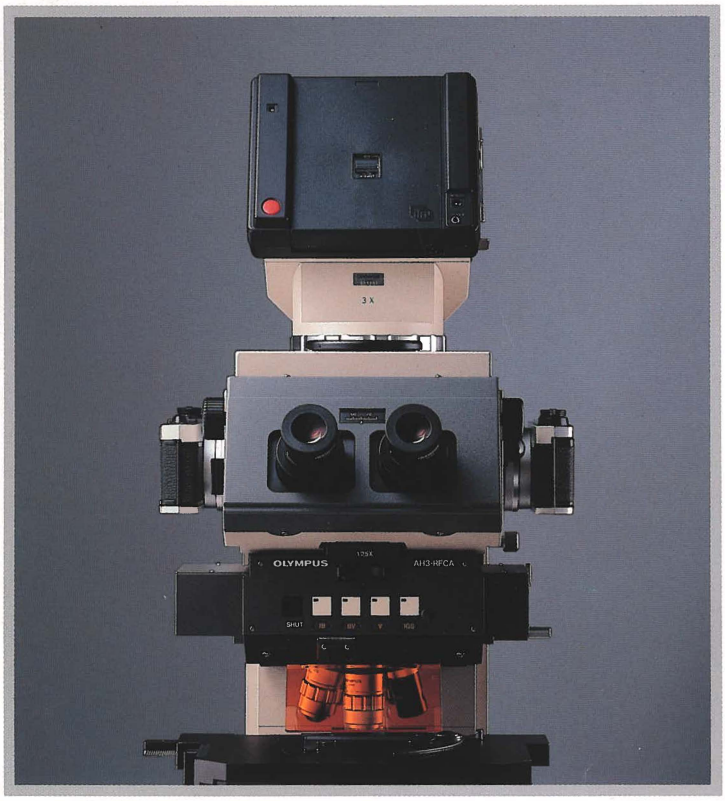
OLYMPUS®

AHBS3/AHBT3

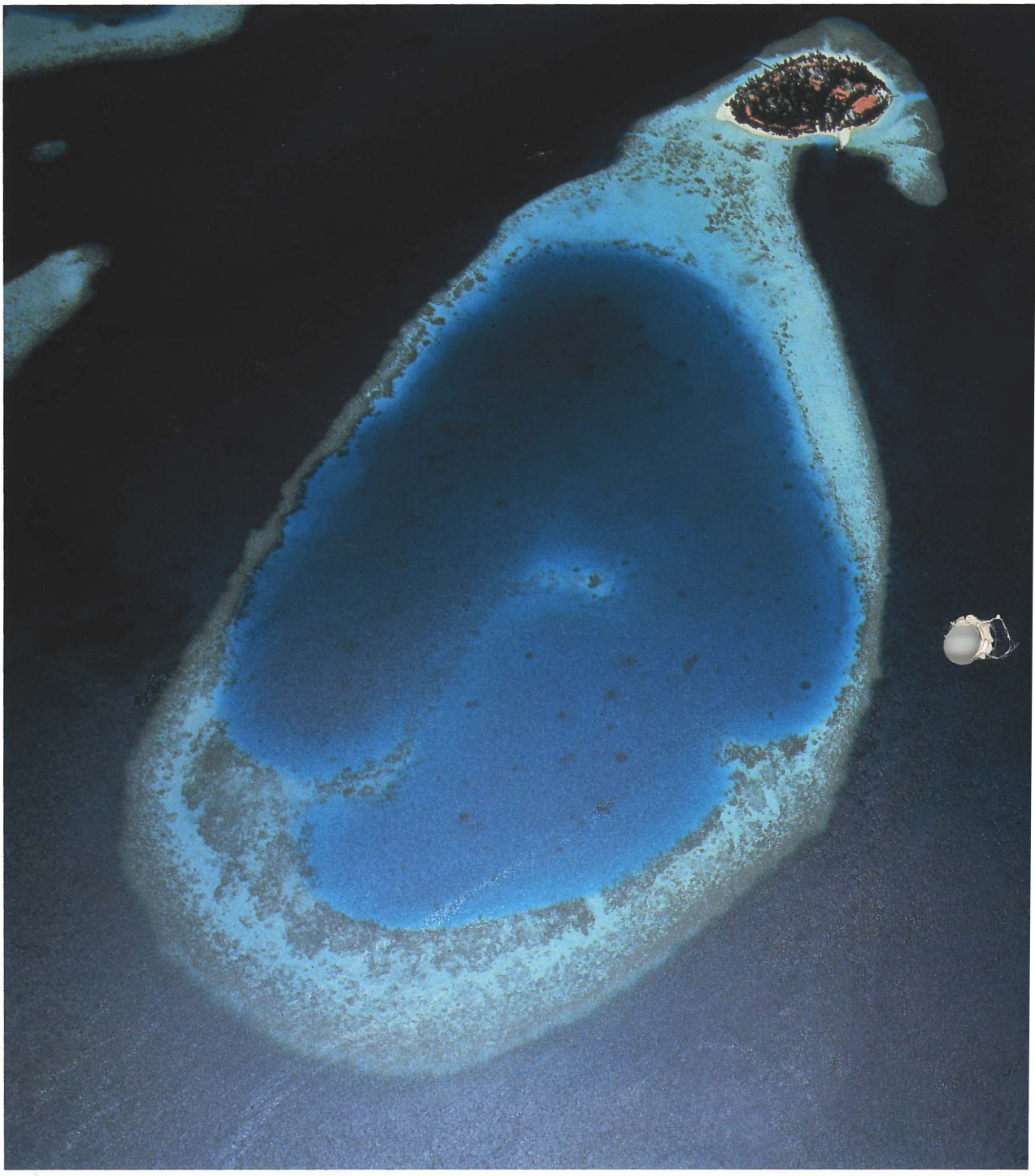
Vanox Research Photomicrographic Microscope System
For Life Science Version

NEW PRODUCT

NEW VANOX



Automatic Functions Make a Difference.



Olympus has long strived to produce microscopes suited to the most stringent requirements for work in research fields which have become increasingly diverse and complex. We also engineer microscopes capable of delivering maximum usefulness, not only serving as eyes for the researcher, but also to assist their minds. And today, Olympus has merged its never-ending R&D efforts and advanced optoelectronic technology to introduce yet another revolutionary microscope —the AHBS3/AHBT3. Utilizing sequence programming for observation and photomicrographic operations as well as image analysis, the AHBS3/AHBT3 features a virtually unlimited expandability to handle automatic inspections and remote-controlled operations. Reducing operator fatigue significantly, this innovative series will steadily broaden your research applications.


OLYMPUS
Ikegami
OLYMPUS
VANOX
AHBS3
Ikegami
TM-1068M
COLOR MONITOR
POWER
DEGAUSS
OLYMPUS
AH-3
OLYMPUS

A Choice of Two Versions—Automatic or Semi-Automatic

The fastest possible microscopic procedures stem from exceptionally easy operation.

The AHBS3/AHBT3 comes in two types—automatic and semiautomatic. Both versions deliver uniform Koehler illumination at low to high magnification powers, since the condenser automatically switches over when the objective magnification power is changed. Moreover, the "all-in-one" design incorporates all of the standard photomicrographic functions. Twelve different combinations are available to choose from depending on the research application. These include the reflected light fluorescence microscope system, enabling simultaneous observation of 4 reflected light fluorescence wavelengths, and transmitted light microscopic techniques.

Automatic Version

AHBS3

Using the control box, the AHBS3 provides automatic control over many functions with the simple touch of a button. This advanced photomicrographic system also permits control through an external computer.

- Once an objective power is selected, the condenser changes, and light adjustment with an ND filter, and aperture and field iris diaphragm adjustments, are carried out automatically. (Manual adjustment is also possible).
- Auto focus adjustment is available for 1X through 40X objective powers. Focusing at higher magnification powers is also a single-button operation. (Manual adjustment is also possible.)
  - Auto focus is possible regardless of the objective-to-specimen distance.
- One-touch selection of the camera back is possible from among 35mm right, left and large-format camera backs, and a TV camera.
- Photo eyepieces are selectable via a motorized turret. (Turret incorporates 2.5X, 3.3X, 4X and 5X photo eyepieces.)

