

OLYMPUS[®]

Your Vision, Our Future

METALLURGICAL MICROSCOPES

BX2M/MX51

UIS2
World-leading optics



System
Revolution
Revolution
System

Power and flexibility to perform multiple inspections with outstanding efficiency.

- Two microscope lineups, BX2M*/MX51 offer the stages of 50mm through 150mm in X/Y travel range.
- Logical layout for superior operation.
- Newly employed arm integrated reflected light illuminator.
- Greater system flexibility with unprecedented freedom to select and combine components.
- Outstanding UIS2 optical performance.
- Excellent image clarity and superb resolution for all inspection demands.

* BX2M series comprises BX51(M), BX41M, BX41M-ESD, BX-IR, BXFM(S) and so forth.





BX51

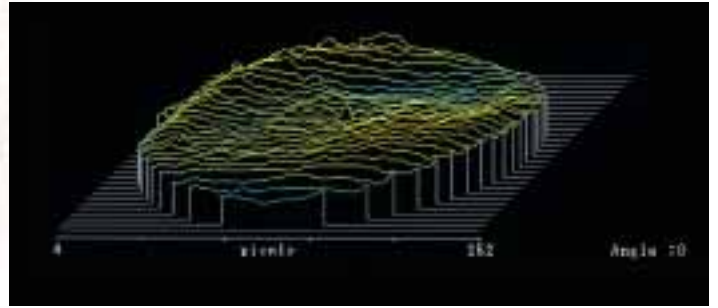
EXCELLENT OPTICS

New standard of the UIS2 optics, wavefront aberration control guarantees the world's highest level imaging, even further.



A new standard of the objective lens performance, using wavefront aberration control.

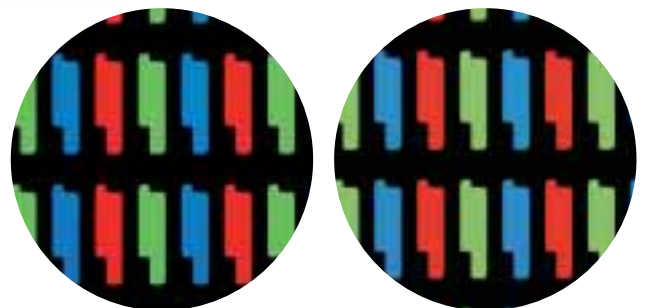
The Olympus UIS2 objective lenses set a new standard, with wavefront aberration control in addition to common performance standards of N.A. and W.D. Olympus challenges farther highest order optics which has not been fulfilled by the conventional standards. We offer excellent performance objective lenses by minimizing the aberrations that lower resolution.



An example of 3D display of a wave front measured with a laser interferometer. The flatter the surface of the lens, the better the aberration correction becomes.

Natural color reproduction faithful to the specimen.

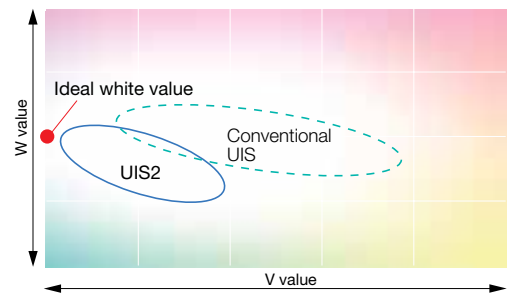
UIS2 objective lenses realize natural color reproduction without any coloration by using stringently selected high transmittance glass and advanced coating technology that realizes high transmittance which is flat over an ultra-wide band wavelength. In addition, since the total optical system, including the tube lens is designed to reproduce a natural color, clear images faithful to the specimen are obtained even with digital imaging.



UIS2 image

Conventional image

■ Color temperature comparison

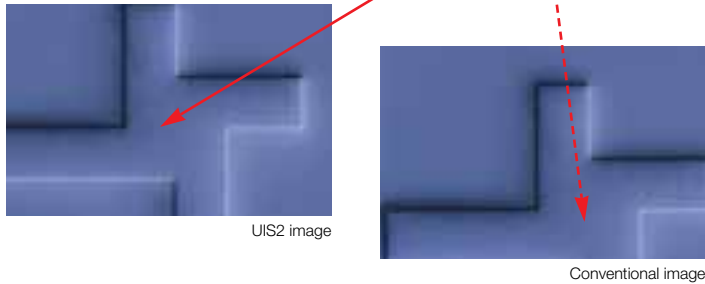


A comparison of the color temperature of UIS2 objective lenses and conventional UIS objective lenses. The color temperature of the UIS2 objective lenses is within a range which is very close to the color temperature target, which represents ideal white value.

UIS2 objective lenses with excellent image parcentricity.

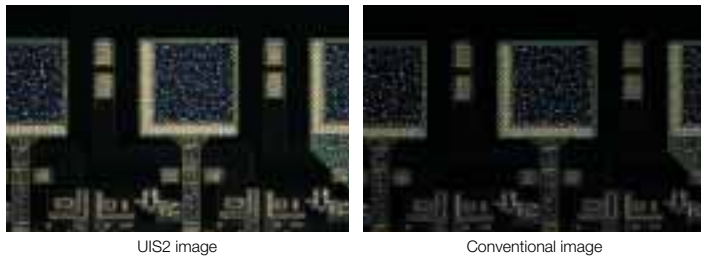
In high power Semi-apochromatic UIS2 objective lenses, centration tolerance between objective lenses on the microscope nosepiece improved by a factor of 2 so that the image never fail to keep the image within the center of the field of view even with digital camera. Centration of the image between objective lenses allows for fast and fatigue free operation.

* 50x or higher power in both MPLFLN and LMPLFLN series



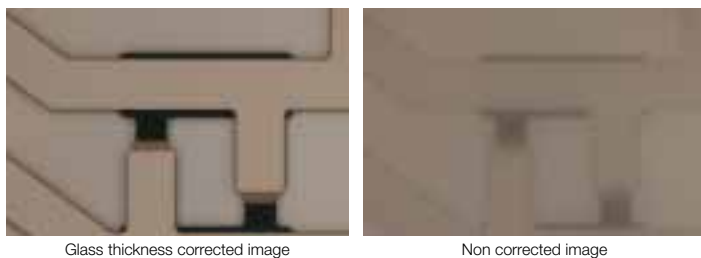
The brightest Darkfield image than ever.

New Semi-apochromatic objective lens series improves Darkfield brightness and significantly enhances sensitivity and allows quick detection of defects in the small diameter wafers used in today's smaller sensors and other high performance electronic devices.



Glass thickness corrected objective lenses handle various glass thicknesses.

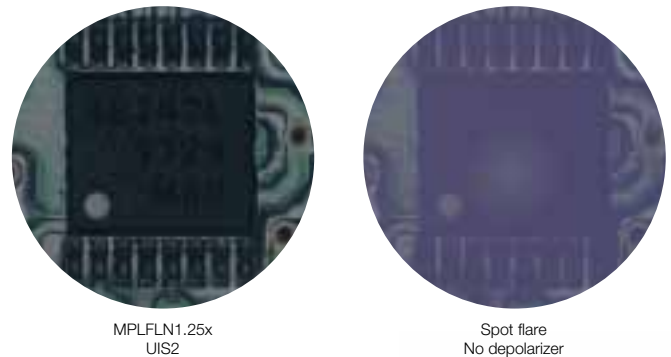
LCPLFLN-LCD objective lenses, accurately correct the spherical aberration which could become issue when viewing through glass substrates, are provided. The 20x and 50x objective lenses are useful when looking through glass thicknesses of 0 to 1.2 mm and the 100x objective lens is corrected for glass thicknesses up to 0.7 mm seamlessly.



Removes spot flare during ultra low magnification observation.

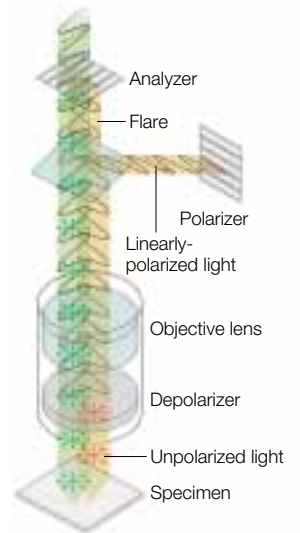
When a low reflection specimen is observed in ultra low power magnification, spot flare hinder precise observation. In UIS2 ultra low magnification observation, a depolarizer built into the objective lens end removes spot flare and, a clear, high contrast image is obtained by combining a set of polarizer and analyzer plate.

*1.25x and 2.5x objective lenses available



Spot flare removal principle conceptual diagram.

Since the light reflected from the surface of the objective lenses is the linearly-polarized light "as is", it is eliminated by analyzer at Crossed Nicol position and has no affect on the image. On the other hand, the light passed through the depolarizer at the end of the objective lens becomes unpolarized light, and when the unpolarized light reflected from the specimen passes through the analyzer, only the linearly-polarized light that matches the vibration direction of the analyzer passes through and forms an image.



