OLYMPUS®

Your Vision, Our Future

CLINICAL MICROSCOPE

BX41/BX45/BX45A/BX51

BX2 SERIES

UIS2
World-leading optics

More contrast, more clarity

The new UIS2 optical system: quicker, easier, more efficient performance for all routine applications.

Already renowned for their advanced ergonomic design, BX2 series clinical microscopes now incorporate Olympus' new UIS2 optical system to deliver a wealth of all-round performance improvements.
With Plan objectives as standard equipment, they deliver flat, even, high-contrast observation images right up to the periphery of the field of view, providing a completely new standard of visibility in routine work.
Offering high quality and excellent cost performance, BX2 series microscopes make routine tasks quicker, easier, and much more efficient.

BX41
Laboratory Microscope

BX45
Ergonomic Laboratory Microscope

UIS2

World-leading optics

BX45A
Automated Ergonomic Laboratory Microscope

BX51
System Microscope

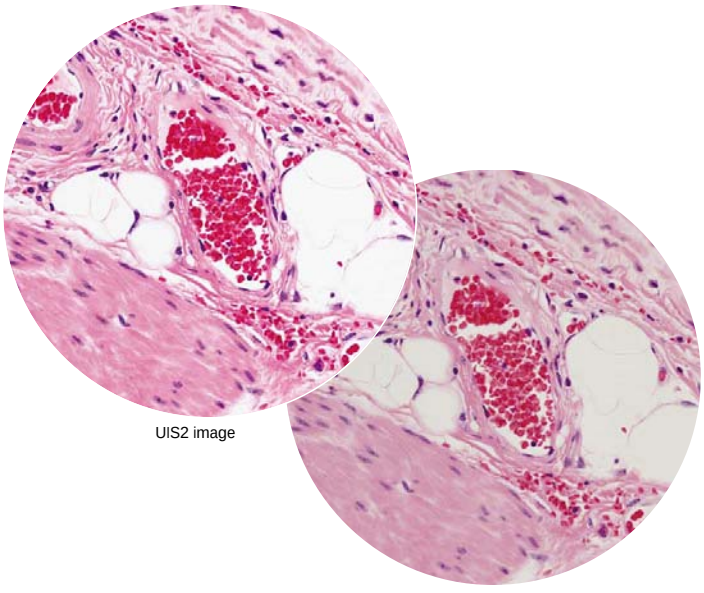
New UIS2 optics deliver specific, immediate benefits — better operability and better basic performance.

Plan objectives for image clarity

Setting the standard for clinical microscopes ultimately depends on image clarity. Olympus' choice of only Plan objectives ensures bright, clear images with excellent flatness and compensation for chromatic aberration.

Improved viewing contrast

The combination of UIS2 objectives and UIS2 eyepieces (WHN series) with newly developed anti-reflective coatings gives higher image contrast and a striking improvement in overall visibility. Stained specimens show greater clarity with a whiter background.



UIS2 image

Conventional image

Environmentally-friendly UIS2 optics

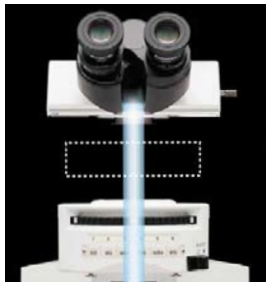
Recognizing the interdependence of optical excellence and care for the environment, Olympus makes all UIS2 objectives and WHN eyepieces from lead-free eco-glass.

Ideal color temperature for digital imaging

UIS2 optics' color temperature rendition at both the eyepiece and on the CCD is very close to natural daylight (5500K). Color reproduction on the monitor matches more closely to what is seen during observation.

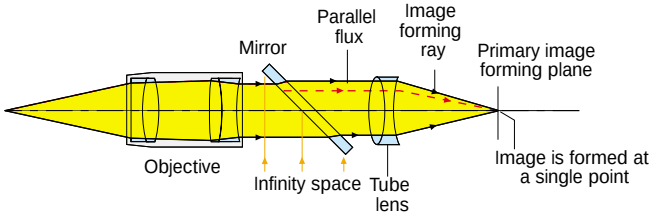
Advanced, high-performance UIS2 optical system

Olympus' principal reason for replacing the popular and well-regarded UIS optical system with its UIS2 successor is to meet a more diverse and demanding range of future needs. Olympus' infinity-corrected optical system has the tube lens inside the observation tube, which prevents image deterioration even if other optical components are added. In addition, UIS2 flexibility provides greater freedom in system structure, even allowing equipment to be added in two tiers simultaneously.



Infinity-corrected optical light path

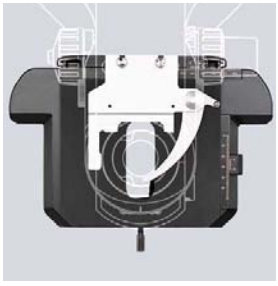
Infinity-corrected optics incorporates a parallel luminous flux between the objective and tube lens. This is known as the infinity space. Even if a mirror is inserted into the infinity space, there is no image distortion and no deterioration in image quality.



Superior cost-efficiency and ergonomics for high-throughput clinical microscopy.

Durable stage with no protrusions

The BX2 series employs a rackless stage in which the X-axis guide does not protrude. This means there is nothing for the operator's hand to accidentally strike when replacing a specimen or adjusting focus. The stage is ceramic coated to maximize durability and ensure consistently smooth specimen movement.



Fatigue-free operation with minimum hand movements

The light intensity adjustment controls is located near the front of the microscope. Users can keep their arms on the table and perform operations with minimal hand movements. The BX45A is equipped with a hand set to switch objectives.

Easy specimen movement

The XY handle of the stage is fitted with a rubber cap for easy, fingertip operation.

Tilting observation tubes allow better ergonomic operation

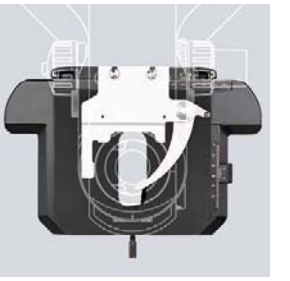
The BX2 series tilting observation tubes (U-CTBI, U-TBI-3, U-TTBI and U-ETBI) are designed to promote comfort and reduce fatigue, enabling operators to maintain concentration for long periods. One model emphasizes high cost efficiency, another offers improved ergonomics derived from detailed research into observation posture, and another presents the observation image moving in the same direction as the specimen. Users can therefore make their choices based on purpose and preference.