AHBS3 + AH3-RFC Reflected Light Fluorescence Microscope System

Equipped with a motorized quintuple reflected light fluorescence nosepiece, the AHBS3 + AH3-RFC allows versatile combination of observations by simultaneously accepting four cube units. Except for the auto focus function, the AHBS3 + AH3-RFC incorporates the same functions as the AHBS3 microscope. When performing reflected light fluorescence microscopy only, the automatic condenser changeover and light adjustment features can be disengaged.

Semi-Automatic Version

AHBT3

- When an objective is selected, automatic changeover of condensers is activated. The operator can manually adjust the aperture and field iris diaphragms. 11 levels of light adjustment are possible through the use of ND filters.
- Focusing magnifier is built in to facilitate focusing at low magnifications.
- A camera back can be selected simply by touching the button on the microscope side panel.
- Photo eyepiece changeover is done by manually rotating the turret.

AHBT3 + AH3-RFC Reflected Light Fluorescence Microscope System

The AHBT3 + AH3-RFC is a semi-automatic microscope system with a reflected light fluorescence revolving nosepiece fitted to the AHBT3 microscope. Motorized changeover of cube units and objective powers is provided.





AHBS3



AHBT3



AHBS3 + AH3-RFC

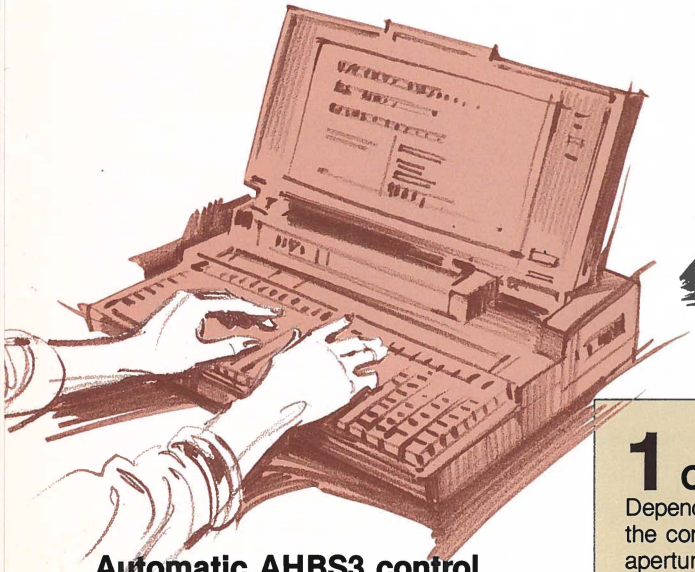


AHBT3 + AH3-RFC

Easy Maneuverability Using Remote Control Capability.

User-Programmable Parameters and remote-controllable automatic functions for added flexibility.

The AHBS3/AHBT3 has automated as many functions as possible, covering everything from observation to photomicrography. These functions have been further refined through the use of an auto control system. This system provides computer control over numerous automated functions incorporated in the AHBS3, thus allowing fully automatic photomicrography without ever touching the microscope. This makes it possible to upgrade the microscope to a completely automatic inspection system.



Automatic Control

Automatic AHBS3 control through a link to a host computer.

With the AH3-RS232C interface, a host computer can now control the microscope and provide microscope light path data. This feature allows the development of a remote-control system by programming an operational sequence.

- Compatible computers: NEC PC9801 Series, IBM-PC/AT



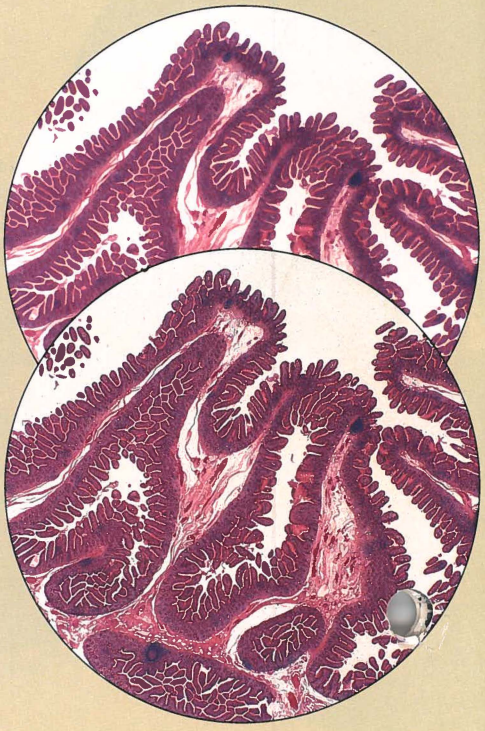
1 Objective changeover

Depending on the selected objective power, the condenser is switched, and field and aperture iris diaphragms as well as light level are adjusted automatically. It is also possible to manually adjust the light level, field and aperture iris diaphragms in order to tailor the unit to each operator's specific preference.



2 Focusing

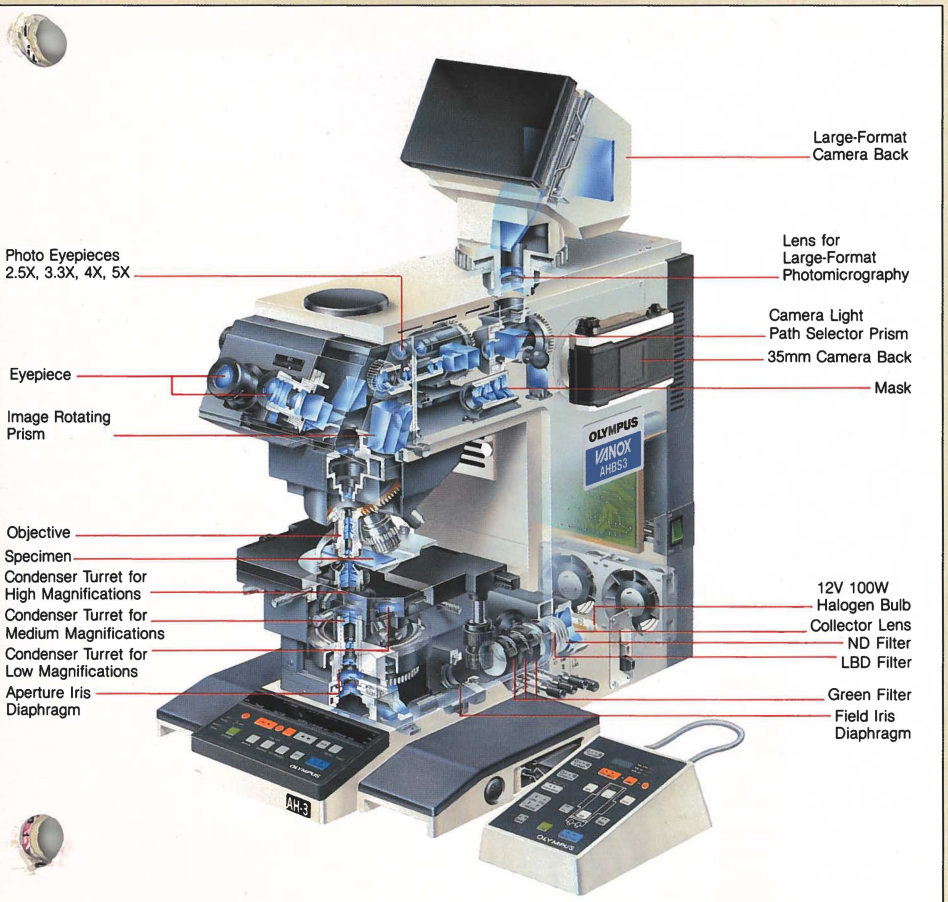
Auto focus is provided for 1X through 40X objectives (S Plan and S Plan Apo series). Stage height is adjustable in minimum increments of 0.5μm, facilitating accurate focusing monitor, for at a-glance confirmation.



via Host Computer



With AH3-RS232C Interface



3 Camera back selection

With a touch of a button, a camera back is selectable from among large-format and 35mm right and left camera backs. Switching to a TV camera is also possible.

4 Photo eyepiece magnification changeover

Photographic magnification power is determined by selecting any photo eyepiece from among the built-in 2.5X, 3.3X, 4X and 5X photo eyepieces.

