BX51/BX61 are the environmentally conscious products 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.
• Exclusion of hexavalent chromium, mercury, lead and cadmium from metal materials and surface treatment of metal.
• Exclusion of lead solders.
• Adoption of cardboard for packing materials without styrene foam for promoting the recycling.

A definition of exclusion depends on OLYMPUS standard. Some accessories are inapplicable.


• OLYMPUS CORPORATION has obtained the ISO9001/ISO14001.
• OLYMPUS CORPORATION has obtained the MD540624/ISO13485.
• Illumination devices for microscopes have suggested lifetimes. Periodic inspections are required. Please visit our web site for details.

Windows is a registered trademark of Microsoft Corporation in the United States and other countries. All other company and product names are registered trademarks and/or trademarks of their respective owners.

Images on the PC monitors are simulated.

Specifications and appearances are subject to change without any notice or obligation on the part of the manufacturer.
The UIS2 optical system: a new evolutionary advance in fluorescence digital imaging.

The new BX2 series addresses the research demands of the future with Olympus’ most advanced optical system to date. UIS2 optics deliver the world’s highest standard of fluorescence performance, along with the image quality and clarity needed for progress of fast-developing life science research programs. With increased S/N ratio, high optical transmission, and diverse illumination capabilities, the UIS2 optical system provides excellent performance over a newly extended wavelength range between UV and IR. This improvement meets all current demands in fluorescence digital imaging and provides a firm foundation for future developments. As modern research advances to ever higher levels of complexity and sophistication, the need for quality and dependability makes the BX2 series today’s most convincing solution.
Higher S/N ratio enables clear capture of weak fluorescence emissions.

World leading fluorescence performance — a vital key to modern life science research

The ideal in fluorescence observation is to capture high-contrast images with the lowest exposure to excitation light, thus minimizing the chances of cell damage and fluorescence fading. With increased S/N ratio, high transmission of the objectives and the high performance mirror unit, Olympus' US2 optics provide excellent performance in fluorescence by obtaining bright images from weak fluorescence signals.

Improved performance of interference type fluorescence mirror units

The new fluorescence mirror units achieve high S/N ratio by application of new coating technology to the filters and optimal design of excitation and emission filters' characteristics. The hard coating, which prolongs the lifetime of filter, is applied to all Olympus fluorescence mirror units.

High-performance filters with high transmission, optimized to individual fluorochrome characteristics

Mirror unit with stray light reducing function to eliminate background noise in fluorescence image.

High S/N objectives detect even slight fluorescence emission

Low auto-fluorescence immersion oil available

Stray light reducing function

Olympus mirror units are equipped with a unique function to eliminate the stray light that could increase the background noise in fluorescence image.

The best S/N ratio...and the best fluorescence performance

Olympus US2 objectives provide the best S/N ratio by employment of totally new design to curtail autofluorescence from all possible sources — glass material, coating and cementing material. US2 objectives achieve high N.A. while reducing autofluorescence, two benefits previously considered incompatible. With these improvements, US2 objectives provide the best fluorescence image.

Low auto-fluorescence immersion oil

The ability to reduce auto-fluorescence normally associated with immersion oil makes this product well suited for fluorescence microscopy. Resistance to crystallization allows it to be used over long periods of time.

Lamp housing with aspherical collector lens providing excellent excitation efficiency

Camera adapter compatible for near infrared region

Trinocular tube compatible for near infrared region

High N.A. objectives for fluorescence imaging

The BX2 series features the newly-developed FLAP-ON60XO objective, offering the world’s highest N.A. (1.42) for fluorescence imaging, and the UPLSAPO100XO with high 1.4 N.A. and advanced universal features. In addition to their outstanding fluorescence S/N ratio, they enjoy UV transmission. The UPLSAPO100XO objective is especially notable for maintaining its transmission down to the 340 nm wavelength.

