OLYMPUS®

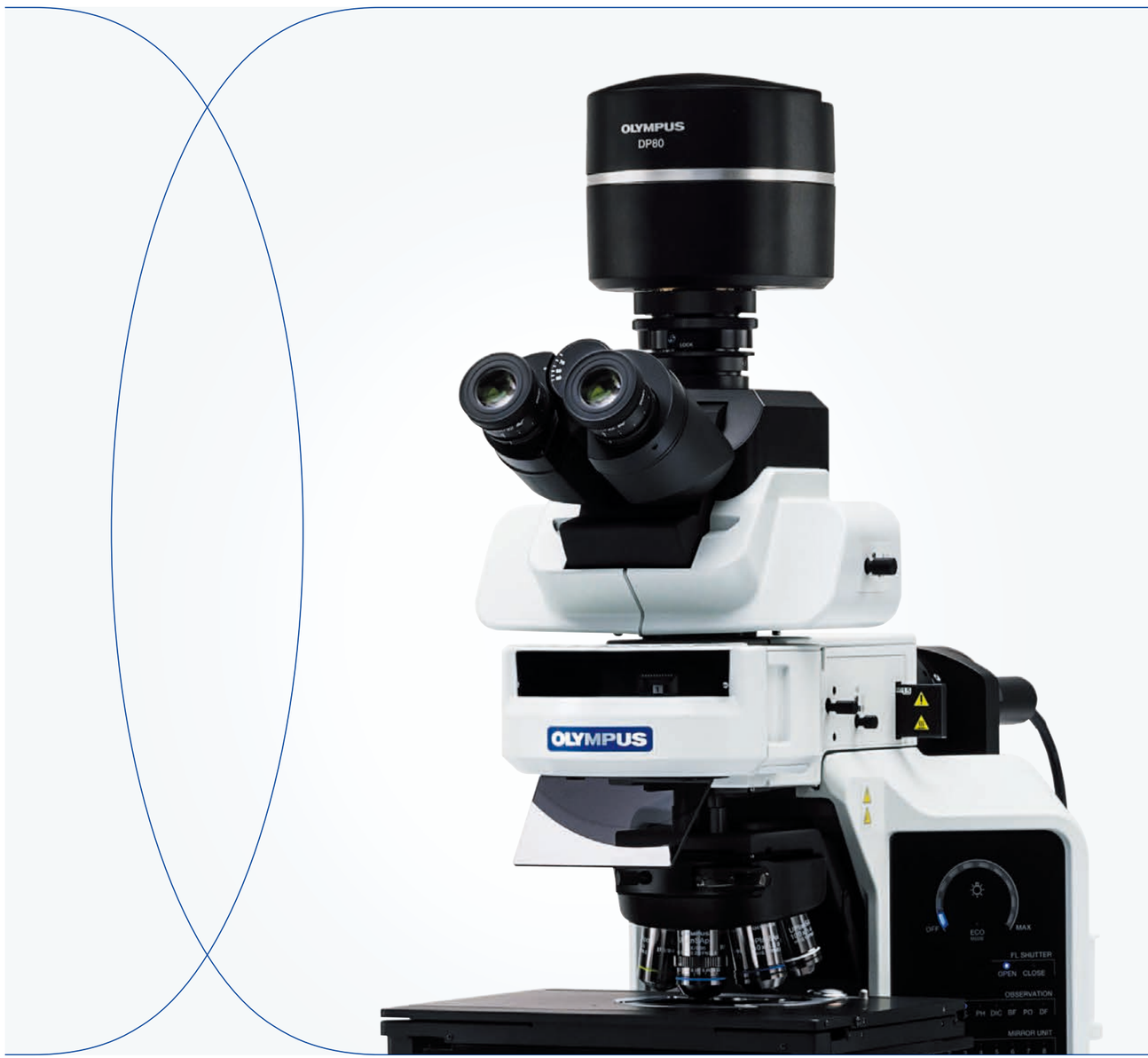
Your Vision, Our Future

System Microscope

BX63/BX53

BX3 Series

A Clear Edge in Imaging



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- **OLYMPUS CORPORATION is FM553994/ISO9001 certified.**
- **OLYMPUS CORPORATION is MD540624/ISO13485 certified.**
- **Illumination devices for microscope have suggested lifetimes. Periodic inspections are required. Please visit our website for details.**

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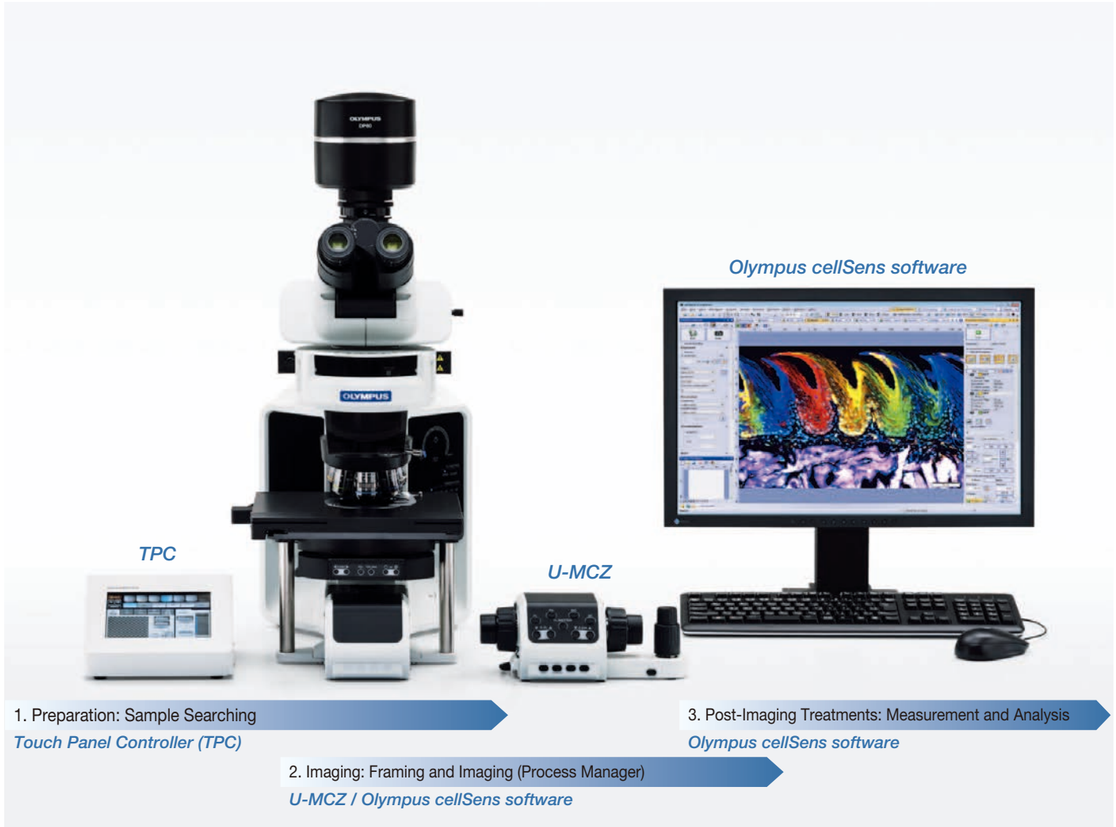
A Revolutionary New Standard in Accuracy and Imaging Efficiency

Whether you need flexibility or are just looking for easy operation, the user-friendly design of the BX3 series of Olympus microscopes lends itself to a wide range of settings for brightfield/darkfield and fluorescence imaging.
With multiple model choices and configurations options, there's a microscope for everyone that will meet individual needs — from routine to advanced imaging.

INTELLIGENT DESIGN FOR EASE OF OPERATION AND EFFICIENT WORKFLOW



Never strain again to view live images while adjusting your microscope. With the BX63 and Olympus cellSens software*, you have the flexibility to place the touch panel and U-MCZ remote microscope controller anywhere on the bench. Think speed and efficiency in image focusing and framing with the U-MCZ positioned by the monitor. Simple and quick switching between observation methods and magnifications is always at your fingertips.

The cellSens Process Manager automates multicolor, multipoint and other imaging methods from settings entered through the touch panel or directly into cellSens. After acquisition, complete your image processing, measurement and analysis with Olympus cellSens software.

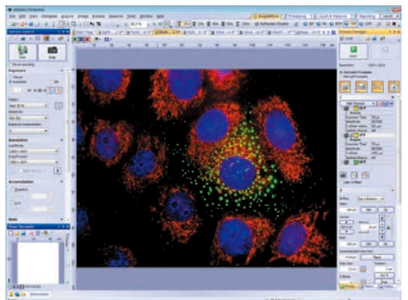
Effortless Imaging

The Touch Panel Controller Places the Power of All Operations at Your Fingertips

Switch between different observation methods and magnifications with a mere touch. The controller offers the choice of a Guidance Mode enabling navigation of procedures currently in use, and the Full Operations Mode that provides access to an entire range of settings—keep full control close at hand for prompt view of microscope system status. Furthermore, multiple observation points and conditions can be saved in advance, enabling rapid recall and reproduction of imaging conditions used by other researchers.

The U-MCZ Controller Blends Rapid Framing and Focusing with Familiar Operational Feel

The U-MCZ controller can be detached from the microscope frame and positioned wherever you want. When used in combination with the XY controller that is provided with the ultrasonic stage, it delivers user-friendly focusing and framing operations that mimic a conventional microscope—all while live images in Olympus cellSens software are kept clearly in view. Switches are also conveniently located on the controller to enable switching between different observation methods, objectives, and mirror units while keeping your ability to simultaneously select intensity adjustments or image capture.



Olympus cellSens Improves Efficiency in Imaging Procedure with its Process Manager and Workflow Optimization

Observation condition data can be set to the touch panel, U-MCZ, and XY controller, which are registered by the Olympus cellSens imaging software, while the Process Manager allows automation of multicolor image acquisition.