5 Photomicrography

The AHBS3 is capable of sending a signal to release the camera shutter. When ND filters are used, an automatic light adjustment function maintains the color temperature at a constant level, even when the brightness is changed to meet the specimen conditions. This eliminates the need for color temperature adjustment. The objective and photo eyepiece magnifications are displayed on the computer monitor, for confirmation at a glance.

Automatic Cube Unit and Objective Changeover Plus Slide-in Attachments.



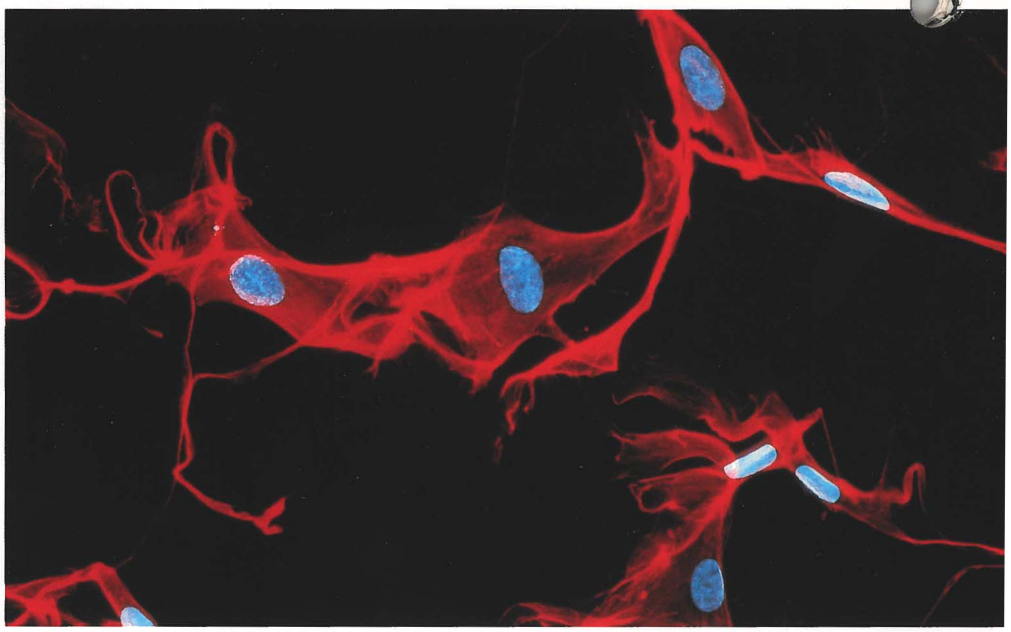
Flexible combinations and easy selection of various observation techniques enhance functions for a broader research scope.

Accepting up to four cube units simultaneously, the new AH3-RFC reflected light fluorescence revolving nosepiece allows a combination of microscopic techniques such as simultaneous reflected light fluorescence and transmitted light brightfield observations or, reflected light fluorescence and transmitted light Nomarski differential interference observations. The cube units and objective powers are changed with the touch of a few buttons. And an easy slide-in Nomarski prism, analyzer and polarizer speed up the switching of microscopy methods.

Flexible combination of various excitation and observation methods.
Cube units come in one type for independent brightfield, transmitted light Nomarski DIC and transmitted light phasecontrast observations, another type for IGS and six types for reflected light fluorescence. Four cube units are simultaneously mountable to allow many combinations of excitation and observation methods, making the AH3-RFC a powerful observation tool for double stained specimens. The operator just needs to press a few buttons to change the cube and the objective power.

Six excitation methods available to ensure a sharp image even for weakly fluorescing specimens.
The new optical system and bright illumination system are the key to AH3-RFC's sharp observation images. Provided are ultraviolet (U), violet (V), blue (B) and green (G) excitations, blue-violet (BV) excitations specially designed for quinacrine mustard stain and interference-blue (B) excitation for FITC stain. The superior spectral characteristics of IB excitation give a brighter and higher contrast FITC stained specimen image that conventional B excitation.

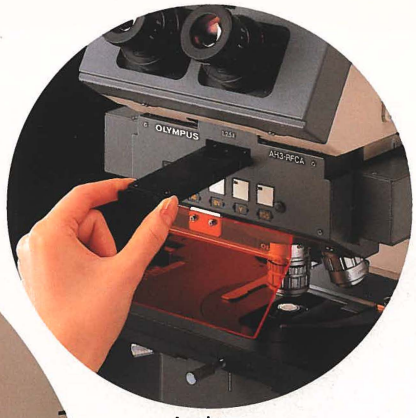




Simultaneous reflected light fluorescence and transmitted light Nomarski DIC observations.
Researchers may obtain simultaneous observations of the entire specimen image and a specific fluorescent portion. Nomarski prism, analyzer, polarizer, and phase-contrast ring slit unit can be quickly slid in and out of the revolving nosepiece or condenser to go from combined observations to single microscopy. Observation of immuno-gold stained (IGS) specimens is also possible.

Adjustable excitation band and transmitted light wavelength.
Each fluorescence cube unit accepts a supplementary exciter filter and barrier filter for respectively adjusting the excitation light band and blocking unnecessary fluorescence. Both filters are easily replaced.

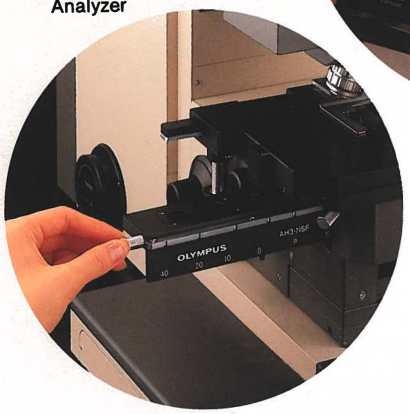
Perfect UV protection during changeover of excitation methods.
The cube units totally exclude ultraviolet rays during the excitation method change. Exciting light intensity is variable between 100% and 25% and there is a manual adjustment for the field iris diaphragm and centering pins for the aperture iris diaphragm. Together, they protect the specimen from deterioration and excessive heat, assuring optimum photomicrography conditions.