	U-CTBI	U-TBI-3	U-ETBI	U-TTBI
F.N.	18	22	22	22
Inclination angle	30°- 60°	5°- 35°	0°- 25°	0°- 25°
Image direction	Inverted	Inverted	Erect	Inverted
Telescopic	No	No	Yes	Yes

Comprehensive range of routine work functions with outstanding cost-performance.

Easy-to-operate stage

A rackless stage with no protrusion of the X-axis guide is standard for all BX2 microscopes. All fine movements, as well as stopping, are extremely smooth. The stage can be rotated, which is useful when framing an image.



Fine movement adjustment

The removable fine focus handle can be attached on either side, depending on left or right hand stage configuration.

Fully portable

A handle on the back of the microscope body makes it fully portable.

Compact and rigid microscope body

The microscope body's compact Y-shape design, only 328mm deep, makes for easy setup even in restricted spaces. Also the body is made from aluminum alloy to ensure the high rigidity needed for consistent performance and long-term durability.

Filter cassette provided

The convenient U-FC filter cassette enables easy access to up to three filters (ø45mm and under 2.8mm thickness).

Front-positioned intensity adjustment knob

The light intensity control is mounted near the front of the unit. Users can work with minimum hand movements, keeping arms on the table.

Detachable revolving nosepiece

The detachable revolving nosepiece allows for quick change of objectives and makes lens cleaning easier. Quintuple to septuple versions are available.

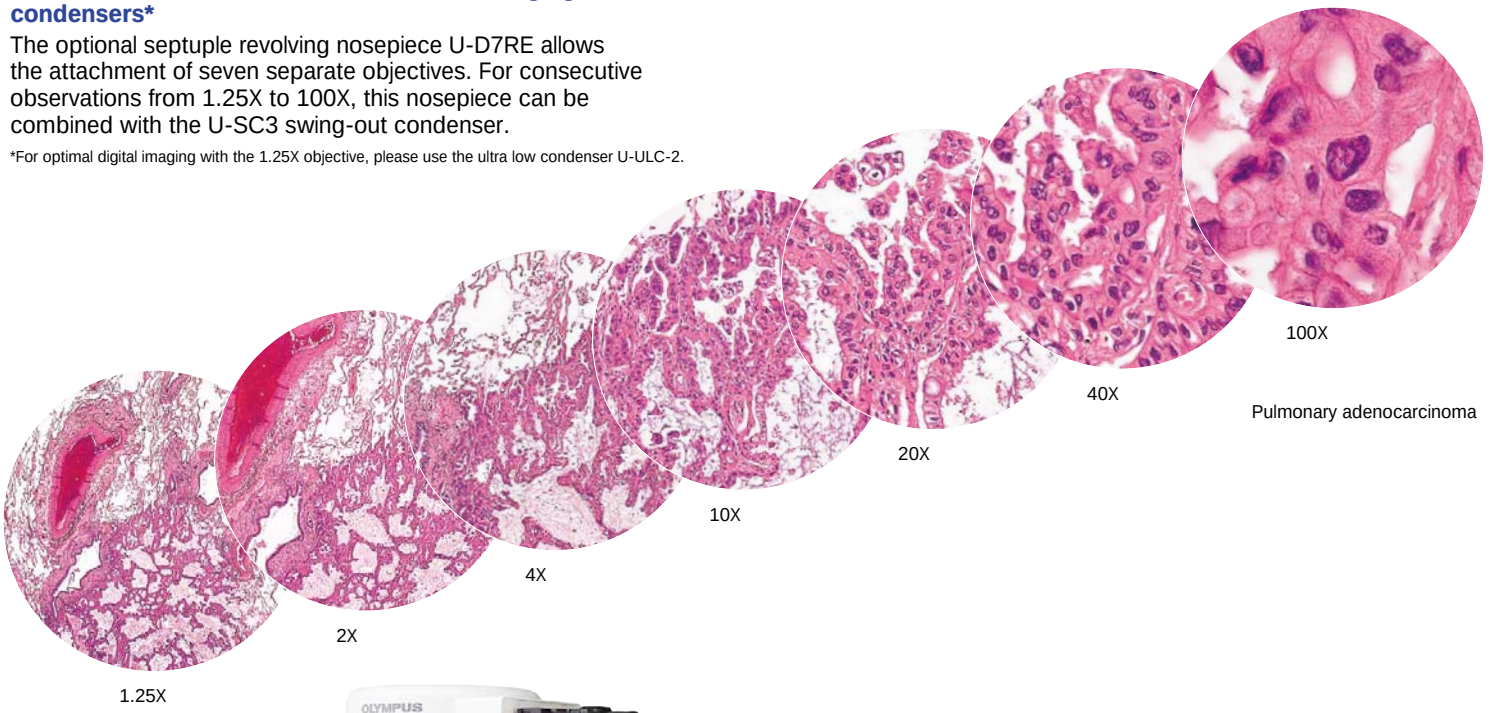
8-position condenser for multiple illumination methods

The optional 8-position universal condenser gives even more freedom to combine observation methods. Optical component combinations can accommodate brightfield, darkfield, phase contrast, Nomarski DIC and simple polarization observations.

Observation from 1.25X to 100X without changing condensers*

The optional septuple revolving nosepiece U-D7RE allows the attachment of seven separate objectives. For consecutive observations from 1.25X to 100X, this nosepiece can be combined with the U-SC3 swing-out condenser.

*For optimal digital imaging with the 1.25X objective, please use the ultra low condenser U-ULC-2.



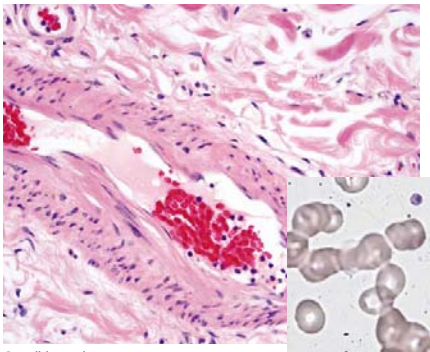
Pulmonary adenocarcinoma

Digital cameras: quality with cost-performance

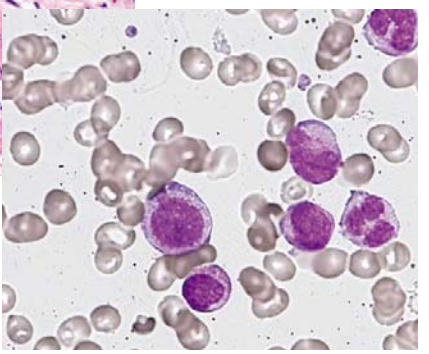
A full lineup of digital cameras is available, giving users a wide choice to meet their needs. The lineup includes a stand-alone type microscope digital camera for use without a PC;
the DP70, which is suitable for all-around use from brightfield to fluorescence; and adapters are available to use Olympus consumer digital cameras.