Instantly Switch Between Color and Monochrome CCDs with the DP80 Microscope Digital Camera

Two different CCDs enable the handling of both monochrome and color imaging, with simple switching between the two CCDs available through handy touch screen operation or Olympus cellSens. Highly sensitive fluorescent images and high-definition brightfield images can thus be acquired from the same camera, eliminating the need to use another camera for high-sensitivity fluorescence imaging.

*cellSens software is not for clinical diagnostic use

TASK MANAGEMENT WITH LESS EFFORT

Microscopy Research With a Personal Touch

With microscope optics pushing the boundaries of resolution at all magnifications and new microscope design — enabling techniques, it is important to be able to efficiently capture and process the images produced. In addition, an increasing number of researchers are using microscopy and it is therefore essential that imaging and analysis are both flexible and user-centric.
The Olympus cellSens software* family fulfils all these requirements with its unique personalisation concept.

Solution | Each cellSens Package can be expanded towards a specific application by using optional "Solutions"

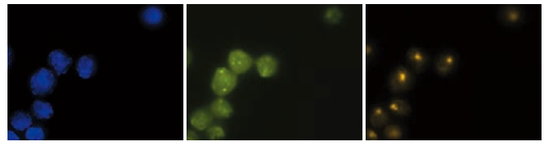
Dimension	available following solutions:			
CI Deconvolution	Multiposition	Well Plate Navigator	Count & Measure	
Database Core	Database Client	NetCam		
Standard	available following solutions:			
Manual Process	Database Core	Database Client	NetCam	
Entry	available following solution:			
Database Client				

Framing and Imaging (Process Manager)

Multicolor

Dimension or Standard + Multichannel Acquisition

Simply select the desired observation conditions through a simple touch panel controller that automatically switches filters and acquires images as desired. When used in combination with multipoint capability, such functionality offers the ability to automatically acquire multicolor images over a wide area.

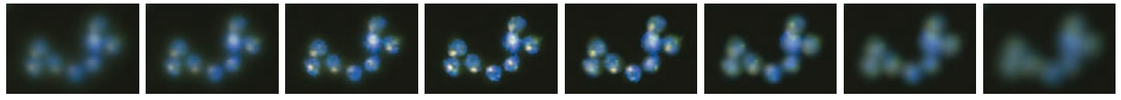


Multicolor: Imaging with Switched Excitation

Z-Stack

Dimension or Standard + Manual Process

The Z-stack mode allows images to be captured along the Z-axis at a specified focus pitch. Use the U-MCZ to check the upper and lower focus limits of a specimen, and register these positions using the touch panel controller.

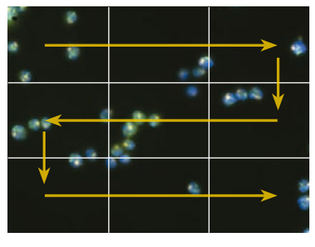


Z-Stack: Imaging with Varied Z-Plane

Panoramic Imaging

Dimension + Multiposition
or
Standard + Manual Process

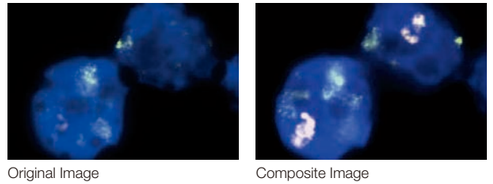
The manual multiple image alignment composes a single montage image as you scan the specimen. Multiple saved images with adjoining components can also be combined into a single free-shape image. Wide area imaging can be completely automated when cellSens Dimension and its optional Multiposition Solution are combined with a motorized microscope.



Panoramic Imaging (Tiling): Images are Accurately Stitched Together to Construct a Wide-Area Image

Maximum Intensity Projection

The Maximum Intensity Projection mode creates a sharp, final all-focus image for thicker specimens.



Original Image | Composite Image

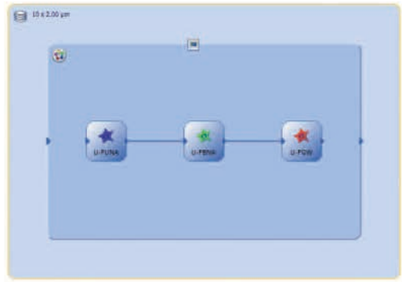
Maximum Intensity Projection (Multicolored, All-Focus Composite Image): Composite Image Produced by Selecting the Brightest Signals from Multiple Images on the Z-Plane

Experiment Manager

EM (Experiment Manager)

Dimension

Experiment Manager with a unique graphical user interface enables the formulation of even the most complex experimental procedures by simply dragging and dropping icons for the desired experiment commands onto the window.

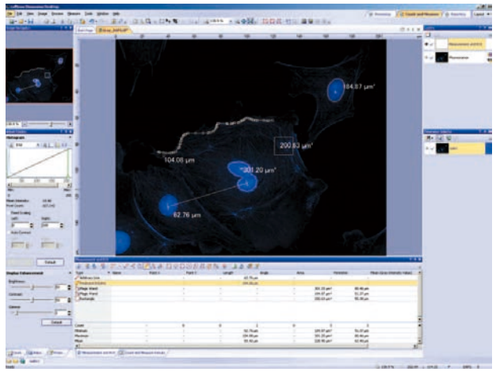


Measurement and Analysis

Manual Measurement

Dimension
or
Standard
or
Entry

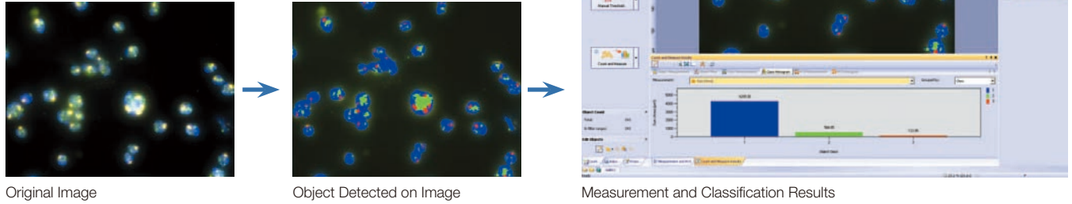
Depending on the cellSens package different measurement are easily accessible, including distances, areas, intensity measurements and morphological parameters. Measurement data is saved as an image layer that can be exported to MS Excel and cellSens workbook formats, or viewed using OlyVia the free image viewer software.



Automatic Object Measurement and Classification

Dimension + Count & Measure

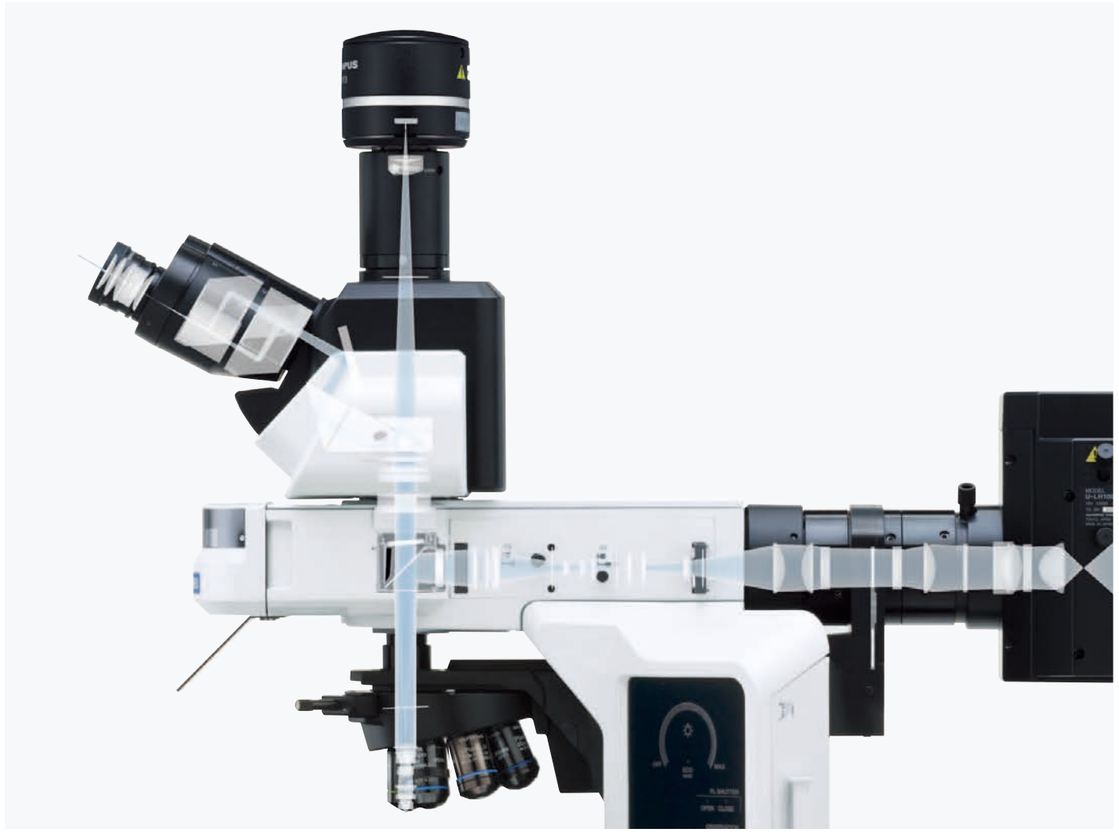
cellSens Dimension has an extensive set of manual measurements that can be further expanded with the Count & Measure Solution. Easily perform automatic object measurement and classification in an interactive interface where recognized objects are always linked with their measurements.



Original Image | Object Detected on Image | Measurement and Classification Results

*cellSens software is not for clinical diagnostic use

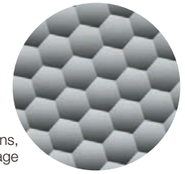
ADVANCED SENSITIVITY IN FLUORESCENCE IMAGING



Higher signal-to-noise ratio (S/N) produces brighter and better fluorescence images, that's why Olympus has pushed the boundaries of S/N with improved fluorescence detection capacity. With mirror units, Olympus high transmission objectives, and fluorescence illuminators that incorporate a fly's-eye lens, a brighter, more uniform illumination and detection is possible.