Analyzer



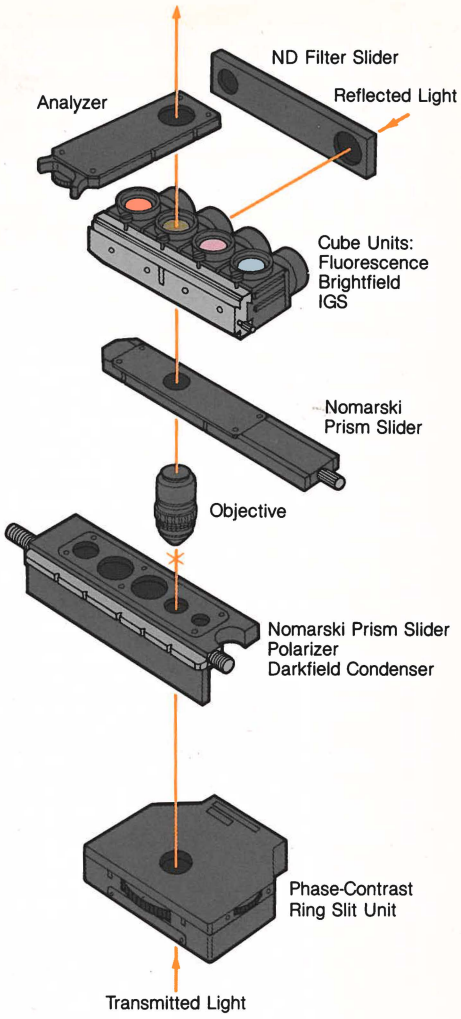
Phase-Contrast
Ring Slit Unit



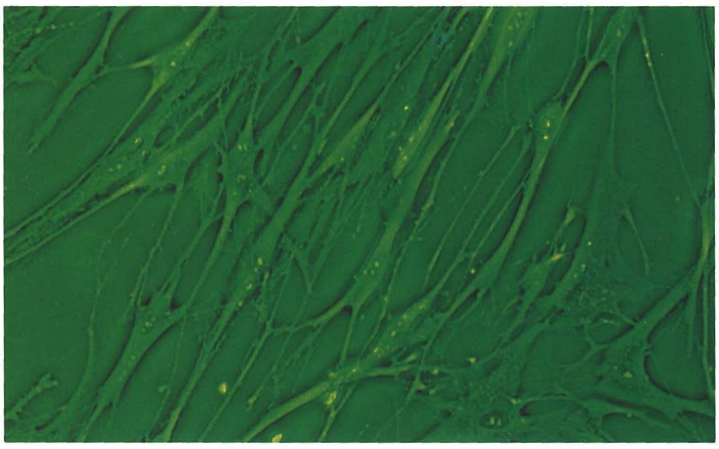
Nomarski Prism Slider

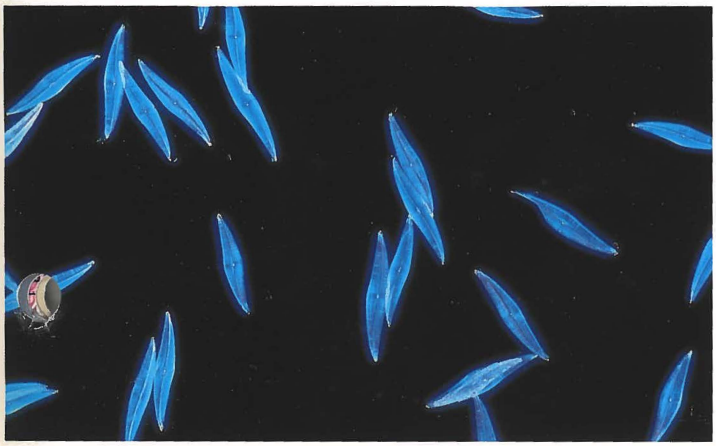


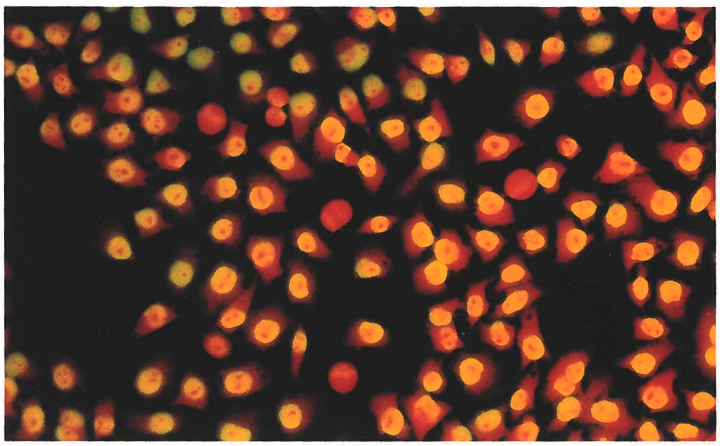
Cube Unit Changeover







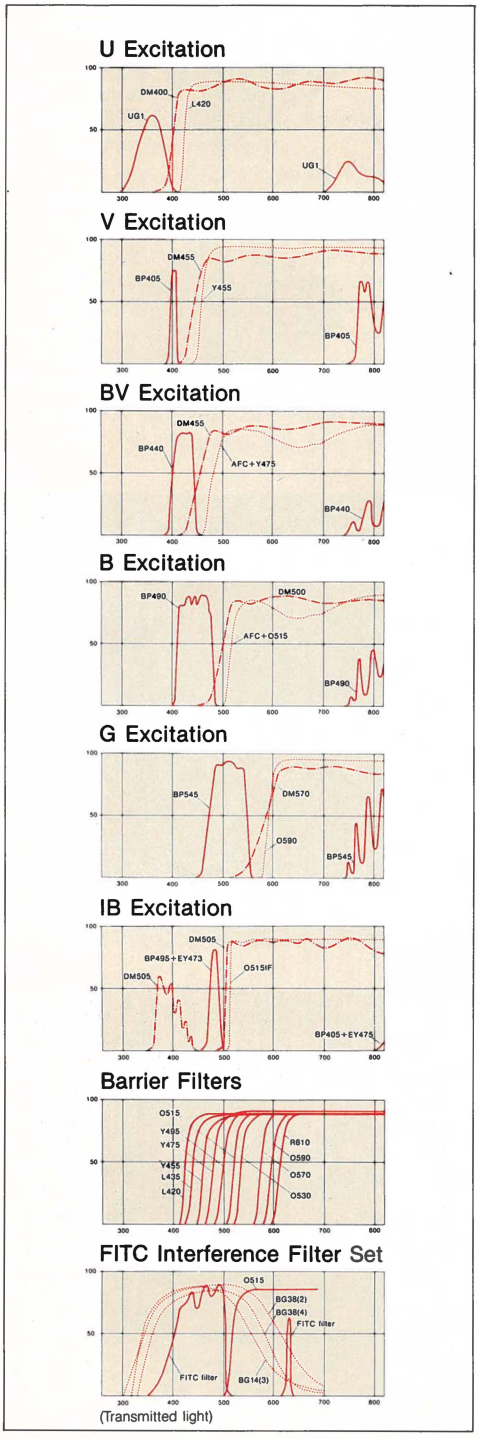




Universal observation attainable by mounting phase-contrast and Nomarski DIC units to the reflected light fluorescence attachment.

AH3-RFC Reflected Light Fluorescence Attachment

The AH3-RFC employs a 200W ultra-high pressure mercury burner for its light source, allowing observation of a sharp fluorescence image with a high-energy excitation light. When used with the phase-contrast or Nomarski DIC attachment, simultaneous observations can be made with different microscopic techniques. Four, combinations are available.



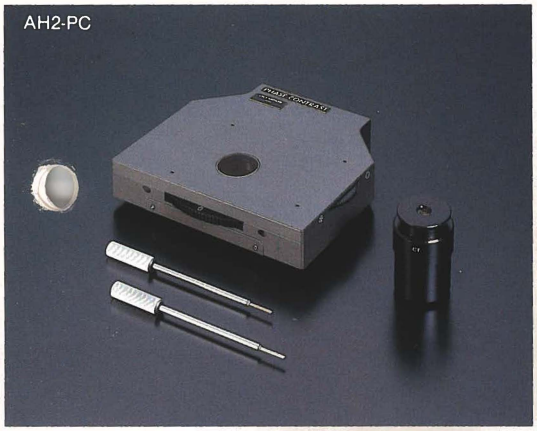
(Transmitted light)