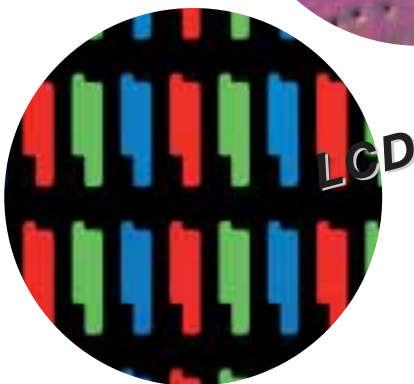
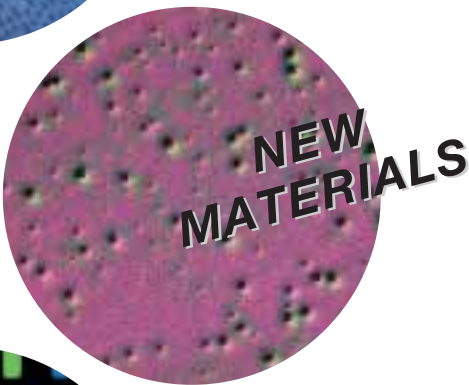
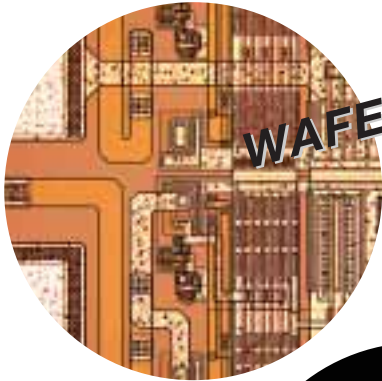
Promotes environmentally-friendly ecologization and weight reduction.

Olympus was the first to consider the environment and to tackle manufacturing ecology. As part of this, the UIS2 optical system uses eco-friendly glass free of lead and arsenic. In addition, the major Semi-apochromatic UIS2 objective lenses are lightened by approximately 2/3. This contributes to prevention of environmental pollution, improvement of operability of objective lenses replacement, etc.

*Some UIS2 objective lenses are the same weight as conventional objective lenses

SYSTEM VERSATILITY

Wide choice of handy accessories to meet the full range of microscopy inspection needs.



Stage selection and adapter plates.

BX Various special stages and adapter plates are provided: a 100 x 100 mm stage plate (U-MSSP4), a wafer holder plate (U-WHP2) for 3- and 4-inch wafers and extra-large stages (U-SIC4R2 and U-SIC4L2), allowing the use of a glass plate (U-MSSPG) for transmitted light observations.



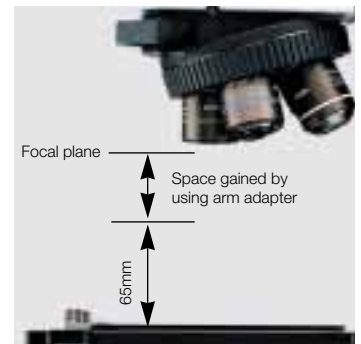
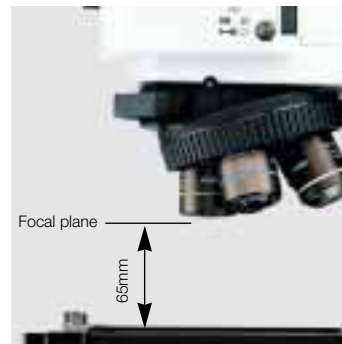
MX The MX51 accommodates a 6 inch wafer holder and a glass plate in combination with 150 mm stage, MX-SIC6R2 and also offers more versatile holders and plates with 100 mm stage, U-SIC4R2.



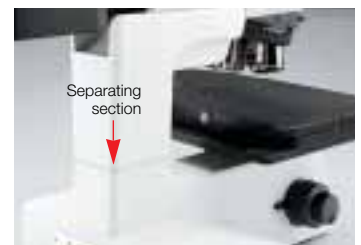
1 U-SIC4R2 2 BH3-SPG6 3 BH3-SP6 4 BH3-WHP6
5 U-MSSP4 6 U-WHP2 7 BH2-WHR43 8 BH2-WHR54
9 BH2-WHR65

Observation of thick samples.

BX BX41M/BX51M Upright Incident Microscope System accommodates up to 65mm high specimen as a standard. Besides, the reflected light illuminator, integrated into the microscope arm gives them an extra height degree of flexibility, by inserting an arm adapter between the microscope and the illuminator.



MX The standard maximum sample thickness is 30mm. Insert the intermediate attachment to accommodate thicker samples.



Improved efficiency with the motorized revolving nosepiece.

Various revolving nosepieces including motorized ones which can be directly operated by blind-touch control pad are offered. The motorized nosepieces improve observation efficiency and eliminate particle shedding (type C). The motorized revolving nosepiece can be attached to all reflected light illuminators and microscope frames.



Reflected light illuminators are compatible with a variety of light sources.

For flexibility in high intensity and long lifetime illumination, Olympus lamphouses offer Halogen, Xenon and Mercury bulb options. The apochromatic collector lens system for halogen, xenon and mercury light sources compensates for chromatic aberrations from the visible to near-infrared light.



Diverse manual-type revolving nosepiece including perfect par-centricity type .

The quintuple BD revolving nosepiece U-P5BDRE and sextuple revolving nosepiece with centering mechanism U-P6RE enables perfect par-centricity between three objective lenses. There is no image center displacement, even when switching from low to high magnifications, an added convenience.



Transmitted light observation.

BX Various transmitted light condensers compatible with true transmitted light observation are available. Choose the condenser matched to the purpose.



MX The combination of a transmitted illumination unit with the 150mm stage, MX-SIC6R2 enables transmitted light brightfield observation of samples up to 2mm thick, with an illumination range of 100 x 100mm. The slim-profiled illumination unit is designed for minimal effect on the stage operation and is useful for observations of samples such as MEMS (Micro Electronics Mechanical Systems) sensors and other optical/optronic components.



Fiber illumination system for all reflected light illuminators.

Cold light illumination, using fiber light guides, is available for all reflected light illuminators. Fiber light illumination systems such as the LG-PS2 utilize a bright 12V100W halogen lamp.

* The type of model varies by country in use.



Filter sliders for flexible illumination.

A variety of filter sliders are provided for such filters as UV-cut, color temperature change and color enhancement.

ERGONOMIC DESIGN

Improved design signals new advance in ergonomics.



Easy focusing and convenient “either-side” attachment of the fine focusing knob.

BX The fine focusing knob can be removed and attached to either side of the microscope to suit right/left-handed operators. The control knob's tactile cover allows light-touch fingertip operation, while the fine focus mechanism is extremely accurate, even at high magnifications.



Agile stage movement and coarse/fine movement interchange.

MX Two stage sizes are selectable, 150mm (MX-SIC6R2) and 100 mm(U-SIC4R2). The 150mm stage has a built-in clutch lever, which enables quick location of specimens on the stage without diverting the operator's view, allowing quick, easy inspections.

Repositioned optical controls for smoother performance.

MX Controls for focusing and light intensity adjustment are placed closer together, so that both can be operated with one and the same hand.



Anti-static treatment prevents dust contaminating the sample.

MX The frame and 6-inch stage are coated to prevent static build-up.

* Use special metal plate.

Range of tilting observation tubes to assist operator comfort.

U-TBI-3 tilting tube is provided for binocular observation, and the U-SWETTR-2, MX-SWETTR observation tubes for documentation. This range of choice lets each operator achieve the most suitable eyepoint and an ergonomic posture, resulting in greatly reduced fatigue for long-duration observations.



Integrated ND filter for more comfortable switching between brightfield/darkfield observation methods.

The brightfield/darkfield reflected light illuminator features an integrated ND filter that protects the operator's eye by preventing sudden, drastic changes in brightness. This integrated function can be disengaged manually.



Brightfield observation



Darkfield observation

Nomarski DIC system provides an optimum image suited to the sample.

Olympus Nomarski DIC observation uses a simple observation switching slider type single prism system. Three different DIC prisms are provided: the U-DICR for all imaging applications, high resolution U-DICRH, and high contrast U-DICRHC, so that the best resolution and contrast matched to the state of the sample are obtained. Since the exit pupil position of the objective lens is standardized by the series, the position of the DIC prism does not have to be switched when the magnification was changed by switching the objective lens, e.g. MPLFLN series 5x through 150x.



U-DICR



U-DICRHC

Polarizer/analyzer plates are interlocked for easy slide IN/OUT.

The interlocked polarizer/analyzer slide IN/OUT on the optical axis by one action so that the switching between Nomarski DIC/POL and other observation methods is performed speedy. In addition, the polarizer and analyzer are designed so that the reflected light illuminator slide-in and slide-out operations can be performed from either the left or right side.



Simultaneous attachment of digital camera and video camera.

The intermediate trinocular unit U-TRU, combined with the tilting observation tube U-TBI-3 makes simultaneous attachment of digital and video documentation equipment possible.



U-TRU

Convenient magnification changer.

The magnification changer applies an additional 2x magnification to the image, ideal for observation at highest magnifications without changing objective lenses, for maintaining working distance and for framing of the smallest specimen detail.



U-ECA

MICROSCOPE LINEUP

A full product line-up for every purpose — even for special applications.

Multiple observation modes in VIS (visible reflected/transmitted), FL and IR

BX51/BX51M/MX51

The BX51 microscope model offers reflected and transmitted light illumination and the BX51M model offers reflected light illumination only, while the MX51 with a 150 mm stage combination offers transmitted light observation (option). All frames can accept the reflected light brightfield/darkfield illuminator BX-RLA2 or the universal illuminator, BX-URA2, which includes fluorescence capability.