BX41

Equally suitable for multiple observation methods.



Small intestine

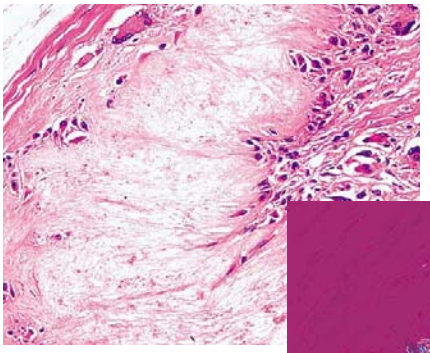


Bone marrow

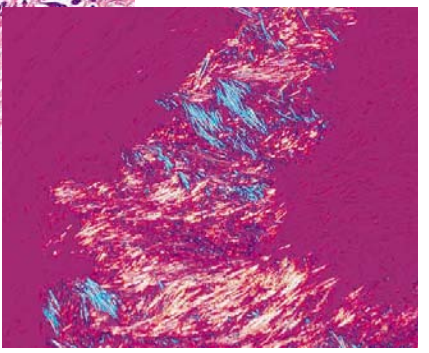
Brightfield observation

Brighter images, with superb resolution/flatness at all magnifications

PLAPON objectives with wide F.N. combined with the Achromatic-aplanatic condenser U-AAC will deliver excellent resolution and flatness from low to high magnifications.
A dedicated ultra low magnification condenser (U-ULC-2) should be used for 1.25X and 2X.



Gout inspection
Brightfield (left),
Simple polarized light (right)



Polarized light observation

High-resolution view of double refraction structure in cells

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-CPA ②U-P4RE ③U-AN360P ④U-OPA ⑤U-POC-2

Darkfield observation

Excellent darkfield effect from low to high magnifications

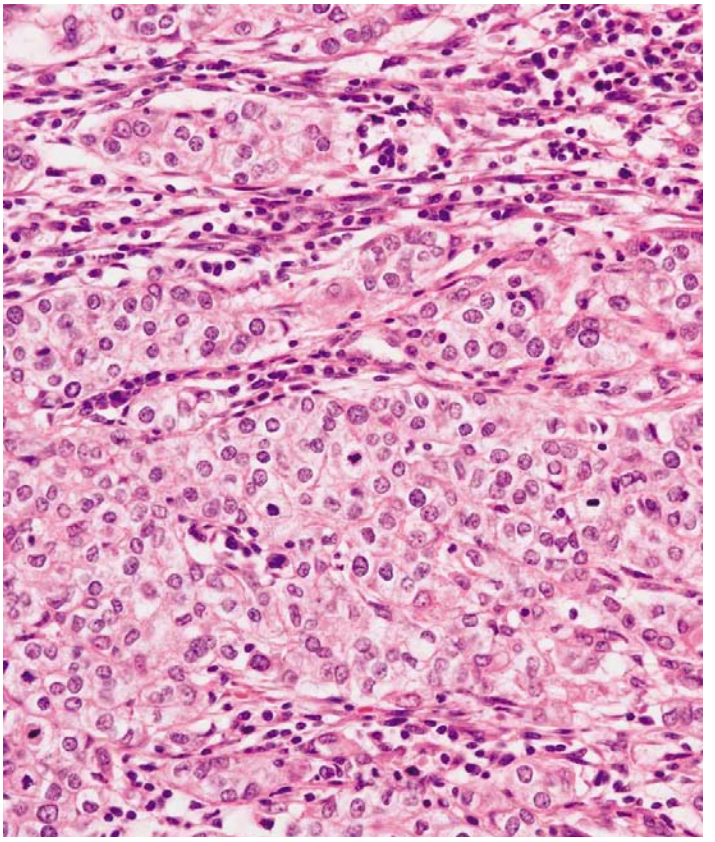
Choose from the 10X —100X dry darkfield condenser (U-DCD) or the 20X —100X oil immersion darkfield condenser (U-DCW).

* Please consult your nearest Olympus dealer for applicable objectives.

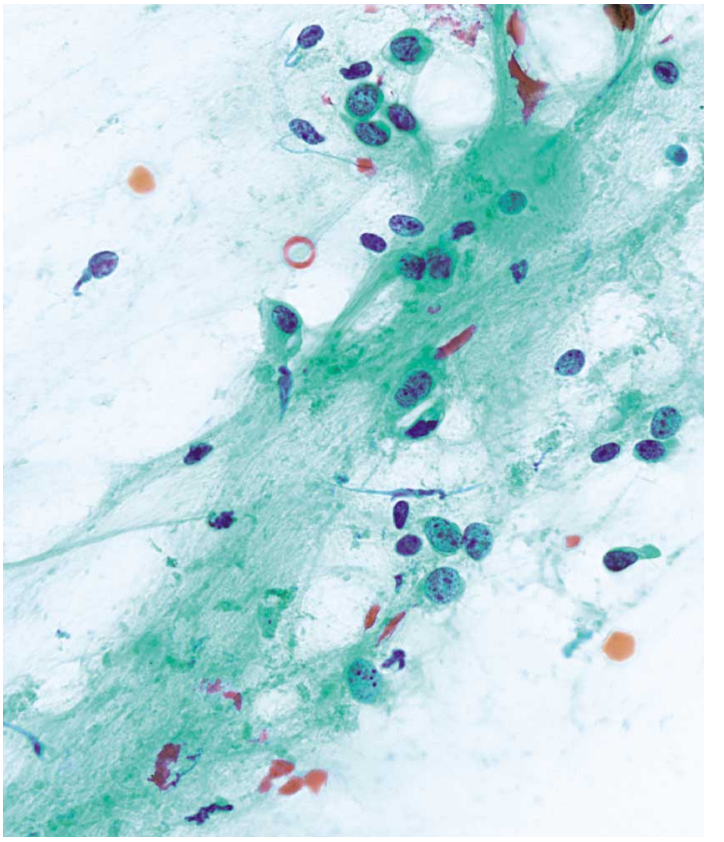
Phase contrast observation

High-contrast, high-resolution imaging

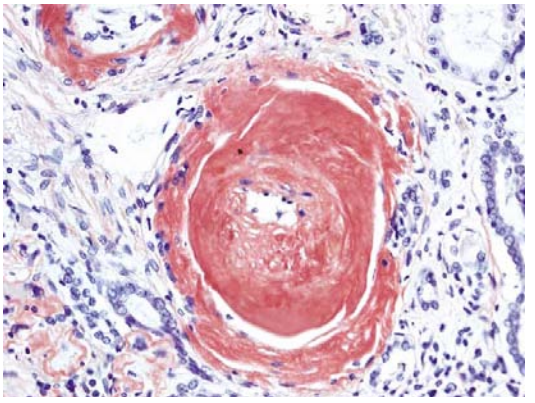
High contrast phase imaging allows close observation of the cell interior and of live bacteria. Using UPLFLN-PH or PLN-PH series objectives, phase contrast observation from 10X up to 100X is possible. With the U-PCD2 condenser, users can view specimens in brightfield or darkfield depending on their chosen combination of optical components.