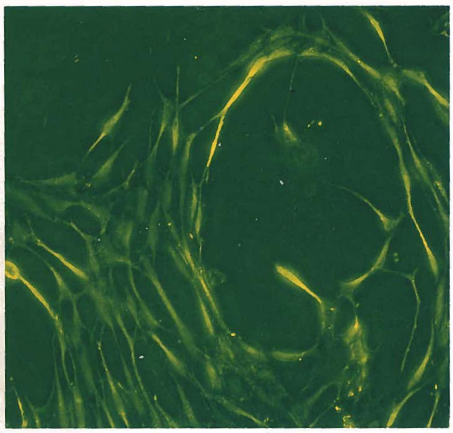


AH3-RFC Standard Outfit

Component		Model	AH3-RFC -1	-2	-3	-4
Fluorescence illuminator, including UV Protective Shield (A3-RFCA-CCV) ND filter (20ND25-W22) and Immersion Oil 50cc		AH3-RFCA	○	○	○	○
Fluorescence Lamp Hausing		AH2-LSRF	○	○	○	○
Power Supply		AH2-RFL-T	○	○	○	○
Mercury Burner (2 pcs.)		* HBU200W/2	○×2	○×2	○×2	○×2
Halogen Lamp Housing		AH2-LSRH				
Power Cord		UYCP	○	○	○	
Centering Screen		BH2-SGRF	○	○	○	
Dichroic Mirrors Assembly	U Excitation	BH2-DMU	○	○	○	○
	V Excitation	BH2-DMV		○		○
	BV Excitation	BH2-DMBV	○		○	
	B Excitation	BH2-DMB		○		○
	G Excitation	BH2-DMG	○	○	○	○
	IB Excitation	BH2-DMIB	○	·	○	
Half Mirror Cube		BH2-HMIGS				
Brightfield Cube		BH2-BF	○	○	○	○
Supplementary Exciting filter	B Excitation	20EY455-W22		○		○
	IB Excitation	20EY475-W22	○		○	
	G Excitation	20EO515-W22	○	○	○	○
		20EO530-W22	○	○	○	○
	BV Excitation	20EL420-W22	○		○	
Supplementary Barrier Filter	U Excitation	20L435-W22	○	○	○	○
		20Y455-W22	○	○	○	○
	V Excitation	20Y475-W22		○		○
	V, BV Excitation	20Y495-W22	○	○	○	○
		20O515-W22	○	○	○	○
	B, IB Excitation	20B460-W22	○	○	○	○
		20G520-W22	○		○	
		20O530-W22	○	○	○	○
		20O570-W22	○	○	○	○
		20O590-W22	○	○	○	○
	G Excitation	20R610-W22	○	○	○	○
Objective (for relfected light fluorescence)		DPLAPO10XUV	○	○	○	○
		DPLAPO20XUV/Dry	○	○	○	○
		DPLAPO40XUV/Dry Spring	○		○	
		DPLAPO100XUV/ Spring, Iris, Oil	○		○	
		DAPO40XUV/ Spring, Iris, Oil		○		
		DAPO100XUV/ Spring, Iris, Oil		○		
		DPLAPO40XUV-PL Spring, Iris, Oil				○
		DPLAPO100XUV-PL Spring, Iris, Oil				
Phase ring slit		AH2-RS				
Centering telescope		CT-30				○
Nomarski attachment AH3-NAS	Nomarski slider	AH3-NAF			○	
	Rotating analyzer	AH3-ANF			○	
	Nomarski slider	AH3-NSF			○	

*USH200MB Can be used as replacement.
The half mirror cube BH2-HMIGS is optional accessory and not included in any standard configurations.

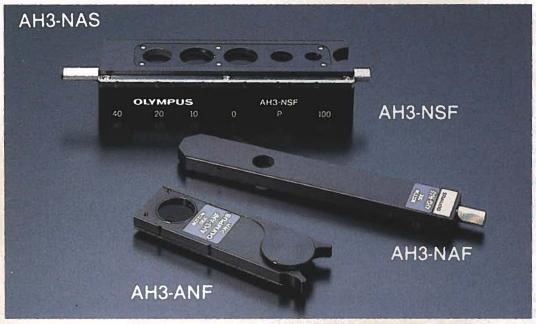


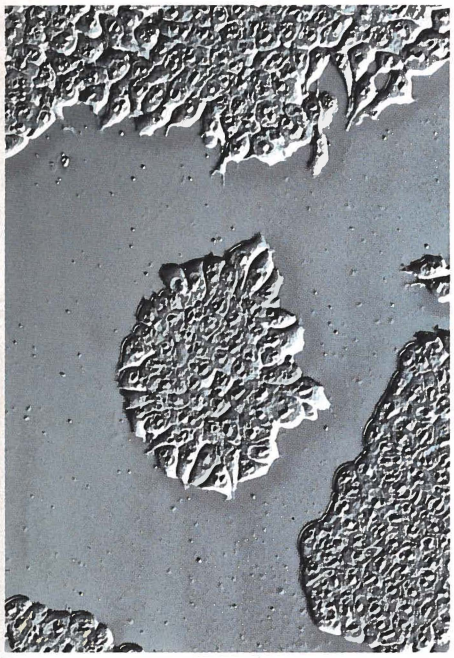


Transmitted Light Phase-Contrast Attachment, AH2-PC

Living organisms such as cells or micro-organisms can be observed without staining. Two types of contrast, negative and positive, are available Negative contrast is suitable for observing the shape and movement of an object, while positive contrast is indicated for observation of munite structural details of the objects. For each type of contrast, five objectives (4X, 10X, 20X, 40X, and 100X) are available.

DApoUVP and D Plan ApoUVPL series objectives are available for simultaneous observation of transmitted phasecontrast and reflected light fluorescence microscopy.





Nomarski DIC Attachments.

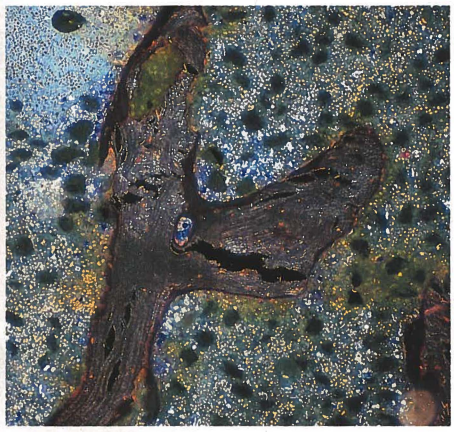
Nomarski DIC technique is used to observe unstained specimens, such as living cells and microorganisms as three-dimensional images under interference colors. The Nomarski slider is fitted with 10X, 20X, 40X and 100X (oil) Nomarski prisms, and a polarizer. An empty aperture is provided to allow the microscopic method to be changed while the slider remains attached to the condenser.

Two diffent DIC attachments are available to be used with the following objectives:

- AH3-NAS (AH3-NAF, AH3-NSF, AH3-ANF) is designed for use with DPlanApo10XUV, 20XUV (Dry), 40XUV (Dry), 100XUV (Oil)
- AH2-NAS (A2-NS, A2-NA) is designed for use with Splan 10X, 20X, 40X, 100X (Oil)







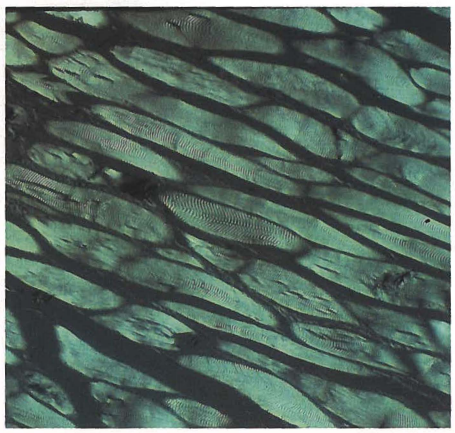
Simple Darkfield Condenser (Transmitted Light), AH2-KDC

The AH2-KDC allows darkfield observation in transmitted light through a simple slide-in operation.

Darkfield Condensers, AH2-DCD, AH2-DCW

Designed to deliver clear, darkfield images, the AH2-DCD is used with 10X—20X dry objectives, and the AH2-DCW with 40X—100X immersion objectives.





Simple Polarizing Attachments (Transmitted Light), AH2-KPO, AH3ANF

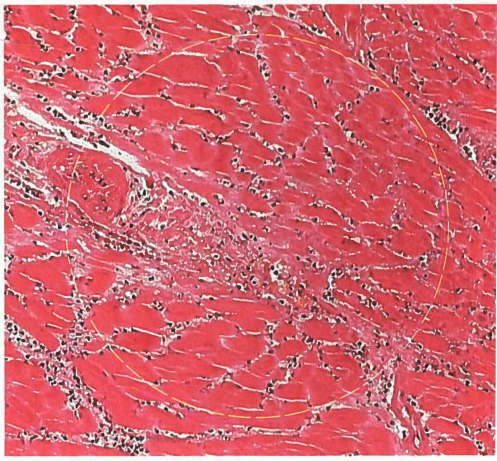
Polarizing microscopy can be accomplished quickly by sliding the AH2-KPO polarizer into the condenser and the AH3-ANF analyzer into the revolving nosepiece.

A Host of Sophisticated Photomicrographic Functions Including Automatic Exposure Measurement

All photomicrographic functions are built-in for faithful reproduction of observed images.

