A Clear Edge in Imaging

System Microscope
BX63/BX53
BX3 Series

OLYMPUS CORPORATION is ISO14001 certified.
OLYMPUS CORPORATION is FM553994/ISO9001 certified.
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Illumination devices for microscope have suggested lifetimes. Periodic inspections are required. Please visit our web site for details.

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www.olympus.com
A Revolutionary New Standard in Accuracy and Imaging Efficiency

User-friendly design assures outstanding operating ease and flexibility for brightfield/darkfield and fluorescence imaging in a wide range of research settings. With a choice of models and configuration options, there’s an Olympus research microscope to meet your individual needs.
**Advanced Sensitivity in Fluorescence Imaging**

### Accuracy

High-sensitivity fluorescence detection enables bright, high-contrast imaging with minimal exposure of cells to excitation light. Advanced Olympus technologies also reduce stray light and autofluorescence to assure a high S/N ratio.

#### 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-imaging enhancements and processing.

#### High Transmission Objectives with Reduced Autofluorescence

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

#### Stray Light Reduction Equipped on All Mirror Units

The low reflection function eliminates over 99% of stray light, producing a high S/N ratio.

#### 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.

#### Low Autofluorescence Immersion Oil

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

---

**Fluorescent Mirror Units with the Latest Coating Technology**

Olympus applies an outstanding filter coating technology to all fluorescence mirror units in order to produce high transmissions, sharp cut-offs and efficient detections of fluorescence.

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Upgraded Accuracy
The BX63 microscope features a fixed stage and focusing nosepiece for maximum stability and accurate imaging. An ultrasonic drive system enables fine, smooth control of specimen position.

Accuracy & Ease of Use
Reliability and Precision in an Easy-to-use Package

Effortless Imaging
The cellSens software allows researchers to perform effortless imaging.

Further Fluency in Fluorescence Integration
The Olympus 8-position fluorescence illuminator allows flexible responses to various fluorescence specimens, with easily replaceable mirror units. Observations are accelerated further with less need for changing mirror units for specimens such as multi-colors and FISH.
The BX63 offers outstanding stability and imaging precision for research applications, with the convenience of a touch screen interface for easy operation. Additionally, it features a detachable controller that can be positioned to suit the operator’s preference or workflow requirements.

**Intelligent Design for Maximum Configuration Flexibility and Operating Ease**

The BX63 is the choice for today’s motorized microscope. By incorporating a motorized nosepiece and securely fastening the stage on three points, the microscope is even more stabilized. The smooth, high-precision drive of the fixed ultrasonic stage reduces vibrations, further advancing the quality of image acquisition.

**Stability for Improved Imaging Reliability**

Programmable controls greatly simplify repetitive observation and imaging tasks. In Navigation mode, the interface is context-sensitive, and displays only the functions that are relevant to the currently selected observation method. In Full Operation mode, it allows researchers access to the full range of functions and customization options available.

**Intuitive Touch Panel Controller for Enhanced Workspace and Workflow Flexibility**

The controller U-MCZ can be removed and attached anywhere on the microscope, enabling the researcher to create a working environment all his/her own. The XY-controller of the ultrasonic stage can also be attached to the user’s preferred side, allowing the simultaneous operation of the controller and the mouse. The controller’s functionally-placed switches simplify observation method/objective/mirror unit changeovers, light intensity adjustments and live/archive image selections.
With the BX63, a diverse lineup of motorized units are available. The researcher has a choice of three controls - the touch panel controller, the controller/U-MCZ, or the imaging software cellSens - for his/her observation method settings, microscopic operations and digital imaging. Observations are made so much faster and simpler, thanks to the interlocked motorized units working together to satisfy even the most demanding applications.

Motorized Fluorescence Illuminator/BX3-RFAA
The flexibility of the motorized fluorescence illuminator accommodates multi-color stained specimens. The 8-position mirror units permit quick 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
Equipped with a DIC slider slot, 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-UCDA
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.

Motorized Seven Position Nosepiece/U-D7REA
Equipped with a DIC slider slot, 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.

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

Software cellSens

Scanning Stage with Ultrasonic/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.
BX53

A Great Solution for System Flexibility with Comfortable Operability

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.