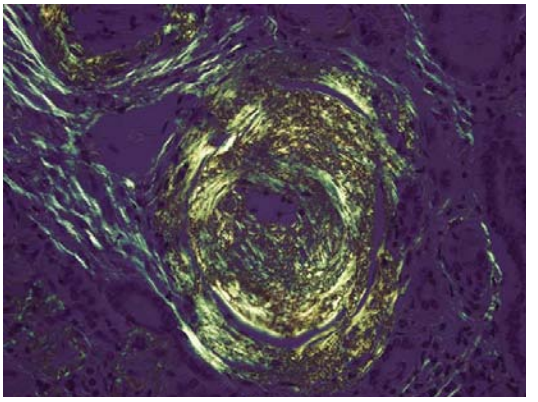
Breast cancer — Brightfield observation

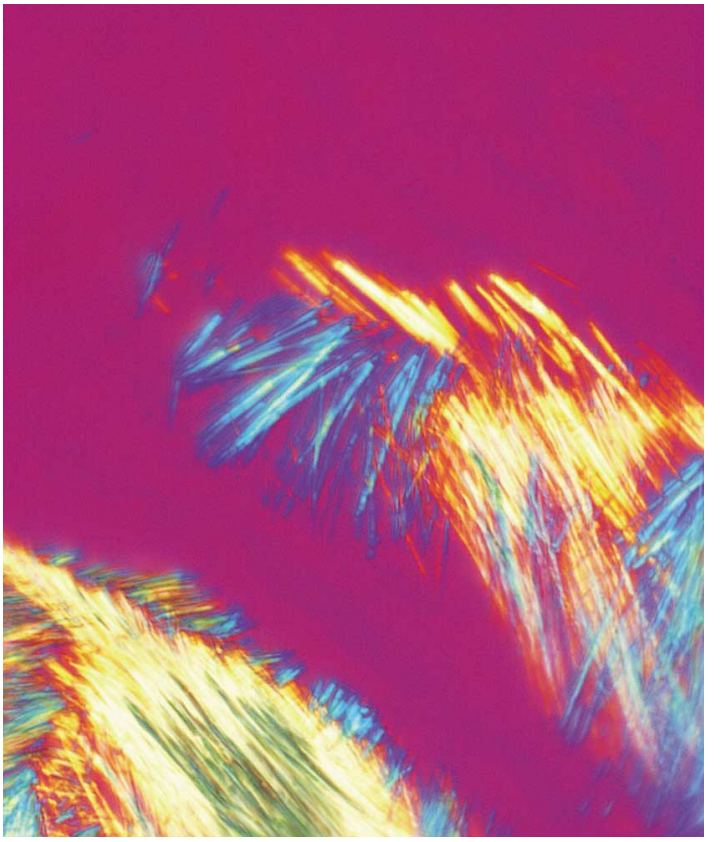


Papanicolaou stain — Brightfield observation



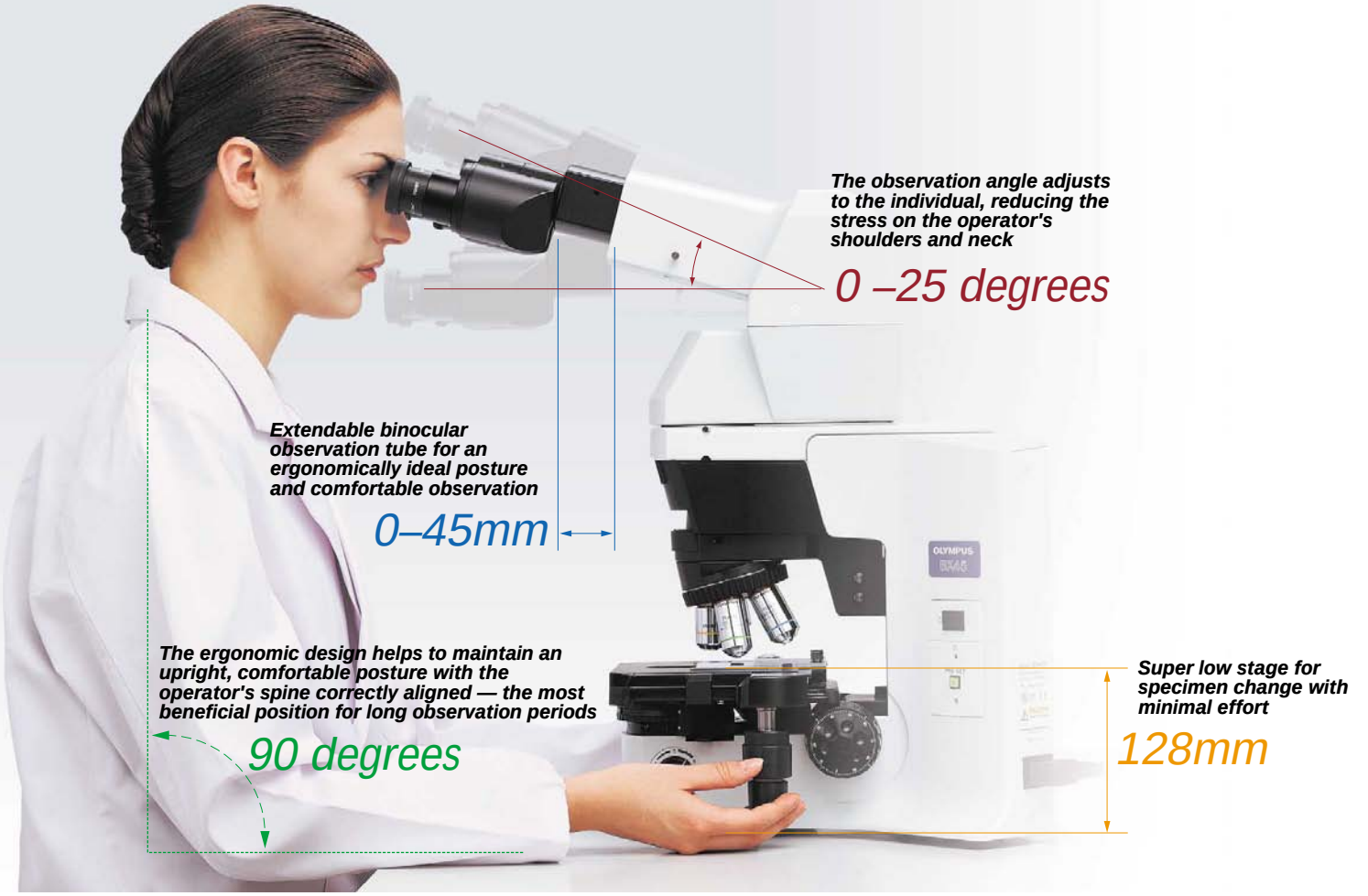
Amyloid
Brightfield observation (above), polarized light observation(below)