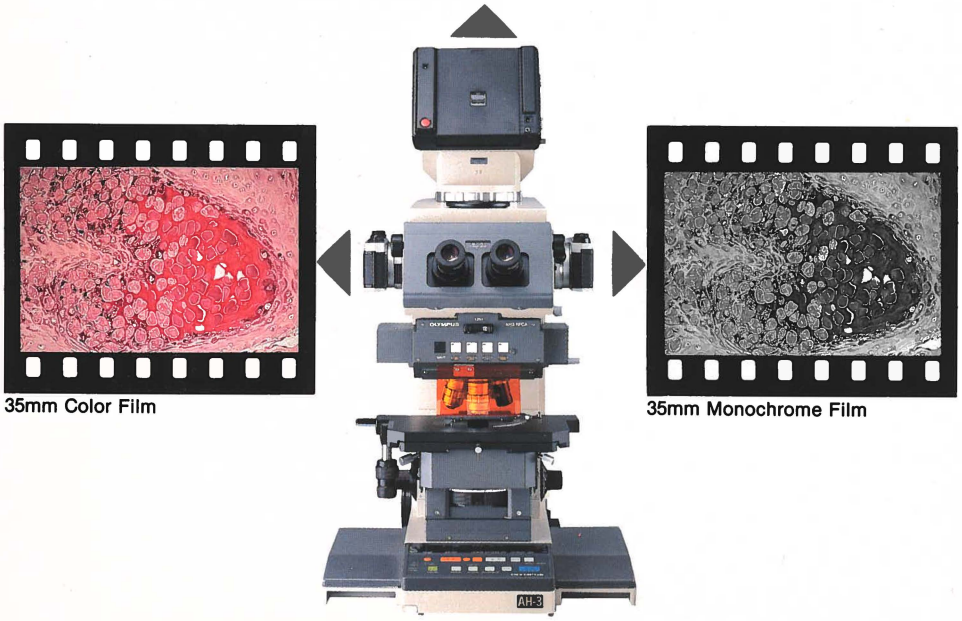
The innovative AHBS3/AHBT3 incorporates a fully automatic photomicrographic system, thus assuring that photographs are produced accurately and efficiently. The real-time lightmetering area can be chosen as 1% spot or a 30% integrated measurement. The built-in microcomputer stores various kinds of basic reciprocity law failure characteristics. Once the film characteristics are set, compensation for long exposure is made automatically. An illuminated digital panel indicates exposure time, ISO/ASA film speed and the camera back in use, for instant confirmation, even in dark rooms. Other convenient photomicrographic functions include multiple exposures, panorama photography, and half-frame photography. Moreover, automatic intermittent photography can also be controlled from an external computer.

30% Integrated Metering





Large-Format Film

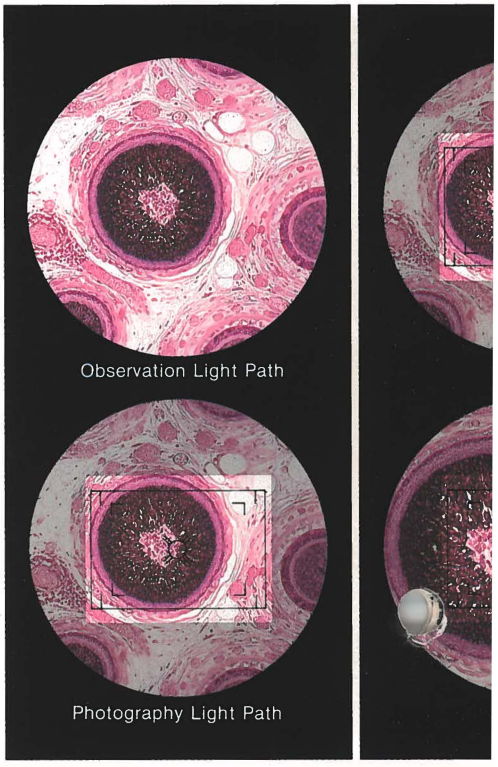


35mm Color Film

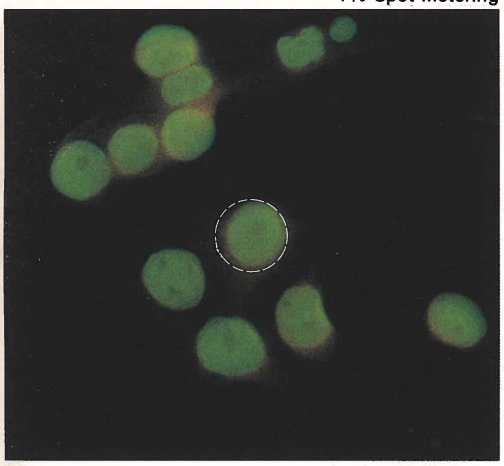
35mm Monochrome Film

Frequent camera changes unnecessary.
The microscope accommodates two 35mm camera backs and a largeformat camera back all at once, easily selected by the touch of a button.

Accurate photographic reproduction of viewing area
With the field of view extended to F.N. 26.5, clear, sharp images can be viewed out to the periphery of the field of view. Once a camera back is chosen, the light path shifts to photography automatically, the image frame comes into view and the light outside the frame is reduced. This SLR viewfinder provides at a glance indication of the photographic area.

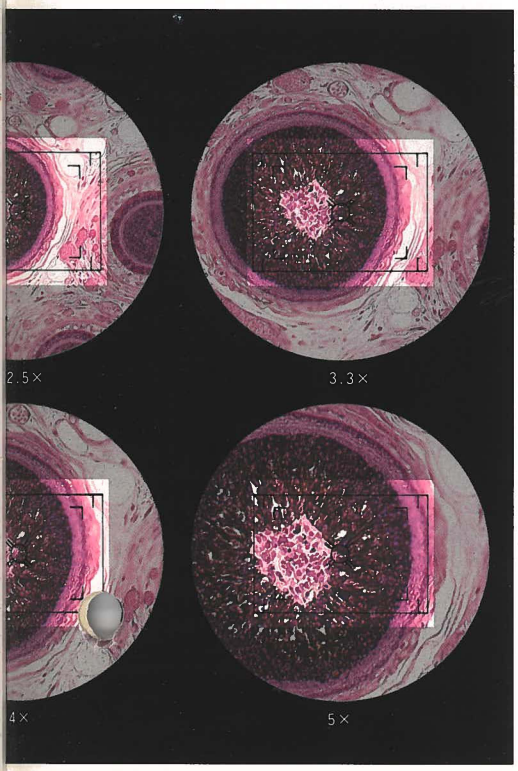


1% Spot Metering



Simplified framing.
Built-in 2.5X, 3.3X, 4X and 5X eyepieces are one-touch selectable, thus facilitating quick framing.

Easy-to-see digital display.
The camera back type, frame count, ISO/ASA film speed, film reciprocity failure compensation value, exposure adjustment value and exposure time (estimated time, remaining tim[illegible]d previous time) are displayed digi[illegible]. A safety lamp indicates whether or not the exposure time falls within the automatic exposure range.

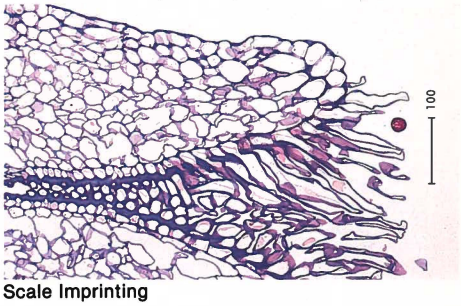


One-touch switching of metering area.
The exposure measurement area is switchable between a 30% integrated area and a 1% spot area, to match the type and distribution of the specimen as well as the purpose of the observation. Spot measurement area assures accurate photo results even for unevenly disfributed, dark or high-density specimens.

Simultaneous TV camera mounting.
In addition to three camera backs, a TV camera can also be mounted concurrently. This provides extra convenience through VTR recording of data, elapsed time documentation of living cells, image analysis and transmission.

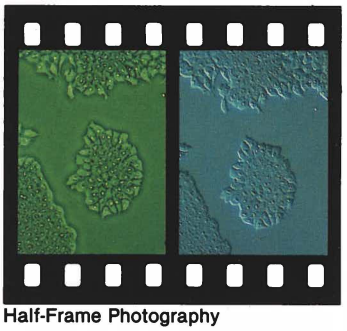


Scale imprinting capability.
A scale can be imprinted on the specimen image simply by sliding the optional AH2-SLM scale slider into the photography light path. Five different scales (10X, 20X, 40X, 50X and 100X) are provided to match the different objective powers.

