materials science

Microscopes for materials science applications have specific objectives and other tools such as incident illuminations, polarization and compensation filters. This allows precise observation of materials such as metals, plastics, minerals, asbestos, glass, wood and chemical materials

Euromex offers a range of metallurgical microscopes, microscopes with rotatable stages and strain-free objectives for polarized light observation, microscopes for asbestos identification and inverted materials science microscopes

industry
materials science

MATERIALS SCIENCE MICROSCOPES

iscope®

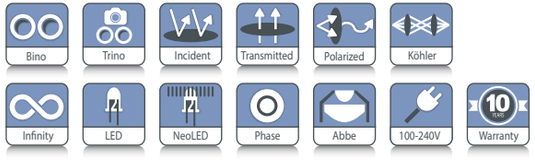
FEATURED

iScope®
for materials science

The iScope® microscopes are supplied with specific attachments that turn the iScope® into a state-of-the-art materials science microscope, suitable for various applications

There are three types of materials science microscopes. Metallurgical microscopes, polarization microscopes and microscopes specifically designed for asbestos identification

IS.1053-PLMi



IS.1053-PLMi
585 (h) x 210 (w) x 480 mm (d) | 10.5 kg
IS.1053-PLPOLRi
590 (h) x 210 (w) x 475 mm (d) | 12.3 kg

HIGHLIGHTS

- **EWF 10x/20 mm and EWF 10x/22 mm eyepieces**
- **Binocular and trinocular models**
- **Reversed revolving nosepiece**
- **Infinity corrected IOS objectives for material observation, polarization and asbestos research**
- **150 x 140 mm rackless stage equipped with metal and glass inserts**
- **Ø 160 mm rotatable circular stage for polarization models**
- **Diascopic 3 W NeoLED™ Köhler illumination**
- **Epi-NeoLED™ illumination for metallurgical models**
- **50 W Epi-illumination for polarization models**
- **iCare sensor for energy saving**
- **CSS - Cable Storage System**
- **10 Years warranty**

IS.1053-PLPOLRi

SPECIFICATIONS

EYEPIECES
The metallurgical models are supplied with extended EWF 10x/20 mm (Ø 30 mm tube) eyepieces. Polarization models are supplied with a pair of EWF 10x/22 mm (Ø 30 mm tube) eyepieces, one eyepiece with crosshairs and one eyepiece with crosshairs and micrometer reticle

Specific models for asbestos identification are supplied with HWF 12.5x/15 mm (Ø 30 mm tube) eyepieces and a Walton-Beckett reticle

HEAD
Binocular and trinocular Siedentopf type heads with 30° inclined tubes. Interpupillary distance from 48 to 76 mm. Two ± 5 diopter adjustments. A unique rotating system allows ergonomic positioning of both tubes in a high (431 mm) and in a low position (397 mm).
Optional photo C-mount adapters with built-in 0.33x or 0.5x objective fits the trinocular head with 23.2 mm tube

NOSEPIECE
Models for polarization are supplied with reversed revolving quadruple nosepiece. Other models have a reversed quintuple nosepiece on ball bearings

STAGE
- 150 x 140 mm rackless stage equipped with double slide holder and integrated 78 x 53 mm mechanical stage. Supplied with a plain metal and plain glass inserts
- Ø 160 mm circular stage for polarization models, 360° rotatable with Vernier and two object clamps; an optional 30 x 40 mm X-Y mechanical stage is available

A ceramic stage is also available on request

STANDARD CONDENSER
Metallurgical models are equipped with height adjustable Abbe N.A. 1.25 condenser with iris diaphragm. Suitable for slider with darkfield stop for magnifications up to maximum 400x. Optional height adjustable Abbe N.A. 0.9/1.25 swing-out condenser with iris diaphragm

CONDENSER FOR POLARIZATION MICROSCOPES

Height adjustable Abbe N.A. 1.25 condenser with iris diaphragm and 360° rotatable polarizer

CONDENSER FOR ASBESTOS RESEARCH MICROSCOPES

Height adjustable Abbe 1.25 phase contrast condenser supplied with slider with 10/40 annuli, green filter and alignment telescope