Gout inspection — Simple polarized light observation

Ergonomic design for improved operability and less fatigue.

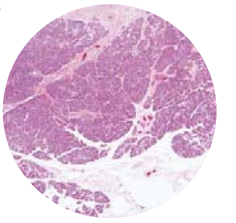


Low-position stage makes changing specimens easy

Use of a new illumination system allows the stage to be fixed at only 128mm above the desk surface, the lowest position in this class of microscope. Focusing is performed by up/down movement of the nosepiece, so there is no variation in stage height and all specimens can be changed with the minimal hand movement. Focusing and stage operations can be done without removing your hands from the desktop, significantly reducing fatigue.

Swing-out condenser for observation over a wide area provides observation at low (1.25X) magnification

The built-in swing-out condenser allows use of ultra low objectives such as 1.25X and 2X. The initial observation covers a wide area, allowing the operator to quickly determine any zone needing closer attention.



1.25X

Compatible with multiple applications

The 3-position universal condenser allows brightfield, darkfield, phase contrast, and simple polarizing observations. Optical components (PH1, PH2, PH3, DFA) and filters (ø32 ND, LBD, IF550) can be easily attached and inserted into the condenser turret.

Convenient range of ergonomic observation tubes

In addition to the general ergonomic observation tube for inverted image observation, there is another version for erect image observation (where the direction of specimen movement matches the direction of observation image movement).

4X to 100X observations with top lens

Consecutive observation from 4X to 100X is now possible with a top lens making it no longer necessary to swing out of the optical path.

Specimen observation with low contrast

The condenser's aperture diaphragm can be shifted to give oblique illumination. Observation of a thick transparent specimen thus becomes easier to view due to the addition of shadow effect.

Numerous objectives to suit various specific purpose

The extensive range of objectives includes the PLN-PH series, for phase contrast observation, as well as no-cover objectives which are ideal for observing smear specimens (e.g. blood) without requiring a cover glass.

Ergonomic Laboratory Microscope

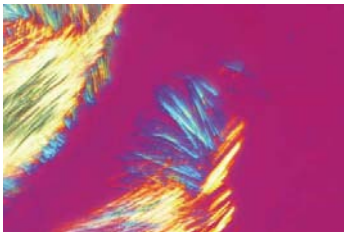
BX45

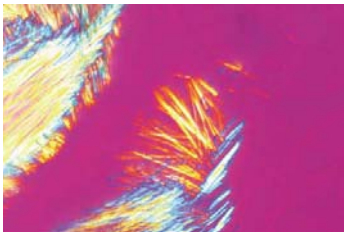
Easy gout inspection

Gout testing is simple with the BX45, as the analyzer is easily inserted or removed from its position in the nosepiece. In addition a rotating stage can be employed.

U-GAN gout analyzer

① U-SRG2 rotatable graduated stage
② BX45-PO polarizer ③ U-GAN gout analyzer





Sodium urate crystal

A key priority: reducing fatigue in cytological examinations

Automated
Ergonomic Laboratory Microscope

BX45A

Motorized objective change

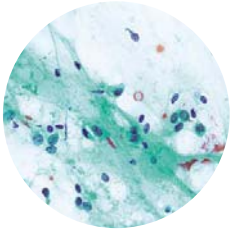
Through a handswitch, the motorized operation of changing between 10X and 40X objectives is quick and easy. The handswitch is convenient and allows the operator to keep their hands on the desktop.

Focusing position correction ring

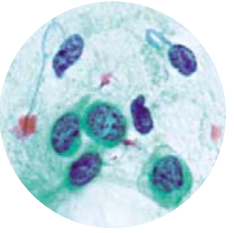
The BX45A is equipped with correction rings to parfocalize the objectives. No focus change is required when changing magnification.

No need for light adjustment when changing objectives

The 10X objective equipped with ND filter enables the same level of brightness even if the magnification is changed from 10X to 40X. No brightness adjustment (e.g. of light intensity) is required.



10X



40X

Papanicolaou stain

Outstanding optical performance and flexible expandability, from clinical to research applications.

Separate arm improves system performance

The BX51 employs an entirely new structure, whereby the transmitted light arm and the microscope frame are separated. This gives users greater freedom to build system configurations of their choice.

Observation from 1.25X to 100X without changing condensers*

The septuple revolving nosepiece U-D7RE allows the attachment of seven separate objectives. For continuous observations from 1.25X to 100X, this nosepiece can be combined with the U-SC3 swing-out condenser (Also compatible with the BX41.).

*For optimal digital imaging with the 1.25X objective, please use the ultra low condenser U-ULC-2.

Up to 4 filters can be built in

The BX51 is equipped with three filters in the base (ND6, ND25, LBD) and a fourth can be added as an option. The levers at the side of the base make inserting and removing filters from light path easy.

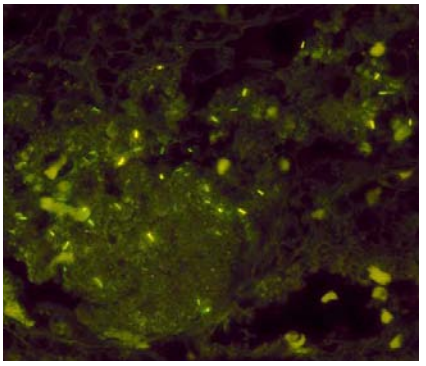
Luminous mirror unit indicator for easy confirmation in dark room

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.

DP70/Microscope digital camera & DP-BSW/Software

High-speed capture of high resolution images equivalent to 12.5 million pixels. Clear, crisp fluorescent images can be obtained with high sensitivity and reduced noise (equivalent to ISO100-1600). The user-friendly GUI (Graphical User Interface) makes it quick and easy to capture, adjust and store digital images.

