- **OLYMPUS CORPORATION has obtained the ISO9001/ISO14001.**
- **Illumination devices for microscope have suggested lifetimes.
  Periodic inspections are required. Please visit our web site for details.**

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OLYMPUS®

www.olympus.com

OLYMPUS CORPORATION
Shinjuku Monolith, 3-1, Nishi Shinjuku 2-chome, Shinjuku-ku, Tokyo, Japan

OLYMPUS EUROPA HOLDING GMBH
Wendenstrasse 14-18, 20097 Hamburg, Germany

OLYMPUS AMERICA INC.
3500 Corporate Parkway, Center Valley, Pennsylvania 18034-0610, U.S.A.

OLYMPUS AUSTRALIA PTY. LTD.
31 Gilby Road, Mt. Waverley, VIC 3149, Melbourne, Australia.

OLYMPUS LATIN AMERICA, INC.
5301 Blue Lagoon Drive, Suite 290 Miami, FL 33126, U.S.A.

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OLYMPUS®

Your Vision, Our Future

Microscope General Catalog

FOR INDUSTRIAL USE

3D Measuring Laser Microscope

Semiconductor/FPD Inspection Microscopes

Wafer Loader

Metallurgical Microscopes

Stereo Microscopes

Measuring Microscopes

Digital Cameras

Image Analysis Software

OLS4000 3D Measuring Laser Microscope

Designed for nanometer level imaging and measurement, the LEXT OLS4000 provides the first guaranteed accuracy specification in a laser confocal microscope. The creation of a Dual Confocal system allows this system to image and measure up to 85-degree slopes and image samples with both high and low reflectivity levels. **The LEXT OLS4000 is a class 2 laser product.*

OLS4000 Specifications

LSM section		Light source/Detector	Light source: 405 nm semiconductor laser, Detector: Photomultiplier
		Total magnification	108x – 17,280x
		Zoom	Optical zoom: 1x – 8x
Measurement	Planar measurement	Repeatability	100x: $3\sigma_{n-1}$=0.02 µm
		Accuracy	Measurement value ±2%
	Height measurement	System	Revolving nosepiece vertical-drive system
		Stroke	10 mm
		Scale resolution	0.8 nm
		Display resolution	1 nm
		Repeatability	50x: σ_{n-1}=0.012 µm
		Accuracy	0.2±L/100 µm or less (L=Measuring Length µm)
Color observation section		Light source/Detector	Light source: White LED, Detector: 1/1.8-inch 2-megapixel single-panel CCD
		Zoom	Digital zoom: 1x - 8x
Revolving nosepiece			Motorized BF sextuple revolving nosepiece
Differential Interference Contrast unit			Differential Interference Contrast slider: U-DICR, Polarizing plate unit built-in
Objective lens			BF Plan Semi-apochromat 5x, 10x LEXT-dedicated Plan Apochromat 20x, 50x, 100x
Z Focusing unit stroke			100 nm
XY stage			100 x 100 nm (Motorized stage), Option: 300 x 300 nm (Motorized stage)

This device is designed for use in industrial environments for the EMC performance (Class A device). Using it in a residential environment may affect other equipment in the environment.

Objective lens

Model	Magnification	Field of view	Working Distance (WD)	Numerical Aperture (NA)
MPLFLN5x	108x – 864x	2,560 – 320 µm	20.0 mm	0.15
MPLFLN10x	216x – 1,728x	1,280 – 160 µm	11.0 mm	0.30
MPLAPON20xLEXT	432x – 3,456x	640 – 80 µm	1.0 mm	0.60
MPLAPON50xLEXT	1,080x – 8,640x	256 – 32 µm	0.35 mm	0.95
MPLAPON100xLEXT	2,160x – 17,280x	128 – 16 µm	0.35 mm	0.95

U-UVF248

Deep Ultraviolet Observation System for Microscope

High-magnification DUV real-time observation just by adding a new module to a new or existing Olympus Microscope.