FOCUSING

Coaxial coarse and fine adjustments, 200 graduations, 1 µm per graduation, 200 µm per rotation, total travel range is approximately 24 mm (20 mm for metallurgical versions) and is supplied with an adjustable rack stop to prevent damage to sample and objectives. The coarse adjustment is equipped with friction control

DIASCOPIC ILLUMINATION

Intensity adjustable 3 W Köhler NeoLED™ illumination with internal 100-240 V power supply. The larger aperture of NeoLED™ allows the optical systems of the iScope® microscope to produce images at higher resolutions, very close to the theoretical diffraction limit of the optics. Other benefits for choosing NeoLED™ are low energy consumption, no heating and a long operating life span.
The Köhler setting provides homogeneous illumination and high contrast

OBJECTIVES

Plan PLMi IOS [1]	5x/0,12	10/0.25	20x/0.40		50x/0.70		S100x/0.80 (6)
Plan PLPOLi IOS [2]	5x/0.12	10/0.25	20x/0.40	S40x/0.65		S60x/0.80 (6)	S100x/1.25 (6)
Plan PLPOLRi IOS [3]	5x/0.12	10/0.25	20x/0.40 (6)		50x/0.70		S100x/0.80 (6)
Plan PLi IOS [4]	4x/0.10	10/0.25	20x/0.40	S40x/0.65 (5)		S60x/0.85 (6)	S100x/1.25 (6)

[1] Plan PLMi Infinity corrected objectives for observation of materials. No cover glass correction
[2] Plan PLPOLi strain free infinity corrected objectives for polarization applications. With 0.17 mm cover glass correction. For transmitted illumination
[3] Plan PLPOLRi strain free Infinity corrected objectives for polarization applications. No cover glass correction. For reflected illumination attachment
[4] Plan PLi infinity corrected objectives for asbestos research. With 0.17 mm cover glass correction
[5] The S40x objective for asbestos research is a plan phase PLPHi infinity corrected objective. With 0.17 mm cover glass correction
[6] Optional objectives
All optics are anti-fungus treated and anti-reflection coated for maximum light throughput

REFLECTED ILLUMINATION FOR METALLURGICAL MODELS

Metallurgical models are equipped with a reflected NeoLED™ illumination and external 100-240 V power supply. Supplied with a 0-90° polarization filter in slider, fixed analyzer in slider, white, green, blue and yellow filters

REFLECTED ILLUMINATION FOR POLARIZATION MODELS

Polarization models are equipped with a 50 W 12 V halogen epi-illumination and external 100-240 V power supply. Supplied with 360° rotatable polarization filter, analyzer, Bertrand lens, 1 λ first red plate, 1/4 λ retardation plate, a quartz wedge, sliders with green/blue and whiter/polarizer filter

ICARE SENSOR

The unique iCare Sensor is developed to avoid unnecessary loss of energy. The illumination of the microscope automatically switches off shortly after microscopists step away from their position

CSS – CABLE STORAGE SYSTEM

iScope® allows users to easily insert the power cable into the back of the instrument, which enables easy storage. The integrated carrying grip at the back of the microscope ensures safe transportation of the microscope

PACKAGE CONTENT

Supplied with power cord, dust cover, spare fuse and user manual. All packed in polystyrene boxes

ISCOPE® POLARIZATION MODELS

MODELS	Bino	Trino	EWF 10x/22 mm[4]	Plan PLPOLi 5x/10x/20x/ S40x IOS objectives[1]	Plan PLPOLRi 5x/10x/20x/ S50x IOS objectives[2]	Ø160 mm stage, 360° rotatable	Polarization condenser with gratuated 360° polarizer	iCare Sensor	Transmitted illumination Köhler LED	50W 12V halogen epi-illumination[3]
IS.1052-PLPOLi	•		•	•		•	•	•	•	
IS.1053-PLPOLi		•	•	•		•	•	•	•	
IS.1052-PLPOLRi	•		•		•	•	•	•	•	•
IS.1053-PLPOLRi		•	•		•	•	•	•	•	•