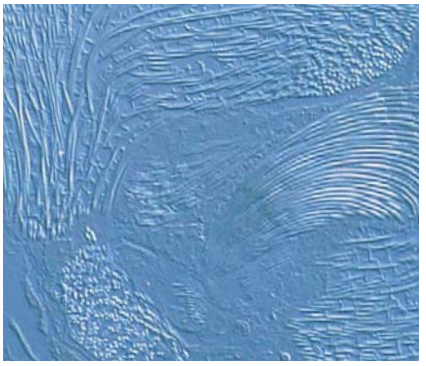
DP70


Tuberculosis bacteria

Fluorescence observation

New improvements in Olympus fluorescence observation

Two illuminators are offered: the arm-integrated, high-rigidity reflected light illuminator BX-URA2 and the fluorescence illuminator BX-RFA. Each can be fitted with six fluorescence mirror units which can be easily interchanged with the turret rotation. Their efficient illumination achieves twice the brightness of conventional fluorescence images.


Newt testis

Nomarski DIC observation

Image optimization according to specimen characteristics

To ensure the optimum observation image for different specimens, the BX51/BX41 have DIC sliders with different levels of shearing. Choose from several types: the U-DICT or U-DICTS, which offer high all-round performance; the U-DICTHC for high contrast imaging of thin specimens; or the U-DICTHR for high resolution, glare-free observation of thick specimens. An 8-position universal condenser (optional) can be combined with other optical components for conducting a variety of brightfield, darkfield, phase contrast, Nomarski DIC and simple polarizing observations.

① U-UCD8 ② U-DICT
③ U-DICTS ④ U-TLO ⑤ U-TLD

BX51

BX51-FL

ACCESSORIES

OBSERVATION TUBES/EYEPOINT ADJUSTER

A variety of products is available, from widefield binocular tubes to super widefield trinocular models. There is also a choice of tilting tubes, including models for inverted image observation and erect image observation (where the direction of specimen movement matches the direction of observation image movement).

① Super widefield erect image trinocular tube/U-SWETR
② Super widefield trinocular tube/U-SWTR-3 ③ Trinocular tube/U-TR30-2
④ Trinocular tube/U-TR30NIR ⑤ Binocular tube/U-BI30-2
⑥ Tilting binocular tube/U-TBI-3 ⑦ Ergonomic binocular tube/U-ETBI
⑧ Ergonomic binocular tube/U-TTBI ⑨ Single port tube/U-SPT
⑩ Eyepoint adjuster/U-EPA ⑪ Economic tilting binocular tube/U-CTBI

EYEPIECES / PHOTO EYEPIECES

Widefield eyepiece/WHN, WH
The WHN maintains image flatness even when stacking a reflected light illuminator and intermediate attachments.

Super widefield eyepiece/SWH
Compatible with F.N. 26.5.

Eyepiece specifications

Item	Name	F.N.	Diopter	Micrometer (ømm)
Widefield	WHN10X	22		24
	WHN10X-H	22	-8 — +5	24
	WH15X	14		24
	CROSSWHN10X	22	-8 — +5	
Super widefield	SWH10X-H	26.5	-8 — +2	—
	MICROSWH10X	26.5	-8 — +2	
	CROSSSWH10X	26.5	-8 — +2	
Finder eyepiece	35WHN10X	22	-8 — +5	
	35SWH10X	26.5	-8 — +2	
	PSWH10X	26.5	-8 — +2	

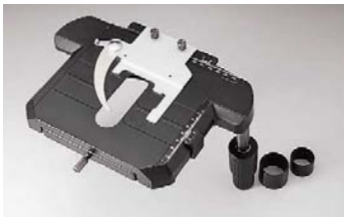
* Users who want the SWH10X micrometer: please have your eyepiece adapted by the manufacturer.

STAGES

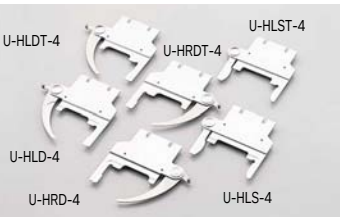
The U-SHG and U-SHGT rubber grip can be attached to the standard stage handle. Different specimen holders are available for use with one slide glass or two, making it easier to switch specimens with just one hand. As well as a plain stage, there is also a rotating model that allows the attachment of a duplex mechanical stage, and a grooved stage which disperses immersion oil to prevent the slide glass from sticking. Users can choose according to application.

Mechanical stage with left-hand control/U-SVLB-4
Specimen holder/U-HRD-4
Rubber grip/U-SHG

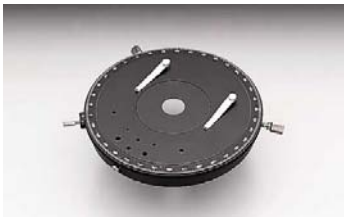
Mechanical stage with right-hand control/U-SVRB-4
Specimen holder/U-HLD-4
Rubber grip/U-SHG



Oil rectangular stage with right-hand control/U-SVRO
Oil rectangular stage with left-hand control/U-SVLO
Specimen holder/U-HLD-4
Rubber grip/U-SHG



Specimen holders



Rotatable graduated stage/U-SRG

Plain Stage/U-SP

REVOLVING NOSEPIECES

Centerable sextuple revolving nosepiece/ U-P6RE
Sextuple centerable revolving nosepiece, allows centration of three objectives.

Septuple revolving nosepiece for DIC/simple POL/ U-D7RE
Septuple revolving nosepiece with slider slot for DIC/POL.

CAMERA ADAPTERS

TR-Adapters
The single port tube of the trinocular tube is detachable, and can be used with various cameras through a range of adapters. Using the U-TV1X-2, camera can be used directly with no need for a shooting lens. The potential of your microscope is greatly increased by its multiple image utilization capabilities.

