Fluorescence/Phase contrast filter	U excitation (BP360-370 BA420-460 DM400) Equivalent to U-MNUA2 B excitation (BP460-495 BA510-550 DM505) Equivalent to U-MWIBA3 G excitation (BP530-550 BA575IF DM570) Equivalent to U-MWIG3 Projection phase contrast plate (automatic switching)
Camera type	Single-panel color CCD pixel shift type
Imaging sensor	2/3 size (inch), 1.45 megapixels (Total number of pixels: 1.5 megapixels), Peltier cooling (Max: T _{amb} - 10°C)
Effective image resolution	4080 x 3072 (12.5 megapixels), 2040 x 1536 (3.1 megapixels), 1360 x 1024 (1.4 megapixels), 680 x 512 (350,000 pixels), 2 x 2 binning; 680 x 510 (350,000 pixels), 4 x 4 binning; 340 x 250 (85,000 pixels)
Sensitivity	Equivalent to ISO 200/400/800/1600
A/D converter	12-bit per channel
Display frame rate	Max. 15 frames/sec. (at live image size of 1360 x 1024)
Interface	IEEE 1394 cable, Proprietary camera cable
OS	Windows Vista Business SP1 (32bit)
Dimensions (mm)	Height 476 x Width 388 x Depth 583
Weight	Approx 35kg
Operating environment	+10 to +35°C/35 to 80%RH (no condensation), Pollution degree: 2 (in accordance with IEC60664), Installation (overvoltage) category: II (in accordance with IEC60664)
Input power/Power consumption	AC 100-120/220-240V 50/60Hz 2.5A/1.2A
Optional equipment	
Objectives	UPLSAPO60xO**N.A.1.35 (For oil immersion) (26x to 120x with optical zoom) LCACHN40xPHP** N.A.0.55 (For plastic vessel) (17x to 80x with optical zoom)
Fluorescence mirror unit	Allowable additional installation of one set of UIS2 mirror unit (Exclusive use against any other filter sets)

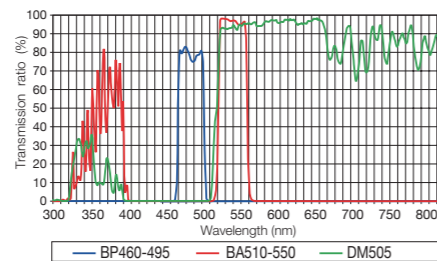
*1 Not available for phase contrast, selection of start position, macro image framing, automatic focus and stitching images. *2 Not available for ultra violet fluorescence and automatic focus.
*3 In case of performing the macro phase contrast observation by using the plastic container whose thickness is less than 1mm, the ghost of the ring slit image may appear. Therefore, please be sure to use the container whose thickness is 1mm or more. Regarding the detail information about the plastic vessels, please refer to the specification page on FSX100 special website (<http://fsx.olympus-global.com/jp/>)

