

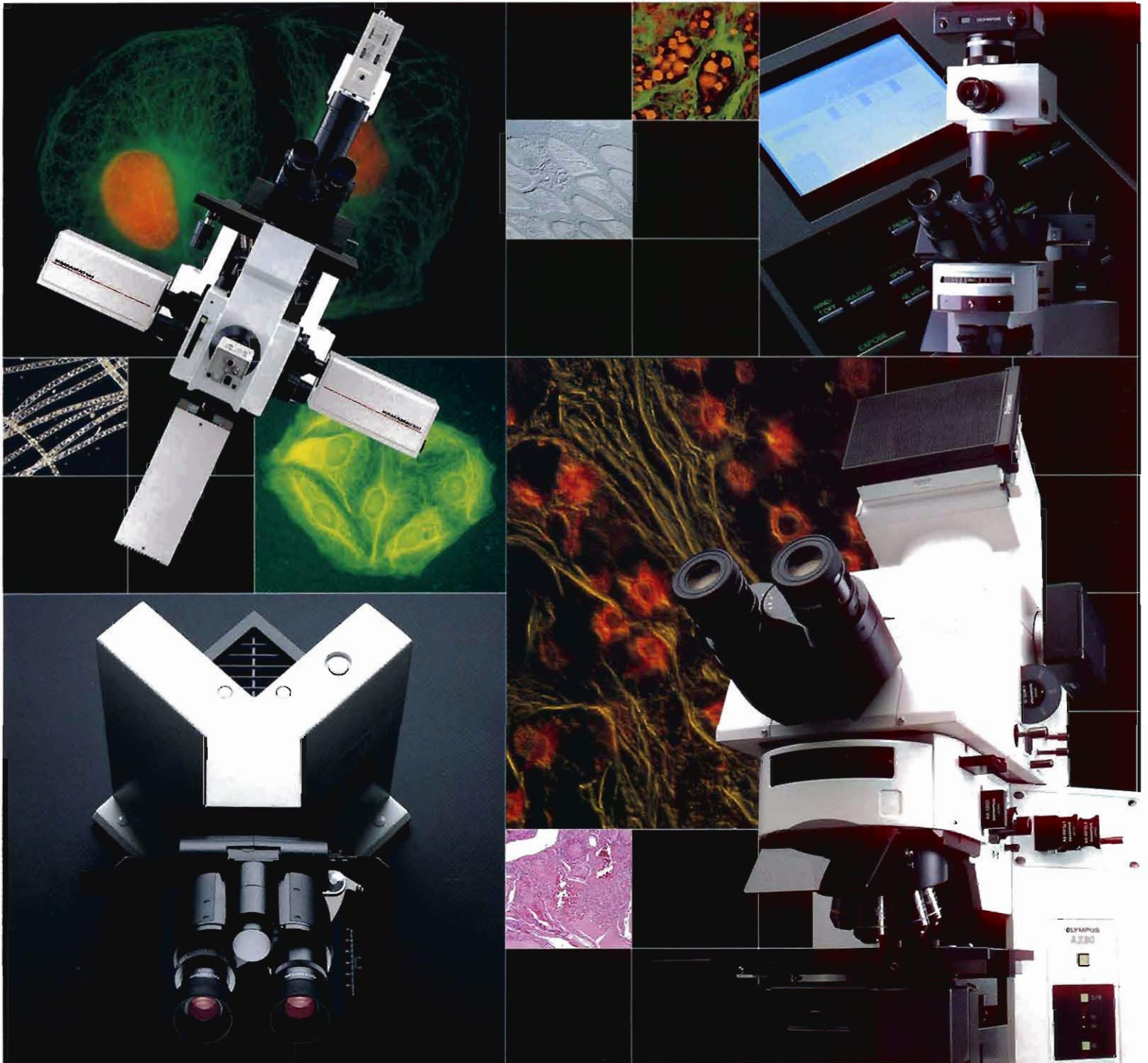
OLYMPUS®

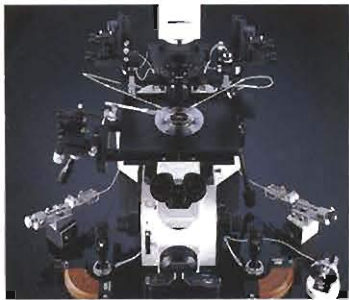
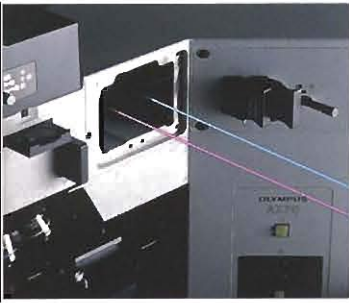
BIOLOGICAL MICROSCOPES

Olympus is about life. About photographic innovations that capture precious moments of life. About advanced medical technology that saves lives. About information- and industry-related products that make possible a better living. About adding to the richness and quality of life for everyone. Olympus. Quality products with a **FOCUS ON LIFE**

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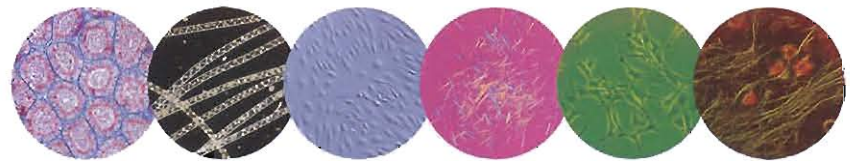
New avenues of research are opening in biological and medical fields. As research demands become more specialized and diversified, biological microscopes must offer the capabilities to meet these needs.

Olympus microscopes and their accessories are developed to meet the ever-changing needs of research applications.

Our accomplishments in microscope development date back more than three-quarters of a century. Olympus has accumulated a broad range of advanced optical and precision technologies and we are renowned for our innovative approach to microscopy.

An outstanding example of Olympus ingenuity is the superior UIS infinity-corrected optical system employed on the AX, BX and IX microscopes. Olympus has also won acclaim for its system versatility and broad range of advanced accessories.

Our microscopes are evolving with enhanced performance and operational ease. Olympus continues to answer research demands in the biological and medical field of today and pave the way for future advances with increasingly sophisticated research equipment.



UIS infinity-corrected optical system

The advanced Olympus UIS optical system maximizes the advantages of infinity correction. Light travels through the body tube as parallel rays as it passes through the objective. These are focused by the telan lens to form a completely aberration-free intermediate image. Attachments can be added between the objective and the built-in telan lens in the observation tube without any magnification factor alterations to total magnification. Additional correction lenses are not required. The UIS optical system delivers optimum image quality with any configuration.

LB

LB Series objectives for biological microscopes

The LB Series objectives not only achieve high resolution and excellent contrast, but deliver an observation image with superb field flatness by fully compensating for every optical aberration. The series boasts improved operational efficiency with a long working distance and offers a uniform focal distance with both low and high magnification objectives. A standard field of view of F.N. 20 is provided when combined with the WHK10x eyepiece. A super widefield of view of F.N. 26.5 is provided when combined with the SWK10x eyepiece.

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AX80

AUTOMATIC RESEARCH PHOTOMICROSCOPE

UIS
UNIVERSAL
INFINITY SYSTEM

PROVIS



The AX80 answers demands for automated microscopic procedure, fully automating procedures from observation to photomicrography, to bring higher standards and operational efficiency to advanced research. All observation and photomicrography operations are controlled via the multi-control box.

- High-quality auto-focus system corresponds to brightfield, darkfield, fluorescence and Nomarski DIC microscopy.
- Zoom magnification system employed in photo optical path and video optical path.
- Flexible spot measurement allows unrestricted movement in measuring area.
- Incorporates Super FL Auto mode for simplified automatic exposure in fluorescence photomicrography.