BX51+BX-URA2



BX51M+BX-RLA2

BX-REMCB

Simple control box gives multiple motorized functions to the BX51.

Designed for easy motorized operation.

- Control options include: exchanging the motorized revolving nosepiece and motorized selection between brightfield (BF) and darkfield (DF) observation; AS opening/closing. Separate controls for the motorized revolving nosepiece and motorized illuminator position are also possible.
- The AS diameter for each revolving nosepiece position can be registered by using a DIP switch, enabling AS coordination when changing objective lenses. The AS is fully opened automatically when darkfield observation is selected.
- The motorized revolving nosepiece and motorized illuminator can be controlled from the hand switch (U-HSTR2), or directly from the computer keyboard via an RS232C connector (9-pin male type).
- The I/O connector (provided) enables remote control of the motorized revolving nosepiece.
- Slim, compact design.
- LED indicators provide naked eye confirmation of power (green), error (red) and remote (yellow).



- 1 BX-REMCB control box for motorized nosepiece and BF/DF illuminator
- 2 BX-RLAA motorized BF/DF reflected light illuminator
- 3 U-D5BDREMC Motorized Nomarski DIC quintuple BD revolving nosepiece



MX51+BX-RLA2

Near infrared (IR) light imaging

BX51/BX51M/MX51

With the same microscope body and reflected light illuminator, it is possible to conduct near infrared light observations of semiconductor interiors and the back surface of a chip package as well as CSP bump inspections.

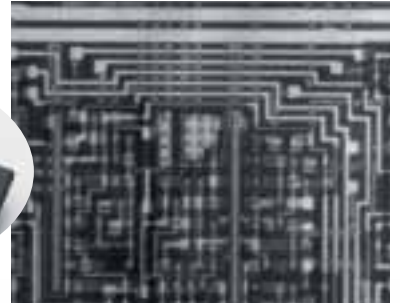
New facility for near infrared light observations.

- Lineup of 5x to 100x IR objective lenses which compensate for aberrations from visible to near infrared light.
- Straight tube, U-TLUIR, provided to allow imaging via IR camera.
- The BX51 offers reflected and transmitted near infrared light observation. The BX51M and MX51 offer reflected near infrared light observation only.

*As for IR camera system, please contact your local Olympus dealer.



- 1 100W halogen lamp housing for IR (U-LH100IR)
- 2 Trinocular tube for IR (U-TR30IR)
- 3 Single port tube lens with lens for IR (U-TLUIR)
- 4 Transmitted polarizer for IR (U-PTIR)
- 5 Rotatable analyzer slider for IR (U-AN360IR)
- 6 Reflected polarizer slider for IR (U-POIR)
- 7 Band path filter (1100nm) for IR (U-BP1100IR)
- 8 Band path filter (1200nm) for IR (U-BP1200IR)
- 9 Objective lenses for IR (LMPlan5xIR, LMPlan10xIR, LMPlan20xIR, LMPlan50xIR, LMPlan100xIR and MPlan100xIR)
- 10 Connector to couple analyzer and polarizer (U-POIR accessory)



Electro Static Discharge Control

BX41M-ESD/BX41M

Incorporating all the basic features, the BX41M-ESD also protects electrostatically sensitive samples and other objects under examination by eliminating a possible electrostatic charge from the operator and surrounding air. This is accomplished by making the operating elements of the microscope body (BX41RF-ESD) conductive. Similarly the surface of the reflected light illuminator BX-KMA-ESD (BX41RF-ESD) and the circular ring of the revolving nosepiece (U-D6RE-ESD) are conductive. The reduced depth of the Y-shape frame and a smaller lamp housing make the microscope more compact. An optional 30W halogen light source offers brightness equivalent to that of a 50W halogen lamp and the convenience and savings of a 2000-hour operating life.

- ESD performance: Surface resistance: Below 10^8 ohm.
Discharge time: Less than 0.2 sec*.
- Compatible with reflected light brightfield, simple polarized light and Nomarski DIC observations.
- BX41M, an economy, and ESD incompatible type, is also available.

*Time to discharge to 100 V when charged to 1000 V.



- 1 BX41M-ESD body
- 2 Sextuple Nomarski DIC ESD revolving nosepiece
- 3 Brightfield ESD illuminator

Advanced features with motorized operation

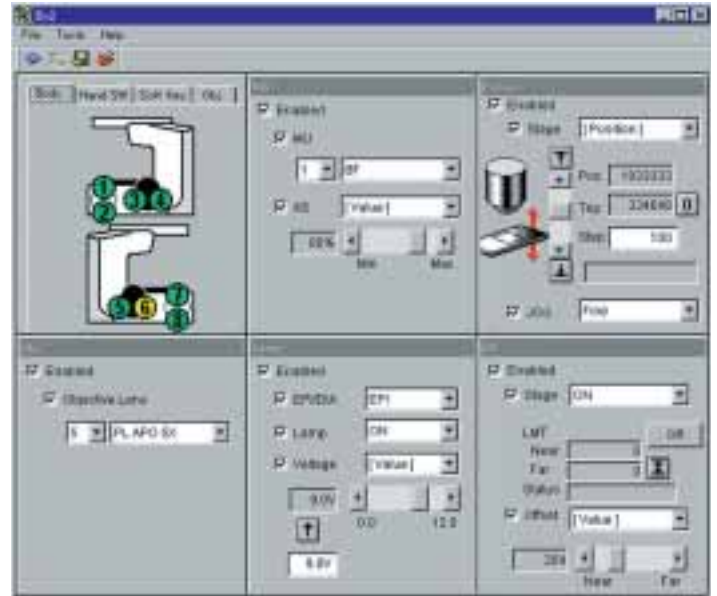
BX61

The motorized BX61 microscope is provided with automatic focus and automatic switching between reflected and transmitted light. A package of control software and macro programs enables a range of microscope operations to be performed via keypad or a personal computer.

- Operations such as adjusting the light path for a particular observation method, changing objective lens magnifications and engaging/disengaging optical components can be programmed precisely. Complicated operation procedures can be macro-programmed to special function keys, either on the keypad or on the PC keyboard. This makes it possible to recall/reproduce specific observation conditions at the touch of a single button.



- Various motorized modules are provided, including a high-speed revolving nosepiece, a centering revolving nosepiece, a brightfield/darkfield illuminator, universal illuminator, reflected light auto focus unit and filter wheels. These modules are controlled through a key pad or through a personal computer.
- A motorized centering quintuple revolving nosepiece, allowing precise par-centricity between objective lenses is also provided.



BX61+BX-RLAA



BX61+BX-RFAA

Advanced options for system combination

BXFM-S/BXFM

Two focusing units are available for combination with the new Olympus microscope system. The BXFM-S unit incorporates a compact reflected light brightfield illuminator with a depth of only 290mm from the optical axes to the rear of the lamp housing. The BXFM unit accommodates the reflected light brightfield/darkfield and fluorescence illuminators. Fiber illumination, with the option of external control, can be used with both models.

- A compact focus drive, fiber illuminator, motorized revolving nosepiece and tube lens unit are available for installation into the system.
- The illuminator, integrated into the microscope arm helps to facilitate installation.
- An external power source (TH4-100/200) allows remote control of light intensity adjustment and turning ON/OFF of the 100W halogen illumination via an external signal.
- Next to great image quality, flexibility of the optical system is one of the important attributes of UIS2 optics. Even when the distance between the objective lens and tube lens is altered, the superior optical design of the tube lens ensures that there is no change of magnification or image deterioration. This optical capability and flexibility is of great advantage when accommodating special needs, or when incorporating the components into inspection systems or other original equipment. In each case the highest standards of optical performance are maintained.



Setting example of fiber illuminator: BXFM-S+U-KMAS+U-LGAD+LG-FS



BXFM-S



BXFM+BX-RLA2



- 1 Large stand (SZ-STL)
- 2 Stand (J-ST)
- 3 BXFM frame (BXFM-F)
- 4 Illuminator holder for BXFM (BXFM-ILH)
- 5 Illuminator holder for BXFM-S (BXFM-ILHS)
- 6 Assist spring for BXFM (BXFM-ILHSPU)
- 7 Reflected light illuminator for BF (BX-KMA)
- 8 Reflected light illuminator for BF (U-KMAS)
- 9 Fiber adapter for reflected light observation (U-LGAD)
- 10 Single port tube with lens (J-TLU)
- 11 External light source (TH4-100/200)
- 12 Hand switch (TH4-HS)

Offers the stage of 150 x 150mm travel area

MX51

The MX51 can be installed the MX-SIC6R 150 x 150mm stage, which copes with larger and larger industrial field samples. Since coarse/fine movement can be switched using the stage grip of the built-in clutch of the MX-SIC6R2, the microscope delivers extremely comfortable operational environment.



- In addition to the 150 mm stage, the BX2M 100 mm stage can be used to deal with various samples.
- SEMI S2/S8 compliance enhances safety and ergonomics. Olympus' unique front operation design concept guarantees high operability and reliability in compliance with industry standards.