New Fluorescence Illuminators with Fly's-eye Lens

Fluorescence illuminators BX3-RFAA and BX3-RFAS equipped with a Fly's-eye lens provide uniform illumination. Even, uniform fluorescence illumination facilitates post-acquisition enhancements and processing.



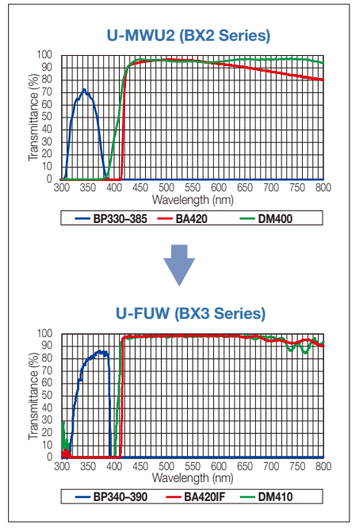
Surface of Fly's-eye Lens, Enlarged Image

Fluorescence Mirror Units with the Latest Coating Technology

Olympus uses the latest coating technology to achieve outstanding performance to all fluorescence mirror units in order to produce high transmissions, sharp cut-offs and efficient detections of fluorescence.

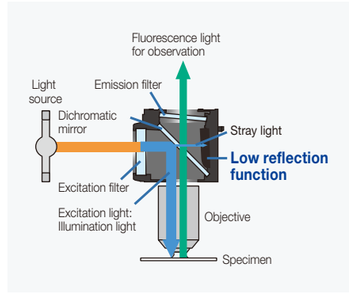
Further Flexibility in Fluorescence Integration

The Olympus 8-position fluorescence illuminator allows greater flexibility for a wide variety of fluorescence specimens with its easily exchangeable mirror units. Observations are accelerated further through the reduced need to replace mirror units for multicolor or FISH applications.



Stray Light Reduction Equipped on All Mirror Units

The low reflection function eliminates stray light, producing a high S/N.

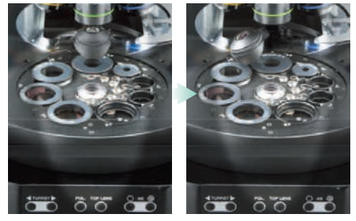


High Transmission Objectives with Reduced Autofluorescence

Olympus UIS2 objectives are made with low-autofluorescence glass, anti-reflection coating, and lens joining materials, improving the S/N. Efficient detection of subtle fluorescence emissions even with weak excitation light deliver ideal performance in fluorescence imaging.

Condenser Design to Reduce Back-Reflections

The motorized universal condenser is designed to reduce back-reflections and autofluorescence by swinging its top lens out, automatically closing its diaphragm to the minimum, and locating the wheel in between two positions in fluorescence imaging.



Low Autofluorescence Immersion Oil

This immersion oil is specifically designed to reduce the autofluorescence normally associated with such oils, for improved S/N. Insusceptible to crystallization, it is an ideal oil for long time observations.

Accuracy & Ease of Use

INTELLIGENT DESIGN FOR FLEXIBLE CONFIGURATIONS AND OPERATING EASE

Intelligent Microscope BX63
+ Digital Camera DP80
+ cellSens software

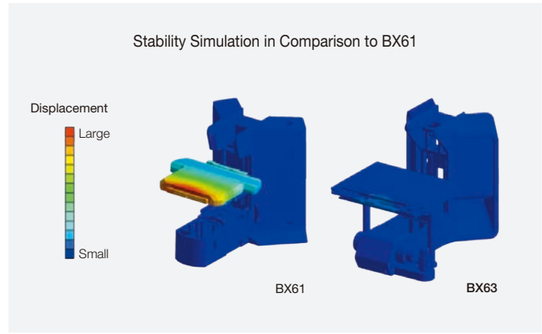
Put simply, the BX63 is a motorized, intelligent microscope developed in response to the requests of hundreds researchers and microscope users. With a simple touch, users can operate with a high speed of control through the detachable and freely positional U-MCZ controller or alternately, by means of a computer installed with cellSens imaging software*.
All microscope data captured via control of the touch panel or U-MCZ controller are continually fed back through cellSens, giving you the freedom to operate the microscope in the most convenient manner for the task at hand.

From image capture to report creation, Olympus cellSens personalizes researchers' individual operational environments in accordance with individual researcher workflows.

BX63

Stability for Improved Imaging Reliability

By having a motorized nosepiece focusing system in combination with a fixed stage eliminates all sources of vibrations, further advancing the quality of image acquisition.



Microscope Frame Equipped with Motorized Focus and Field Diaphragm

This unit incorporates a high-speed, high precision motorized focusing nosepiece with 0.01µm resolution and 20mm vertical strokes. The field diaphragm adjustment of transmitted light is also motorized.

Motorized Fluorescence Illuminator/BX3-RFAA

The flexibility of the motorized fluorescence illuminator accommodates multicolor stained specimens. The 8-position mirror units permit quick tool-less changeover of fluorescence colors.

Motorized Attenuator Wheel/U-AW

The Olympus BX63 has a motorized ND filter wheel for fluorescence and transmitted light intensity adjustments. Special adapters are required for mounting (U-LHEAD for fluorescence, and U-LH100ADP for transmitted light).

Motorized Seven Position Nosepiece/U-D7REA

This revolving nosepiece allows simultaneous attachment of seven objectives. It is especially suitable for continuous observations from low to high magnifications and combining specific objectives, such as polarized light observations.

Motorized Universal Condenser/BX3-UCD8A

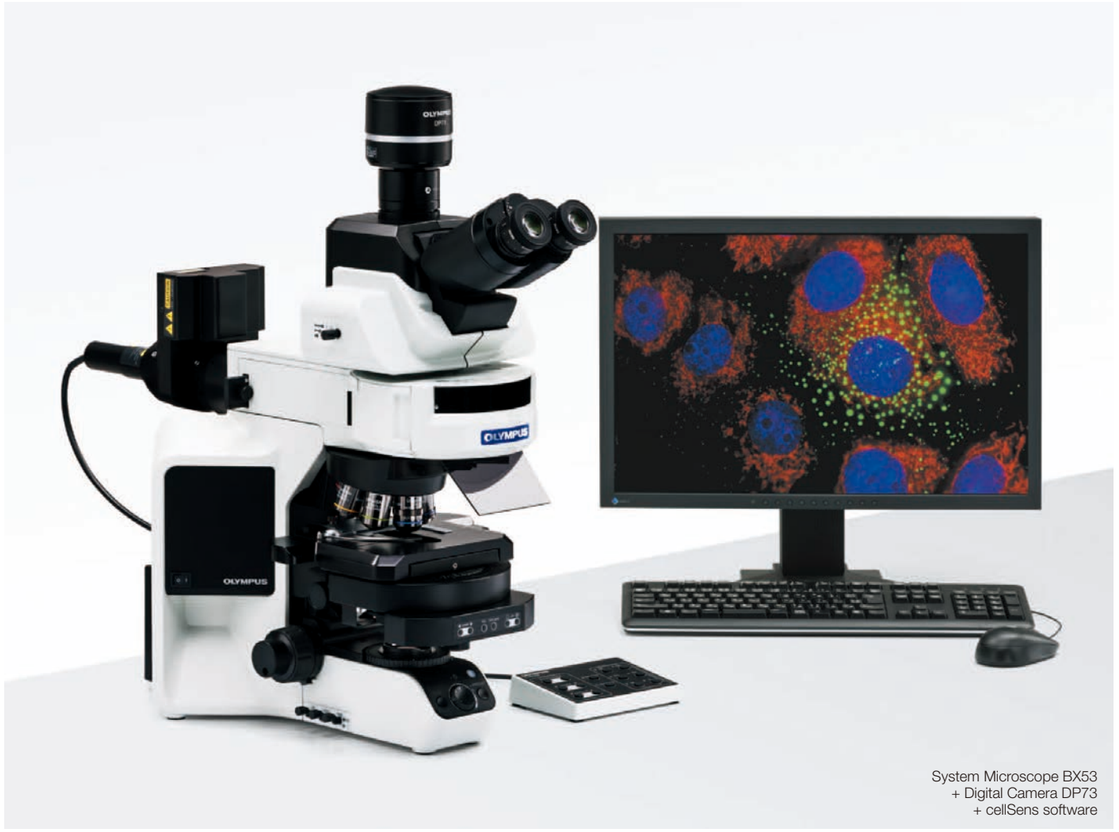
By integrating with designated optical components, the motorized universal condenser accommodates various kinds of transmitted light observation, from brightfield to differential interference contrast and phase contrast.

Ultrasonic Stage/BX3-SSU

The ultrasonic stage delivers high-precision XY control. The XY-controller can be mounted on the controller/U-MCZ for the BX63 and worked like conventional stage handles.

*cellSens software is not for clinical diagnostic use

SYSTEM FLEXIBILITY WITH COMFORTABLE OPERABILITY



System Microscope BX53
+ Digital Camera DP73
+ cellSens software

The BX53 is a versatile system microscope that can be configured to meet virtually any research need.
It supports a wide range of fluorescence imaging applications, and has a range of advanced features for enhanced operating ease and process flexibility.

BX53

Customizable Control Layout

Light intensity now can be controlled with the dial in front, and transmitted filters and fluorescence shutters are operable from either side. Detachable fine focus handle can be attached on either side of the microscope based on operator preference. The BX53 frees the operator to create a customized working environment with the microscope.

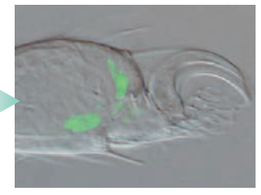
Further Ease in Imaging with Multi-Stained Specimens

The 8-position fluorescence illuminator allows flexible responses to various fluorescence specimens. Mirror units can easily be replaced.