Illumination	Transmitted light 12V100W halogen Koehler illumination
Focusing	Auto focus (realtime mode/one-shot mode, manual focus possible); fine focus sensitivity: 0.5µm
Nosepiece	Motorized sextuple
Stage	Mechanical square stage with right (or left) drive handle 198mmx265mm, traveling area (Y) 52mmx(X) 76mm
Condenser	Motorized universal condenser (N.A. 0.16 - 1.4 with oil top lens)
Photography unit	Built-in fully automatic photomicrographic unit for simultaneous mounting of two 35mm cameras, one large-format camera and one video camera. Three selectable Auto Exposure modes (Super FL Auto, FL Auto and standard Auto). Selectable measurement area (0.1% spot, 1% spot, 30% average); auto bracketing; reciprocity failure correction; built-in photo frame
Other features	Built-in universal reflected light illuminator (AX80TRF frame); six built-in motorized filters in transmitted light path; detachable FS, AS, filter changer, converter
Accessories	Reflected light universal illuminator, DIC attachment, phase-contrast attachment, RS-232C/GPIB interface board, etc.

*Please refer to AX80 catalog for further details

3

AX70

RESEARCH SYSTEM MICROSCOPE

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INFINITY SYSTEM

PROVIS



The AX70 is ideal for constructing a tailored, high-quality automated system with various functions and units. Observation procedure is also speeded up with various optional motorized parts. The unique, highly stable Y-shaped frame assures comfortable operation and superb versatility.

- Total control system can be constructed with multi-control box to correspond to such research applications as F.I.S.H. and patch clamping.
- Virtually all operations are automated when used in combination with universal photo system and multi-control box.

Illumination	Transmitted light 12V100W halogen Koehler illumination
Focusing	Coarse & fine coaxial handle; full stroke: 25mm; minimum fine adjustment: 1µm
Observation tube	SW erect image trinocular (F.N. 26.5)/SW trinocular (F.N. 26.5), etc.
Nosepiece	Interchangeable motorized sextuple, etc.
Stage	Mechanical square stage with right (or left) drive handle 198mmx265mm, traveling area (Y) 52mmx(X) 76mm
Condenser	Swing-out condenser N.A. 0.90; motorized universal condenser N.A. 0.16 - 1.4, etc.
Other features	Built-in universal reflected light illuminator (AX70TRF frame). Six built-in motorized filters. Detachable FS, AS, filter changer, converter
Accessories	Reflected light universal illuminator, DIC attachment, phase-contrast attachment, multi-port observation head, 6x6" large stage, motorized components, RS-232C/GPIB interface board, etc.
Photography unit (U-PHOTO unit) (option)	Built-in fully automatic photomicrographic unit for simultaneous mounting of two 35mm cameras, one large-format camera and one video camera. Three selectable Auto Exposure modes (Super FL Auto, FL Auto and standard Auto). Selectable measurement area (0.1% spot, 1% spot, 30% average). Auto bracketing. Reciprocity failure correction. Built-in photo frame

*Please refer to AX70 catalog for further details

Accessories for AX70

U-PHOTO

Universal photo system

The universal photo system used in combination with the multi-control box achieves automatic photo and video documentation. Features such as flexible moving spot measurement, automatic exposure control, 3-way camera light path and zoom magnification change system are controlled by the U-MCB multi-control box.

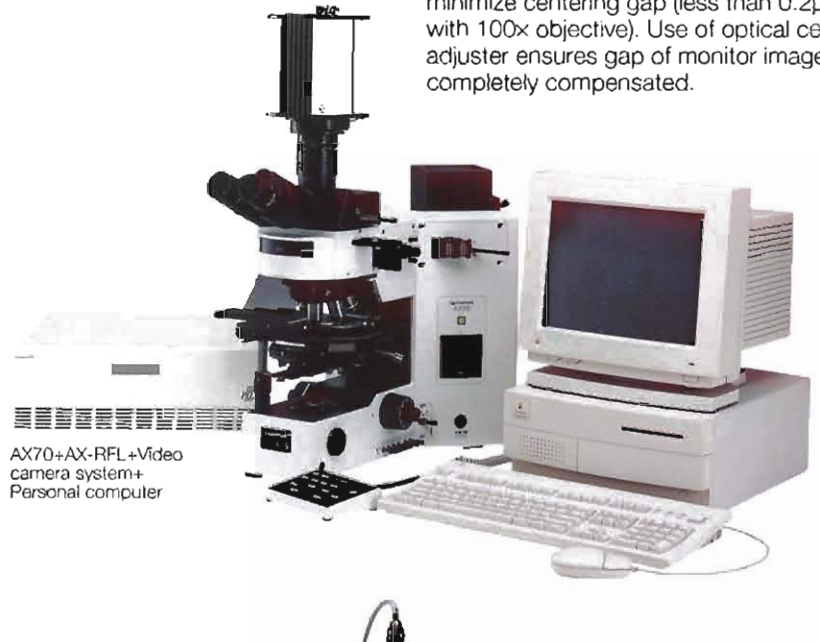


AX70+U-PHOTO

AX-RFL

Reflected fluorescence observation

- Motorized fluorescent cubes assure quick changeover of excitation wavelength.
- Changeover of cube is highly precise to minimize centering gap (less than $0.2\mu\text{m}$ with $100\times$ objective). Use of optical center adjuster ensures gap of monitor image is completely compensated.



AX70+AX-RFL+Video camera system+ Personal computer

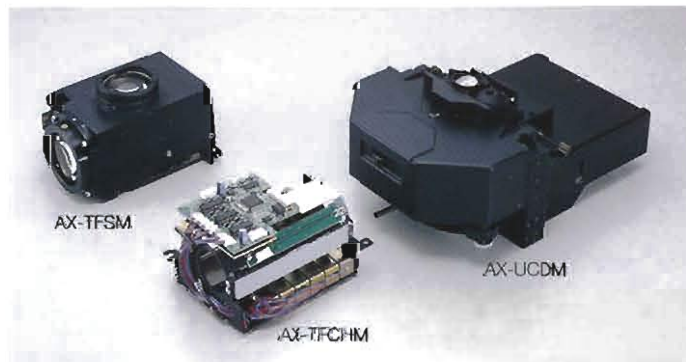
U-MPH

Multi-port head

The U-MPH enables erect image observation of a super widefield of view and makes simplified micromanipulation on the upright microscope possible. Centering, rotation, magnification and focus adjustments are also possible for the second image port. Images from video cameras mounted to ports 1 and 2 can thus be perfectly aligned.



AX70+U-MPH+PM-30+ Video camera systems



Motorized units

AX-TFSM/AX-TFCHM/AX-UDCM

Various units for transmitted light observation allow construction of a high-quality automated system.

- AX-TFSM AX transmitted motorized field stop unit
- AX-TFCHM AX transmitted motorized filter changer
- AX-UDCM AX motorized universal condenser

BX60

SYSTEM MICROSCOPE

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The BX60 answers advanced fluorescence observation needs with high-quality images and system versatility. Unprecedented sharpness and contrast in fluorescence observation is achieved by the BX60 universal vertical illuminator, which employs UIS optics with improved UV transmission, in combination with the matchless UIS Series objectives.