U-UVF248+MX61 configuration

U-UVF248 Specifications

UV248 compatible intermediate tube U-UVF248IM	DUV optics	Wavelength	248±4 nm
		Light source	80 W mercury xenon lamp
		Objective lens	Special DUV100x objective lens/ NA 0.9 WD 0.2 mm
		Intermediate magnification	2.5x
		Field number	12.5 (actual view field 50 µm)
		Usage environment	23±5°C
	Visible optics	Objective lens	UIS2 objective lens
		Intermediate magnification	1x
		Field number	22 (camera observation 20)
UV248 compatible light source box U-UVF248LB		Brightness adjustment	Manual adjustment from 0 to 100%
		Shutter	Up-down lever switch
UV quartz light guide U-UVF2FB/5FB		Length of 2 or 5 m	
Mercury xenon lamp housing		80 W mercury xenon lamp	
Power supply		Ushio product (100-120 V)	

DUV image capture

DUV camera	KP-F140UVF (Hitachi Kokusai Electric) High-resolution DUV digital camera
	SXGA 1360 (H) x 1024 (V)

Microscope

Recommended microscope system	Semiconductor inspection microscope/MX61
	300mm semiconductor/FPD inspection microscope/MX61L
	Industrial inspection microscope/MX51

Power consumption	3 kW (maximum)
Weight	Approx. 46 kg (with MX61) and approx. 28 kg (with MX51)

MX61A

Automatic Semiconductor Inspection Microscope System

MX61A is a top-end model in the semiconductor inspection microscope MX series. The MX61A has further advanced automation and motorization of microscopic observations, and achieved a new dimension in flexibility and expandability to meet specific inspection and analysis needs of users as a Dual-Engine concept.

MX61A Specifications

Optical system	UIS2/UIS optical system (infinity-corrected system)
Illumination system	• Reflected light illumination system (FN 26.5) • 12 V, 100 W halogen bulb (pre-centered). • Motorized brightfield/darkfield selection by mirror + 1 mirror unit (* optional). * Any desired observation mirror unit can be added. • Motorized aperture iris diaphragm built in. (Preset value for each objective lens, opened automatically for DF observation.) • Available reflected light observation methods: ① Brightfield; ② Darkfield; ③ DIC; ④ Simplified Polarized Light; ⑤ Fluorescent Light; ⑥ near IR; ⑦ DUV *⑦ requires MX2-BSW (PC) and cannot be configured with the MX-OPU61A operation unit.*
Motorized focusing mechanism	• High-rigidity, 2-guide cross-roller guide system • Ball screw + Stepping motor drive. • Stroke: 25.4 mm. • Fine adjustment sensitivity: Below 1 μm. Resolution: 0.01 μm. • Maximum speed: 5 mm/sec. (Default: 3 mm/sec.) • Maximum load (including the stage holders) MX-STSP10: 10 kg MX-STSP15: 15 kg MX-STSP22: 22 kg
Observation tube	• Super-widefield erect image trinocular tube (FN 26.5) MX-SWETTR (Optical path select 100:0, 0:100, tube inclination angle 0 to 42 degrees) U-SWETTR-5 (Optical path select 100:0, 20:80, tube inclination angle 0 to 35 degrees) • Infra-red wide field trinocular tube (FN 22) U-TR30IR (Optical path select 100:0, 0:100, tube inclination angle 30 degrees (fixed)).
Motorized revolving nosepiece	• Brightfield 6-position motorized revolving nosepiece: U-D6REMC, • Brightfield/darkfield 5-position motorized revolving nosepiece: U-D5BDREMC, • Brightfield/darkfield 5-position centerable motorized revolving nosepiece: U-P5BDREMC, • Brightfield/darkfield 6-position motorized revolving nosepiece: U-D6BDREMC
Controllers	• Operation Unit MX-OPU61A LCD touch panel with built-in control software. Enables microscope controls and observation condition setups. • Hand Switch MX-HS61A Enables microscope controls (using 1 jog dial + 14 buttons). • Software MX2-BSW (for a PC use) Application software for controlling the MX61A and motorized modules.
Stage	• MX-SIC1412R2: 14x12-inch stage with coaxial knobs on the bottom right Stroke: 356 x 305 mm (Transmitted illumination field 356 x 284 mm). Roller guide type sliding belt drive (rack-less). Grip clutch mechanism (Belt interlock-release system). • MX-SIC8R: 8x8-inch stage with coaxial knobs on the bottom right. Stroke: 210 x 210 mm (Transmitted illumination field 189 x 189 mm). Roller guide type sliding belt drive (rack-less). Grip clutch mechanism (Belt interlock-release system). • 99S003-06 200mm Scanning Stage Stroke: 203 x 203 mm Please consult the Olympus with 300mm scanning stage.
Dimensions & weight	• Dimensions: Approx. 711 (W) x 853 (D) x 552 (H) mm. • Weight: Approx. 56 kg (Microscope stand only: Approx. 31 kg) *In the MX61A configuration of the following items: the MX-SIC1412R2 stage, MX-WHPR128 wafer holder, U-D6BDREMC motorized revolving nosepiece, U-AFA2M-VIS active auto focusing unit, MX-AFC MX Cover for AF, MX-SWETTR observation tube and U-LH100-3 lamp housing are combined:*
Operating environment	• Indoor use. • Altitude: Max. 2000 meters. • Ambient temperature:10° through 35°C (50° through 95° F). • Relative humidity: 80% for temperatures up to 31°C (88°F) (without condensation), decreasing linearly through 70% at 34°C (93°F), 60% at 37°C (99°F) to 50% relative humidity at 40°C (104°F). • Supply voltage fluctuations: ±10%. • Pollution degree: 2 (in accordance with IEC60664). • Installation (overvoltage) category: II (in accordance with IEC60664)