Energy Saving Switch Turns off Automatically

The motion sensor detects when an operator leaves and will automatically turn off the transmitted light lamp after around 30 minutes. The energy-saving switch conserves energy and lamp lifetime.

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 7-position revolving nosepiece, integrated with the motorized universal condenser, enables automatic switching to the optimal DIC prism. Simplified prism switches accelerate observations.

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 his/her own working environment with the microscope.

Saves Microscope Information with Coded Units

The imaging software cellSens integrated with the coded fluorescence illuminator BX3-RFAS and the motorized 7-position nosepiece U-D7RES can automatically store fluorescence mirror unit and objective data with the images, facilitating post-imaging treatments.

Accuracy & Ease of Use

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.
UIS2 Objectives Deliver Optimal Performance in Wider Wavelength Spectrum

**UIS2 Objectives**

Thanks to the application of the original Olympus LW 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, near images, without color shift, even in brightfield and Nomarski DIC observations. For quality and performance, they offer solutions for digital imaging needs.

**Plan Apochromat objectives**

- **PLAPON Series**
  - Designed for unsurpassed resolution and contrast, these Plan Apochromat objectives keep chromatic aberration compensation down to a minimum. The PLAPON60/0.95 objective has two improvements, chromatic aberration compensation at 455 nm - 650 nm and image-forming performance at 405 nm.

**UPLSAPO Series**

These UIS2 objectives are optimized for phase contrast observation.

**UPLFLN (UPLFLN-PH) Series**

These plan objectives also provide flat images with high S/N ratio, 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.

**UPLSAPO 60x**
- Objective: 0.95
- WD: 0.16
- FN: 26.5
- Coll. glass: 0.17
- Immersion: 0.17
- Spring: ✔
- iris diaphragm: ✔
- Oil proof: ✔

**UPLSAPO 40x**
- Objective: 0.75
- WD: 0.22
- FN: 26.5
- Coll. glass: 0.17
- Immersion: 0.17
- Spring: ✔
- iris diaphragm: ✔
- Oil proof: ✔

**UPLSAPO 30x**
- Objective: 0.65
- WD: 0.29
- FN: 26.5
- Coll. glass: 0.17
- Immersion: 0.17
- Spring: ✔
- iris diaphragm: ✔
- Oil proof: ✔

**UPLSAPO 20x**
- Objective: 0.55
- WD: 0.36
- FN: 26.5
- Coll. glass: 0.17
- Immersion: 0.17
- Spring: ✔
- iris diaphragm: ✔
- Oil proof: ✔

**UPLSAPO 10x**
- Objective: 0.45
- WD: 0.43
- FN: 26.5
- Coll. glass: 0.17
- Immersion: 0.17
- Spring: ✔
- iris diaphragm: ✔
- Oil proof: ✔

**UPLSAPO 4x**
- Objective: 0.35
- WD: 0.50
- FN: 26.5
- Coll. glass: 0.17
- Immersion: 0.17
- Spring: ✔
- iris diaphragm: ✔
- Oil proof: ✔

**PLAPON 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.

<table>
<thead>
<tr>
<th>Objective</th>
<th>NA</th>
<th>WD (mm)</th>
<th>FN</th>
<th>Coll. glass (mm)</th>
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**UIS2 Objectives in Wider Wavelength Spectrum**

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**Observation Tubes / Eyepoint Adjusters**

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

**Eyepieces**

Eyepieces maintain image flatness even when a reflected light observation or a transmitted light observation with an intermediate tube is attached. The two available types are FN 22 and FN 26.5.
World-renowned Optical Performance Accommodates Various Observation Styles

Fluorescence

Olympus Takes Fluorescence Observation to Another Plane

A total of three types of reflected illuminators are available: the motorized fluorescence illuminator BX3-RFAS, the coded fluorescence illuminator BX3-RFAS, and the universal reflected illuminator BX3-URA.

Eight fluorescence mirror units can be attached for comfortable multi-color fluorescence observations. Fly’s-eye lenses, that are equipped with both BX3-RFAS and BX3-RFAS, and high-performance filters that come with mirror units realize bright, efficient fluorescence observations. Storing fluorescence mirror unit data (used in imaging) together with the images is possible by integrating coded fluorescence illuminator and motorized fluorescence illuminator.