- Selection of 18 excitation mirror units combining dichroic mirrors, excitation filters and absorption filters.
- Simultaneous observation of fluorescence and transmitted light can be executed in combination with universal objectives, universal condenser and single DIC prism.
- Four mirror units can be mounted simultaneously to allow instant switching among wavelengths.

illumination	Transmitted light 12V100W halogen Koehler illumination
Focusing	Coarse & fine coaxial handle; full stroke: 25mm; minimum fine adjustment: 1µm
Observation tube	Binocular (F.N. 22)/Trinocular (F.N. 22)/SW trinocular (F.N. 26.5)/Tilting binocular (F.N. 22)/Tilting trinocular (F.N. 22)
Nosepiece	Interchangeable sextuple, etc.
Stage	Ceramic coated mechanical square stage with right (or left) drive handle 135mm×180mm, traveling area (Y) 52mm×(X) 76mm. Torque adjustment for movement incorporated
Condenser	Swing-out condenser N.A. 0.90, Aplanate-Apochromat condenser N.A. 1.40, etc.
Other features	Frame built-in type reflected light illuminator (option). Three-filter built-in (ND6, ND25, LBD). Light pre-set switch. Focus upper limiter
Accessories	Reflected light fluorescence attachment, DIC attachment, phase-contrast attachment, multi-viewing attachment, polarizing attachment, etc.

*Please refer to BX60 catalog for further details

5

BX50

SYSTEM MICROSCOPE

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INFINITY SYSTEM



The BX50 employs an ergonomic Y-shaped frame and boasts exceptional operational ease and observation efficiency. Superior performance is assured for a range of applications from sophisticated research to routine clinical procedures and illumination is ideal for a variety microscopy and photomicrography.

- Original ergonomic Y-shaped frame frees up workspace and offers improved operational ease.
- Silky-smooth 1µm sensitivity fine focus for precise adjustment at high magnification.
- Incorporates built-in filters (ND6, ND25 and LBD).
- Employs universal objectives for various observation methods and offers speedy observation method changeover.

illumination	Transmitted light 12V100W halogen Koehler illumination
Focusing	Coarse & fine coaxial handle; full stroke: 25mm, minimum fine adjustment: 1µm
Observation tube	Binocular (F.N. 22)/Trinocular (F.N. 22)/SW trinocular (F.N. 26.5)/Tilting binocular (F.N. 22)/Tilting trinocular (F.N. 22)
Nosepiece	Interchangeable sextuple, etc.
Stage	Ceramic-coated mechanical square stage with right (or left) drive handle 135mm×180mm, traveling area (Y) 52mm×(X) 76mm. Torque adjustment for movement incorporated
Condenser	Swing-out condenser N.A. 0.90, Aplanate-Apochromat condenser N.A. 1.40, etc.
Other features	Three-filter built-in (ND6, ND25, LBD). Light pre-set switch. Focus upper limiter
Accessories	Reflected light fluorescence attachment, DIC attachment, phase-contrast attachment, multi-viewing attachment, polarizing attachment, etc.

*Please refer to BX50/40 catalog for further details

BX40 SYSTEM MICROSCOPE

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The BX40 was developed for routine clinical procedures and offers the advantages of a high-cost-performance model. It delivers superb operational efficiency and boasts a design that reduces fatigue during prolonged periods.

- Y-shaped, ergonomic design lessens strain on arms and wrists to reduce fatigue during prolonged observation.
- Operator can maintain natural observation posture since all electrical controls are located on right wing of stand and observation tube features eyepiece inclination adjustment of 5°-35°.

Illumination	Transmitted light 6V30W halogen Koehler illumination
Focusing	Coarse & fine coaxial handle; full stroke: 25mm; minimum fine adjustment: 1µm
Observation tube	Binocular (F.N. 22)/Trinocular (F.N. 22)/SW trinocular (F.N. 26.5)/Tilting binocular (F.N. 22)/Tilting trinocular (F.N. 22)
Nosepiece	Fixed quintuple
Stage	Ceramic coated mechanical square stage with right (or left) drive handle 135mm×180mm, traveling area (Y) 52mm×(X) 76mm. Torque adjustment for movement incorporated
Condenser	Swing-out condenser N.A. 0.90, Abbe condenser N.A. 1.25, etc.
Other features	Light pre-set switch, Focus upper limiter
Accessories	Reflected light fluorescence attachment, DIC attachment, phase-contrast attachment, multi-viewing attachment, etc.

*Please refer to BX50/40 catalog for further details

6

BX40CY MICROSCOPE FOR CYTODIAGNOSIS

UIS
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INFINITY SYSTEM



The BX40CY was specifically developed for cytological examinations and employs such design features as a lower-positioned nosepiece and mechanical stage for fatigue-free routine clinical cytodiagnosis over extended periods. The microscope is designed to reduce operator fatigue and dramatically increases efficiency and productivity.

- Distance between table surface and nosepiece/stage surface is 30mm lower than standard BX40 microscope.
- Tilting binocular observation tube with adjustable eyepoint height is standard equipment.
- Neutral density (ND) filter incorporated in 10× objective equalizes light intensity in field of view when switching to 40× objective.
- Accommodates thin slide holder to scan entire viewing field with 40× objective.

Illumination	Transmitted light 6V30W halogen Koehler illumination
Focusing	Coarse & fine coaxial handle; full stroke: 25mm; minimum fine adjustment: 1µm
Observation tube	Tilting binocular (F.N. 22)/tilting trinocular (F.N. 22), etc.
Nosepiece	Low-positioned fixed quintuple
Stage	Low-positioned ceramic-coated mechanical square stage with right (or left) drive handle 135mm×180mm, traveling area (Y) 52mm×(X) 76mm. Torque adjustment for movement incorporated
Condenser	Abbe condenser N.A. 1.25/swing-out condenser N.A. 0.90
Other features	One-touch marking unit (U-MAKER). ND filter built-in objective (PL10xCY). Light pre-set switch, Focus upper limiter

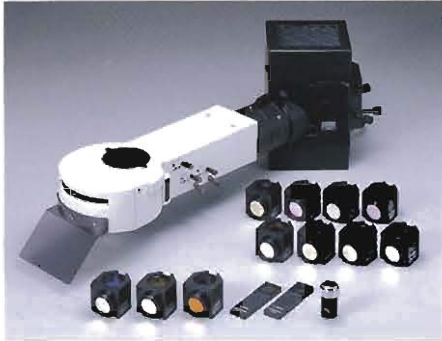
*Please refer to BX40CY catalog for further details

Accessories for BX

BX-FLA

Universal illuminator attachment

The optical system features enhanced UV transmission to assure superb brightness, sharpness and contrast for fluorescence images. The universal illuminator attachment accepts up to four mirror units that combine dichroic mirrors with excitation and absorption filters, for swift changeover among four fluorescence wavelengths.



BX-PMDO

Multi-viewing attachment

A single image can be viewed with the same orientation and brightness by up to five persons simultaneously to facilitate discussion between researchers, and for training and education. No additional power unit is required since the power unit of the arrow pointer is incorporated in the main body.

•Also available for 10 persons (BX-DMDO) and two persons (BX-SDO and BX-BDO).



7



U-UCDB

Universal condenser

Any combination of up to five optical elements can be inserted into the modular universal turret condenser, facilitating rapid changeover among different observation methods. Nomarski differential interference contrast is achieved simply by inserting the analyzer slider into the revolving nosepiece. Simultaneous incident light fluorescence and transmitted DIC observation are both possible.



BX-PHD

Phase-contrast turret condenser

This unit features a newly formulated coating for the phase-contrast annuli that enhances resolution, contrast and staining effects for the examination or identification of phase specimens. Quick changeover from phase-contrast to brightfield or darkfield is possible with a simple turn of the turret.



BX-POL

Simple polarizing attachment

Polarized light observation can be performed by simply inserting an analyzer into the revolving nosepiece and placing a polarizer on the light exit window. This accessory is extremely useful for detecting birefringent specimen details.