[1] Strain free objectives with 0.17 mm cover glass correction
[2] Strain free objectives without 0.17 mm cover glass correction
[3] The reflected 50 W illumination attachment of the IS.1052-PLPOLRi and IS.1053-POLRi models are equipped with a 360° rotatable polarization filter, analyzer, Bertrand lens, 1 λ first red plate, 1/4 λ retardation plate, a quartz wedge, slider with green and blue filter. External 240 or 115 Vac/ 12 Dc 4.16 A power supply
[4] The iScope® polarization models are supplied with a EWF 10x/22 mm eyepiece with a crosshairs reticle and a EWF 10x/22 mm eyepiece with crosshairs and 10/100 micrometer

ISCOPE® METALLURGICAL MODELS

MODELS	Bino	Trino	EWF 10x/20 mm	Plan PLMi 5x/10x/20x/ S50x IOS objectives *	Mechanical rackless stage	Abbe condenser	Köhler 3 W LED	Metallurgical attachment with NeoLED™ epi-illumination
IS.1052-PLMi	•		•	•	•	•	•	•
IS.1053-PLMi		•	•	•	•	•	•	•

**Objectives without cover glass correction*

The reflected illumination attachment is supplied with a 0-90° polarizer mounted in a slider, a fixed analyzer in slider, a white, yellow and blue filter, all mounted in a slider. External 100-240 Vac/ 7.5 Dc power adapter

ISCOPE® ASBESTOS RESEARCH MODELS

MODELS	Binocular	Trinocular	HWF 12.5x/15 mm	HWF 12.5x/15 mm, with Walton-Bracket	Plan PLi 4/10x objectives *	Plan phase PLPHi S40x objectives	Phase contrast condenser	Mechanical rackless stage	iCare Sensor	Köhler LED
IS.1052-PLAi	•		•	•	•	•	•	•	•	•
IS.1053-PLAi		•	•	•	•	•	•	•	•	•

** Objectives with cover glass correction*

***Note**: the iScope® asbestos research model is equipped with a 87/230 x 140 mm rackless stage with double slide holder and integrated 79 x 52 mm mechanical stage. The iScope® rackless stage has no protruding parts, enables more smooth movements and is safer to work with (see photo on the right)*

ACCESSORIES AND SPARE PARTS

EYEPIECES

IS.6210 EWF 10x/22 mm eyepiece (Ø 30mm tube)
IS.6210-C EWF 10x/22 mm eyepiece with crosshairs (Ø 30 mm tube)
IS.6210-P EWF 10x/22 mm eyepiece with pointer (Ø 30 mm tube)
IS.6210-CM EWF 10x/22 mm eyepiece with 10/100 micrometer and crosshairs (Ø 30 mm tube)
IS.6212 WF 12.5x/17 mm eyepiece (Ø 30 mm tube)
IS.6212-W WF 12.5x/17 mm eyepiece with Walton Beckett reticle (Ø 30 mm tube)
IS.6215 WF 15x/16 mm eyepiece (Ø 30 mm tube)
IS.6215-CM EWF 15x/16 mm eyepiece with 10/100 micrometer and crosshairs (Ø 30 mm tube)
IS.6220 WF 20x/12 mm eyepiece (Ø 30 mm tube)
IS.6299 Pair of eyecups for infinity corrected iScope® models
IS.6310 EWF 10x/20 mm eyepiece (Ø 30mm tube)

PLAN PLMI INFINITY CORRECTED IOS OBJECTIVES FOR MATERIALS SCIENCE

IS.8105 Plan PLMi 4x/0.12 IOS objective. * WD 15.5 mm
IS.8110 Plan PLMi 10x/0.25 IOS objective. * WD 10 mm
IS.8120 Plan PLMi 20x/0.40 IOS objective. * WD 5.8 mm
IS.8150 Plan PLMi S50x/0.70 IOS objective. * WD 0.32 mm
IS.8100 Plan PLMi S100x/0.80 IOS objective. * WD 2 mm