Fluorescence filter

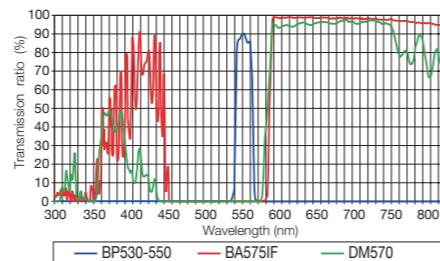
Ultra violet excitation



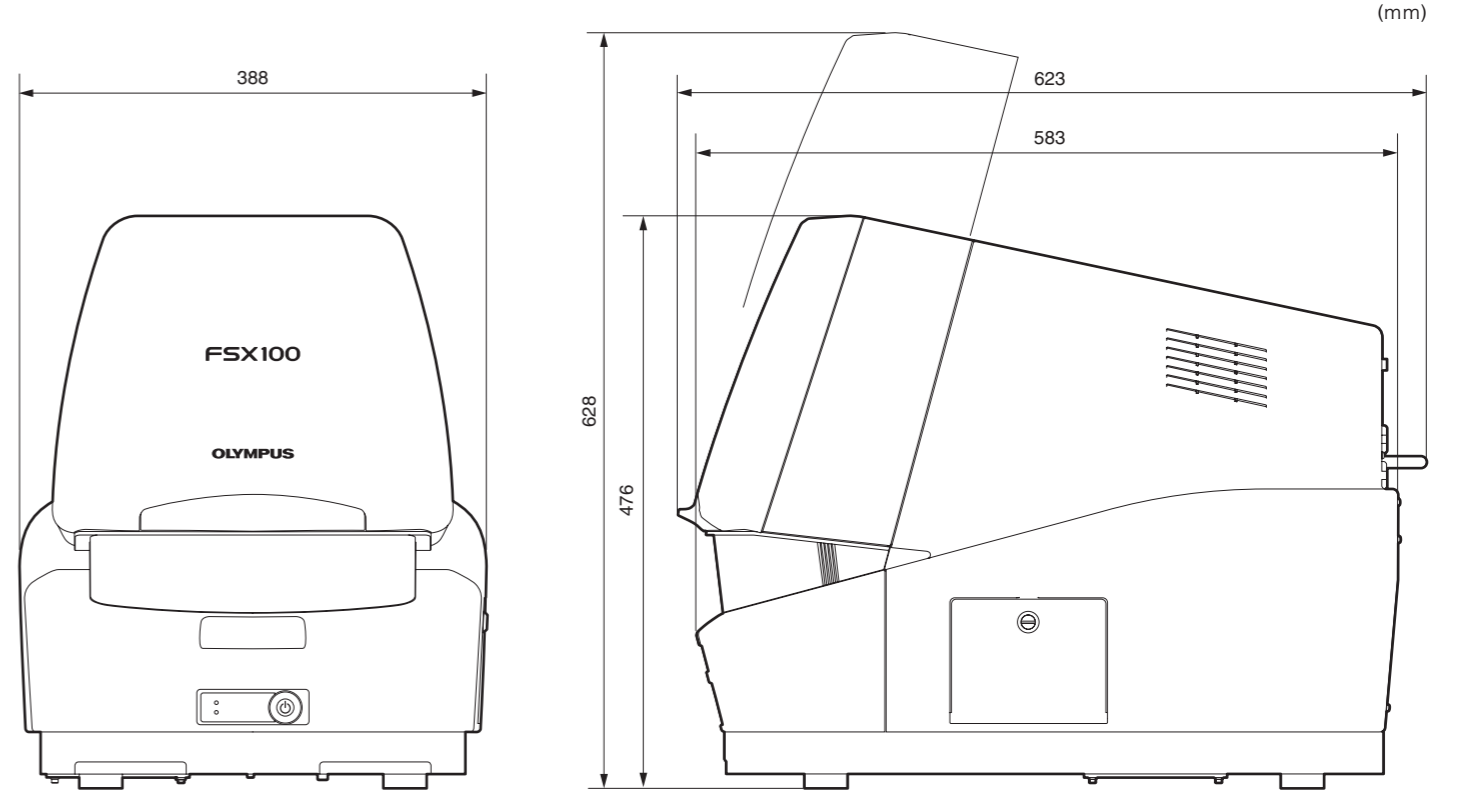
Blue excitation



Green excitation



Dimensions



Optionally available equipment for expanding applications

Oil-immersion objective



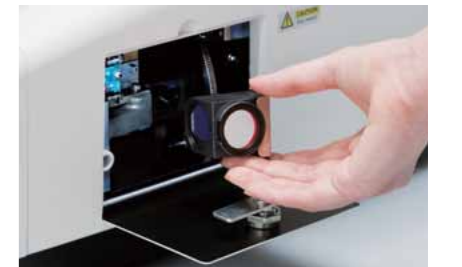
The oil-immersion objective UPLSAPO60XO with N.A. 1.35 is available for fluorescence photomicrography with higher resolution and higher S/N. It is recommended that this optional objective be used with Olympus low auto-fluorescence immersion oil.

Objective for plastic vessels



LCACHN40XPHP is available for fluorescence or phase contrast photomicrography with a plastic vessel of 1mm-thick bottom. The pre-centered phase illumination system eliminates the need for any alignment or adjustments.

Mirror unit



One additional UIS2 mirror unit may be installed as optional accessory.