Reflected/transmitted light configuration with 150mm stage
MX51+BX-RLA2+MX-SIC6R2+BH3-SPG6+MX-TILL



Reflected light configuration with small size stage
MX51+BX-RLA2+USIC4R2



Reflected light configuration with 150mm stage
MX51+BX-RLA2+MX-SIC6R2+BH3-WHP6+BH2-WHR65

UIS2 OBJECTIVE LENSES

Diverse lineup allows selection according to the purpose.

UIS2
World-leading optics



MPLFLN (-BD) series

These Plan Semi-Apochromat objective lenses completely eliminate chromatic aberration at high level, which is perfect for a wide range of microscopic methods including brightfield (darkfield), fluorescence, Nomarski DIC and simple polarized observation. All 50x or higher objective lenses have 1mm working distance to fulfill safe approach to the specimen. Since exit pupil positions from 5x through 150x are standardized, no switching of the DIC prism lever position is necessary when the objective lens power changes.



MPLFLN-BDP series

The Plan Semi-Apochromat POL design ensures through compensation for coma aberration. Distortion is also minimized, which makes these objective lenses the best choice for Nomarski DIC microscopy.



LMPLFLN (-BD) series

Long working distance Plan Semi-Apochromat objective lenses with a high level of chromatic aberration correction. Long working range up to the sample is effective with stepped samples and in preventing collision. Since exit pupil positions from 5x through 100x are standardized, no switching of the DIC prism lever position is necessary when the objective lens power changes.



MPLN (-BD) series

Plan Achromat objective lenses with excellent flatness up to F.N. 22. Use the BD series in brightfield and darkfield observation.



LCPLFLN-LCD series

The perfect objective lenses for sample observation through an LCD panel or other glass plate. Aberration correction matched to the glass thickness is possible by using a correction ring.

LMPlan-IR, MPlan-IR series

Plan Semi-apochromat objective lenses which compensate for aberrations from visible to near infrared light.



SLMPlan series

Long working distance allows observation of fine line widths in high contrast observation with no chromatic shift.

MPlanAPO (-BD) series

Plan Apochromat objective lenses with optimal chromatic aberration correction.

Objective lenses	Magnifications	N.A.	W.D. (mm)	Cover Glass Thickness (mm)	Resolution*2 (μm)
MPLFLN	1.25x*3*4*6	0.04	3.5	—	8.39
	2.5x*3*6	0.08	10.7	—	4.19
	5x	0.15	20.0	—	2.24
	10x	0.30	11.0	—	1.12
	20x	0.45	3.1	0	0.75
	50x	0.80	1.0	0	0.42
MPLFLN-BD*4	100x	0.90	1.0	0	0.37
	5x	0.15	12.0	—	2.24
	10x	0.30	6.5	—	1.12
	20x	0.45	3.0	0	0.75
	50x	0.80	1.0	0	0.42
	100x	0.90	1.0	0	0.37
MPLFLN-BDP*4	150x	0.90	1.0	0	0.37
	5x	0.15	12.0	—	2.24
	10x	0.25	6.5	—	1.34
	20x	0.40	3.0	0	0.84
	50x	0.75	1.0	0	0.45
	100x	0.90	1.0	0	0.37
LMPLFLN	5x	0.13	22.5	—	2.58
	10x	0.25	21.0	—	1.34
	20x	0.40	12.0	0	0.84
	50x	0.50	10.6	0	0.67
	100x	0.80	3.4	0	0.42
LMPLFLN-BD*4	5x	0.13	15.0	—	2.58
	10x	0.25	10.0	—	1.34
	20x	0.40	12.0	0	0.84
	50x	0.50	10.6	0	0.67
	100x	0.80	3.3	0	0.42
MPLN*3	5x	0.10	20.0	—	3.36
	10x	0.25	10.6	—	1.34
	20x	0.40	1.3	0	0.84
	50x	0.75	0.38	0	0.45
	100x	0.90	0.21	0	0.37
MPLN-BD*1*3*4	5x	0.10	12.0	—	3.36
	10x	0.25	6.5	—	1.34
	20x	0.40	1.3	0	0.84
	50x	0.75	0.38	0	0.45
	100x	0.90	0.21	0	0.37
LCPLFLN-LCD*6	20x	0.45	8.3—7.4	0—1.2	0.75
	50x	0.70	3.0—2.2	0—1.2	0.48
	100x	0.85	1.2—0.9	0—0.7	0.39

UIS
UNIVERSAL
INFINITY SYSTEM

Objective lenses	Magnifications	N.A.	W.D. (mm)	Cover Glass Thickness (mm)	Resolution*2 (μm)
MPlanApo	20x	0.60	0.9	0	0.56
	50x	0.95	0.3	0	0.35
	100x	0.95	0.35	0	0.35
	100x	1.40	0.1	0	0.24
MPlanApo-BD	100x	0.90	0.31	0	0.37
SLMPlan	20x	0.35	21.0	0	0.96
	50x	0.45	15.0	0	0.75
LMPlan-IR	5x	0.10	20.0	—	—
	10x	0.25	18.5	—	—
	20x	0.40	8.1	—	—
	50x	0.55	6.0	—	—
	100x	0.80	3.4	—	—
MPlan-IR*3	100x	0.95	0.3	—	—

* "BD" = "Brightfield/darkfield" objective lenses

*1 Slight vignetting may occur in the periphery of the field when MPLN-BD series objective lenses are used with high-intensity light sources such as mercury and xenon for darkfield observation.

*2 Resolutions calculated with aperture iris diaphragm wide open.

*3 Limited up to F.N. 22. No compliance with F.N. 26.5.

*4 BD objective lenses cannot be combined with BX41M-ESD.

*5 Analyzer and polarizer are recommended to the usage with MPLFLN1.25x or 2.5x.

*6 MPLFLN1.25x, 2.5x and LCPLFLN-LCD series are to be available in the beginning of 2007.

DIGITAL IMAGING SOLUTION

Greater efficiency up from observation to image capture and data analysis.

Microscope digital camera DP20

Smooth live image display.

High-speed image fetching which allows sequential shooting.

Live images at 15 frames / second are displayed in high definition television class resolution so that focusing on the monitor is performed easily without any breaks in stage traveling for specimen to observe and faithful color is obtained at high resolving power. The DP20 also has a high-speed sequential shooting function which can photograph up to 4 high-quality images at 1 second intervals without any compression, etc. and fetch images without interrupting work. Also, the DP20 can be connected to a PC through a high-speed USB2.0 interface and image recording and measurement and analysis can be performed using our image analysis software.

*Since the DP20 is a stand-alone type, image recording and simple measurements are possible even without a PC.



Microscope digital camera DP71

Capable of digital photography for low-reflection specimens.

12.5 megapixel high definition images transferred in approximately 3 seconds.

The DP71 can transfer equivalent to 12.5 megapixel high resolution images at high speed. High sensitivity equivalent to ISO1600 and low noise allows its use in a wide range of applications from faint fluorescent samples to brightfield images. Since high definition live images are smoothly displayed at 15 frames/sec, stress-free operation is accomplished. All operations from image acquisition to filing and management are performed smoothly by means of superior GUI software.

*Special technologies are employed to obtain a resolution equivalent to 12.5 million pixels from the DP71's 1.45 million pixel CCD.



analySIS FIVE

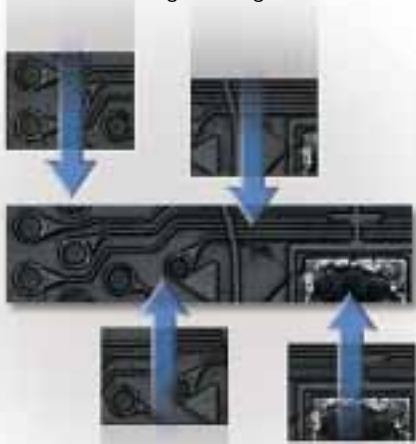
Seamless operation from image processing, measurement and analysis to database and report generation

The image analysis software analySIS FIVE has made possible seamless operation from image processing, measurement, and analysis to database and report generation. The analySIS FIVE comes in 3 types: "imager", "docu", and "auto", according to the difference of the functions installed. The type can be chosen according to the application. The "auto" type has all functions, including stitching images and extended focal image. Customizing to more pleasant software is possible by freely adding the desired functions.

*Add-in software (cast iron analysis, film thickness measurement) for performing special analysis is also available.

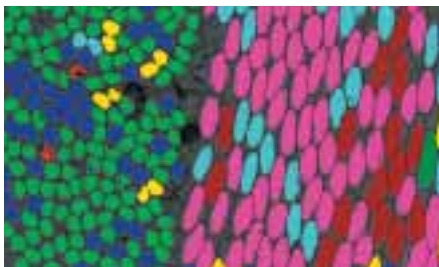
Stitching Images

Multiple adjacent images can be seamlessly and naturally stitched together into one — an easy, effective way of observing areas too large to be viewed as one image through the microscope.



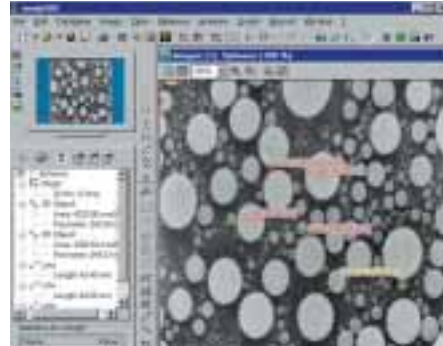
Particle Analysis

The separator function enables automatic separation of particles within an image, while threshold levels and detection areas are set through the ROI (region of interest). All particles are measured automatically, using a range of measurement parameters. The measurement data is statistically processed to enable high-level particulate analysis.