BX50+BX-PMDO

BX50+BX-SDO



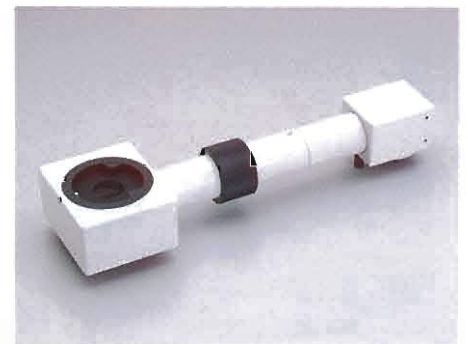
U-CA
Magnification changer

A simple turn of the turret increases intermediate magnification from 1x by three levels: 1.25x, 1.6x and 2x without changing the visual or photo eyepieces.



U-EPA
Eyepoint adjuster

Eyepoint position can be raised by 30mm, while the UIS infinity-corrected optical system permits up to two eyepoint adjusters to be attached between the frame arm and observation tube.

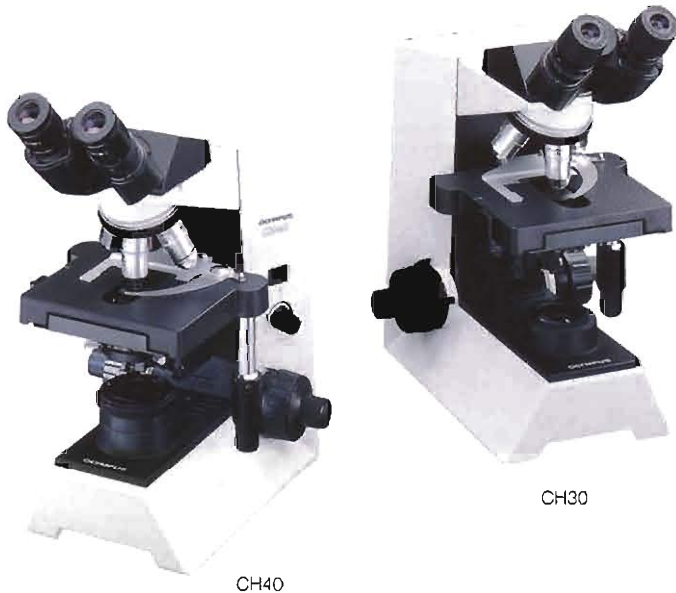


U-DA
Drawing attachment

This unit is extremely convenient for accurate sketching of a magnification specimen image seen through the microscope with a magnification ratio of 16x.

CH40/CH30 SYSTEM MICROSCOPES

LB



CH40

CH30

The CH40/CH30 offer extended capabilities to match a wide range of applications from routine clinical work to educational use. They not only feature an ergonomically designed frame for maximum operating comfort and enhanced rigidity, but also offer the convenience of extra-bright illumination.

CH40

Featuring powerful 6V30W halogen Koehler illumination, the CH40 is applicable for a wide range of observation methods and photomicroscopy.

CH30

An ergonomically designed frame and bright 6V20W halogen illumination make the CH30 ideal for routine clinical work and educational applications.

Illumination	Transmitted light 6V30W halogen (CH40)/6V20W halogen (CH30)
Focusing	Coarse & fine coaxial handle; full stroke: 25mm; minimum fine adjustment: 2µm
Observation tube	Binocular/trinocular/monocular
Nosepiece	Fixed quintuple (CH40)/fixed quadruple (CH30)
Stage	Mechanical stage with right (or left) drive handle 134mm×188mm, traveling area (Y) 50mm×(X) 76mm
Condenser	Abbe condenser N.A. 1.25, etc.
Other features	Focus upper limiter, Field diaphragm (CH40)
Accessories	Dual-observation attachment, phase-contrast attachment, drawing attachment, simple polarizing attachment, etc.

*Please refer to CH40/CH30 Series catalog for further details

9

CHK2/CHL2 SYSTEM MICROSCOPES

LB



CHK2

CHL2

The CHK2/CHL2 are economically priced yet achieve a high standard of optical and mechanical quality as routine and educational microscopes. A variety of combinations is available depending on applications and budget.

CHK2

Featuring a built-in 6V20W halogen illuminator and mechanical stage, the CHK2 is suited to various microscopy requirements.

CHL2

The affordable CHL2 microscope is equipped with a plano-concave mirror to illuminate specimens and is ideally suited to the classroom for educational purposes.

Illumination	CHK2: transmitted light 6V20W halogen CHL2: plano-concave mirror (ø50mm)
Focusing	Coarse & fine coaxial handle; full stroke: 20mm; minimum fine adjustment: 2.5µm
Observation tube	Binocular/monocular
Nosepiece	Fixed quadruple
Stage	Attachable mechanical stage with right (or left) drive handle 120mm×122mm, traveling area (Y) 40mm×(X) 76mm (CHK2/CHL2), square plain stage 120mm×122mm (CHL2)
Condenser	Abbe condenser N.A. 1.25, etc.
Other features	Focus upper limiter, attachable sub stage illuminator (option for CHL2)

*Please refer to CHK2/CHL2 catalog for further details

Accessories for CH40/CH30



CH2-PCD Phase-contrast condenser

By simply rotating the turret, the CH2-PCD condenser can be set for three different types of microscopy: brightfield, darkfield and phase-contrast. It functions smoothly with phase-contrast objectives 10x and 40x.



CH3-DO Dual observation attachment

This attachment enables dual, simultaneous observation of a specimen from the same direction with uniform magnification and brightness for both operators. A pointer can be used to indicate specific sections of the specimen.



BH2-PC Phase-contrast condenser

The BH2-PC is an indispensable unit for observation of transparent specimens. It can be used with 10x to 100x objectives.



CH3-PC-PL Simple phase-contrast attachment

Easy, economical phase-contrast microscopy is achieved by simply attaching a phase annular ring (model CH2-RS10/RS40) to the standard Abbe condenser.



CH3-FS Field iris diaphragm

This attachment is designed for the CH30 to offer Koehler illumination and consists of a diaphragm frame and an auxiliary lens.



CH2-POL Simple polarizing attachment

The CH2-POL is a simple polarizing attachment and consists of an Abbe condenser and polarizing filter set.



BH-DCD Dry darkfield condenser

Clear darkfield images are delivered by this dry condenser which eliminates the oil-immersion procedure. The numerical aperture is 0.8/0.92, corresponding to 10x, 20x and 40x objectives with an N.A. up to 0.65.

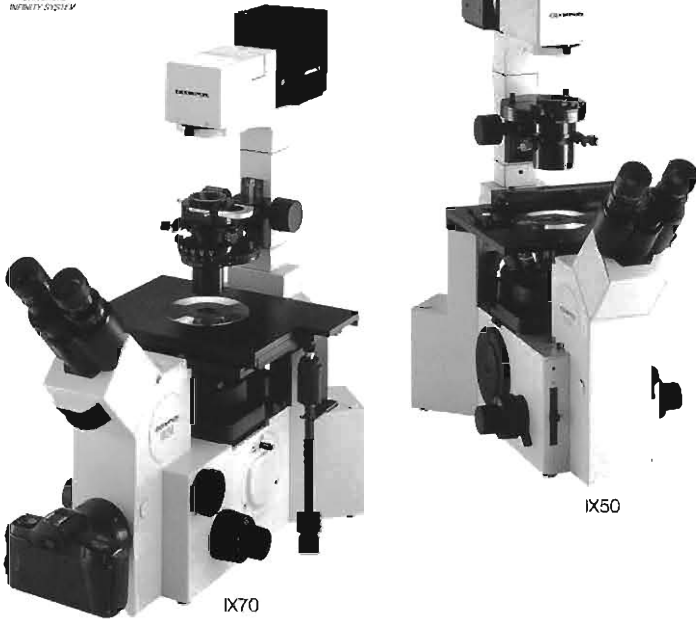


BH2-DA Drawing attachment

Accurate sketching of the observed image is simplified with this attachment which makes the tip of the drawing utensil visible through the observation tube. Magnifications from 20x to 1,000x are possible.