Automatic Switching of DIC Prisms

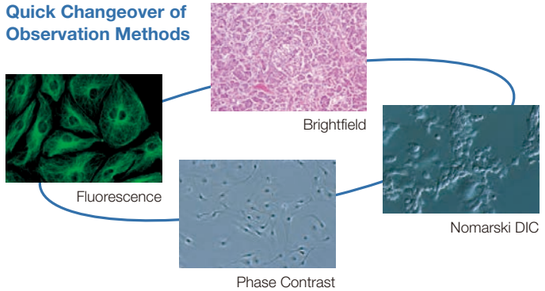
Switching objectives on the motorized or coded 7-position revolving nosepiece, integrated with the motorized universal condenser, enables an automatic switch to the optimal DIC prism. Simplified prism switches accelerate observations.

Changing Objectives with Coded Nosepiece, Automatic Switchovers of DIC Elements



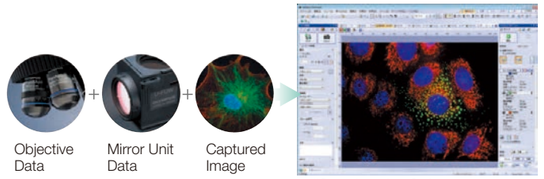
Optimum Contrast Observation

Quick Changeover of Observation Methods



Saves Microscope Information with Coded Units

cellSens imaging software integrates with the coded and motorized components to automatically store fluorescence mirror unit and objective data with the images, facilitating post-imaging treatments.



cellSens Imaging Software

Energy Saving Switch Turns Off Light Source Automatically

The motion sensor detects when an operator is present and when absent, automatically turns off the transmitted light lamp after 30 minutes. The energy saving switch conserves energy and extends lamp lifetime.

System Microscope BX53

OPTIMAL PERFORMANCE WITH WIDE WAVELENGTH SPECTRUM

UIS2 objectives

Objective	NA	W.D. (mm)	FN	Cover glass thickness (mm)	Immer-sion	Spring	Cor-rection ring	Iris dia-phragm	Water proof and oil proof function
UPLSAPO 4X	0.16	13	26.5	—					
UPLSAPO 10X2	0.40	3.1	26.5	0.17					
UPLSAPO 20X	0.75	0.6	26.5	0.17		✓			
UPLSAPO 20XO	0.85	0.17	26.5	—	Oil	✓			✓
UPLSAPO30XS	1.05	0.8	22	0.13-0.19	Silicone	—	✓	—	✓
UPLSAPO40X2	0.95	0.18	26.5	0.11-0.23		✓	✓		
UPLSAPO40XS	1.25	0.3	22	0.13-0.19	Silicone	✓	✓		✓
UPLSAPO60XW	1.20	0.28	26.5	0.13-0.21	Water	✓	✓		✓
UPLSAPO60XO	1.35	0.15	26.5	0.17	Oil	✓			✓
UPLSAPO60XS	1.30	0.3	22	0.15-0.19	Silicone	✓	✓		✓
UPLSAPO100XO	1.40	0.13	26.5	0.17	Oil	✓			✓
UPLSAPO100XOPH	1.40	0.12	26.5	0.17	Oil	✓			✓
PLAPON1.25X	0.04	5	26.5	—					
PLAPON2X	0.08	6.2	26.5	—					
PLAPON 60XO	1.42	0.15	26.5	0.17	Oil	✓			✓
PLAPON 60XOSC2	1.40	0.12	22	0.17	Oil	✓			✓
PLAPON 60XOPH	1.42	0.15	26.5	0.17	Oil	✓			✓
UPLFLN 4X	0.13	17	26.5	—					
UPLFLN 10X2	0.30	10	26.5	—					
UPLFLN 20X	0.50	2.1	26.5	0.17		✓			
UPLFLN 40X	0.75	0.51	26.5	0.17		✓			
UPLFLN 40XO	1.30	0.2	26.5	0.17	Oil	✓			✓
UPLFLN 60X	0.90	0.2	26.5	0.11-0.23		✓	✓		
UPLFLN 60XOI	1.25-0.65	0.12	26.5	0.17	Oil	✓		✓	✓
UPLFLN 100XO2	1.30	0.2	26.5	0.17	Oil	✓			✓
UPLFLN 100XOI2	1.3-0.6	0.2	26.5	0.17	Oil	✓		✓	✓
UPLFLN 10X2PH	0.30	10	26.5	—					
UPLFLN 20XPH	0.50	2.1	26.5	0.17		✓			
UPLFLN 40XPH	0.75	0.51	26.5	0.17		✓			
UPLFLN 60XOIPH	1.25-0.65	0.12	26.5	0.17	Oil	✓		✓	✓
UPLFLN 100XO2PH	1.30	0.2	26.5	0.17	Oil	✓			✓

Objective	NA	W.D. (mm)	FN	Cover glass thickness (mm)	Immer-sion	Spring	Cor-rection ring	Iris dia-phragm	Water proof and oil proof function
UPLFLN 4XP	0.13	17	26.5	—					
UPLFLN 10XP	0.30	10	26.5	—					
UPLFLN 20XP	0.50	2.1	26.5	0.17		✓			
UPLFLN 40XP	0.75	0.51	26.5	0.17		✓			
UPLFLN 100XOP	1.30	0.2	26.5	0.17	Oil	✓			✓
PLFLN 100X	0.95	0.2	26.5	0.14-0.2		✓	✓		
PLN 2X	0.06	5.8	22	—					
PLN 4X	0.10	18.5	22	—					
PLN 10X	0.25	10.6	22	—					
PLN 20X	0.40	1.2	22	0.17		✓			
PLN 40X	0.65	0.6	22	0.17		✓			
PLN 50XOI	0.90–0.50	0.2	22	—	Oil	✓		✓	✓
PLN 100XO	1.25	0.15	22	—	Oil	✓			✓
PLN 10XPH	0.25	10.6	22	—					
PLN 20XPH	0.40	1.2	22	0.17		✓			
PLN 40XPH	0.65	0.6	22	0.17		✓			
PLN 100XOPH	1.25	0.15	22	—	Oil	✓			✓
PLN 4XP	0.10	18.5	22	—					
ACHN 10XP	0.25	6	22	—					
ACHN 20XP	0.40	3	22	0.17					
ACHN 40XP	0.65	0.45	22	0.17		✓			
ACHN 100XOP	1.25	0.13	22	—	Oil	✓			✓
MPLAPON 60X	0.90	0.4	26.5	0		✓			
MPLAPON 100X	0.95	0.3	26.5	0					
MPLAPON 100XO	1.40	0.1	26.5	0	Oil	✓			✓
MPLFLN 2.5X	0.08	10.7	26.5	—					
MPLFLN 10X	0.30	11	26.5	—					
MPLFLN 20X	0.45	3.1	26.5	0					
MPLFLN 40X	0.75	0.63	26.5	0					
MPLFLN 100X	0.90	1	26.5	0					
MPLN 5X	0.10	20	22	—					
UAPON 20XW340	0.70	0.35	22	0.17	Water	✓			✓
UAPON 40XO340-2	1.35	0.1	22	0.17	Oil	✓			✓
UAPON 40XW340	1.15	0.25	22	0.13–0.25	Water	✓	✓		✓

UPLSAPO Series

Thanks to the application of the original Olympus UW multi-coatings, these Super Apochromat objectives compensate for both spherical and chromatic aberrations from the UV to the near infrared region. Their sensitivity to fluorescence emissions ensures the acquisition of sharp, clear images, without color shift, even in brightfield and Nomarski DIC observations. For quality and performance, they offer solutions for digital imaging needs.

UPLFLN (UPLFLN-PH) Series

These Plan objectives also provide flat images with high transmission up to the near infrared region of the spectrum. With their high S/N, excellent resolution and high contrast imaging, they are especially effective in brightfield and Nomarski DIC observations. The UPLFLN-PH series is optimized for phase contrast observation.

PLAPON Series

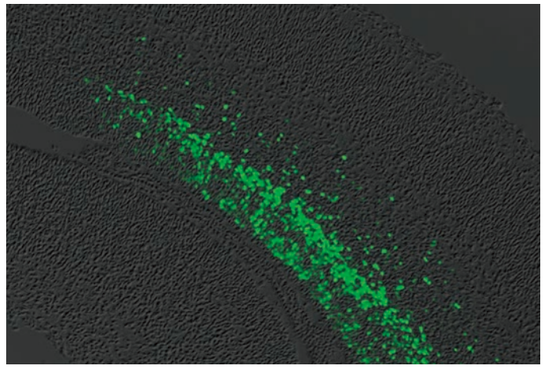
Designed for optimum resolution and contrast, these Plan Apochromat objectives keep chromatic aberration to a minimum. The PLAPON60xOSC objective has two improvements, chromatic aberration compensation at 405nm – 650nm and image-forming performance at 405nm.

PLN Series

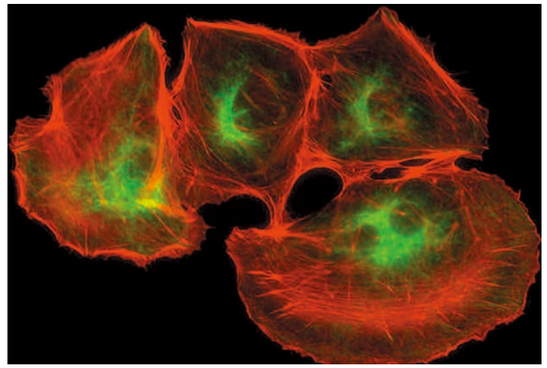
Ideal for a range of biological applications, these high quality objectives feature excellent flatness up to FN 22 in transmitted brightfield (phase contrast) observation.
The PLN-PH series is specifically designed for phase contrast work.