This device is designed for use in industrial environments for the EMC performance (Class A device). Using it in a residential environment may affect other equipment in the environment.

Semiconductor/FPD Inspection Microscopes

UIS2 World-leading optics

Inspection
Dual-Engine
Analysis

- Selectable Dual-Engine
- Superior observation images for everyone
- Optimized solutions
- Ergonomics and environment

Inspection

◆ *The operation unit controlling the entire MX61A system as an Inspection-Engine plus auto focus compatible with a wide range of observation methods and detailed customized settings provide a higher level inspection environment.*

Optimized view and image data management
Digital imaging system

Optimized performance in wafer inspection
Wafer loader system

Analysis

◆ *The "Microscope control software" controlling the entire MX61A system as an Analysis-Engine broadens the expandability of MX61A and supports advanced analysis requirements.*

Ultra high resolving power in Visible/DUV light
Fully automated DUV system

Scanning Stage and Digital Documentation Integration System
Automated microscopy operation system

analySIS® FiVE

ruler/imager/docu/auto/pro

Digital Power Analyzing — analySIS FiVE software provides sophisticated solutions for all applications involving materials analysis, industry and quality assurance, ensuring efficient and successful results.

Sample combination with an industrial microscope and a digital camera

analySIS® FIVE Specifications

Function/type	ruler	imager	docu	auto	pro
Camera control/microscope control*	✓	✓	✓	✓	✓
Measurement	✓	✓	✓	✓	✓
Stitching images		⋆	✓	✓	✓
Extended focus		⋆	✓	✓	✓
3D image		✓	✓	✓	✓
Particle analysis		⋆	⋆	✓	✓
Database		✓	✓	✓	✓
Report generator		✓	✓	✓	✓
Fourier Transformation		⋆	⋆	⋆	✓
Pattern measurement		⋆	⋆	⋆	✓

* For acceptable cameras and microscopes, please consult your Olympus dealer.

✓: standard ⋆: Can be extended using special expansion software "add-ins". For details, please consult your Olympus dealer.