Nomarski DIC

Image Optimization According to Specimen Characteristics

Olympus has prepared a wider 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.

Two types of condensers are also available: the 8-position universal condenser U-UCD8-2 and the motorized universal condenser BX3-UCD8A, both for various observations (brightfield, darkfield, phase contrast, DIC and simple polarized light).
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, the low magnification U-UC for continuous 2x to 100x (Dry) observations, and the ultra low magnification U-ULC-2.

Polarizing 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 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.

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 to 100x is achievable. With the U-PCD2 phase-darkfield condenser, users can view specimens in brightfield or darkfield. A simultaneous observation with reflected light fluorescence microscopy is also possible.

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).

* Please consult your nearest Olympus representative for applicable objectives.
Microscope Digital Cameras to Fulfill Diverse Needs

**Supports High-quality Fluorescence Imaging, with an Unsurpassed Resolution and Color Reproduction**

The DP73 is our flagship model, providing imaging from brightfield to fluorescence at an unparalleled maximum resolution of 17.28 megapixels. The DP73 supports Adobe RGB to faithfully reproduce colors and it provides high-quality imaging via Olympus’ new Fine-detail Processing that uses algorithms to enhance resolution and reduce artifacts such as pseudo-colors and moiré as tend to hamper observation of microstructures at low magnification. During fluorescence imaging, the DP73 can clearly discern weak fluorescent signals thanks to its high sensitivity equivalent to ISO1600 and its Pixel-shift Photobleaching Correction function that automatically corrects color tones during pixel shifting.

*By shuffling the pixels of the 2.01 megapixel-CCD, it is possible to record still images equivalent to the maximum image recording size (4800 x 3600) or effective image size of 17.28 million pixels.

**Capture Brightfield Images with Exceptional Detail**

Equipped with a 5-megapixel CCD, the DP26 provides high-definition images at resolutions up to 2448 x 1920 pixels. Images are distinct with no loss of fine detail even when taken at low magnification and enlarged. The color profile of the DP26 comes from natural colors like those one would see when viewing a specimen directly, so even slight differences in colors can be distinguished. The DP26 also features progressive scanning and quick image capture to facilitate the real-time display of images with no color shift.

**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 small discussion groups and conferences. Optional cellSens imaging software platform also allows operation via computers.

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**Imaging Software/cellSens**

cellSens is an imaging software available in three versions to meet individual workflow needs. *Entry* is used for simple image acquisition. *Standard* provides simple operation for imaging documentation. *Dimension* allows for the control of the complete workflow from image capture to analysis. With GUI customization, working environments for both Standard and Dimension can be optimized according to workflow. cellSens frees the researcher to concentrate on his/her creative work.

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**Camera Adapters**

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

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**Development/Production**

Olympus Group will develop products, services and production technologies with a careful and conscientious regard for safety and environmental protection, so that the society and environment we pass on will be sound and full of health. BX43/BX46/BX53/BX63 are Olympus-certified Eco-Products, manufactured under Olympus’ own green designing standards, established in reference to Type II environmental label indication stipulations in the international standard ISO 14021.

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**Use**

- **LED illumination** White LED as light source, BX63 and BX46 reduce power consumption by 10%.
- **CCD (energy-saving) mode** Internal 0.5A (60G) BX63 reduce power consumption by 10%.

**Waste Disposal**

- **Waste sorting** Improved recycling rate

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**Transport**

Adoption of cardboard packaging
BX63/BX53 common specifications

**Microscope frame**
- Optical system: UFX optical system
- Focus: Built-in motorized nosepiece lenses
  - Stroke: 20 mm, minimum increment: 0.01 µm, maximum nosepiece movement spaced: 5 mm

**Illuminator**
- Built-in Koehler illumination for transmitted light, light intensity LED indicator, Built-in motorized field stop
  - High color nonreflectively LED light source: 92 V 100 W halogen bulb (pre-centered)

**Resolving nosepiece**
- Interchangeable motorized fieldscrew/condenser nosepiece
- Interchangeable fieldscrew/condenser nosepiece