IX70/IX50 INVERTED SYSTEM MICROSCOPES

UIS
UNIVERSAL
INSTRUMENT SYSTEMS



The IX Series combines world-class UIS optics and high stability with ease of operation. From physiology to tissue culture, these inverted system microscopes are the ideal choice for a wide range of applications.

IX70

This upgradable microscope system evolves to meet changing demands in advanced research applications such as electrophysiological experimentation involving patch clamping. For top-end research, the IX70 not only offers superb fluorescence capability, but assures excellent versatility with up to four video camera ports.

IX50

The IX50 offers superb optical performance and operational versatility for tissue culture microscopy. Excellent contrast is achieved for phase-contrast images, an ideal feature for routine microtitaplate use.

Illumination	IX70/50: transmitted Koehler light 12V100W halogen IX50: 6V30W halogen
Focusing	Vertical movement of stage Coarse & fine coaxial handle; full stroke: 9mm; minimum fine adjustment: 1µm
Observation tube	Binocular (F.N. 22)/Trinocular (F.N. 22)
Nosepiece	Fixed sextuple
Stage	Mechanical stage with right (or left) drive handle/plain stage
Condenser	Long working distance universal condenser (N.A. 0.55, W.D. 23.3mm) Ultra long working distance phase condenser (N.A. 0.3, W.D. 73mm) Super long working distance phase condenser (N.A. 0.1, W.D. 182mm) etc.
Other features	Three-step (IX70)/two-step (IX50) light path selector, Shock-resistant tiltable illumination pillar, Built-in intermediate magnification changer (IX70).
Accessories	Reflected light fluorescence attachment, DIC attachment, side-viewing attachment, incubator, heated stage, micromanipulator, etc.

*Please refer to IX catalog for further details

CK2 INVERTED MICROSCOPE

LB



The versatile CK2 is suited to routine applications in a range of fields from tissue culture and embryology to immunology and pharmacology. A compact system, the CK2 answers high-level operational demands for superior cost performance. Olympus' original phase-contrast slider and specific objectives achieve phase-contrast observation from 4x to 40x without condenser switch-over.

- Flexible choice of peripheral accessories corresponds to various specimens and flasks.
- Incorporates user-friendly centering mechanism to simplify alignment of phase annuli and annular diaphragms. Phase annuli changeover is eliminated with 10x and 20x objectives.
- Optional polarized light and darkfield microscope units available.

Illumination	Transmitted light 6V20W halogen illumination
Focusing	Vertical movement of nosepiece (stage fixed); coarse & fine coaxial handle; full stroke: 8.2mm; minimum fine adjustment: 1.2µm
Observation tube	Binocular (CK2-BI frame, F.N. 18) Trinocular (CK2-TR frame, F.N. 18)
Nosepiece	Fixed quintuple
Stage	Plain stage (160mm×240mm), attachable mechanical stage
Condenser	Ultra long working distance phase-contrast condenser (N.A. 0.3, W.D. 72mm)
Accessories	Drawing attachment, magnification changer, Terasaki holder, 35mm dia. petri dish holder, slide glass holder, etc.

*Please refer to CK2 catalog for further details

Accessories for IX



IX-IBC CO₂ incubator

This unit is designed for the incubation of cells or other similar specimens under microscopic observation in a CO₂ environment. The specimen is kept at a constant temperature by the warm air circulation system and warm plate.



IX-IBM Incubator

A transparent acrylic enclosure, the IX-IBM allows microscopic examination of living cells within a controlled macro-environment. The heater does not contribute to dust contamination or culture solution evaporation.



IX-SDO Side-by-side dual-viewing attachment

This attachment permits two observers positioned side by side to simultaneously view the same specimen, facilitating dialogue during research or in teaching situations.



IX-FLA Fluorescence observation unit

Designed for fluorescence observation, this unit can be mounted with four different mirror units and combined freely according to needs. An original mirror can be tailor-made from generic mirror units for observation of bright images.



IX-FLA-FURA Observation unit for fura-2 fluorescent probe

This unit is designed for observation with a fura-2 fluorescent probe and delivers a bright fluorescence calcium observation image with the mirror unit designed exclusively for fura-2 and excitation filter.

* A unit for indo-1 observation is also available.



OSP-EXA High-speed excitation wavelength selector unit

Since the OSP-EXA high-speed excitation wavelength selector unit is linked with the microscope with an optical fiber, the microscope is unaffected by vibrations, making it a reliable companion for the patch clamp.



IX-LWUCD Long working distance universal condenser

This universal condenser can combine five optical elements to correspond to phase-contrast observation from 4x to 100x, and difference interference contrast observation from 10x to 60x. The design assures easy manipulator setting.



IX-ULWCD Ultra long working distance universal condenser

The IX-ULWCD corresponds to phase-contrast and brightfield observations with 4x, 10x, 20x, and 40x objectives. High-contrast observation images are consistently delivered.



IX-HMC Hoffman Modulation Contrast unit

This unit provides simple, clear 3D-like contrast images to achieve manipulation ease. Plastic chambers and thick specimens are accepted.

* Hoffman Modulation Contrast is registered to Modulation Optics, Inc.

ON Series MICROMANIPULATORS

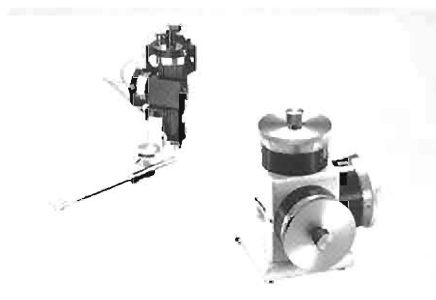
Compact with a slim design, these ergonomic joysticks assures highly precise needle-tip adjustment. Natural wrist movement for fatigue-free manipulation is assured thanks to the slim design of the ON Series. Various types of handles and accessories are available.



ONO-121 (1:1)/ONO-125 (5:1) Ergonomic joystick micro- manipulator three-axis joystick

Horizontal X and Y movement is controlled by moving the joystick in the required direction, and in the Z vertical direction by rotating the top end of the joystick.

- Fine movement of range: 10mm/2mm
- Full rotation of knob: 250 μ m/50 μ m
- Minimum graduation: 2.5 μ m/0.5 μ m
- Joystick (for movement in X-Y plane): 400 μ m max. (movement ratio and lever tension adjustment)



ONO-131 (1:1)/ONO-135 (5:1) Three-axis hydraulic micromanipulator

With this model, a pipette can be inserted into cells and cells can be sectioned or held. Also, known movements along an axis can be easily reproduced.

- Fine movement of range: 10mm/2mm
- Full rotation of knob: 250 μ m/50 μ m
- Minimum graduation: 1 μ m/0.2 μ m



MMO-202DS Drop handle joystick micromanipulator (Narishige Co., Ltd. product)

- Fine movement of range: 10mm (X, Y and Z)
- Full rotation of knob: 250 μ m
- Minimum graduation: 1 μ m

BX-P POLARIZING MICROSCOPES

UIS
UNIVERSITY
INSTRUMENT SYSTEM



This series employs UIS optics to achieve unsurpassed performance in polarized light observation. These units deliver optimum compensation for optical aberrations to achieve images of unprecedented sharpness. Six compensators are available to allow observation and measurement at various retardation levels.

- Conoscopic/orthoscopic version and Orthoscopic version available.
- 6 different kinds of compensators are available for BX-P.
- Accessories and video/camera system of BX Series mountable on BX-P.