Objectives

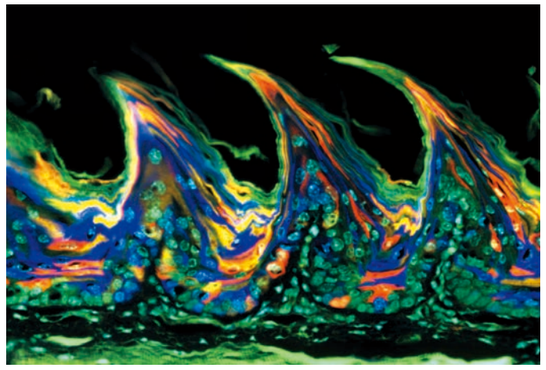
WORLD-RENOWNED OPTICAL PERFORMANCE ACCOMMODATES VARIOUS OBSERVATION METHODS

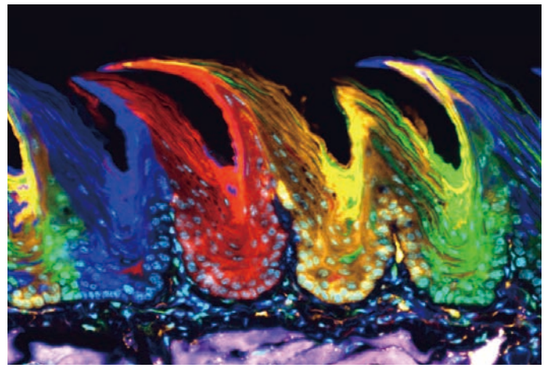


Brain Section of Mouse at Embryonic Day 15 (GFP)



NRK-52E Cells (Alexa Fluor 488/Alexa Fluor 546)





Rainbow mouse (Each interpapillary pit of the tongue is occupied by single-color cells that originate from monoclonal stem cells.)
Two days after tamoxifen induction, the epithelial cells in the interpapillary pit express random colors, indicating that multiple clones proliferated independently. However, after 84 days, each interpapillary pit was occupied by single-color cells, indicating that they are derived from monoclonal stem cells. (Nature Cell Biology 15, 511–518, 2013)

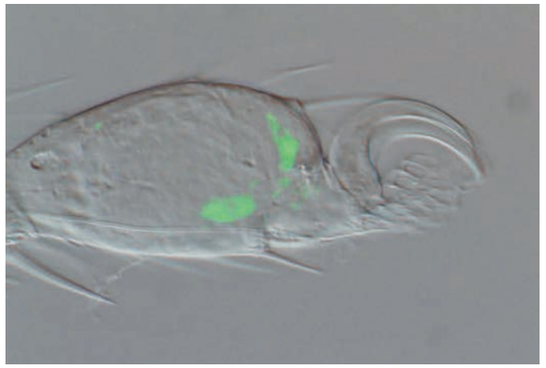
Fluorescence

Olympus Takes Fluorescence Observation to Another Plane

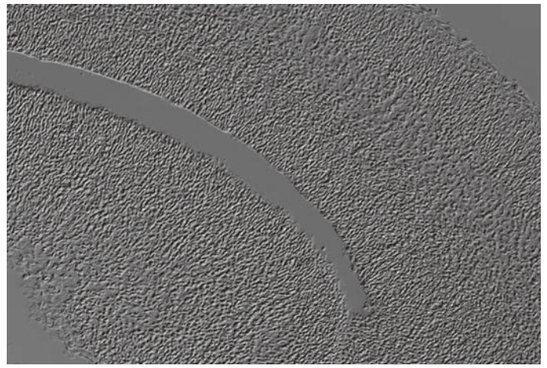
The U-HGLGPS light source is a pre-centered liquid light guide illuminator, equipped with a liquid light guide that minimizes the impact of lamp heat on the microscope and specimens alike. Employing a high-pressure mercury bulb, the light source offers a durable average lifetime of 2000 hours and a more stable and even illumination.

U-HGLGPS (Light Guide Illumination System)

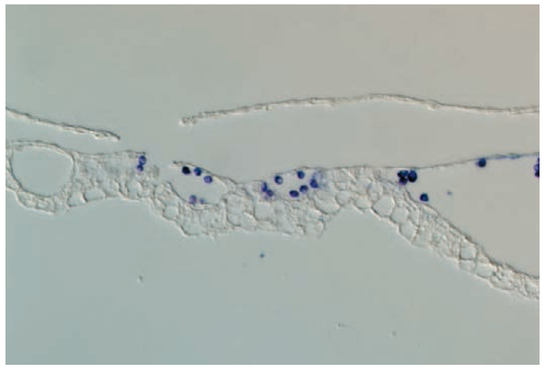
A total of three types of reflected illuminators are available: motorized fluorescence illuminator BX3-RFAA; coded fluorescence illuminator BX3-RFAS; universal reflected illuminator BX3-URA. Storing fluorescence mirror unit data (used in imaging) together with the images is possible by integrating coded fluorescence illuminator or motorized fluorescence illuminator with cellSens software.



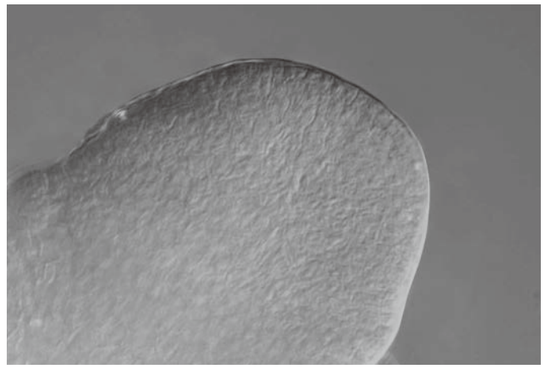
Distal Tip of a *Drosophila* limb (GFP)



Brain Section of Mouse at Embryonic Day 15



Blood Island at Stage 12 of Chicken Development



A Shoot Apical Meristem of Rice

Nomarski DIC

Image Optimization According to Specimen Characteristics

Olympus has prepared a wide selection of DIC sliders with varied shearing value for acquiring optimal specimen images. The U-DICT and the U-DICTS are designed for all-round performance. The U-DICTHC optimizes high-contrast observations of thin specimens, and the U-DICTHR, high resolution with less glare for thick specimens.

① U-DICT ② U-DICTS ③ U-DICTHR ④ U-DICTHC

Two types of condensers are also available: 8-position universal condenser U-UCD8-2; motorized universal condenser BX3-UCD8A, both for various observations (brightfield, darkfield, phase contrast, DIC and simple polarized light).

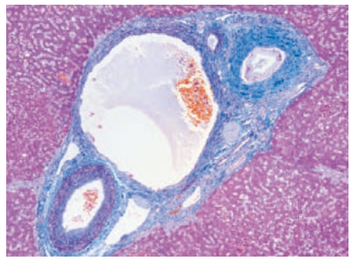
Observation Methods

Brightfield

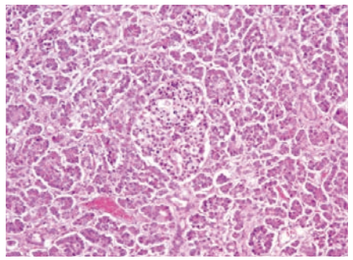
Brighter Images, with Superb Resolution/Flatness at All Magnifications

A diverse condenser lineup includes: the achromatic aplanatic U-AAC delivering excellent resolution and flatness from low to high magnifications; the swing-out U-SC3 accommodating 1.25x to 100x objectives; the low magnification U-LC for continuous 2x to 100x (Dry) observations; the ultra low magnification U-ULC-2.

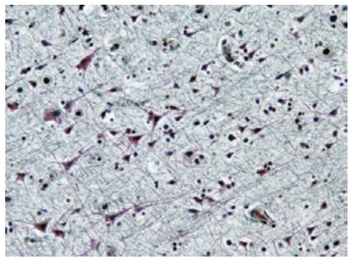
① U-SC3 ② U-ULC-2 ③ U-AC2 ④ U-AAC ⑤ U-LC



Liver (Azan Stain)



Pancreas (HE Stain)



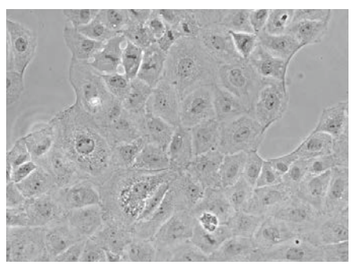
Cerebrum (Bodian Stain)

Phase Contrast

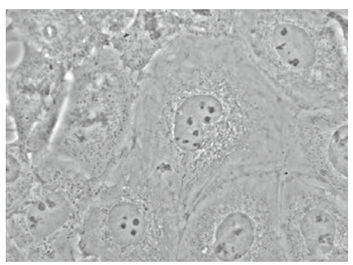
Ideal Phase Contrast Observation with Excellent Image Clarity

High contrast phase imaging allows close observation of the cell interior and of live bacteria. Using UPLFLN-PH or PLN-PH series objectives, phase contrast observation from 10x up to 100x is achievable. With the U-PCD2 phase/darkfield condenser, users can view specimens in brightfield or darkfield. Simultaneous observation with reflected light fluorescence microscopy is also possible.

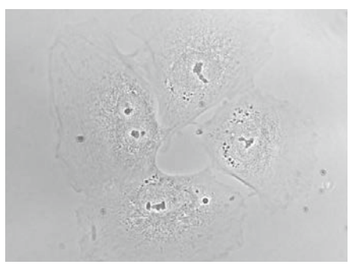
U-PCD2



NRK-52E Cells



NRK-52E Cells



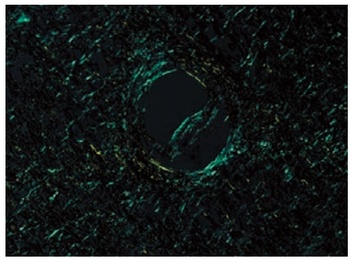
NRK-52E Cells

Polarized Light

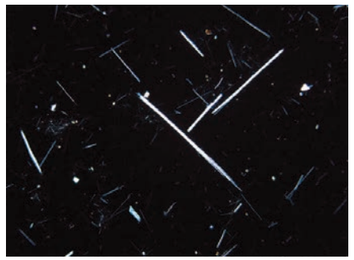
Polarizing Observation for Wide-Area Retardation Measurement

Tooth, bone, muscle tissue, nerve tissue, actomyosin fiber and mitotic spindle can all be observed, without staining. There are intermediate attachments (U-OPA/U-CPA) for orthoscopic and orthoscopic/conoscopic viewing. Various compensators make it possible to observe a wide range of retardation. Also available is a condenser exclusively for polarization observation, revolving nosepiece, rotating stage, objectives and simple polarizing attachment.