**Observation tube**
- Wildfield (FN 22)
  - Wildfield tilting binocular, Wildfield binocular, Widefield binocular
  - Widefield, telescopic, lifting binocular tube, Widefield ergo binocular

**Stage**
- Universal stage (stroke: X:40 mm Y: 52 mm)
  - Ceramic-coated conical stage, with left or right hand low drive control, with rotating mechanism and torque adjustment mechanism, optional rubber rings available
  - Cross-stage with short left hand handle

**Condenser**
- Motorized universal conical (NA 0.9) motorized 8-position turret, Aperture stop, motorized filter switch mechanism and top lens swing out mechanism
  - For 1.25x–100x (swing-out: 1.25x–4x), with top lens (NA 1.4)
  - Swing-out Achromatic (NA 1.4) for 10×–100x
  - Universal (NA 0.9) for 1.25x–100x (swing-out: 1.25x–4x, with top lens (NA 1.4)
  - Ultra low (NA 0.9) for 1.25x–4x
  - Darkfield oil (NA 0.8–0.92) for 10×–100x

**NDFilter wheel**
- Motorized 6-position NDFilter wheel

**Fluorescence illuminator**
- Universal multi-purpose coated type (FN 22, motorized 8-position mirror unit turret, 4-position ND slider)
- Multi-purpose coated type (FN 22, 8-position mirror unit turret, 4-position ND slider)

**Controller**
- High-performance control box (I/F: FireWire)

**Fluorescence light source**
- 130 W Hg light guide illuminator
- 100 W Fh lamp housing and transformer
- 75 W Xe lamp housing and transformer
- 100 W Hg lamp housing and transformer
- Darkfield oil (NA 0.8–0.92), 12 V 100 W halogen bulb (pre-centered)

**Observation tube**
- Widefield (FN 22)
  - Widefield tilting, telescopic, lifting binocular tube, Widefield ergo binocular, Widefield binocular

**Condenser**
- Abbe (NA 1.1), for 4x–100x
  - Swing-out Achromatic (NA 0.9) for 1×–100x (swing-out: 1.25x–4x)
  - Achromatic Aplanatic (NA 1.4) for 10×–100x
  - Phase contrast, darkfield (NA 1.1), [phase contrast: for 10×–100x, darkfield: for 10×–100x (up to NA 0.80)]
  - Achromatic Aplanatic (NA 1.4) for 10×–100x (swing-out: 1.25x–4x)
  - Ultra low (NA 0.9) for 1.25x–4x
  - Darkfield oil (NA 0.8–0.92) for 10×–100x

**Fluorescence light source**
- Multi-purpose coated type (FN 22, 8-position mirror unit turret, 4-position ND slider)
  - Universal (NA 0.9), for 1.25x–100x [swing-out: 1.25x–4x, with top lens (NA 1.4)]
  - Swing-out Achromatic (NA 1.4) for 10×–100x
  - Ultra low (NA 0.9) for 1.25x–4x
  - Darkfield oil (NA 0.8–0.92) for 10×–100x

**Stage**
- Ceramic-coated conical stage, with left or right hand low drive control, with rotating mechanism and torque adjustment mechanism, optional rubber rings available
  - Non stick grooved coaxial, plain, rotatable stages are also available

**Ambient temperature**: 5 °C to 40 °C (41 °F to 104 °F)
- **Maximum relative humidity**: 80% for temperatures up to 31 °C (88 °F), decreasing linearly through 70% at 34 °C (93 °F), 60% at 37 °C (99 °F), to 50% relative humidity at 40 °C (104 °F)
- **Supply voltage fluctuations**: Not to exceed ±10% of the normal voltage

**BX3/BX53 common specifications

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

**BX63/BX53 dimensions

- **BX63 FL dimensions**: (unit: mm)
- **BX53 dimensions**: (unit: mm)
- **BX3-CBH dimensions**: (unit: mm)

**Touch panel controller dimensions**: (unit: mm)
- Approx. 4.1 kg, Power consumption: Approx. 290 W
- The length measured with an arrow (1) may vary according to interpupillary distance. Distance of figure shown is 62 mm.