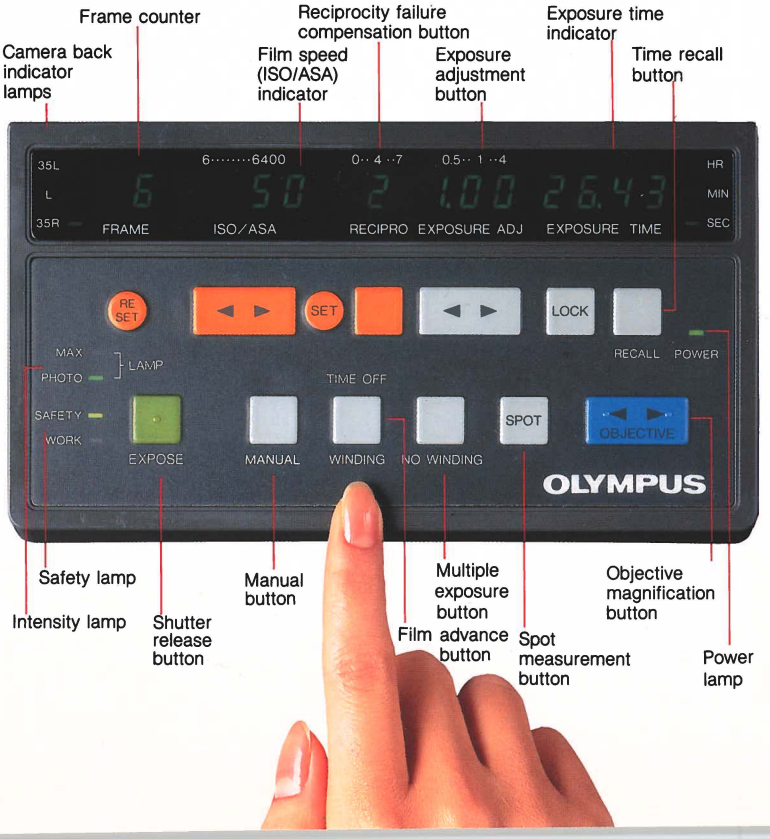


Scale Imprinting

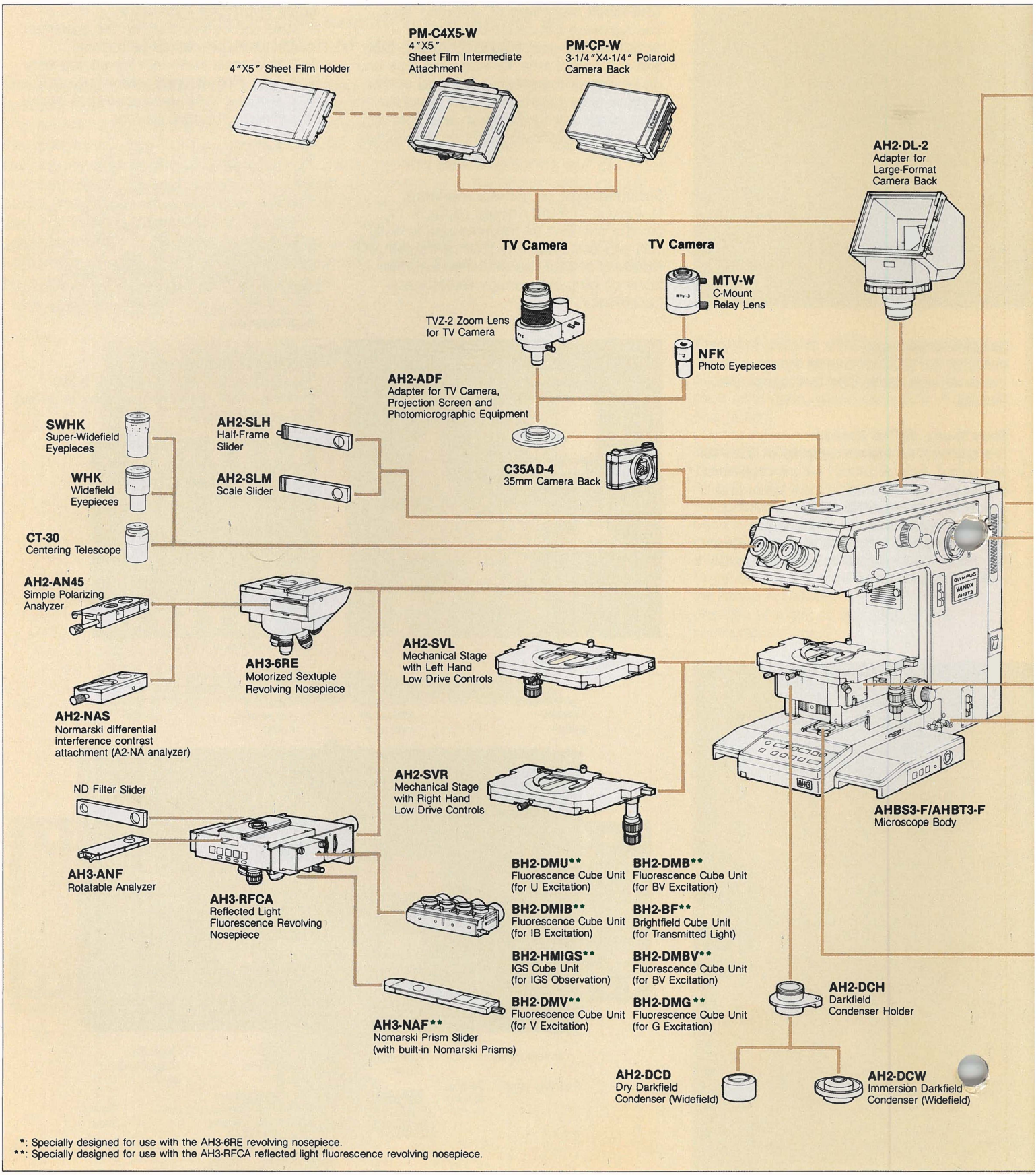
Half-frame photography.
The optional AH2-SLH half-frame slider allows two half-frame photographs to be put onto a single frame.



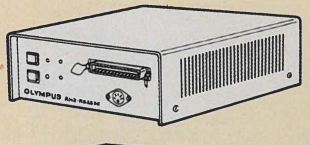
Half-Frame Photography



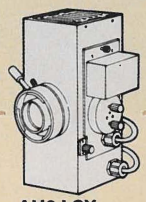
AHBS3/AHBT3 System Diagram



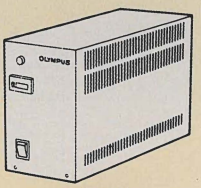
*: Specially designed for use with the AH3-6RE revolving nosepiece.
**: Specially designed for use with the AH3-RFCA reflected light fluorescence revolving nosepiece.



AH3-RS232C
RS232C Interface
(for AHBS3)

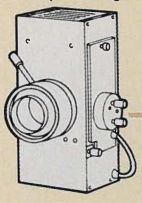


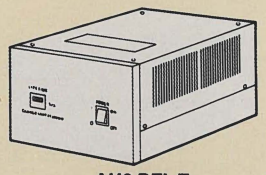
AH2-LSX
Xenon Lamp Housing



AH2-RX-T
Power Supply Unit

AH2-LSRF
Mercury
Lamp Housing

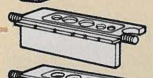




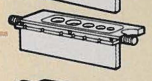
AH2-RFL-T
Power Supply Unit
for Ultra-High Pressure
Mercury Lamp Housing



C35AD-4
35mm Camera Back



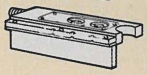
AH3-NSF**
Nomarski Prism Slider



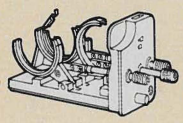
AH2-NAS
Nomarski differential
interference contrast
attachment (A2-NS slider)



AH2-KPO
Simple Polarizer



AH2-KDC
Simple Darkfield Condenser



Filter Tray
(Standard on Microscope)



AH2-PC
(AH2-RS) Phase-Contrast Attachment
(AH2-RS Ring Slit Unit)



AH2-ASS
(AH2-AST) Aperture
Iris Diaphragm Unit

●AH2-ASS is specially designed for AHBS3.