** No cover glass correction*

PLAN PLI INFINITY CORRECTED IOS OBJECTIVES FOR ASBESTOS RESEARCH

IS.7202 PLan PLi 2x/0.05 IOS objective. ** WD 20.2 mm
IS.7204 PLan PLi 4x/0.12 IOS objective. ** WD 15.4 mm
IS.7210 PLan PLi 10x/0.25 IOS objective. ** WD 10 mm
IS.7220 PLan PLi 20x/0.40 IOS objective. ** WD 5.1 mm
IS.7210 PLan phase PLPHi 40x/0.65 IOS objective. ** WD 0.54 mm
IS.7260 PLan PLi 60x/0.85 IOS objective. ** WD 0.14 mm
IS.7200 PLan PLi 100x/1.25 IOS objective. ** WD 0.19 mm

*** With 0.17 mm cover glass correction*

PLAN PLPOLI INFINITY CORRECTED IOS OBJECTIVES FOR POLARIZATION

without reflected illumination attachment

IS.7905-T Plan PLPOLi 5x/0.12 IOS objective. * WD 15.5 mm
IS.7910-T Plan PLPOLi 10x/0.25 IOS objective. * WD 10 mm
IS.7920-T Plan PLPOLi 20x/0.40 IOS objective. ** WD 5.1 mm
IS.7940-T Plan PLPOLi S40x/0.65 IOS objective. ** WD 0.54 mm
IS.7960-T Plan PLPOLi S60x/0.80 IOS objective. ** WD 0.14 mm
IS.7900-T Plan PLPOLi S100x/1.25 IOS oil immersion objective. ** WD 0.13 mm

** No cover glass correction*

*** With 0.17 mm cover glass correction*

PLAN PLPOLRI INFINITY CORRECTED IOS OBJECTIVES FOR POLARIZATION

with reflected illumination attachment

IS.7905-R Plan PLPOLi 5x/0.12 IOS objective. * WD 15.5 mm
IS.7910-R Plan PLPOLi 10x/0.25 IOS objective. * WD 10 mm
IS.7920-R Plan PLPOLi 20x/0.40 IOS objective * WD 5.8 mm
IS.7950-R Plan PLPOLi S50x/0.75 IOS objective. * WD 0.92 mm
IS.7900-R Plan PLPOLi S100x/0.80 IOS objective. * WD 2 mm

** No cover glass correction*

TRANSMITTED KÖHLER ILLUMINATION SYSTEM

IS.9700 Blue filter 45 mm for lamphouse
IS.9702 Green filter 45 mm for lamphouse
IS.9704 Yellow filter 45 mm for lamphouse
IS.9706 White opaque filter 45 mm for lamphouse
SL.5503 3 W NeoLED™ replacement unit

POLARIZATION ATTACHMENT

without reflected illumination

IS.9604 Quartz wedge in slider
IS.9608 Analyzer 0-360° rotatable
IS.9610 Lambda plate first red 530 nm in slider
IS.9612 Lambda/4 retardation plate in slider

POLARIZATION ATTACHMENT

with reflected 50W/12V halogen illumination

IS.9602-R Polarizer
IS.9604-R Quartz wedge in slider
IS.9608-R 360° Rotatable analyzer in slider
IS.9610-R Lambda plate first red 530 nm
IS.9612-R Lambda/4 retardation plate in slider
AE.3679 Halogen spare bulb 12 V 50 W

MATERIALS SCIENCE ATTACHMENT

with reflected NeoLED™ epi-illumination

IS.9230 Reflected NeoLED™ epi-illumination attachment with for materials science with 5x, 10x, 20x and S50x objectives. Supplied with a 0-90° polarizer mounted in a slider, a fixed analyzer in slider, a white, yellow and blue filter, all mounted in a slider. With external 100-240 Vac/ 7.5 Vdc power adapter
IS.9720 Blue filter in slider
IS.9722 Green filter in slider
IS.9724 Yellow filter in slider
IS.9726 White filter in slider
IS.9727 Polarizer 0-90° in slider for materials science attachment (IS.9230)
IS.9728 Analyzer 0-360° rotatable in slider for materials science attachment (IS.9230)
IS.9731 Slider with green and blue filters
IS.9515 Metal plain insert for mechanical stage
IS.9518 Glass plain insert for mechanical stage
SL.5500 3 W NeoLED™ replacement unit

CAMERA ACCESSORIES

AE.5130 Universal SLR adapter with built-in 2x lens without T2 adapter. For standard 23.2 mm tube
AE.5040 T2 adapter for Canon EOS SLR digital camera
AE.5025 T2 adapter for Nikon D SLR digital camera