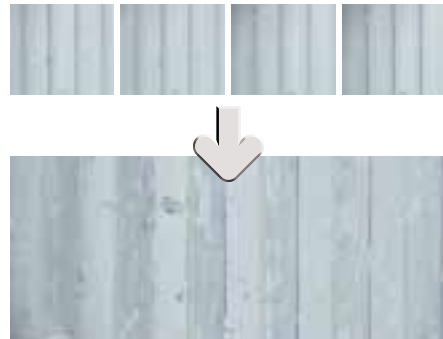
Measurement

Counting particles...measuring dimensions...calculating the distance between two lines...analySIS FIVE handles tasks like these with ease. Results can also be saved/output together with the images.



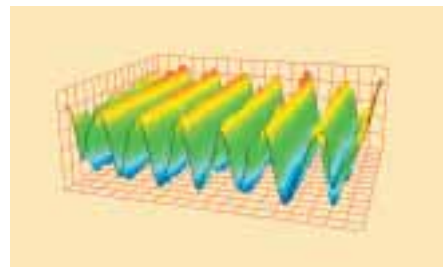
Extended Focal Image

Multiple versions of the same image, each focused at a different position, can be combined to produce a single, wholly-focused image. This function allows clear imaging of samples with different height levels on the surface, which cannot be observed all together at the same time conventionally.

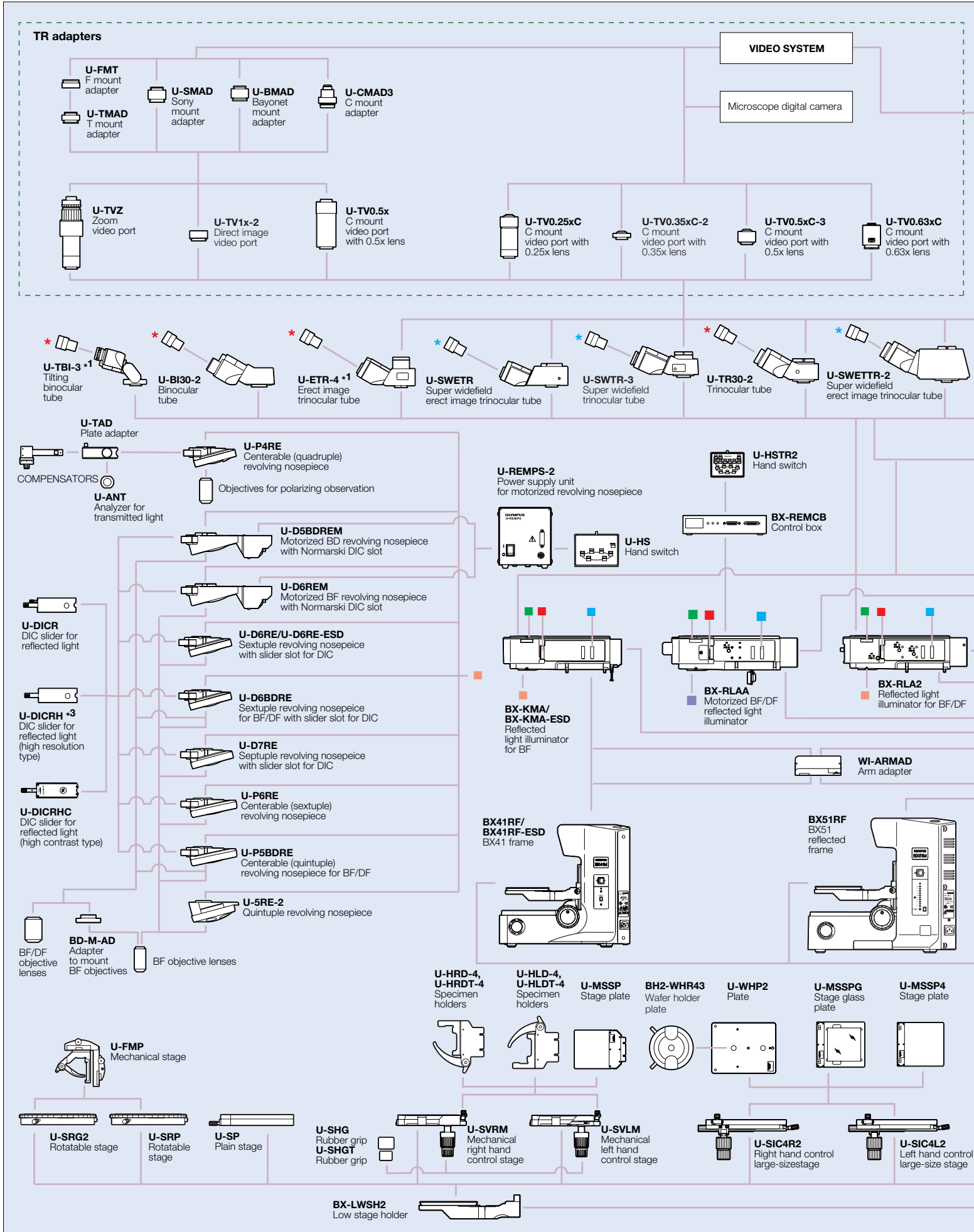


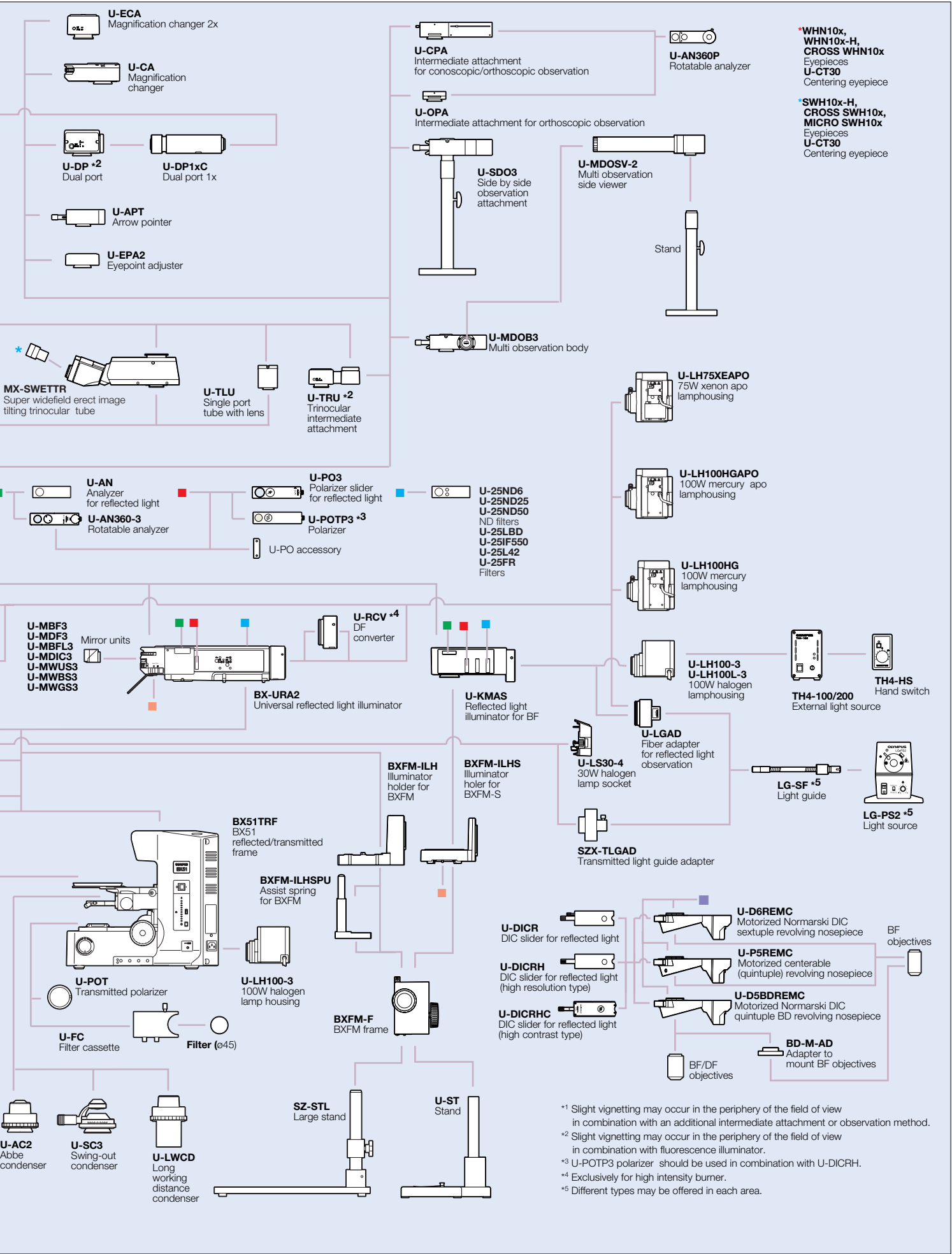
3D Image

A uniformly focused image, obtained using the extended focal point function, can be used to construct 3D images and create real 3D animation. Magnification, reduction, pan, and rotation can be performed freely, allowing the specimen to be seen as a whole and examined from any angle.