Illumination	Transmitted light 12V100W halogen Koehler illumination
Polarizing intermediate tube	Swing-out focusable Bertrand lens with slot for 360° rotatable analyzer for conoscopic & orthoscopic observation (U-CPA)
Test plate	1 wavelength (1λ), 1/4 wavelength (1/4λ)
Compensators	Berek, Senarmont, Brace-Koehler, quartz wedge, etc. (6 types available)
Focusing	Coarse & fine coaxial handle; full stroke: 25mm; minimum fine adjustment: 1μm
Observation tube	Trinocular (F.N. 22)
Nosepiece	Detachable quadruple nosepiece with centering adjustment function
Stage	Circular rotatable stage with centering adjustment function and attachable mechanical stage. 360° graduated in 1° increments, lockable in any position
Condenser	Achromat strain-free condenser with built-in 360° rotatable polarizer (N.A. 0.18-0.9)

*Please refer to BX-P catalog for further details

POS POLARIZING MICROSCOPE



Simple to use, the POS offers a variety of functions to answer a range of applications from training and educational use to chemical research in the laboratory. The straight observation tube eases operation, while the PO objectives are developed exclusively for polarized light observation and offer high resolution and aberration compensation.

- Simplified operation for maximum versatility.
- Most competitive price for maximum applications.
- Centering device for each objective (except 4x).
- Complete range of extra accessories.

Illumination	Plano-concave mirror (ø50mm)
Bertrand lens	Swing-out focusable Bertrand lens with slot for 360° rotatable analyzer for conoscopic & orthoscopic observation
Test plate	1 wavelength (1λ), 1/4 wavelength (1/4λ)
Compensators	Berek
Focusing	Individual coarse and fine focus handles
Observation tube	Monocular (F.N. 19)
Nosepiece	Centerable nosepiece
Stage	Circular rotatable stage with centering adjustment function and attachable mechanical stage. 360° graduated in 1° increments, lockable in any position
Condenser	Achromat strain-free condenser (N.A. 1.2) with sliding mechanism to insert compensation lens (N.A. 0.25)

*Please refer to POS catalog for further details

SZH10

ZOOM STEREO MICROSCOPE SYSTEM



SZH10-131

Transmitted light photomicrography version (with built-in Koehler illuminator)

The built-in Koehler illuminator delivers uniform illumination considerably brighter than conventional light sources. Special illumination techniques are also at the fingertips including high-contrast, low-contrast and oblique illumination, to make this model especially effective for photomicrography.



SZH10-141

Brightfield/darkfield version

The SZH10-141 makes switch-over between brightfield and darkfield observation modes simple with the turn of a lever. This is especially effective for observing plankton in solution.



SZH10-121

Transmitted light version

The unique optical system provides previously unachievable uniform, ultra-bright illumination. The stand features excellent heat dispersion properties and is ideal for frequently repeated observation and biological research procedures.



SZH10-151

Coaxial vertical illumination version

This version is ideal for observing specimens that are difficult to examine under oblique incident-light illumination. The coaxial vertical illuminator combines a polarizer with a $1/4\lambda$ plate for easier observation of specimens that are difficult to observe under oblique incident light illumination.

State-of-the-art zoom stereo microscope systems, the SZH10 series provides the versatility and optical performance demanded by applications from biotechnology to leading-edge research. The dynamic 10:1 zoom range permits high-magnification observation from macro- to micro-observation, while the click-stop function is positioned on the zoom handle for ease of use. The distortion-free Apochromatic objective (D.F. PLAPO 1x) assures extra-clear images that are free from chromatic and other aberrations.

- Low-eyepoint design of binocular tube ensures fatigue-free observation.
- Zoom magnification controls, mounted on both sides of body, can be operated effortlessly.
- Built-in counterbalance mechanism allows quick, smooth focusing, even when heavy photomicrographic equipment is attached.

Optical system	Galileian type Zoom stereo microscope
Zoom range	0.85x-8.5x (zoom ratio 10), click stop equipped (releasable)
Total Mag. range	3.5x-420x
Working distance	198 mm (with DFPL 0.5x)-39mm (with DFPL 2x)
Observation tube	Binocular (F.N. 24), 45° inclination
Illumination base	1. SZH-ILL-C: 6V20W halogen transmitted light base 2. SZH-ILLB: 6V20W halogen Koehler illumination transmitted light base 3. SZH-ILLD: 6V20W halogen brightfield/darkfield transmitted light base 4. SZH-ILLC: 12V50W coaxial incident light illuminator
Objectives	PLAPO 1x, PLACH 0.5x, 0.75x, 1x, 1.5x, 2x
Eyepieces	10x (F.N. 24), 15x (F.N. 16), 20x (F.N. 12), 30x (F.N. 6.5)
Focusing	Coaxial coarse & fine focus
Accessories	Photo, video tube, drawing attachment etc., mechanical stage universal arm stand, simple polarizing attachment, etc.

*Please refer to SZH10 catalog for further details

SZ Series

ZOOM STEREO MICROSCOPES SZ11/SZ60/SZ40/SZ30

The SZ Series high cost-performance microscopes are ideal for biological research that demands higher-precision observation, offering high magnification, superb resolution and long working distance. This series employs newly designed Greenough optics, based on MTF (Modulation Transfer Function) analysis, for improved image flatness and contrast. A choice of cost-effective microscope bodies is available including a built-in coaxial vertical illuminator version, as well as various types of accessories such as a trinocular observation tube.

SZ11

This series offers an extended zoom range to provide total magnification from 18x to 330x with a variety of functions.

SZ60

This series delivers sharp, high-contrast images and offers an excellent zoom range of 6.3:1 to assure images of high resolution over a wide magnification range.

SZ40

This series offers a long working distance of 110mm and an extended zoom range to deliver magnification from 0.67x to 5x.

SZ30

Offering excellent cost performance, this series provides a long working distance and large zoom range of 0.9x to 4x.



SZ1145 TRCTV



SZ6045 TRPT



SZ4045 CHI



SZ3080

	SZ11 Series	SZ60 Series	SZ40 Series	SZ30 Series
Optical system	Greenough type zoom stereo microscope			
Zoom range	1.8x-11x (Ratio 6.1)	1x-6.3x (Ratio 6.3)	0.67x-4x (Ratio 6)	0.9x-14x (Ratio 4.4)
Total mag. range	18x-330x	10x-189x	6.7x-120x	9x-120x
Working distance	73mm (63mm CHI)	100mm (90mm CHI)	110mm (100mm CHI)	100mm
Observation tube angle	45°	45°	45°/60°	60°
Observation tube	1. Binocular 2. Binocular with coaxial stand illuminator (CHI type) 3. Trinocular with photo tube (TRPT type) 4. Trinocular with video tube (TRCTV type)			Binocular

*Please refer to SZ Series catalog for further details

SD/SF Series STEREO MICROSCOPES



The SD/SF compact stereo microscope series features Greenough optics. The long 110mm working distance and increased focal depth combine to make these microscopes perfect for all applications from biological research to training/educational use.

	SD	SF
Optical system	Greenough type stereo microscope	
Magnification	1x & 3x (switchable)	2x (SF20 Series) 1x (SF10 Series)
Working distance	110mm	
Observation tube angle	45°/60°	45°/60°

*Please refer to SD/SF catalog for further details

JM4045/JM-Tr DARKFIELD STEREO MICROSCOPES



These microscopes feature a built-in reflector and bowl-shaped frost board to allow bright and soft illumination. The unique substage illuminator not only assures oblique illumination from any angle, but also employs a user-friendly focal adjustment. The combination of transmitted light, oblique illumination and darkfield microscopy ensures the most effective illumination for each specimen type.