MISCELLANEOUS

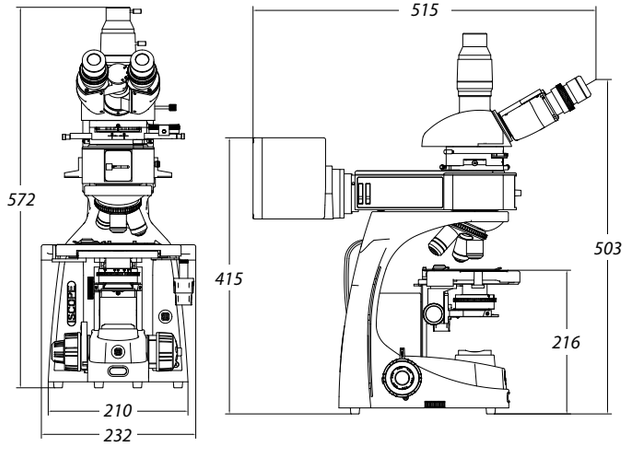
IS.9522 Optional 30 x 40 mm X-Y mechanical stage for circular polarization stage

DISPOSABLES

PB.5155 Microscope slides 76 x 26 mm, ground edges, 50 pieces
PB.5165 Cover glasses 18 x 18 mm, thickness 0.13 - 0.17 mm, 100 pieces
PB.5168 Cover glasses 22 x 22 mm, thickness 0.13 - 0.17 mm, 100 pieces
PB.5245 Lens cleaning paper, 100 sheets per pack
PB.5255 Immersion oil, n = 1.482 (25 ml)
PB.5274 Cleaning liquid, isopropanol alcohol 99% (200 ml)
PB.5275 Cleaning kit: lens cleaning fluid, lint free lens tissue, brush, air blower and cotton swabs

WD = working distance

Ceramic stage



MATERIALS SCIENCE MICROSCOPES

bscope®

FEATURED

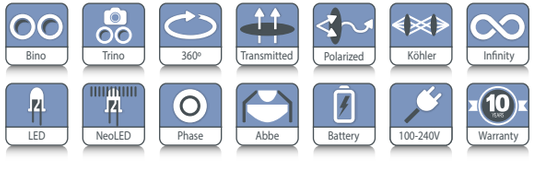
● *BS.1053-PLMi*

bScope®

for materials science

The well-equipped microscopes of the bScope® for materials science are especially configured for observation of all kinds of materials such as metals, plastics, wood, glass, etc. These microscopes are extensively used in the materials research and quality assurance laboratories

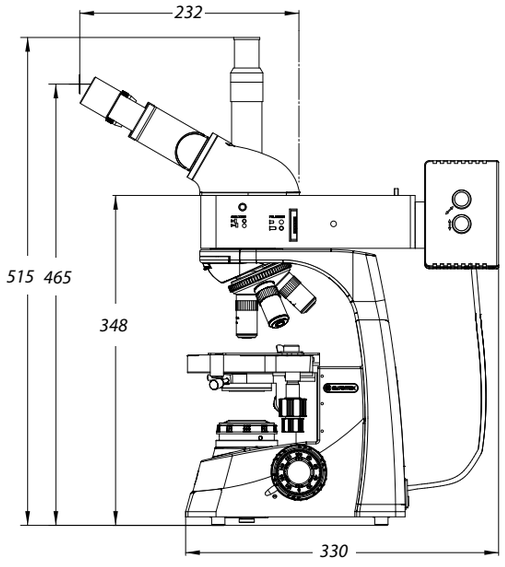
The design of he bScope® is both ergonomic and evolutive. Wide field WF 10x/22 mm eyepieces and low focusing controls minimize fatigue during long working sessions and therefore provide more comfort for microscopists. The robust and compact size of the bScope® together with the Cable Storage System allow more working space, safer operation and easy storage