BX2M SYSTEM DIAGRAM





- U-ECA**
Magnification changer 2x
- U-CA**
Magnification changer
- U-DP *2**
Dual port
- U-DP1xC**
Dual port 1x
- U-APT**
Arrow pointer
- U-EPA2**
Eyepoint adjuster

- U-CPA**
Intermediate attachment for conoscopic/orthoscopic observation
- U-OPA**
Intermediate attachment for orthoscopic observation
- U-SDO3**
Side by side observation attachment
- U-MDOSV-2**
Multi observation side viewer
- U-MDOB3**
Multi observation body
- U-AN360P**
Rotatable analyzer

- WHN10x, WHN10x-H, CROSS SWH10x**
Eyepieces
- U-CT30**
Centering eyepiece
- SWH10x-H, CROSS SWH10x, MICRO SWH10x**
Eyepieces
- U-CT30**
Centering eyepiece

- MX-SWETTR**
Super widefield erect image tilting trinocular tube
- U-TLU**
Single port tube with lens
- U-TRU *2**
Trinocular intermediate attachment

- U-AN**
Analyzer for reflected light
- U-AN360-3**
Rotatable analyzer
- U-PO3**
Polarizer slider for reflected light
- U-POTP3 *3**
Polarizer
- U-PO**
accessory
- U-25ND6, U-25ND25, U-25ND50**
ND filters
- U-25LBD, U-25IF550, U-25L42, U-25FR**
Filters

- U-LH75XEAP0**
75W xenon apo lamphousing
- U-LH100HGAP0**
100W mercury apo lamphousing
- U-LH100HG**
100W mercury lamphousing
- U-LH100-3, U-LH100L-3**
100W halogen lamphousing
- TH4-HS**
Hand switch
- TH4-100/200**
External light source
- U-LGAD**
Fiber adapter for reflected light observation
- U-LS30-4**
30W halogen lamp socket
- LG-SF *5**
Light guide
- LG-PS2 *5**
Light source

- U-MBF3, U-MDF3, U-MBFL3, U-MDIC3, U-MWUS3, U-MWBS3, U-MWGS3**
Mirror units
- U-RCV *4**
DF converter
- BX-URA2**
Universal reflected light illuminator
- U-KMAS**
Reflected light illuminator for BF

- BXFM-ILH**
Illuminator holder for BXFM
- BXFM-ILHS**
Illuminator holder for BXFM-S

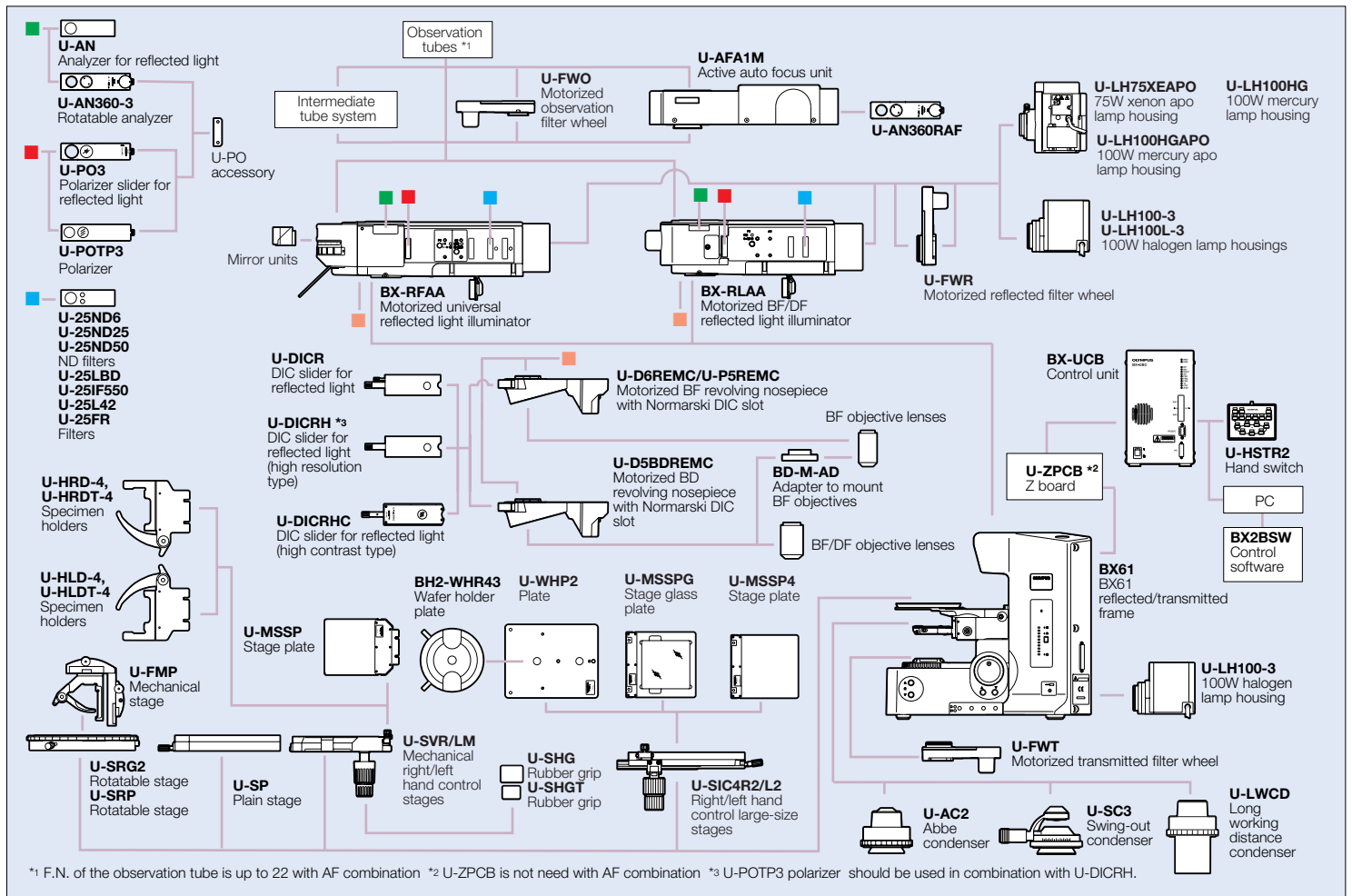
- BX51TRF**
BX51 reflected/transmitted frame
- BXFM-ILHSPU**
Assist spring for BXFM
- U-LH100-3**
100W halogen lamp housing
- U-POT**
Transmitted polarizer
- U-FC**
Filter cassette
- Filter (ø45)**
- BXFM-F**
BXFM frame

- U-DICR**
DIC slider for reflected light
- U-DICRH**
DIC slider for reflected light (high resolution type)
- U-DICRHc**
DIC slider for reflected light (high contrast type)
- U-D6REMC**
Motorized Normarski DIC sextuple revolving nosepiece
- U-P5REMC**
Motorized centerable (quintuple) revolving nosepiece
- U-D5BDREMC**
Motorized Normarski DIC quintuple BD revolving nosepiece
- BD-M-AD**
Adapter to mount BF objectives
- BF/DF objectives**

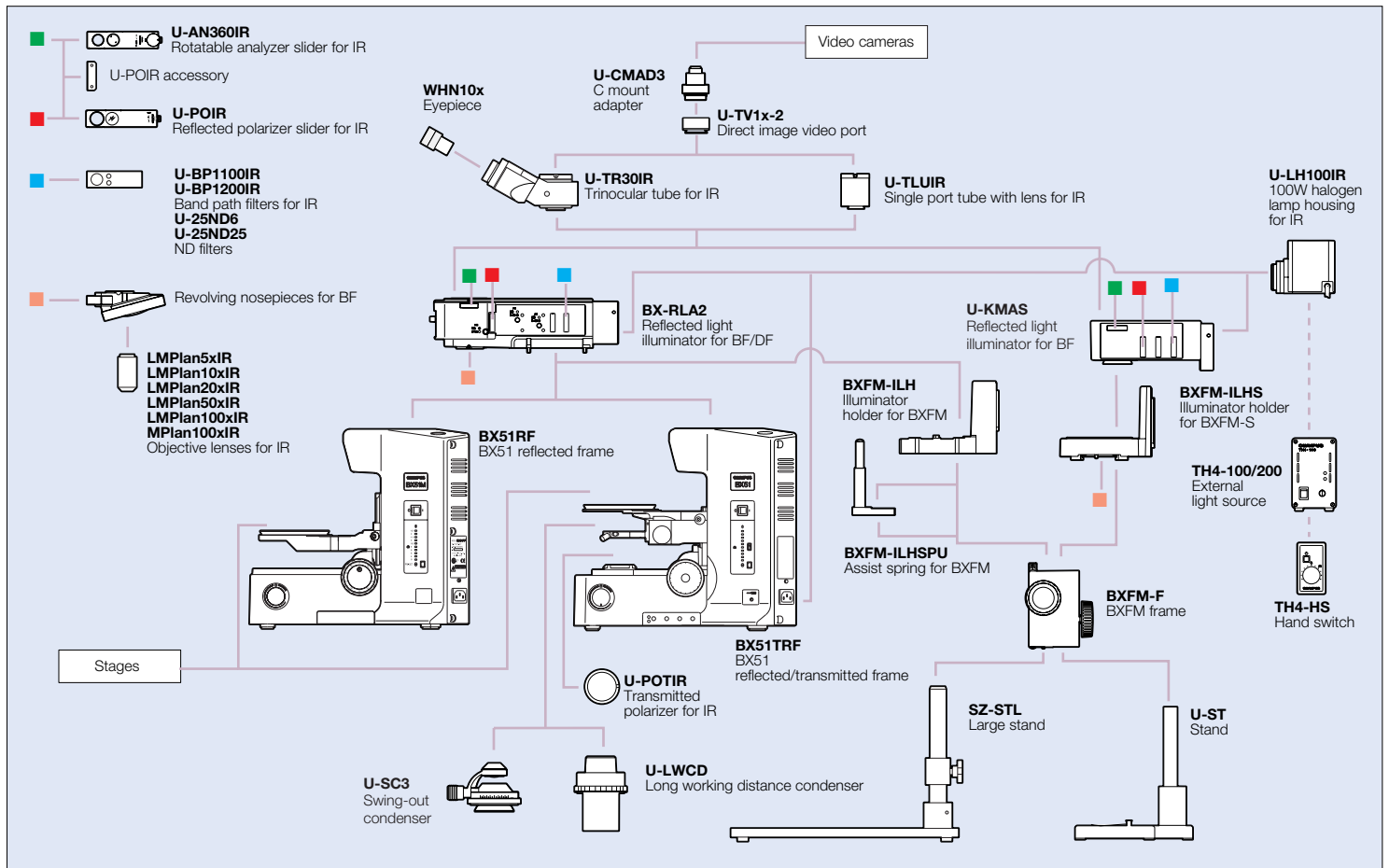
- U-AC2**
Abbe condenser
- U-SC3**
Swing-out condenser
- U-LWCD**
Long working distance condenser
- SZ-STL**
Large stand
- U-ST**
Stand