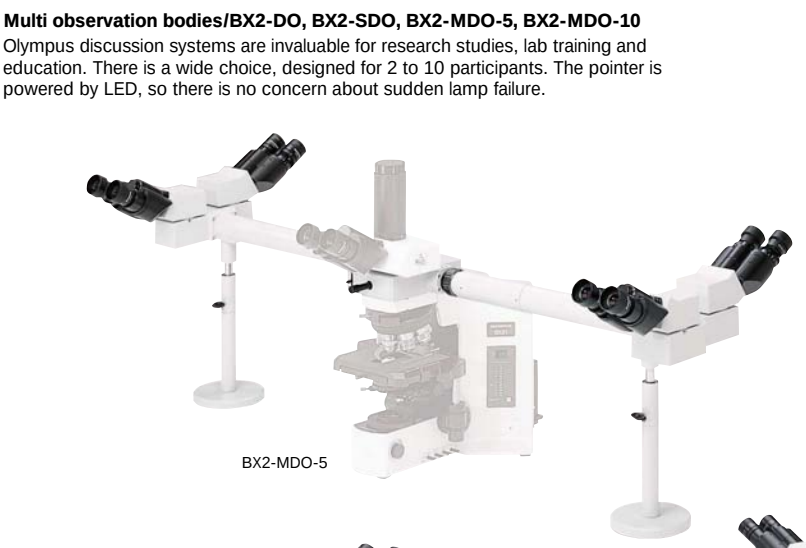
Camera adapters

① U-PMTVC
② U-PMTV
③ U-PMTV1X
④ U-SMAD
⑤ U-CMAD3
⑥ U-TMAD
⑦ U-BMAD
⑧ U-FMT
⑨ U-TV0.25XC
⑩ U-TV0.5X
⑪ U-TVZ
⑫ U-TV0.35XC-2
⑬ U-TV0.5XC-3
⑭ U-TV1X-2

GROUP OBSERVATION SYSTEMS

Multi observation bodies/BX2-DO, BX2-SDO, BX2-MDO-5, BX2-MDO-10

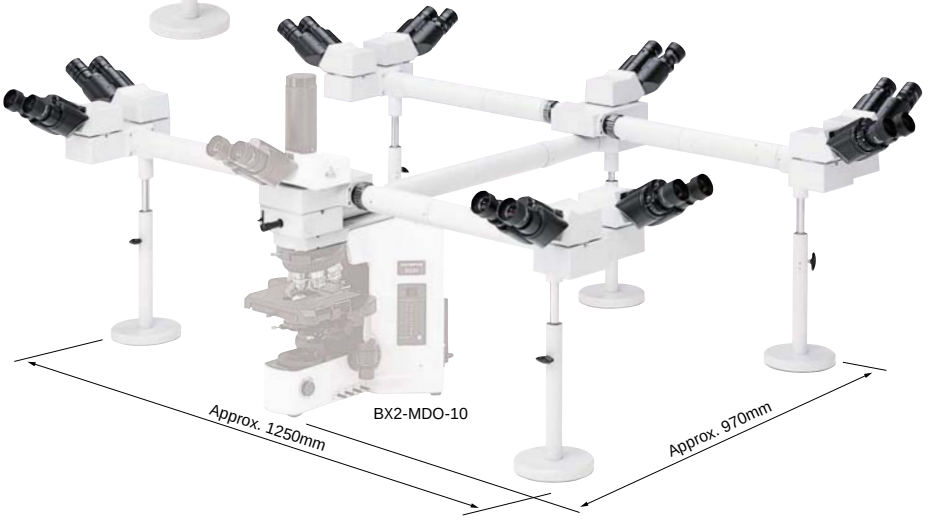
Olympus discussion systems are invaluable for research studies, lab training and education. There is a wide choice, designed for 2 to 10 participants. The pointer is powered by LED, so there is no concern about sudden lamp failure.



BX2-MDO-5

BX2-SDO

BX2-DO



BX2-MDO-10

OTHER ACCESSORIES

Dual port/U-DP
A double port tube can be combined with the trinocular tube.

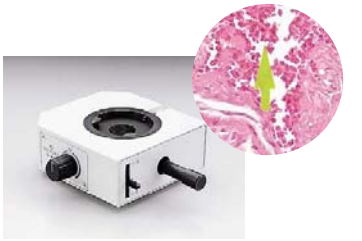
Trinocular intermediate attachments/ U-TRU, U-TRUS
This intermediate trinocular attachment can be used simultaneously with the inclinable binocular observation tube (U-TBI-3). Two light paths are selectable: 100% light for binocular observation or 20% for binocular observation and 80% for imaging through the trinocular port.

Simple polarizing attachment
Simple polarizing observation can be accomplished with the combination of U-KPA intermediate attachment for simple polarizing observation, U-ANT analyzer for transmitted light and U-POT polarizer.

Drawing attachment/U-DA
The drawing attachment projects an image of the pencil and drawing surface into the visual field. Tracing of microscopic structures is made easier and more accurate.

Magnification changer/U-ECA, U-ECA1.6X
This intermediate magnification changing component expands the capability of UIS2 objectives, optimizing the image field without the interruption of rotating the objective lens; This should be : U-ECA: 1X / 2X, U-ECA1.6X: 1X / 1.6X.

Magnification changer/U-CA
This intermediate magnification changing component expands the capability of UIS2 objectives, optimizing the image field without the interruption of rotating the objective lens; 1X / 1.25X / 1.6X / 2X.



Arrow pointer/U-APT
Enables super imposition of a red or green LED arrow for display on a monitor or for reproduction with a photomicrograph.

BX41/BX51 specifications

Item		BX41	BX51
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 6V30W halogen bulb (pre-centered) Light preset switch	Built-in Koehler illumination for transmitted light 12V100W halogen bulb (pre-centered) Light preset switch Light intensity LED indicator Built-in filters (LBD-IF, ND6, ND25 optional)
Revolving nosepiece		Interchangeable reversed quintuple/sextuple/septuple nosepiece	
Observation tube	F.N. 18 (for BX41)	•Tilting binocular, inclined 30°-60°	—
	Widefield (F.N. 22)	•Widefield binocular, inclined 30° •Widefield tilting binocular, inclined 5°-35° •Widefield trinocular, inclined 30° •Widefield ergo binocular, inclined 0°-25°	
	Super widefield (F.N. 26.5)	Super widefield trinocular, inclined 24°	
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 (N.A. 1.1), for 4X — 100X •Swing out Achromatic (N.A. 0.9), for 1.25X — 100x (swing-out: 1.25X — 4x) •Achromatic Aplanatic (N.A. 1.4), for 10X — 100X •Phase contrast, darkfield (N.A. 1.1), (phase contrast: for 10X — 100X, darkfield: for 10X — 100X [up to N.A. 0.80]) •Universal (N.A. 1.4/0.9), for 2X — 100X (swing-out: 2X — 4X, with oil top lens: 20X — 100X) •Darkfield dry (N.A. 0.8 — 0.92), for 10X — 100X •Darkfield oil (N.A. 1.20 — 1.40), for 10X — 100X •Ultra low (N.A. 0.16), for 1.25X — 4X	