Excellent trinocular tube performance even in the near infrared region

The trinocular tube U-TR30NIR improves the transmission and compensates for aberrations over a wider wavelength range. A new multi-coatings is applied to the trinocular optical surfaces to widen the IR spectral characteristics and allow for observation of newly developed fluorochromes in the near-infrared region.

Camera adapter suitable for near infrared region

Users can choose from a variety of low magnification camera adapters with C-mount, all IR compatible.

Up to near infrared compensation for chromatic aberration

The Super Apochromat performance of UPLSAPO series objectives compensates for all chromatic aberrations, from visible to near infrared — thanks to the incorporation of a newly-developed ultra-wide wavelength reflection prevention coating (UW multi-coatings). The improvement in transmission in the near infrared region is especially notable, and typifies the high performance which makes US2 objectives the natural choice in many leading-edge research fields.

High-quality fluorescence mirror units for fluorescence proteins

The HQ type mirror units are ideal for the wavelength characteristics of ECFP/EGFP/YFP. With sharp upstroke and high transmission, the mirror unit efficiently transmits the fluorescence emitted from fluorescence proteins. This allows bright observation images even with weak excitation light, while preventing fluorescence fading and minimizing the chances of cell damage.

High transmission across a wide wavelength spectrum

The latest US2 objectives achieve a flat, high transmission over a wide wavelength spectrum, from visible to near infrared — thanks to the incorporation of a newly-developed ultra-wide wavelength reflection prevention coating (UW multi-coatings). The improvement in transmission in the near infrared region is especially notable, and typifies the high performance which makes US2 objectives the natural choice in many leading-edge research fields.

Users can choose from a variety of low magnification camera adapters with C-mount, all IR compatible.

Fluorescence microscopy microcopy. Resistance to crystallization allows it to be used over long periods of time.
The rectangular field stop can be set to the exact size of the imaging sensor to avoid fading outside of the imaging area and damaging sensitive tissue.

The pinhole field stop module (BX-RFSFPOT) makes it possible to use the light source as a spotlight, illuminating tiny individual areas on the fluorescence specimen — an especially valuable feature in experimental work. The slider is attached to the BX-RFA fluorescence illuminator in the field stop position.

Unnecessary exposure area caused by a round field stop

Neuro glia cells

Blue and red enhanced

Green and red enhanced

Fluorescence excitation balancers (U-EXBABG, U-EXBAUB, U-EXBAUG)

When observing double and triple stained specimens, both observation and photography can be conducted by arranging or altering the fluorescence brightness while freely changing the excitation light for each stained color. An excitation balancer is attached in the parallel light path, so there is no unevenness in the visual field.

Luminous mirror unit indicator for easy confirmation in dark room

Bright, easy-to-see self-illuminated labels are used to denote fluorescence filter sets, easily visible in a dark room. Three filter positions are displayed simultaneously making selection of the next filter easy and intuitive.

Double lamp housing adapter (U-DULHA) for exchange between two light sources

When two different light sources are attached at the same time, this adapter unit enables easy exchange between them according to the user’s application. (Optical path: 100/0, 0100, F.N.11)

Confocal laser scanning biological microscope (FV1000)

The Fluoview/FV1000 is a next-generation imaging system designed for high-resolution, confocal observation of both fixed and live cells. The FV1000 offers advances in confocal system performance while providing the speed and sensitivity required for live cell imaging with minimal risk of damage to specimens.

In addition, the FV1000 offers a revolutionary synchronized laser scanning system called the SIM Scanner. While one laser stimulates, the second laser simultaneously provides high-resolution imaging. This coordination of laser stimulation and imaging makes the FV1000 an ideal choice for FRAP, FLIP and photoactivation.

*FV1000 is a class 3B laser product.
Varied illumination and advanced optics deliver top quality digital images.

Excellent color reproduction from daylight illumination
Since Olympus microscopes can apply ideal color temperature at natural daylight (5500 K) throughout the light source, the objectives and the CCD camera, the camera captures color information accurately and provides faithful reproduction on the display.