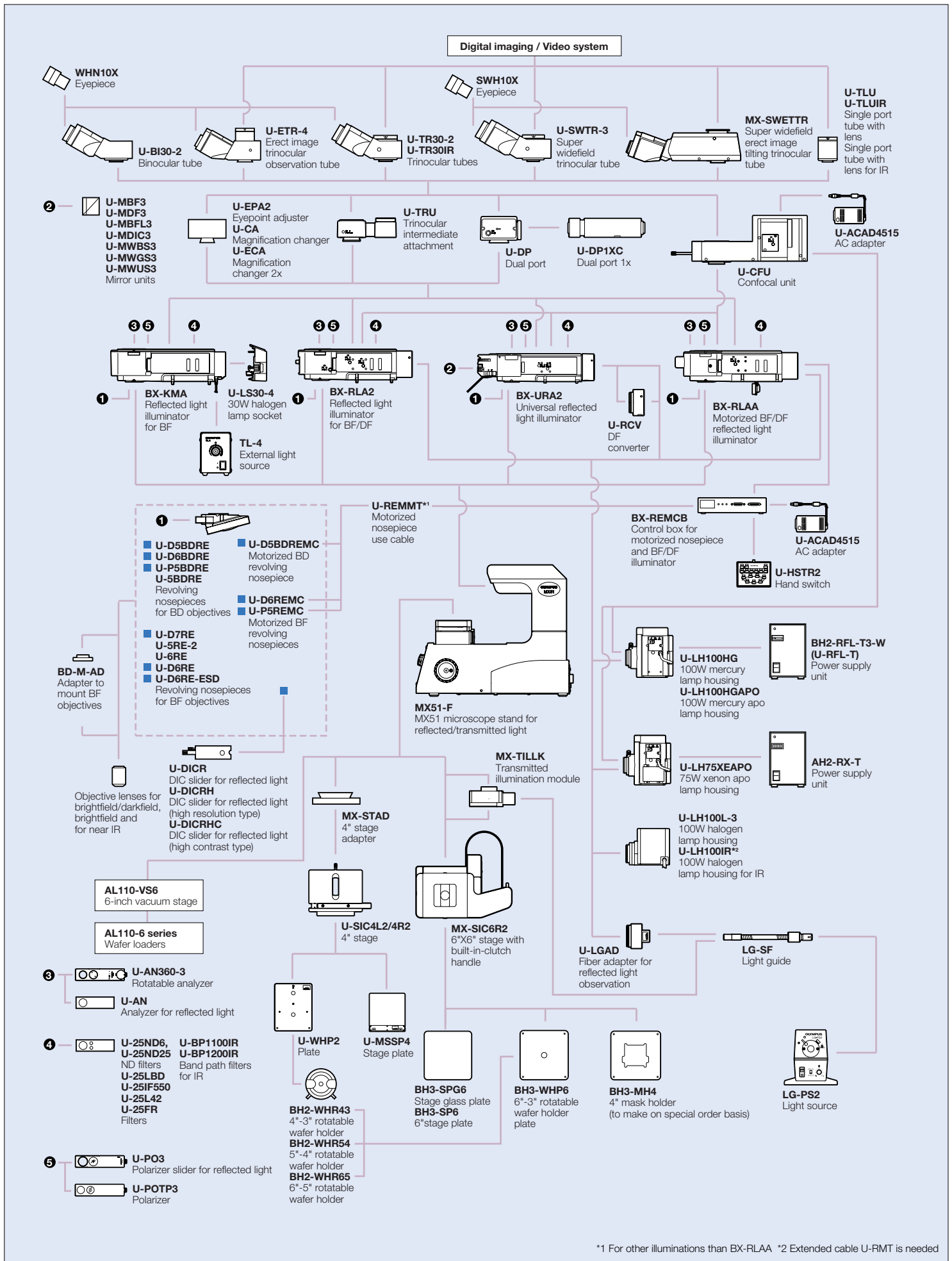
*1 Slight vignetting may occur in the periphery of the field of view in combination with an additional intermediate attachment or observation method.
 *2 Slight vignetting may occur in the periphery of the field of view in combination with fluorescence illuminator.
 *3 U-POTP3 polarizer should be used in combination with U-DICRH.
 *4 Exclusively for high intensity burner.
 *5 Different types may be offered in each area.

MOTORIZED SERIES SYSTEM DIAGRAM



IR SYSTEM DIAGRAM





*1 For other illuminations than BX-RLAA *2 Extended cable U-RMT is needed

BX41M/BX41M-ESD/BX51M/BX51/BX61 specifications

		BX41M/BX41M-ESD	BX51M	BX51	BX61
Optical system		UIS2 optical system (infinity-corrected)			
Microscope frame	Illumination	Reflected (ESD treatment)	Reflected	Reflected/transmitted	
		Built-in 6V30W light source Light preset switch	Built-in 12V100W light source Light preset switch LED voltage indicator	Built-in 12V100W light source Light preset switch LED voltage indicator Reflected/transmitted changeover switch	External 12V100W light source Light preset switch LED voltage indicator Reflected/transmitted changeover switch
	Focus	Stroke 25mm Fine stroke per rotation 100µm Minimum graduation 1µm With upper limit stopper, torque adjustment for coarse handle			Motorized focusing Stroke 25mm Minimum graduation 0.01µm
	Maximum sample height	65mm (w/o spacer)		25mm (w/o spacer)	
Observation tubes	Widefield (F.N. 22)	Inverted: binocular, trinocular, tilting binocular Erect: trinocular, tilting binocular			
	Super widefield (F.N. 26.5)	Inverted: trinocular Erect: trinocular, tilting trinocular			
Reflected light illumination	BF etc.	BX-KMA/BX-KMA-ESD 30W halogen BF/DIC/KPO ESD treatment applied	BX-RLA2 100W halogen (high intensity burner, fiber illuminator mountable) BF/DF/DIC/KPO FS, AS (with centering mechanism), BF/DF interlocking ND filter		BX-RLAA Motorized BF/DF changeover Motorized AS
	Reflected fluorescence	—	BX-URA2 100W mercury lamp, 75W xenon lamp 50W metal halide lamp 6 position mirror unit turret (standard: WB, WG, WU+BF etc) with FS, AS (with centering mechanism), with shutter mechanism		BX-RFAA Motorized 6 position turret Built-in motorized shutter With FS, AS
Transmitted light		—			100W halogen Abbe/long working distance condensers Built-in transmitted light filters (LBD, ND25, ND6)
Revolving nosepieces	For BF	Sextuple (with ESD treatment)	Sextuple, centering sextuple, septuple (motorized sextuple: optional)		Motorized sextuple, centering quintuple
	For BF/DF	—	Quintuple, centering quintuple, sextuple (motorized quintuple optional)		Motorized quintuple
Stages		Coaxial left(right) handle stage: 76(X)x52(Y)mm, with torque adjustment Large-size coaxial left (right) handle stage: 110(X)x105(Y)mm, with lock mechanism in Y axis			
Dimensions		approx. 283(W) x 489(D) x 480(H)mm	approx. 317.5(W) x 602(D) x 480(H)mm	approx. 317.5(W) x 602(D) x 480(H)mm	approx. 317.5(W) x 602(D) x 541(H)mm
Weight		approx. 15kg (Microscope frame 6.9kg)	approx. 19.5kg (Microscope frame 9.8kg)	approx. 20.8Kg (Microscope frame 10.3kg)	approx. 25.5kg (Microscope frame 11.4kg)