TRINOCULAR MODEL BS.1053-PLMi
515 (h) x 195 (w) x 431 mm (d) | 8.5 kg

HIGHLIGHTS

- **Materials science microscopes**
- **Trinocular models**
- **WF 10x/22 mm eyepieces**
- **Reversed ball-bearing quintuple nosepiece with slot for polarization filter**
- **Plan M-IOS objectives**
- **Polarizer and analyzer filters**
- **Rackless integrated X-Y mechanical stage**
- **3 W NeoLED™ adjustable transmitted and reflected NeoLED™ illumination**
- **Integrated carrying grip**
- **Cable Storage System and anti-theft system**
- **10 Years warranty**



SPECIFICATIONS

EYEPIECES

Wide field WF 10x/22 mm eyepieces with 22 mm field of view (Ø 30 mm tube)

HEAD

The bScope® is equipped with a Siedentopf type head, 360° rotatable and equipped with 30° inclined tubes, sporting a ± 5 diopter adjustment on left eyepiece. The interpupillary distance is adjustable between 48 to 76 mm. The trinocular head comes with a Ø 23.2 mm tube, ensuring maximum flexibility. The prisms inside the heads are designed to minimize the light absorption for perfect digital imaging. The trinocular head has a light path selector (100:0 / 0:100) and generates an erect image. Models with an integrated USB-2.0 camera are supplied with a 5.0 MP 1/2.5" CMOS sensor with a resolution of 2592 x 1944 pixels (see chapter 10)

Trinocular light path selector 100-0/0-100

NOSEPIECE

Revolving and reversed ball-bearing quadruple nosepiece

OBJECTIVES

The state-of-the-art production techniques and multi layer coatings used for the manufacturing of the bScope® objectives enable the bScope® to be used for the most demanding applications. World class spherical aberration correction and modern CNC and assembly technology ensure perfect centering of the objectives

Infinity corrected achromatic DIN plan M-IOS 5x/0.12, 10x/0.25, 20x/0.40, 50x/0.70 IOS objectives. Optional plan M-IOS S80x/0.80 and S100x/0.85 DIN IOS objective are also available

The S80x and S100x objectives are spring loaded
All optics are anti-fungus treated and anti-reflection coated for maximum light throughput

FOCUSING

Double coaxial, low-positioned coarse and fine adjustments with 180 graduations. Precision 1.1 µm, 200 µm per rotation, total travel range is approximately 19 mm. Supplied with an adjustable rack stop to prevent damage to sample and objectives. The coarse adjustment is equipped with friction control

STAGE

The bScope® is equipped with a scratch resistant 185 x 140 mm stage with integrated 74 x 48 mm X-Y rackless mechanical stage, Vernier scale, soft-close removable specimen holder

The rackless stage has no protruding parts, enables more smooth movements and is safer in use. Low-positioned X-Y control knobs prevent fatigue during long working sessions

CONDENSER FOR BRIGHTFIELD

The standard height adjustable Abbe N.A. 1.25 condenser for brightfield comes with an iris diaphragm and swing-out filter holder

POLARIZATION

The bScope® has an integrated slot above the nosepiece for an optional polarization filter for transmitted illumination

NEOLED™ REFLECTED ILLUMINATION

Reflected intensity adjustable 3 W NeoLED™ Köhler illumination with external power supply, push-pull type rotatable polarizer and push-pull analyzer, built-in condenser with iris diaphragm and field iris diaphragm. Integrated rotating filter disc with green, blue, yellow and white filters

NEOLED™ TRANSMITTED ILLUMINATION

The 3 W adjustable Köhler NeoLED™ diascopic illumination is powered by an internal 100-240 V power supply making it suitable for worldwide use. The innovative NeoLED™ design offers larger apertures, allowing the optical system of the bScope® microscope to produce images at higher resolutions, very close to the theoretical diffraction limit of the optics. Other benefits of the NeoLED™ is the low energy consumption, no heating and a long operating life span

KÖHLER ILLUMINATION

Köhler illumination ensures for all infinity corrected IOS models the highest possible contrast and the maximum achievable resolving power. Generates a uniform illumination of the sample and eliminates all interference from dust on lenses and side glare of the light source

CORDLESS USE

The optional rechargeable batteries turn the bScope® into a cordless system (only available for the transmitted illumination)

CSS – CABLE STORAGE SYSTEM

This system allows users to easily stow away excess cable length into the back of the instrument during operation and to roll up the power cable for easy storage