UIS2 optics provide high transmission for clear, flat images
In the UIS2 optical system, improved transmission and compensation for chromatic aberration over a wide wavelength spectrum are not only characteristics of the objectives, but also of image forming components such as the trinocular tube and video camera adapter. As a result, images at all magnification levels are flat, sharp, clear and free from color shift.

Digital camera, DP20
Providing live image display speed that's close to real-time while maintaining high-precision image quality
The DP20 can display high-precision images of 2 megapixels in UXGA (1500 x 1200) format at 15 frames/second. Additionally, it provides faithful 8-bit RGB color reproduction that is ideal for conferences and presentations. The DP20 is equipped with a color profile that provides full-color images in real-time, allowing faithful color reproduction of specimens. It can easily be connected with just 1 cable (6 pin) to a PC with a FireWire (IEEE1394) port. And it can connected to a laptop PC as well via a FireWire (IEEE1394a) PC card.

Digital camera, DP25
5 megapixel high-precision, high-quality technology for microscopic imaging
In addition to live display at a high frame rate of 8 fps with exceptional quality (2560 x 1920 pixels), the DP25 is equipped with a color profile that provides full-color images in real-time, allowing faithful color reproduction of specimens. It can easily be connected with just 1 cable (6 pin) to a PC with a FireWire (IEEE1394) port. And it can connected to a laptop PC as well via a FireWire (IEEE1394a) PC card.

Digital camera, DP72
High-resolution digital images equivalent to 12.8 million pixels* captured in approx. 2.5 seconds — from brightfield to fluorescence.
Thanks to its high-speed hardware, the DP72 can capture high-resolution images equivalent to 12.8 million pixels in around 2.5 seconds*. The camera's high sensitivity and low noise (equivalent to the level of ISO 1600) ensure clear fluorescence imaging, while the resolution quality allows precise representation of particular specimen areas.

Optimal trinocular tube for digital imaging
In digital imaging, the best light intensity balance between the observation side and the digital camera side should be equal. Olympus’ new trinocular tube U-TR30NIR provides a choice of three light path exchange: 100% for binocular, 100% for camera, or 50% each for binocular and camera.

Image processing software
Software to support basic functions
DP2-BSW is a simple and easy-to-use, thus user-friendly image capturing software package. It can be used to control different types of motorized units, and to perform both still time-lapse images and live image movie recording.

• Intuitive, easy-to-use GUI (Graphical User Interface). Tool bar items can be user-customized and menu icons restricted to frequently used functions.
• A reference scale bar can be displayed, overlayed, and subsequently burned onto a saved image. Arrows and text can also be entered and saved in an image.

• BX61 motorized microscopes can be controlled from a personal computer. Different conditions can be set for respective observation methods, and the observation method can be changed by simply clicking on a button on the controller screen.
• Several functions for measuring live or still images, including point measurements, arbitrary line, polygon, circle and ellipse or rectangle measurements, are integrated. For further processing the measurements can be exported to MS Excel with the simple click of a mouse.

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**The advanced UIS2 system delivers high performance over a wider wavelength spectrum.**

UIS2 optics inherit high expandability As heir to Olympus’ infinity-corrected optical system, in which the tube lens is built into the observation tube, UIS2 optics display no image deterioration even when many different optical components or equipment are inserted in the parallel light path. This inherent expandability gives users ample freedom to construct the system in a way that meets their specific requirements.

**UW (Ultra wideband) multi-coatings reduces autofluorescence and improves S/N ratio.**

By using carefully selected raw materials for glass, and applying advanced UW multi-coatings technology, Olympus has reduced objective autofluorescence and significantly improved the S/N ratio.

**Flat, high transmission over wide wavelength range from UV to IR.**

UW multi-coatings also yields a flat, high transmission over a wide wavelength range, ensuring high performance in research tasks using different types of fluorochromes.