Hardware requirements

OS	Windows 2000 SP4 Windows XP SP2
Memory	256MB or higher (512MB and more recommended)
CPU	Pentium III 500MHz or higher (Pentium 4 1.8GHz or higher recommended)
Hard disk	200MB or higher
Display	1024 X 768 resolution or higher, 1280 X 1024 resolution, 16.77 million color recommended
Browser	Internet Explorer 3.02 or later (version 6.0 or higher recommended)
Others	CD-ROM drive or DVD-ROM drive

Note: The different models might be available in some areas.

UIS2/UIS Objective Lenses

Universal Infinity System

UIS2/UIS optical characteristics of objective lenses for industrial and metallurgical applications.

MPLAPON series

This is a Plan Apochromat objective lens series for brightfield observation with chromatic aberration corrected at high level. Olympus has assured that this series has the optical performance (wavefront aberration) with a Strehl ratio*1 of 95% or more*2 first in the world as a universal objective lens. This series is also compatible with a differential interference contrast or simple polarized observation.

MPLAPON100xO

This is a Plan Apochromat objective lens of the oil-immersion type*3 that features a numerical aperture of 1.4. It provides the highest level of chromatic aberration correction and a high resolving power.

MPLFLN (-BD) series

These Plan SemiApochromat 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*4 and simple polarized observation. All 50x or higher objective lenses have 1 mm 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 SemiApochromat POL design ensures through compensation for coma aberration. Distortion is also minimized, which makes these objective lenses the best choice for Nomarski DIC microscopy.

SLMPLN series

This Ultra long working distance Plan objective lens series minimizes a risk of collision between the specimen and the objective lens and it also delivers high contrast imaging.

LMPLFLN (-BD) series

Long working distance Plan SemiApochromat objective lenses provide more free space between the objective lens and the specimen so that it can prevent from collision between objective lens with the stepped specimen. 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 . Use the BD series in brightfield and darkfield observation.

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 imaging specimen through glass plate like an LCD application. Aberration correction matched to the glass thickness is possible by using a correction ring.

LMPlan-IR, MPlan-IR series

Plan Achromat objective lenses which compensate for aberrations from visible to near infrared light.

*1 Strehl ratio: When the light condensing ratio (central intensity) on the image field of an ideal aplanatic optical system is assumed as 100%, a light condensing ratio in % that an actual optical system can condense is known as Strehl ratio. The greater is this numeric value, the better becomes the quality of an optical system.

*2 Strehl Ratio is guaranteed by the following conditions. •Measurement : Transmitted Wavefront Interferometer (OLYMPUS in-house equipment) •Temperature : 23 ± 1 centigrade •Measurement Area : 97% in pupil diameter

*3 Specified oil: IMMOIL-F30CC *4 The MPLFLN40x objective lens is not compatible with the differential interference contrast microscopy.

UIS2 World-leading optics

Lens optical character	Magnification	N.A.	W.D. (mm)	Cover glass thickness*5 (mm)	Resolution*6 (µm)
MPLAPON	50x	0.95	0.35	0	0.35
	100x	0.95	0.35	0	0.35
MPLAPON	100xO*3	1.4	0.1	0	0.24
MPLFLN	1.25x*7*8	0.04	3.5	—	8.39
	2.5x*8	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
	40x*4	0.75	0.63	0	0.45
	50x	0.80	1.0	0	0.42
	100x	0.90	1.0	0	0.37
MPLFLN-BD*9*10	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
	150x	0.90	1.0	0	0.37
MPLFLN-BDP*9*10	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
SLMPLN	20x	0.25	25	—	1.34
	50x	0.35	18	0	0.96
	100x	0.6	7.6	0	0.56
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*9*10	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*7	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*7*9*10*	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	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

Lens optical character	Magnification	N.A.	W.D. (mm)	Cover glass thickness*5 (mm)	Resolution*6 (µm)
LMPlan-IR*7	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*7	100x	0.95	0.3	—	—

*5 — : Applicable to the view of specimens with/without a cover glass
0 : Applicable to the view of specimens without a cover glass.

*6 Resolutions calculated with aperture iris diaphragm wide open.

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

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

*9 BD: Brightfield/darkfield objective lenses.

*10 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.