AHBS3 + AH3-RFC/AHBT3 + AH3-RFC Observation Methods and Compatible Objectives

Objective / Observation Method			Transmitted Light Brightfield	Reflected Light Fluorescence (U, V, BV excitation)	Reflected Light Fluorescence (B, IB, G excitation)	Reflected Light IGS	Transmitted Light Phase-Contrast*	Transmitted Light Nomarski DIC	Transmitted Light Simple Darkfield	Transmitted Light Darkfield	Transmitted Light Simple Polarizing
Magnification Power	N.A.	W.D.									
DPlan Apo10xUV	0.40	1.10mm	○	○	○	X	○	○	○	○	○
DPlan Apo20xUV	0.70	0.75mm	○	○	○	X	○	○	○	○	○
DPlan Apo20xUV (oil)	0.80	0.18mm	○	○	○	X	X	○	X	○	○
DPlan Apo-40xUV	0.85	0.25mm	○	○	○	X	X	○	X	○	○
DPlan Apo40xUV (oil)	1.00	0.16mm	○	○	○	○	○	X	X	○	○
DPlan Apo100xUV (oil)	1.30	0.16mm	○	○	○	○	○	○	X	○	○
DApo 20xUV	0.70	0.75mm	○	○	○	X	X	X	○	○	○
DApo 40xUV (oil)	1.30	0.12mm	○	○	○	○	○	X	X	○	○
DApo 100xUV (oil)	1.30	0.12mm	○	○	○	○	○	X	X	○	○
SPlan Apo4x	0.16	9.83mm	○	X	X	X	X	X	X	X	○
SPlan Apo10x	0.40	0.55mm	○	X	○	X	X	X	○	○	○
SPlan Apo20x	0.70	0.55mm	○	X	○	X	X	X	○	○	○
SPlan Apo40x	0.95	0.13mm	○	X	○	X	X	X	X	○	○
SPlan Apo60x (oil)	1.40	0.12mm	○	X	○	X	X	X	X	X	○
SPlan Apo100x (oil)	1.40	0.15mm	○	X	○	X	X	X	X	○	○
SPlan4x	0.13	15.50mm	○	X	X	X	○	X	X	X	○
SPlan10x	0.30	7.50mm	○	X	Δ	X	○	○	○	○	○
SPlan20x	0.46	1.50mm	○	X	Δ	X	○	○	○	○	○
SPlan40x	0.70	0.50mm	○	X	Δ	X	○	○	○	○	○
SPlan100x	0.95	0.20mm	○	X	Δ	X	X	X	X	○	○
SPlan100x (oil)	1.25	0.17mm	○	X	Δ	X	○	○	X	X	○

○: Usable
Δ: Usable but image slightly darker than other objectives.
X: Not usable.
*Objectives specially designed for transmitted light phasecontrast microscopy. (If phase-contrast objectives are used for other observations, the image may darken and the performance decrease slightly.)

Revolving Nosepiece/Microscopy Attachment Combinations

Revolving Nosepiece / Observation Method	Transmitted Ligit Nomarski DIC	Transmitted Light Simple Polarizing
AH3-RFCA Reflected Light Fluorescence Revolving Nosepiace	AH3-ANF Analyzer Slider AH3-NAF Nomarski Prism Slider AH-3NSF Normarski Prism Slider	AH2-KPO Simple Polarizer AH3-ANF Analyzer Slider
AH3-6RE Motorized Sextuple Revolving Nosepiece	A2-NA Analyzer A2-NS Nomerski Prism Slider	AH2-KPO Simple Polarizer AH2-AN45 Simple Polzrizing Analyzer)

*Attachments other than listed above may be used both with the AH3-RFCA and AH3-6RE revolving nosepieces.

LB Series Objectives and Eyepieces

S Plan Apochromat Objectives

Magnification	N.A.	W.D.(mm)
SPlanApo4X	0.16	9.83
SPlanApo10X	0.40	0.55
SPlanApo20X	0.70	0.55
SPlanApo40X	0.95	0.13
SPlanApo60X oil	1.40	0.12
SPlanApo100X oil	1.40	0.15



S Plan Apochromat

S Plan Achromat Objectives

Magnification	N.A.	W.D.(mm)
SPlanFL1X*	0.04	2.20
SPlanFL2X	0.08	5.50
SPlan4X	0.13	15.50
SPlan10X	0.30	7.50
SPlan20X	0.46	1.50
SPlan40X	0.70	0.50
SPlan100X oil	1.25	0.17
SPlan100X dry	0.95	0.20



S Plan Achoromat



S Plan Achoromat FL

No Cover Objectives

Magnification	N.A.	W.D.(mm)
NCSPlan40X	0.70	0.45
NCSPlan100X dry	0.95	0.30
NCSPlanApo60X dry	0.90	0.42
NCSPlanApo100X oil	1.40	0.15



No Cover

*Designed for Field Number 21; not recommended for super widefield observation



Fluorescence-free

Fluorescence-free Objectives

Magnification	N.A.	W.D.(mm)
DPlanApo10XUV	0.40	1.10
DPlanApo20XUV	0.70	0.75
DPlanApo20XUV oil	0.80	0.18
DPlanApo40XUV dry	0.85	0.25
DPlanApo40XUV oil	1.00	0.16
DPlanApo100XUV oil	1.30	0.16
DApo40XUV oil	1.30	0.12
DApo100XUV oil	1.30	0.12



Fluorescence-free Phase Contrast

Fluorescence-free Phase Contrast Objectives

Magnification	N.A.	W.D.(mm)
DPlanApo10XUVPL	0.40	1.10
DPlanApo20XUVPL	0.70	0.75
DPlanApo40XUVPL oil	1.00	0.16
DPlanApo100XUVPL oil	1.30	0.16
DApo40XUVPL oil	1.30	0:12
DApo100XUVPL oil	1.30	0.12



Phase Contrast (positive)



Phase Contrast (negative)

Phase Contrast Objectives (positive)

Magnification	N.A.	W.D.(mm)
PC SPlan4XPL	0.19	15.50
PC SPlan10XPL	0.30	7.50
PC SPlan20XPL	0.46	1.50
PC SPlan40XPL	0.70	0.50
PC SPlan100XPL oil	1.25	0.17

Phase Contrast Objectives (negative)

Magnification	N.A.	W.D.(mm)
PC SPlan4XNH	0.19	15.50
PC SPlan10XNH	0.30	7.50
PC SPlan20XNH	0.46	1.50
PC SPlan40XNH	0.70	0.50
PC SPlan100XNH oil	1.25	0.17



Super Widefield Eyepiece



Widefield Eyepiece

Super Widefield Eyepiece

Magnification	F.N.
SWHK8X	26.5
SWHK-10X	26.5

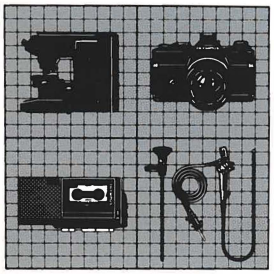
Widefield Eyepieces

Magnification	F.N.
WHK8X	20
WHK10X	20
WHK15X	14

A pair of adapters for widefield eyepieces is supplied with the microscope stand.

AHBS3/AHBT3 Standard Outfit

Component	Model	AHBS3		AHBT3
		-513	-514	513
Microscope Stand	AHBS3-F	○	○	
	AHBT3-F			○
Power Cord	UYCP	○	○	○
Sextuple Revolving Nosepiece	AH3-6RE	○	○	○
Mechanical Stage	AH2-SVR	○	○	○
Halogen Bulb (2pcs)	JC12V100WHAL-L	○	○	○
35mm Camera Back (2pcs)	C35AD-4	○	○	○
Filter Set (LBT and IF550)	PM-FIL-6	○	○	○
Lens Cleaning Kit	CLEANING KIT	○	○	○
S Plan Fluorite Objective	SPLFL2X	○	○	○
S Plan Achromatic Objective	SPL4X	○		○
	SPL10X	○		○
	SPL20X	○		○
	SPL40X	○		○
	SPL100X/oil	○		○
S Plan Apochrmatic Objective	SPLAPO4X		○	
	SPLAPO10X		○	
	SPLADO20X		○	
	SPLAPO40X		○	
	SPLAPO100X/oil		○	
LB Eyepieces (2 pcs)	SWHK10X	○	○	○



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