Complete chromatic aberration compensation up to near infrared region

UIS2 objectives completely eliminate chromatic aberration up to the near infrared region, matching the ability of Super Apochromat objectives to provide clear images without overlapping colors or color shift. As a result, a single objective can perform imaging from UV to IR wavelengths.

### UIS2 objectives

<table>
<thead>
<tr>
<th>Objective</th>
<th>N.A.</th>
<th>W.D. (mm)</th>
<th>F.N.</th>
<th>Cover glass thickness (mm)</th>
<th>Immersion</th>
<th>Spring</th>
<th>Correc- tion</th>
<th>Oil</th>
<th>Cover ring</th>
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</table>

**UPLAPO series**

Thanks to the application of Olympus’ original UW multi-coatings, these Super Apochromat objectives fully 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 an unbeatable solution to every kind of digital imaging need.

**PLAPON series**

Designed for unsupervised resolution and contrast, these Plan Apochromat objectives keep chromatic aberration down to an absolute minimum. The PLAPON series, to which the UW multi-coatings is inserted in the parallel light path, ensures high performance in research tasks using different types of fluorochromes.

**UPLSAPO series**

Thanks to the application of Olympus’ original UW multi-coatings, these Super Apochromat objectives fully 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 an unbeatable solution to every kind of digital imaging need.

**PLN(PLN-PH) series**

Ideal for a range of clinical and research applications, these high quality objectives feature excellent Ballas up to F.N. 22 interlaced brightfield (plane contrast) observation. The PLN-PH series is specifically designed for phase contrast observation.
New DIC observation system optimizes the specimen image at wider magnifications.

Optimum shearing value according to the specimen
Three types of prisms with different shearing value are provided to define contrast and resolution.

Clear, high-contrast imaging from low to high magnifications.

Clear, high-contrast observation of stained specimens
Image contrast is significantly enhanced by combining UIS2 objectives with the UIS2 eyepiece WHN, which features multi-

Task-specific brightfield condenser options
According to their purpose, users can choose from the U-SC3, a swing-out condenser suitable for observations from 1.25X-100X, the U-AC2, a highly cost-efficient Abbe-type model; the U-AAC, whose Aplanat-Achromat design comprehensively eliminates chromatic aberration; and the U-ULC-2, a special condenser for ultra low magnifications.

Universal condenser/U-UCD8
This condenser, with built-in polarizer, allows simultaneous attachment of up to 8 optical components, freely combined or easily switched.

Septuple revolving nosepiece for DIC/simple POL/U-DYRE
Equipped with a DIC slider slot, the U-DYRE septuple revolving nosepiece allows simultaneous attachment of 7 objectives from low to high magnifications. It is especially suitable for combined DIC and fluorescence observations.

• High contrast for thin specimens
U-DICTHC
High contrast can be obtained even in high magnification observations of thin specimens, such as culture cells.

• High resolution with less glare
U-DICTHR
This unit enables observations with high resolution but less glare even for thick specimens used in developmental and genetic research, such as finely-structured diatoms, embryos, zebrafish and C. elegans.

• High all-round performance
U-DICT, U-DICTS
Suitable for observing a wide range of general specimens, such as tissue.

Nomarski DIC

Brightfield

Universal condenser/U-UCD8
This condenser, with built-in polarizer, allows simultaneous attachment of up to 8 optical components, freely combined or easily switched.

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Nomarski DIC

Brightfield

Universal condenser/U-UCD8
This condenser, with built-in polarizer, allows simultaneous attachment of up to 8 optical components, freely combined or easily switched.
High-quality darkfield effect at all magnifications.

**Observing algae in water, or muscle tissue**

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

* Please consult your nearest Olympus dealer for applicable objectives.

**Phase Contrast**

High-contrast observation of internal structure of live cells/fungi

- UPLFLN-PH series objectives have high transmission, producing well-balanced images with high contrast even at low magnifications. They are suitable for simultaneous fluorescence, brightfield and darkfield observations.