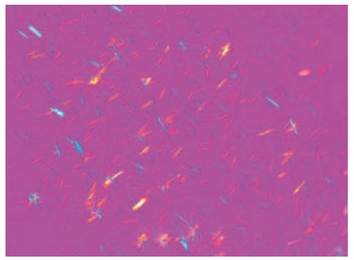
①U-POC-2 ②U-CPA ③U-OPA ④U-AN360P-2
⑤U-P4RE ⑥U-GAN ⑦U-POT



Amyloid



Asbestos



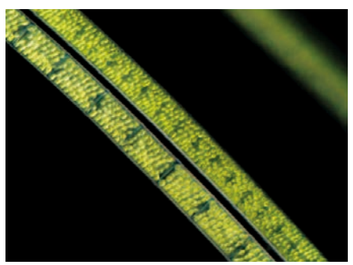
Urate crystals

Darkfield

High-Quality Darkfield Effect at All Magnifications

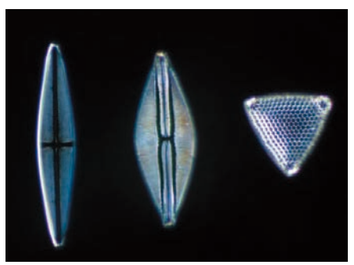
Two darkfield condensers are provided: the dry darkfield condenser (U-DCD), for magnifications from 10x to 100x (up to NA 0.80); and the oil immersion darkfield condenser (U-DCW), for magnifications from 20x to 100x (up to NA 1.2).

U-DCD U-DCW



Spirogyra

Water Flea



Diatom

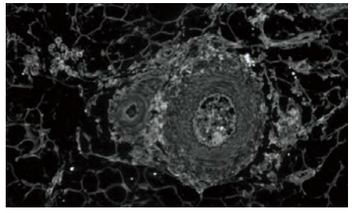
MICROSCOPE DIGITAL CAMERAS TO FULFILL DIVERSE NEEDS

Digital Cameras

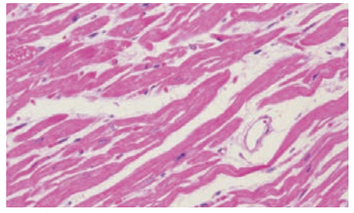
DP80

A Cutting-Edge Digital Microscopy Camera Equipped with Dual CCD Sensors, Providing Both High Sensitivity Monochrome and High-Quality Single-Shot Color Images with Pixel Precision

The DP80 boasts the innovative advantage of allowing you to acquire both high-sensitivity fluorescence images and high-quality brightfield images simply by switching between two CCDs depending on the observation method you need. The high-sensitivity monochrome CCD provides images of weak fluorescent light, while the color CCD acquires brightfield images (up to 12.5 million pixels) with high color reproduction faithful to the visual microscope observation. The excellent imaging performance gives you the advantage in creating presentations or scientific publications.



BW Image



Brightfield Image

DP73

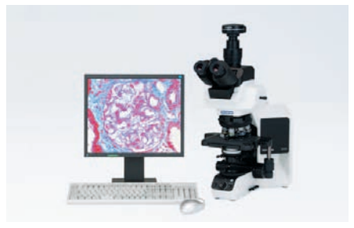
Supports High-Quality Fluorescence Imaging, with an Excellent Resolution and Color Reproduction

The DP73 displays live digital images with gradual smoothness and combines exceptional resolution with precise color reproduction. It also offers outstanding operational ease, even when focusing and moving the observation site, to deliver a feel similar to viewing an image directly through the microscope. Furthermore, the DP73 supports the creation of digital brightfields and fluorescence documentation, and has conference presentation capability, to provide unrivalled value from the first use.

DP26

Capture Brightfield Images with Exceptional Detail

Equipped with a 5-megapixel CCD, the DP26 provides high-definition images at resolutions up to 2448x1920 pixels. Images are distinct with no loss of fine detail even when taken at low magnification and enlarged. The color profile of the DP26 reproduces color live displayed specimens in real time. The DP26 also features progressive scanning and quick image capture to facilitate the real-time display of images with no color shift.



DP21

The Optimal Stand-Alone Model for Conferences

The DP21 is a stand-alone digital camera with a convenient handset for simple operations from observations to imaging. Its accurate color reproductions and smooth, high-definition live image displays are ideal for discussion groups and conferences. Optional cellSens imaging software platform also allows computer operation.

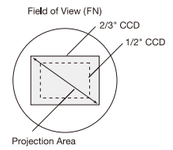
Accessories

Camera Adapters

The single port tube of the trinocular tube is detachable, and can be used with various cameras through a range of adapters.

Camera Adapter (projection lens)	Projection Magnifications	Projection Area (FN)		
		2/3" CCD	1/2" CCD	1/3" CCD
U-TV1XC	1x	11	8	6
U-TV1X-2+U-CMAD3	1x	11	8	6
U-TV1X-2+U-BMAD	1x	11	8	6
U-TV0.63XC	0.63x	17.5	12.7	9.5
U-TV0.63XB	0.63x	17.5	12.7	9.5
U-TV0.5XC-3	0.5x	22	16	12
U-TV0.35XC-2	0.35x	—	22	17.1

Practical Field of View (mm) = $\frac{\text{Projection Area (field number)}}{\text{Objective Magnifications}}$



Eyepieces

Eyepieces maintain image flatness when a reflected light illuminator or other intermediate tube is attached. The two available types are FN 22 and FN 26.5.

Item	Name	FN	Diopter	Micrometer (ømm)
Widefield	WHN10X	22		24
	WHN10X-H	22	-8 — +5	24
	CROSSWHN10X	22	-8 — +5	
Super widefield	SWH10X-H	26.5	-8 — +2	—
	MICROSWH10X	26.5	-8 — +2	
	CROSSSWH10X	26.5	-8 — +2	

Observation Tubes/Eyepoint Adjusters

A wide range of observation tubes is available for the BX3 series, including wide field binocular, trinocular types, various tilting tubes, tilting, telescopic, lifting binocular tube, and tubes for observation of upright images in which the specimen and the observed image move in the same direction.

①U-TTBI/U-ETBI ②U-TTLBI ③U-TTR-2 ④U-SWETTR-5 ⑤U-BI30-2 ⑥U-TBI-3
⑦U-TR30/U-TR30NIR ⑧U-SWTR-3 ⑨U-TBI-3-CLI ⑩U-ETR-4 ⑪U-EPA2 ⑫U-EPAL-2

*DP series digital cameras are not for clinical diagnostic use.

BX63 system diagram

TR-Adapter

CAMERAS

U-FMT F-Mount Adapter
U-TMAD T-Mount Adapter
U-SMAD Sony-Mount Adapter
U-BMAD Bayonet-Mount Adapter
U-CMAD3 C-Mount Adapter

◆ **WHN10X-H, CROSS WHN10X** Eyepieces
U-CT30-2 Centering telescope

* **WHN10X, WHN10X-H, CROSS WHN10X** Eyepieces
U-CT30-2 Centering telescope

U-TVZ Zoom Adapter
U-TV1X-2 TV Adapter
U-DPCAD Dual port tube with C mounts
U-CMDPTS C mount adapter for U-DPTS
U-DPTS Multi double port tube
U-CMDPTS C mount adapter for U-DPTS
U-TV0.63XB 0.63X B4-Mount Adapter
U-TV0.25XC 0.25X C-Mount Adapter
U-TV0.35XC-2 0.35X C-Mount Adapter
U-TV0.5XC-3 0.5X C-Mount Adapter
U-TV0.63XC 0.63X C-Mount Adapter
U-TV1XC C-Mount Adapter 1X (XY adjustment)

U-ETR-4*1 Erect image trinocular tube
U-TR30NIR Trinocular tube
U-TR30-2 Trinocular tube
U-TTR-2 Tilting trinocular tube
U-BI30-2 Binocular tube
U-TBI-3*1 Tilting binocular tube
U-TBI-3-CLI*1 Tilting binocular tube
U-TTBI Ergonomic binocular tube
U-ETBI Ergonomic erect image binocular tube
U-TTLBI*2 Tilting, telescopic, lifting binocular tube

U-KPA Intermediate attachment for simple polarizing observation
U-ANT Analyzer for transmitted light
U-CA Magnification changer
U-EPA2 Eyepoint adjuster
U-EPAL-2 Eyepoint adjuster

U-LLGAD Liquid light guide adapter
U-LLG150/ U-LLG300 Liquid light guide (1.5 m/3 m)
U-HGLGPS Light source
U-LH75XEAPO 75 W xenon apo lamp housing
U-RX-T Power supply unit for xenon lamp
U-LH100HGAPO 100 W mercury apo lamp housing
U-LH100HG 100 W mercury lamp housing
U-RFL-T Power supply unit for mercury lamp

U-GAN Analyzer for urate crystals observation
U-ANT Analyzer for transmitted light
U-DICT DIC slider for transmitted light
U-DICTS Shift DIC slider for transmitted light
U-DICTHR High resolution DIC slider for transmitted light
U-DICTHC High contrast DIC slider for transmitted light