	JM4045	JM-Tr
Type	Darkfield zoom stereo microscope	
Magnification change	Zoom 0.67x-4x (Ratio 6)	5-step turret
Total magnification	6.7x-80x	6.3x-80x
Working distance	110mm	90mm
Illuminator	Built-in 20W tungsten transmitted illuminator with brightfield/darkfield selector switch and 12W tungsten epi-illuminator, built-on swivel-joint arm with focus adjustment	

VE-31/VE-32 STEREO MICROSCOPES



Suitable for a wide range of lab applications as well as educational use, the VE-31 and VE-32 redefine standards for stereo microscopes. These models are exceptionally compact and lightweight, yet answer the demands of most applications with a range of functions including interpupillary distance adjustment.

	VE31	VE32
Total magnification	20x	40x
Working distance	62mm	
Other features	Diopter adjustment (±5 diopters) Interpupillary distance adjustment Equipped with plastic storage case	

Accessories for SZH10/SZ

SZ-STU1

Universal stand type 1

This stand allows the microscope body to tilt during observation to thus expand the working area. The SZ-STU1 also exhibits operational versatility in anatomical and electrophysiological experimentation.

- For use with SZ-STB1 bonder arm.



SZ-STU2

Universal stand type 2

This versatile stand allows smooth adjustment of both arm angle and length. This stand is perfect for photomicrography and video mounting of large specimens.

- For use with SZ-STS arm.



LSGA

Epi-illuminator

This unit is directly mountable to the microscope and employs a 6V15W high-intensity halogen bulb. The lamp housing incorporates a built-in, heat-insulating filter designed to minimize the adverse effects of heat on the specimen.



SZ-STL

Large-size microscope stand

This large, sturdy stand allows attachment of photomicrographic equipment and a video camera. The SZ-STL is ideal for observation of large specimens.

- For use with SZ-STB1 bonder arm.



LGR

Fiber optics ring light

The LGR fiber optics ring light provides uniformly bright illumination with no shading to interrupt specimen observation. This cold light supply employs a 15V150W halogen bulb that is ideal for observation of heat-susceptible specimens.



LGW

Light guide with bifurcated fiber optics

This guide illuminates from any angle and position via a flexible arm. The use of a collector lens also increases light intensity at high magnification, while simplifying spot illumination.

PM30

AUTOMATIC PHOTOMICROGRAPHIC SYSTEM

The PM30 features the exclusive Super FL Auto mode to ensure foolproof photomicrography for fluorescence microscopy despite the extremely difficult parameters of this microscopy.

- Exposure modes: auto exposure (Super FL Auto, FL Auto, Auto), manual, time
- Measuring area: 0.1 % spot, 1% spot, 30% average
- Acceptable cameras: 35mm, 4" x 5" large format, 3-1/4" x 4-1/4" Polaroid
- Other functions: data imprinting, auto brecking (ABC), automatic ISO setting, reciprocity failure adjustment, RS-232C interface, large LCD display, data backup by internal memory, AE lock, multi-exposure, IC memory card (option), printer interface (option)

* Please refer to PM30/20 catalog for further details



PM20

AUTOMATIC PHOTOMICROGRAPHIC SYSTEM

The PM20 boasts normal Auto mode and a new FL Auto mode, which uses specially developed exposure adjustment to simplify intricate fluorescence photomicrography.

- Exposure modes: auto exposure (FL Auto, Auto), manual, time
- Measuring area: 1% spot, 30% average • acceptable cameras: 35mm, 4" x 5" large format, 3-1/4" x 4-1/4" Polaroid
- Other functions: auto brecking (ABC), automatic ISO setting, reciprocity failure adjustment, data backup by internal memory, AE lock, multi-exposure, LCD display, data imprinting (option)

* Please refer to PM30/20 catalog for further details



PM-10AK3

SEMI-AUTOMATIC PHOTOMICROGRAPHIC SYSTEM

The PM-10AK3 features automatic exposure control and automatic film-winding capability and boasts simple operation.

- Exposure modes: auto exposure, time
- Measuring area: 30% average
- Acceptable cameras: 35mm, 4" x 5" large format, 3-1/4" x 4-1/4" Polaroid
- Other functions: auto winding, rewinding, loading (with automatic camera back)



PM-10M3

MANUAL PHOTOMICROGRAPHIC SYSTEM

A 35mm camera is accommodated as well as various large-format cameras with the attachment mounted. By simply changing the light path, the PM-10M3 offers easy focal adjustment in dark specimen observation such as darkfield or polarized light microscopy. Attaching the EMM-7 photographic exposure meter to the exposure body also enables exposure and interference contrast temperature measurement to be performed easily and accurately.



EMM-7



U-VPT

VIDEO CAMERA-INTEGRATED PHOTOTUBE

The U-VPT is a new phototube integrating a color video camera. A photomicrographic attachment or second video camera can also be mounted together with the U-VPT, which speeds and simplifies light path switch-over with the touch of a lever.



VIDEO ADAPTERS

Olympus provides a variety of video adapters in place of the detachable vertical tube to allow direct mounting of most video cameras and deliver the full advantages of UIS optics.



UIS series objectives

Universal objectives



UPLAPO series

Top-performance universal Plan Apochromat objectives, featuring an unsurpassed high N.A., deliver the best resolution, contrast and field flatness for any microscopic technique.



UPLFL series

These affordable Semi-Apochromat universal objectives deliver superb resolution, contrast and flatness for any microscopic technique.



UPLFL-P series

These Strain-free Semi-Apochromat universal objectives reduce internal strain to an absolute minimum and are best suited for polarizing and Nomarski DIC microscopies.

Brightfield objectives



PLAPO series

These Plan Apochromat objectives keep chromatic aberration down to an absolute minimum and deliver the best resolution and contrast for brightfield microscopy and photomicroscopy.



PL series

These cost-effective Achromat objectives ensure field flatness up to F.N. 22 and are widely used in research, educational and routine work applications.



ACH series

These economically priced objectives maintain high resolution in the center field of view and are suitable for routine work, educational and training purposes.

Objectives for special purpose



UPLFL-PH series

The newly designed phase annuli reduce flare and halo to a minimum and ensure high resolution and contrast for unstained specimens, i.e. living cells and microorganisms.



No cover objectives

These no cover objectives are specially designed for microscopy without a cover slip such as for blood smear specimens.



UAPO/340 series

These objectives feature a highest transmission of 340nm wavelength light, ensuring maximum performance in fluorescence microscopy through UV excitation including Ca^{2+} photometry.

Objectives for inverted microscopes



LCPLFL-PH series

These objectives are exclusively designed for culture specimens. Thanks to the correction cap method, an excellent phase-contrast image is assured regardless of the thickness and material of vessel.



LCPLFL series

These Semi-Apochromat objectives are dedicated for tissue culture and offer excellent contrast and resolution in brightfield, Nomarski DIC and fluorescence observations.



LCACH series

These Achromat phase-contrast objectives are designed for cell culture observations and are best suited for various clinical examinations and cell testing.