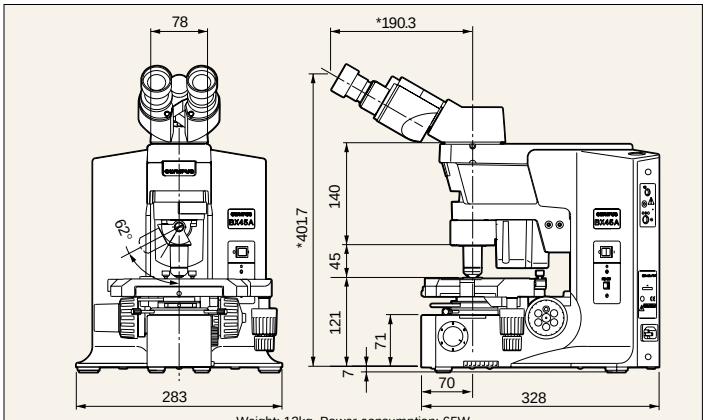
BX45/BX45A specifications

Item		BX45A*	BX45
Microscope frame	Optical system	UIS2 optical system	
	Focus	Fixed low stage nosepiece focus 15mm focus stroke with coarse adjustment limit stop Torque adjustment for coarse adjustment knobs High sensitivity fine focusing knob (adjustment gradations: 1µm)	
	Illuminator	Built-in Koehler illumination for transmitted light 6V30W halogen bulb (pre-centered) Light preset switch	
Revolving nosepiece		Fixed motorized 2-position revolving nosepiece	Fixed reversed quintuple nosepiece
Observation tube	Widefield (F.N. 22)	•Widefield binocular, inclined 30° •Widefield tilting binocular, inclined 5°-35° •Widefield trinocular, inclined 30° •Widefield ergo binocular, inclined 0°-25°	
Stage		Ceramic-coated coaxial stage with left or right hand low drive control, rotating mechanism and torque adjustment mechanism (Plain, rotating stages are also available)	
Condenser		Brightfield 4X — 40X (N.A. 0.9)	Fixed 3 position universal condenser (N.A. 0.9) 1.25X — 100X (swing out: 1.25X — 2X)

* 4-40X dry type objectives besides UPLSAPO40X are mountable.

BX45A dimensions

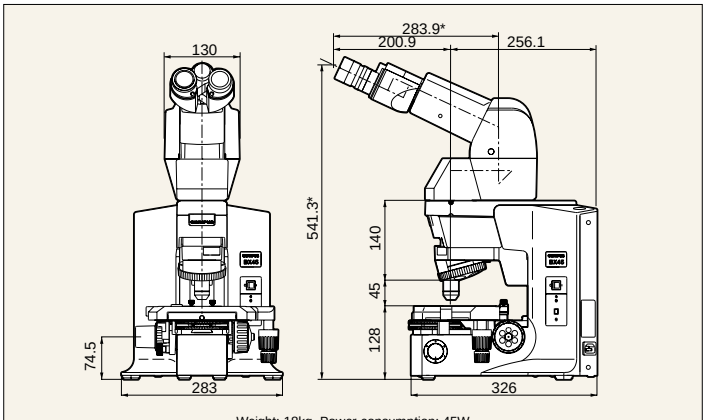
(unit: mm)



Weight: 12kg, Power consumption: 65W
The length marked with an asterisk (*) may vary according to interpupillary distance. Distance for figure shown is 62mm.

BX45 dimensions

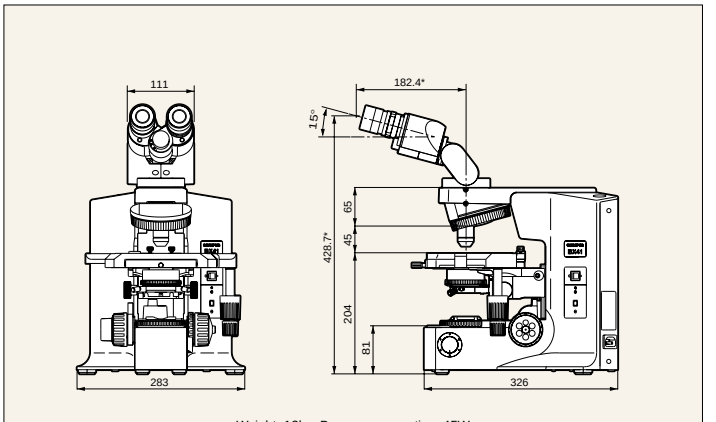
(unit: mm)



Weight: 18kg, Power consumption: 45W
The length marked with an asterisk (*) may vary according to interpupillary distance. Distance for figure shown is 62mm.

BX41 dimensions

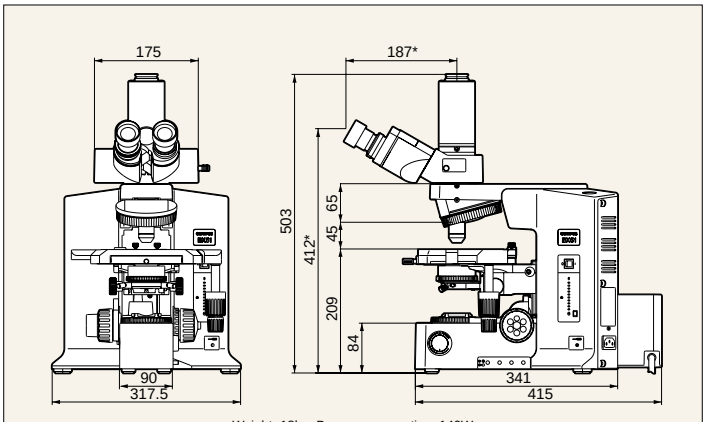
(unit: mm)



Weight: 12kg, Power consumption: 45W
The length marked with an asterisk (*) may vary according to interpupillary distance. Distance for figure shown is 62mm.

BX51 dimensions

(unit: mm)



Weight: 18kg, Power consumption: 140W
The length marked with an asterisk (*) may vary according to interpupillary distance. Distance for figure shown is 62mm.

Photos courtesy of:
Prof. Tadokoro, Pathology class, School of medicine, St. Marianna University (P.6)
Dr. Takanashi, Pathology Dept., Mitsui Memorial Hospital (P.10 above)

Specifications are subject to change without any obligation on the part of the manufacturer.

ISO9001 Certification
Design and production adheres to ISO9001 international quality standard.

ISO14001 Certification
Design and production at the OLYMPUS CORPORATION Ina Plant conforms with ISO14001 specifications for environmental management systems.

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This catalog is printed by enviromentally-friendly waterless printing system with soy ink.

Printed in Japan M1541E-0305B