U-D7REA Motorized 7-position nosepiece
U-IFCBL50 Interface cable, 50 cm
U-D7RES Coded 7-position nosepiece
U-D6RES Coded 6-position nosepiece
OBJECTIVES

BX3-RFAS Coded fluorescence illuminator
Mirror units
U-AN-2 Analyzer slider
BX3-RFAA Motorized fluorescence illuminator
U-IFCBL15 Interface cable, 15 cm

U-LHEAD Extension adapter for lamp housing
U-DULHA Double lamp housing adapter
U-AW Motorized attenuator wheel
U-IFCBL15 Interface cable, 15 cm
U-IFCBL200 Interface cable, 200 cm

BX3-ARM Standard arm
BX63F BX63 frame
U-LH100ADP LH100 adapter
U-AW Motorized attenuator wheel
U-IFCBL15 Interface cable, 15 cm
U-IFCBL200 Interface cable, 200 cm
U-LHLEDC LED lamp housing
U-LH100-3 100 W halogen lamp housing
U-RMT Extension cord
U-IFCBL200 Interface cable, 200 cm
U-MCZ Controller
U-POT Polarizer
U-FC Filter cassette
Filter (ø45)
Touch panel controller (attached to BX63F)

C1394A Interface cable
BX3-CBH Control box
PC (software)

U-HLD-4, U-HLDT-4 Specimen holder
U-HRD-4, U-HRDT-4 Specimen holder
U-HLS-4, U-HLST-4 Specimen holder
U-CST Centering target

XY-controller (attached to BX3-SSU)
Control box (attached to BX3-SSU)
BX3-SSU Ultrasonic Stage

IX2-GCP Glass stage insert plate
IX-CP50 Insert plate
IX-SCL Slide clip
IX-SVL2*3 Cross stage with short left handle

U-SC3 Swing-out condenser
U-AAC Achromatic/ Aplanatic condenser
U-ULC-2 Ultra low condenser
U-DCD Darkfield condenser, dry
U-DCW Darkfield condenser, oil
U-TLO Oil top lens
U-TLD Dry top lens
U-UCD8-2 8-position universal condenser
BX3-UCD8A Motorized universal condenser
U-IFCBL15 Interface cable, 15 cm
Optical elements
U-CO1.25X Low magnification conversion lens for UCD

U-SHG **U-SHGT** Rubber grips
U-SVLO Oil rectangular stage with left-hand control
U-SVRO Oil rectangular stage with right-hand control
U-SVLB-4 Mechanical stage with left-hand control
U-SVRB-4 Mechanical stage with right-hand control
BX3-STAD Stage adapter

*1 Slight vignetting may occur in combination with an additional intermediate attachment or fluorescence illuminator. *2 Require an additional intermediate attachment or fluorescence illuminator.
*3 Cannot be used with BX3-UCD8A and U-UCD8-2

BX53 system diagram

◆ **WHN10X-H, CROSS WHN10X**
Eyepieces
U-CT30-2
Centering telescope

* **WHN10X, WHN10X-H, CROSS WHN10X**
Eyepieces
U-CT30-2
Centering telescope

▲ **SWH10X-H, CROSS SWH10X, MICRO SWH10X**
Eyepieces
U-CT30-2
Centering telescope

TR-Adapter

U-FMT F-Mount Adapter
U-TMAD T-Mount Adapter
U-SMAD Sony-Mount Adapter
U-BMAD Bayonet-Mount Adapter
U-CMAD3 C-Mount Adapter
U-TVZ Zoom Adapter
U-TV1X-2 TV Adapter
U-DPCAD Dual port tube with C mounts
U-CMDPTS C mount adapter for U-DPTS
U-DPTS Multi double port tube
U-CMDPTS C mount adapter for U-DPTS
U-TV0.63XB 0.63X B4-Mount Adapter
U-TV0.25XC 0.25X C-Mount Adapter
U-TV0.35XC-2 0.35X C-Mount Adapter
U-TV0.5XC-3 0.5X C-Mount Adapter
U-TV0.63XC 0.63X C-Mount Adapter
U-TV1XC C-Mount Adapter 1X (XY adjustment)

CAMERAS

U-SWETTR-5 Super widefield erect image tilting trinocular observation tube
U-SWTR-3 Super widefield trinocular tube
U-ETR-4*1 Erect image trinocular tube
U-TR30NIR Trinocular tube
U-TR30-2 Trinocular tube
U-TTR-2 Tilting trinocular tube
U-BI30-2 Binocular tube
U-TBI-3*1 Tilting binocular tube
U-TBI-3-CLI*1 Tilting binocular tube
U-TTBI Ergonomic binocular tube
U-ETBI Ergonomic erect image binocular tube
U-TTLBI*2 Tilting, telescopic, lifting binocular tube

U-ECA Magnification changer 2X
U-KPA Intermediate attachment for simple polarizing observation
U-ANT Analyzer for transmitted light
U-CA Magnification changer
U-DP*1*3 Dual port
U-DP1XC Dual port 1X
U-APT Arrow pointer
U-EPA2 Eyepoint adjuster
U-EPAL-2 Eyepoint adjuster
U-TRU*1*3 Trinocular intermediate unit
U-TRUS*1 Trinocular intermediate unit

U-GAN Analyzer for urate crystals observation
U-ANT Analyzer for transmitted light
U-DICT DIC slider for transmitted light
U-DICTS Shift DIC slider for transmitted light
U-DICTHR High resolution DIC slider for transmitted light
U-DICTHC High contrast DIC slider for transmitted light
U-ANT Analyzer for transmitted light
U-TAD Plate adapter
COMPENSATORS

U-D7REA Motorized 7-position nosepiece
U-D7RES Coded 7-position nosepiece
U-D6RES Coded 6-position nosepiece
U-D7RE Septuple revolving nosepiece for DIC/simple POL
U-D6RE Sextuple revolving nosepiece for DIC/simple POL
U-P6RE Centerable sextuple revolving nosepiece
U-P4RE Centerable revolving nosepiece
U-5RE-2 Quintuple revolving nosepiece

OBJECTIVES

BX3-ARM Standard arm
BX53F BX53 frame
U-LH100-3 100 W halogen lamp housing
U-POT Polarizer
U-FC Filter cassette
Filter (ø45)

BX3-RFAA*4 Motorized fluorescence illuminator
Mirror units
U-AN-2 Analyzer slider
BX3-RFAS*4 Coded fluorescence illuminator
U-AN-2 Analyzer slider
BX3-URA Universal reflected illuminator
BX3-25ND6 ND filter
BX3-25ND25 ND filter
U-AN-2 Analyzer slider

U-LHEAD*5 Extension adapter for lamp housing
U-DULHA Double lamp house adapter
U-AW Motorized attenuator wheel

U-LLGAD Liquid light guide adapter
U-LLG150/ U-LLG300 Liquid light guide (1.5 m/3 m)
U-HGLGPS Light source
U-LH75XEAPO 75 W xenon apo lamp housing
U-RX-T Power supply unit for xenon lamp
U-LH100HGAPO 100 W mercury apo lamp housing
U-LH100HG 100 W mercury lamp housing
U-RFL-T Power supply unit for mercury lamp

U-DAL10X Drawing attachment 10X
U-DA Drawing attachment
U-DO3 Dual observation attachment
U-SDO3 Side by side observation attachment
U-MDOSV*6 Multi observation side viewer
U-MDOB3 Multi observation body
U-MDO10B3 Multi observation body for 10 persons
U-MDO10R3*6 Multi observation body for 10 persons
U-CPA Intermediate attachment for conoscopic andorthoscopic observation
U-AN360P-2 Rotatable analyzer
U-OPA Intermediate attachment for orthoscopic observation

U-FMP Mechanical stage
U-SRG2 Rotatable graduated stage
U-SRP Precision rotatable stage
U-SP Plain stage
U-CST Centering target
U-SHG Rubber grip
U-SHGT Rubber grip
U-HLD-4, U-HLDT-4 Specimen holder
U-HRD-4, U-HRDT-4 Specimen holder
U-HLS-4, U-HLST-4 Specimen holder
U-SVRO Oil rectangular stage with right-hand control
U-SVLO Oil rectangular stage with left-hand control
U-SVRB-4 Mechanical stages with right-hand control
U-SVLB-4 Mechanical stages with left-hand control

U-LC*7 Low magnification condenser
U-AC2 Abbe condenser
U-SC3 Swing-out condenser
U-AAC Achromatic/ Aplanatic condenser
U-ULC-2 Ultra low condenser
U-PCD2 Phase/darkfield condenser
U-POC-2 Polarizing condenser

Optical devices
U-CO1.25X Low magnification conversion lens for UCD
BX3-UCD8A Motorized universal condenser
U-TLO Oil top lens
U-TLD Dry top lens
U-DCD Darkfield condenser, dry
U-DCW Darkfield condenser, oil
U-UCD8-2 8-position universal condenser

U-CBS Control box for coded function
U-HSEXP Hand switch for exposure
U-HSCBM Hand switch for CBM
U-IFCBL200 Interface cable, 200 cm
U-CBM Control box
Stand*6
DP21-SAL Standalone Connection Kit
PC (Software)

*1 Slight vignetting may occur in combination with an additional intermediate attachment or observation method. *2 Require an additional intermediate attachment or fluorescence illuminator.
*3 Cannot be used with U-TTLBI. *4 Compatible with FN 22. *5 Cannot be used with BX3-URA. *6 Stand is a standard equipment of the U-MDOSV and U-MDO10R3. *7 An auxiliary lens is equipped.