Objectives for upright microscopes

Objectives	Item	Numerical Aperture	Working Distance	Cover Glass Thickness	Remarks
Universal Plan Apochromat	UPLAPO4x	0.16	13.00	—	
	UPLAPO10x	0.40	3.10	0.17	
	UPLAPO20x	0.70	0.65	0.17	
	UPLAPO20xO	0.8	0.19	—	Oil
	UPLAPO40x	0.85	0.20	0.11—0.23	C.C.
	UPLAPO40xOI	0.5—1.00	0.12	—	Oil, Iris
	UPLAPO60x	0.9	0.20	0.11—0.23	C.C.
Plan Apochromat	PLAPO1.25x	0.04	5.1	—	
	PLAPO2x	0.08	6.20	—	
	PLAPO40x	0.95	0.13	0.11—0.23	C.C.
	PLAPO60xO	1.40	0.10	0.17	Oil
	PLAPO100xO	1.40	0.10	0.17	Oil
Universal Plan Semi-Apochromat	UPLFL4x	0.13	17.00	—	
	UPLFL10x	0.30	10.00	—	
	UPLFL20x	0.50	1.60	0.17	
	UPLFL40x	0.75	0.51	0.17	
	UPLFL60xOI	0.65—1.25	0.10	0.17	Oil, Iris
	UPLFL100xO	1.30	0.10	0.17	Oil
Plan Achromat	UPLFL100xOI	0.60—1.30	0.10	0.17	Oil, Iris
	PLAN2x	0.05	5.0	—	
	PLAN4x	0.10	22.00	—	
	PLAN10x	0.25	10.50	—	
	PLAN20x	0.40	1.20	0.17	
	PLAN40x	0.65	0.56	0.17	
	PLAN50xOI	0.50—0.90	0.20	—	Oil, Iris
Achromat	PLAN100xO	1.25	0.15	—	Oil
	ACH10x	0.25	6.10	—	
	ACH20x	0.40	3.00	0.17	
	ACH40x	0.65	0.45	0.17	
	ACH60x	0.8	0.15	0.17	
	ACH100xO	1.25	0.13	—	Oil
No Cover	ACH100xOI	0.55—1.25	0.13	—	Oil, Iris
	UMPLFL40x	0.75	0.63	0	
	UMPLFL50x	0.8	0.66	0	
	UMPLFL100x	0.95	0.31	0	
	MPLAPO50x	0.95	0.3	0	
	MPLAPO60x	0.9	0.40	0	
	MPLAPO100xO	1.40	0.1	0	Oil

Phase Objectives	Item	Numerical Aperture	Working Distance	Cover Glass Thickness	Remarks
Universal Plan Apochromat	UPLAPO10xPH	0.40	3.10	0.17	
	UPLAPO20xPH	0.70	0.65	0.17	
	UPLAPO40xOPH	0.50—1.00	0.12	—	Oil
	UPLAPO60xOPH	1.40	0.10	0.17	Oil
	UPLAPO100xOPH	0.50—1.35	0.10	0.17	Oil
Plan Semi-Apochromat	UPLFL4xPH	0.13	17.0	—	
	UPLFL10xPH	0.30	10.00	—	
	UPLFL20xPH	0.50	1.60	0.17	
	UPLFL40xPH	0.75	0.51	0.17	
Plan Achromat	UPLFL60xOIPH	0.65—1.25	0.10	0.17	Oil, Iris
	UPLFL100xOPH	1.30	0.10	0.17	Oil
	PLAN10xPH	0.25	10.50	—	
Achromat	PLAN20xPH	0.40	1.20	0.17	
	PLAN40xPH	0.65	0.56	0.17	
	PLAN100xOPH	1.25	0.15	—	Oil
Achromat	ACH10xPH	0.25	6.10	—	
	ACH20xPH	0.40	3.00	0.17	
	ACH40xPH	0.65	0.45	0.17	
	ACH100xOPH	1.25	0.13	—	Oil

Polarized Objectives	Item	Numerical Aperture	Working Distance	Cover Glass Thickness	Remarks
Plan Semi-Achromat	UPLFL4xP	0.13	13.0	—	
	UPLFL10xP	0.30	3.10	—	
	UPLFL20xP	0.50	1.60	0.17	
	UPLFL40xP	0.75	0.51	0.17	
	UPLFL100xOP	1.30	0.10	—	Oil
Plan Achromat	PLAN4xP	0.10	22.0	—	
Achromat	ACH10xP	0.25	6.10	—	
	ACH20xP	0.40	3.00	0.17	
	ACH40xP	0.65	0.45	0.17	
	ACH100xOP	1.25	0.13	—	Oil

Water Immersion Objectives	Item	Numerical Aperture	Working Distance	Cover Glass Thickness	Remarks
Universal Plan Semi-Achromat	UMPLFL10xW	0.3	3.3	—	
	UMPLFL20xW	0.5	3.3	—	
	LUMPLFL40xW	0.8	3.3	—	
	LUMPLFL60xW	0.9	2.0	—	
	UPLAPO60xW/PSF	1.2	0.25	0.13—0.21	
	LUMPLFL40xW/IR	0.8	3.3	—	IR
	LUMPLFL60xW/IR	0.9	2.0	—	IR

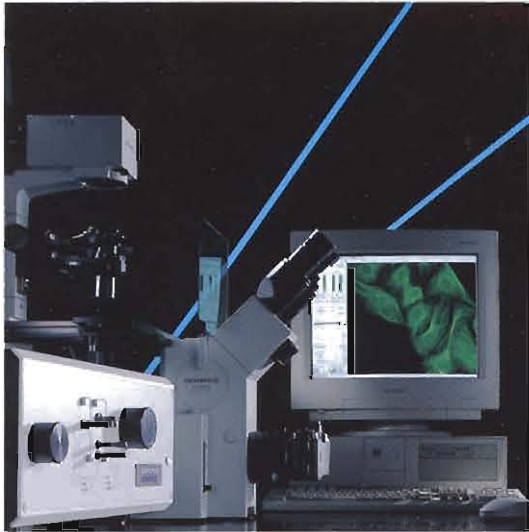
Objectives for inverted microscopes

Phase Objectives	Item	Numerical Aperture	Working Distance	Cover Glass Thickness	Remarks
C Achromat	CPL10xPH	0.25	9.8	1	
	LCACH20xPH	0.40	3.2	1	
	LCACH40xPH	0.55	1.2	1	
C Plan Semi-Apochromat phase	UPLFL4xPH	0.13	17	—	
	CPLFL10xPH	0.30	9.5	1	
	UPLFL10xPH	0.30	10	—	
	LCPLFL20xPH	0.40	6.9*	0—1 0.6—1.6 1.5—2.5	
	LCPLFL40xPH	0.60	2.6*	0—1 0.6—1.6 1.5—2.5	C.C.
	LCPLFL60xPH	0.70	1.7*	0—1 0.6—1.6 1.5—2.5	C.C.

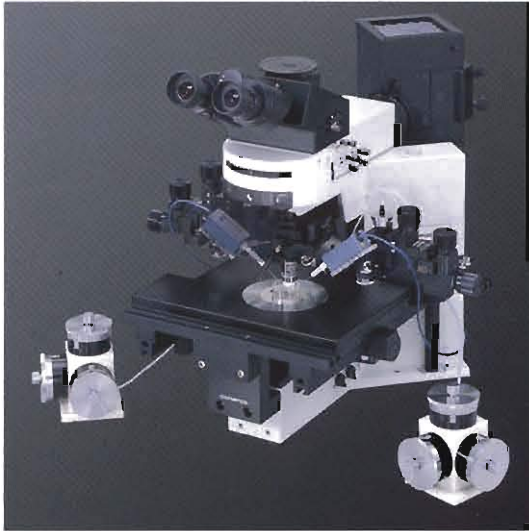
Phase Objectives	Item	Numerical Aperture	Working Distance	Cover Glass Thickness	Remarks
C Plan Semi-Apochromat	UPLFL10x	0.30	10	—	
	LCPLFL20x	0.40	6.9*	0—1 0.7—1.7 1.5—2.5	
	LCPLFL40x	0.60	2.6*	0—1 0.7—1.7 1.5—2.5	C.C.
UAPO340 Series	LCPLFL60x	0.70	1.7*	0—1 0.7—1.7 1.5—2.5	C.C.
	UPLAPO10x	0.40	3.1	—	C.C.
	UAPO20x/340	0.75	0.55	0.17	
	UAPO40x/340	0.90	0.20	0.11—0.23	
	UAPO40xOI/340	0.65—1.35	0.10	0.17	Oil, Iris

*when 1mm thick vessel is used.

Laser Scanning Microscopy



Microscopic photometry



Patch clamping



Telepathology

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

Olympus business areas



Medical and health-care area



Imaging and information area



Industrial applications area

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