**Polarizing observation for wide-area retardation measurement.**

- UPLFLN-P series objectives, designed for observation under polarizing light, can be used with the revolving nosepiece U-P4RE, which provides a centering function, and the special polarizing light condenser U-POC-2. Also available as an option is the sextuple revolving nosepiece U-P6RE, which allows perfect alignment of the light path among 3 objectives.

- The circular rotatable graduated stage has two centering knobs and allows smooth sample rotation. By setting a click stop every 45 degrees, it enables accurate observation and measurement.

**Darkfield**

- With the U-CPA conoscopic observation attachment, the changeover between orthoscopic and conoscopic observation methods is simple and quick — just slide the Bertrand lens control knob in or out.

- UPLFLN-PH series objectives have high transmission, producing well-balanced images with high contrast even at low magnifications. They are suitable for simultaneous fluorescence, brightfield and darkfield observations.

- Mounting an attachable cross-movement mechanical stage (U-FMP) onto the circular rotatable stage makes for improved observation efficiency. Interference between the mechanical stage and the objectives is eliminated, so that images of superb quality can be effortlessly observed at all objective magnifications.

**Measuring range of compensators**

<table>
<thead>
<tr>
<th>Compensator</th>
<th>Measurement range</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thick Berek (U-CTB)</td>
<td>0-11,000 nm (20λ)</td>
<td>Measurement of high retardation level (R*&gt;3λ), crystals, macromolecules, etc.</td>
</tr>
<tr>
<td>Berek (U-CBE)</td>
<td>0-2,000 nm (3λ)</td>
<td>Measurement of retardation level (crystals, living organisms, etc.)</td>
</tr>
<tr>
<td>Manganese compensator (U-CME2)</td>
<td>0-55 nm (1/10λ)</td>
<td>Measurement of low retardation level (living organisms, etc.)</td>
</tr>
<tr>
<td>Quartz wedge (U-CWE2)</td>
<td>500-2,200 nm (4λ)</td>
<td>Measurement of retardation level (crystals, macromolecules, etc.)</td>
</tr>
</tbody>
</table>

* Please consult your nearest Olympus dealer for applicable objectives.

* For more accurate measurement, it is recommended that compensators (except U-CWE2) be used together with the interference filter 45-IF546.
New advances in ergonomics secure improved observation efficiency.

**Rackless stage design**
BX2 series microscopes feature a wire-driven stage from which the X-axis guide does not protrude. This design provides a rigid and precise X-Y translation. The X-Y movement weight is freely adjustable. The stage surface has a ceramic coating which provides excellent wear resistance and ensures consistently smooth specimen movement.

**Grooved oil stage**
For operators who frequently use high magnification oil immersion objectives, Olympus offers a special stage with a groove for oil run-off, to prevent glass slides from sticking to the surface.

**Smooth, light rubber knob movement**
A rubber cap allowing light and accurate one-finger operation is available as option.

**DC power source with no flicker**
The microscope body’s power source is direct current, which delivers bright observation images without flicker.

**Metal construction for maximum rigidity**
The microscope bodies are made from aluminum alloy to ensure the high rigidity needed for consistent performance and long-term durability.

**Swing-out U-SC3 condenser allows observation over wide area**
The swing-out U-SC3 condenser is suitable for all observations from 1.25X to 100X. No special condenser is required for work at ultra low magnifications.

Up to 4 filters can be mounted
Space is provided for an optional fourth filter. This allows any filter to be inserted freely, and the built-in frosted filter to be changed. Changing to direct light observation is a one-touch operation.

滤光轮/ U-FWR, U-FWO and U-FWT
Motorized exchange of 6 filters. 3 kinds of filters can be attached simultaneously: U-FWR (ø32, 25) for excitation, U-FWO (ø32, 25) for emission and U-FWT(ø32) for transmitted light.

**Reflected light illuminator/BX-RFAA**
This motorized turret can load up to 6 fluorescence mirror units. Also, equipped with motorized shutter.