BXFM specifications

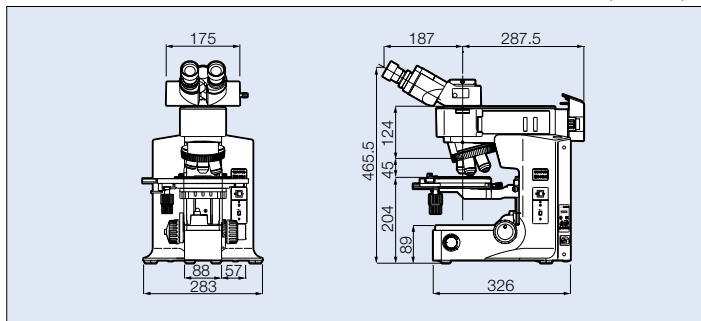
		BXFM	BXFM-S
Optical system		UIS2 optical system (infinity-corrected)	
Microscope frame	Focus	Stroke 30mm, Fine stroke per rotation 200µm, Minimum graduation 2µm, with torque adjustment for coarse handle	
Observation tubes	Widefield (F.N. 22)	For inverted image: binocular, trinocular, tilting binocular For erect image: trinocular, tilting binocular	
	Super widefield (F.N. 26.5)	For inverted image: trinocular For erect image: trinocular, tilting trinocular	
Reflected light illumination	BF etc.	BX-RLA2 100W halogen (high intensity burner, fiber illuminator mountable) BF/DF/DIC/KPO FS, AS (with centering mechanism), with shutter mechanism	U-KMAS 100W halogen fiber illumination BF/DIC/KPO
	Reflected fluorescence	BX-URA2 100W mercury lamp, 75W xenon lamp 6 position mirror unit turret (standard: WB, WG, WU+BF etc) with FS, AS (with centering mechanism), with shutter mechanism	—
Revolving nosepiece	For BF	Sextuple, centering sextuple, septuple (motorized sextuple: optional)	
	For BF/DF	Quintuple, centering quintuple, sextuple (motorized quintuple optional)	
Dimensions		Approx. 248 (W) x 587 (D) x 249 (H) mm	Approx. 394 (W) x 334 (D) x 276 (H) mm
Weight		Approx. 9kg (standard combination)	Approx. 6.2kg (standard combination)

MX51 specifications

Optics	UIS2 optics (infinity-corrected system)		
Microscope stand	2-guide rack and pinion method Coarse and fine co-axial Z-axis control stroke 32mm (2mm upper and 30mm below from the focal plane) The same stroke 15mm (combination with transmitted illumination) Stroke per rotation of fine Z-axis control 0.1 mm (1 unit 1 μ m) Coarse handle torque adjustment Coarse handle upper limit lever		
Illumination	BX-KMA Brightfield illuminator	BX-RLA2 Brightfield/Darkfield illuminator	BX-URA2 Universal Fluorescence illuminator
	Contrast changeover method	—	BF-DF slide method
Applicable observation mode	① Brightfield ② Nomarski DIC ③ Polarized light	① Brightfield ② Darkfield ③ Nomarski DIC ④ Polarized light ⑤ IR	Mirror (Max. up to 6) turret method ① Brightfield ② Darkfield ③ Nomarski DIC ④ Polarized light ⑤ Fluorescence
	Lamphousing	6V30W Halogen Lamp socket: U-LS30-4 Transformer: TL-4	12V100W Halogen Lamphouse: U-LH100L-3 Power supply is integrated in MX51
Transmitted illumination	Brightfield MX-TILLK combined with fiber light guide illumination (configured with MX-SIC6R2)		
Power supply unit	—	Rated voltage: 100-120/220-240V~1.8A/0.8A 50/60Hz Continuous light intensity dial	
Observation tube	U-BI30-2 Widefield binocular, U-TR30-2 Widefield trinocular, U-ETR3 Widefield erect image trinocular (F.N. 22) U-SWTR-3 Super widefield trinocular, MX-SWETTR Super widefield erect image tilting trinocular (F.N. 26.5)		
Revolving nosepiece	U-5RE-2, U-6RE U-D5BDRE, U-D6BDRE, U-P5BDRE (with slider slot for DIC Prism)		
Stage	U-SIC4R2/SIC4L2 Coaxial right/left-hand control 4" x 4" stage	MX-SIC6R2 Coaxial right/left-hand control 6" x 6" stage	
	Drive method: rack and pinion method Y axis stopper: lever method	Drive method: Belt method Stroke: 158(X) x 158 (Y) mm Clutch method: 2 clutch plates (Built-in-clutch ON/OFF handle) Holder dimensions: 200 x 200mm Transmitted light area: 100 x 100mm	
Dimensions/weight	Dimensions: Approx. 430(W) x 591(D) x 495(H)mm Weight: Approx. 26kg (Stand Approx. 11kg)		

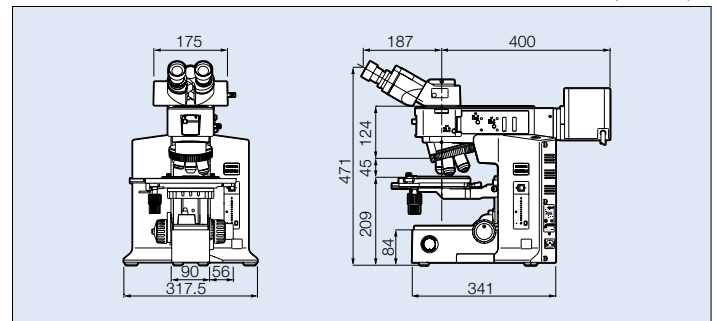
BX41M/BX41M-ESD dimensions

(unit: mm)



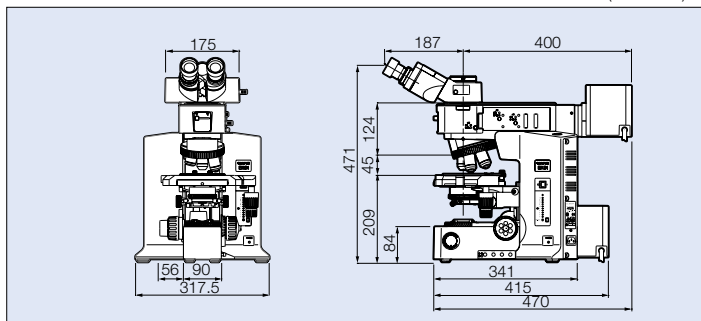
BX51M dimensions

(unit: mm)



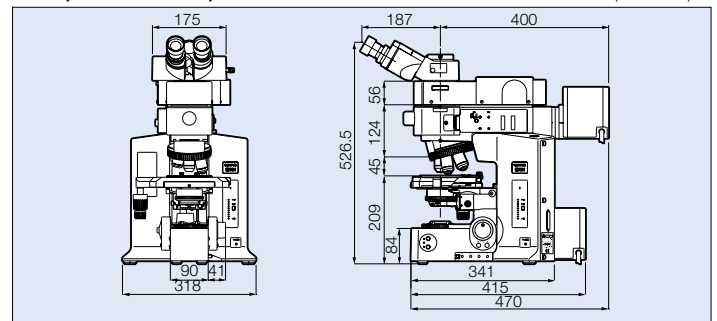
BX51 dimensions

(unit: mm)



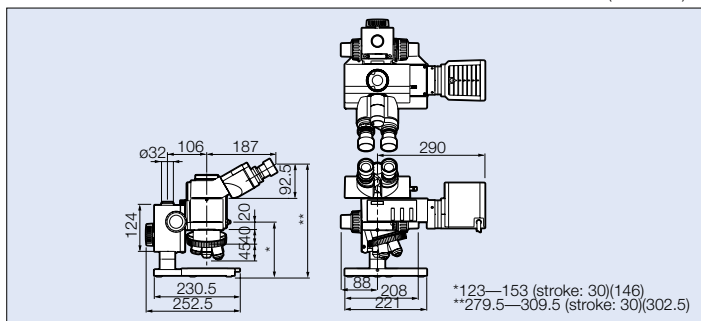
BX61 (AF combination) dimensions

(unit: mm)



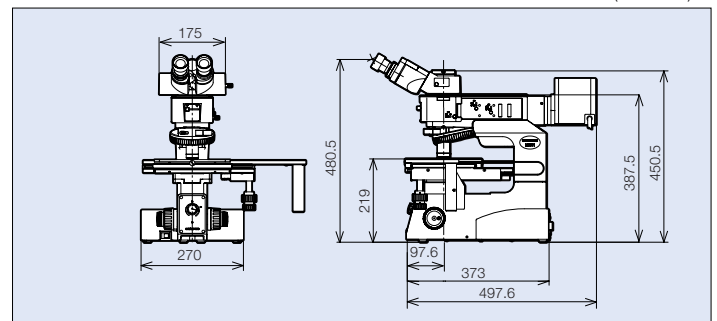
BXFM-S dimensions

(unit: mm)



MX51 dimensions

(unit: mm)





*All brands are trademarks or registered trademarks of their respective owners.

•OLYMPUS CORPORATION has obtained the ISO9001/ISO140001.

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

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