BX63 specifications

Microscope frame	Optical system	UIS2 optical system
	Focus	Built-in motorized nosepiece focus Stroke: 20mm, minimum increment: 0.01µm, maximum nosepiece movement speed: 5mm/s
	Illuminator	Built-in Koehler illumination for transmitted light, Light intensity LED indicator, Built-in motorized field stop • High color reproductivity LED light source •12V 100W halogen bulb (pre-centered)
Revolving nosepiece		• Motorized septuple revolving nosepiece • Interchangeable reversed coded sextuple/coded septuple nosepiece
Observation tube	Widefield (FN 22)	• Widefield tilting trinocular • Widefield trinocular • Widefield erect image trinocular • Widefield tilting binocular • Widefield tilting, telescopic, lifting binocular • Widefield ergo binocular • Widefield binocular
Stage		• Ultrasonic stage (Stage stroke: X:76mm x Y: 52mm, maximum stage movement speed: 30mm/s • Ceramic-coated coaxial stage with left or right hand low drive control: with rotating mechanism and torque adjustment mechanism, optional rubber grips available • Cross stage with short left handle
Condenser		• Motorized universal condenser (NA 0.9, motorized 8-position turret, Aperture stop, polarizing filter in/out mechanism and top lens swing out mechanism), for 1.25x–100x [swing-out 1.25x-4x, with oil top lens: (NA 1.4)] • Swing out Achromatic (NA 0.9), for 1.25x–100x (swing-out: 1.25x–4x) • Achromatic Aplanatic (NA 1.4), for 10x–100x • Universal (NA 0.9), for 1.25x–100x [swing-out: 1.25x–4x, with oil top lens:(NA 1.4)] • Ultra low (NA 0.16), for 1.25x–4x • Darkfield dry (NA 0.8–0.92), for 10x–100x • Darkfield oil (NA 1.20–1.40), for 10x–100x
ND filter wheel		• Motorized 6-position ND filter wheel
Fluorescence illuminator		• Motorized multi-purpose coded type (FN 22, motorized 8-position mirror unit turret, 4-position ND slider) • Multi-purpose coded type (FN 22, 8-position mirror unit turret, 4-position ND slider)
Fluorescence light source		• 130W Hg light guide illumination • 100W Hg apo lamp housing and transformer • 100W Hg lamp housing and transformer • 75W Xe lamp housing and transformer
Controller		• High-performance control box (I/F: FireWire)

*This device is designed for use in industrial environments for the EMC performance. Using it in a residential environment may affect other equipment in the environment.

BX53 specifications

Microscope frame	Optical system	UIS2 optical system
	Focus	Vertical stage movement: 25mm stage stroke with coarse adjustment limit stopper, Torque adjustment for coarse adjustment knobs, Stage mounting position variable, High sensitivity fine focusing knob (minimum adjustment gradations: 1µm)
	Illuminator	Built-in Koehler illumination for transmitted light, Light preset switch, Light intensity LED indicator, Built-in filters (LBD-IF, ND6, ND25), 12V 100W halogen bulb (pre-centered)
Revolving nosepiece		Interchangeable reversed quintuple/coded quintuple/sextuple/septuple/coded sextuple/coded septuple nosepiece
Observation tube	Widefield (FN 22)	• Widefield tilting, telescopic and lifting binocular • Widefield tilting trinocular • Widefield trinocular • Widefield erect image trinocular • Widefield tilting binocular • Widefield tilting, telescopic, lifting binocular tube •Widefield ergo binocular •Widefield binocular
	Super widefield (FN 26.5)	• Super widefield trinocular • Super widefield erect image tilting trinocular
Stage		Ceramic-coated coaxial stage with left or right hand low drive control: with rotating mechanism and torque adjustment mechanism, optional rubber grips available (Non stick grooved coaxial, plain, rotatable stages are also available)
Condenser		• Abbe (NA 1.1), for 4x–100x • Swing out Achromatic (NA 0.9), for 1.25x–100x (swing-out: 1.25x–4x) • Achromatic Aplanatic (NA 1.4), for 10x–100x • Phase contrast, darkfield (NA 1.1), [phase contrast: for 10x–100x, darkfield: for 10x–100x (up to NA 0.80)] • Universal (NA 0.9), for 1.25x–100x [swing-out: 1.25x–4x, with oil top lens:(NA 1.4)] • Low (NA 0.75), for 2x–100x(Dry) • Ultra low (NA 0.16), for 1.25x–4x • Darkfield dry (NA 0.8–0.92), for 10x–100x • Darkfield oil (NA 1.20–1.40), for 10x–100x
Fluorescence illuminator		• Multi-purpose coded type (FN 22, 8-position mirror unit turret, 4-position ND slider) • Economical type (FN 26.5, 8-position mirror unit turret)
Fluorescence light source		• 130W Hg light guide illumination • 100W Hg apo lamp housing and transformer • 100W Hg lamp housing and transformer • 75W Xe lamp housing and transformer

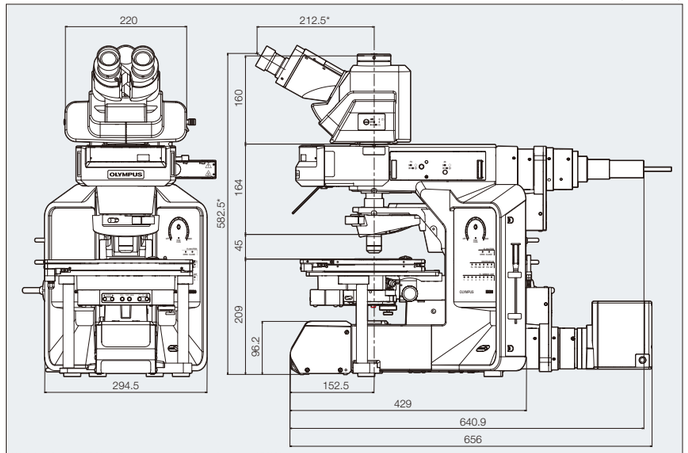
*The U-CBM is designed for the BX3 use in industrial environments for the EMC performance. Using it in a residential environment may affect other equipment in the environment.

BX63/BX53 common specifications

Operating environment	• Indoor use • Ambient temperature : 5º to 40ºC (41º to 104ºF) • Maximum relative humidity : 80% for temperatures up to 31ºC (88ºF), decreasing linearly through 70% at 34ºC (93ºF), 60% at 37ºC (99ºF), to 50% relative humidity at 40ºC (104ºF) • Supply voltage fluctuations : Not to exceed ±10% of the normal voltage

BX63 FL dimensions

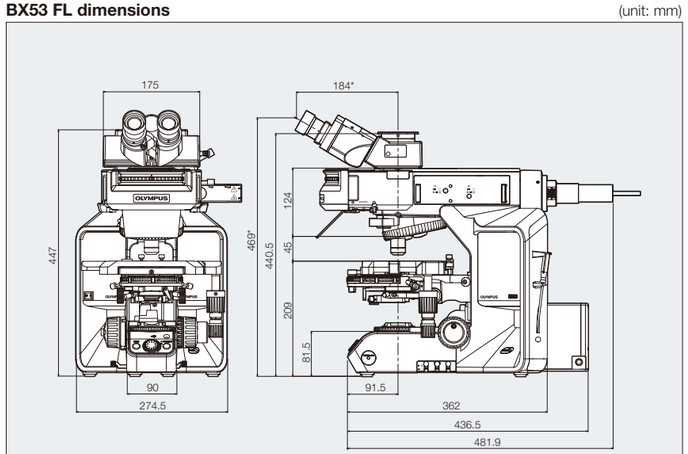
(unit: mm)



Weight: Approx. 33kg, Power consumption: Approx. 450W
The length marked with an asterisk (*) may vary according to interpupillary distance. Distance for figure shown is 62mm.

BX53 FL dimensions

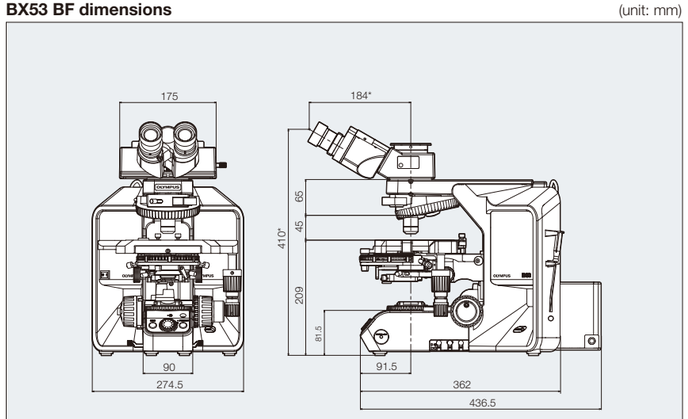
(unit: mm)



Weight: Approx 19kg, Power consumption: Approx. 300W
The length marked with an asterisk (*) may vary according to interpupillary distance. Distance for figure shown is 62mm.

BX53 BF dimensions

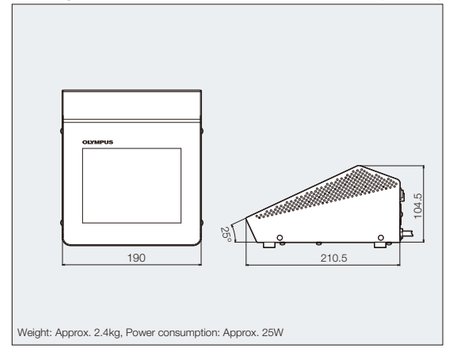
(unit: mm)



Weight: Approx. 16kg, Power consumption: Approx. 140W
The length marked with an asterisk (*) may vary according to interpupillary distance. Distance for figure shown is 62mm.

Touch panel controller dimensions

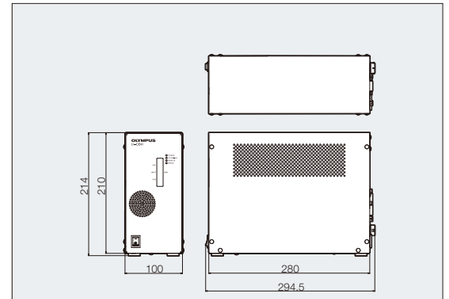
(unit: mm)



Weight: Approx. 2.4kg, Power consumption: Approx. 25W

BX3-CBH dimensions

(unit: mm)



Weight: Approx. 4.2kg, Power consumption: Approx. 230W