**Motorized revolving nosepiece/ U-DREM**
Motorized sextuple revolving nosepiece with slider slot for Nomarski/DIC.

**Motorized universal condenser/ U-UCRBA-2**
8 position universal condenser. Different combinations of designated optical components allow for various kinds of transmitted light observation. Automatic control of optical component exchange, top lens swing out and aperture iris diaphragm, Pulmonary adenocarcinoma

Motorized modules attached to the microscope are controlled via this control box, which is linked to the computer via an RS232C connector.

Motorized revolving nosepiece/U-D6REM
Motorized sextuple revolving nosepiece with slider slot for Nomarski DIC.

Motorized universal condenser/U-UCD8A-2
8 position universal condenser. Different combinations of designated optical components allow for various kinds of transmitted light observation. Automatic control of optical component exchange, top lens swing out and aperture iris diaphragm.

Stage adjustment buttons

**Stage adjustment buttons**

**Lamp preset and lamp on/off button**
Mounted on the front left side of the microscope frame.

**Fine/coarse and stage escape button**
Mounted on the left side of the microscope frame.

**Hand switch/ U-HSTR2**
Hand set used to control the microscope while conducting visual observations.

**Control box/BX-UCB**
Motorized modules attached to the microscope are controlled via this control box, which is linked to the computer via an RS232C connector.
Meticulously selected accessories further enhance new BX2 functions.

**EYEPIECES**

Universal condensers, ultra low magnification condensers and Abbe type condensers are available to meet all observation needs.

**CONDENSERS**

Top lenses/U-TLD, U-TLO

Brightfield condensers

Darkfield condensers

Phase/darkfield condensers/U-PSC2

Revolving condenser U-FOC-2

**OBSERVATION TUBES/EYEPOINT ADJUSTER**

A wide range of observation tubes is available for the BX2 series, including wide field, binocular and trinocular types, various tilting tubes, and tubes for observation of upright images in which the specimen and the observed image move in the same direction.

**STAGES**

The BX-HG and BX-HCT rubber grip can be attached to the standard stage handle. Different specimen holders are available for use with one glass slide or two, making it easy to switch specimens with just one hand. A simple plain stage is available with optional stage clips. Rotatable stages are available with the option of simple stage clips or attachable mechanical stage mechanisms. A specific ground stage is available, designed to dispense immersion oil, preventing the glass slide from sticking to the stage surface. Users can choose according to purpose.

**REMOVING NOSEPICE**

Satellite revolving nosepiece for DIC/single PL5, U-DA

Satellite revolving nosepiece with slider slot for DIC/F50, size of thick specimens holder may damage some objectives.

**INTERMEDIATE UNITS**

Dual port/U-GP

The dual port may be used for a variety of purposes: reversing the stage by special composition (e.g., shifting fluorescence to one port, referred to the other), as an illumination port for adding a new incident light source or as a C-mount compatible trinocular port for image stacking. An image formation lens is also provided.

Trinocular intermediate attachments/U-IT5

The intermediate trinocular attachment can be used simultaneously with the available trinocular observation tube (U-IT5). Two light paths are selectable: 100% light for binocular observation or 25% for trinocular observation and 85% for shaping through the binocular port.

**GROUP OBSERVATION SYSTEMS**

Multi observation boxes/BX2N-DO, BX2N-SDO, BX2N-MDO-5, BX2N-MDO-10

Olympus discussion systems are available for research studies, lab training, and education. Multi-view configurations are available to accommodate between 2 and 10 participants. The pointer is powered by LED, so there is no need for concern about sudden lamp failure.

**CAMERA ADAPTERS**

The single port tube of the trinocular tube is detachable, and can be used with various cameras via a range of adapters. Using the U-TX2A-2, videos can be shot directly with no need for a shooting lens. The potential of your microscope is greatly increased by its multiple image utilization capabilities.

**FILTER CASSETTE**

Use of this cassette enables fast exchange of filters. 10.1 in.

**ACCESSORIES**

Use of this cassette enables fast exchange of filters. 10.1 in.