Analyzer and rotatable push-pull polarizer

Reflected illumination with rotating color filter disc

Ergonomic carrying grip for easy transportation

CARRYING GRIP

The integrated carrying grip at the back of the microscope ensures safe transportation of the microscope

ANTI-THEFT SLOT

At the back of the microscope a Kensington Security Slot is placed, which can be used to secure the instrument from theft

PACKAGE CONTENT

Smart Styrofoam packaging ensures a low environmental footprint while maintaining maximum safety during transport. Supplied with power cord, dust cover, tools, a spare fuse, white filter and user manual

MODEL	Trinocular	WF 10x/22 mm eyepieces	PLMi 5x/10x/20x/50x IOS objectives	Transmitted NeoLED™ Köhler illumination	Relfected NeoLED™ Köhler illumination
BS.1053-PLMi	•	•	•	•	•

Optional: PLMi 100x IOS objective

ACCESSORIES AND SPARE PARTS

EYEPIECES

BS.6310 WF 10x/22 mm eyepiece, Ø 30 mm tube
BS.6310-M WF 10x/22 mm eyepiece, Ø 30 mm tube with 10/100 micrometer
BS.6315 WF 15x/12 mm eyepiece, Ø 30 mm tube
BS.6399 Pair of eyecups, Ø 30 mm tube

OBJECTIVES

BS.8105 Plan M-IOS DIN 5x/0.12 infinity corrected objective. WD 26.1 mm
BS.8110 Plan M-IOS DIN 10x/0.25 infinity corrected objective. WD 20.20 mm
BS.8120 Plan M-IOS DIN 20x/0.40 infinity corrected objective. WD 8.80 mm
BS.8150 Plan M-IOS DIN 50x/0.70 infinity corrected objective. WD 3.68 mm
BS.8180 Plan M-IOS DIN 80x/0.80 infinity corrected objective. WD 1.25 mm
BS.8100 Plan M-IOS DIN 100x/0.85 infinity corrected objective. WD 0.40 mm

POLARIZATION

BS.9602 Analyzer in mount for under nosepiece
BS.9645 Polarizer, for lamphouse
BS.9601-R Polarizer in slider for reflected illumination attachment

MISCELLANEOUS

AE.1370 Set of rechargeable batteries, three pieces

BS.9515 Metal plain insert for mechanical stage
BS.9518 Glass plain insert for mechanical stage

CAMERA ACCESSORIES

AE.5130 Universal Ø 23.2 mm tube adapter with built-in 2x lens for SLR photo camera with APS-C sensor. Needs T2 adapter
AE.5025 T2 adapter for Nikon D SLR digital camera
AE.5040 T2 adapter for Canon EOS SLR digital camera

DISPOSABLES

PB.5155 Microscope slides 76 x 26 mm, ground edges, 50 pieces
PB.5165 Cover glasses 18 x 18 mm, thickness 0.13-0.17 mm, 100 pieces
PB.5168 Cover glasses 22 x 22 mm, thickness 0.13-0.17 mm, 100 pieces
PB.5245 Lens cleaning paper, 100 sheets per pack
PB.5255 Immersion oil (25 ml). n = 1.482
PB.5274 Isopropyl alcohol 99% (200 ml)
PB.5275 Cleaning kit: lens cleaning fluid, lint free lens tissue/paper, brush, air blower, cotton swabs

WD = working distance

Delphi-X observer

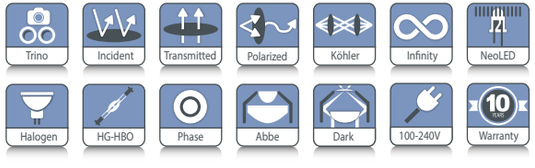
Delphi-X Observer

for materials science

State-of-the-art microscopes for advanced materials science applications

The ergonomic design and outstanding state-of-the-art objectives make the Delphi-X Observer the ideal microscope for advanced materials application. The 25 mm field of view of the eyepieces and the plan apochromatic objectives enable observations with perfect color rendering at high resolving power

DX.2053-PLMi



BS.1053-PLMi
454 (h) x 261 (w) x 470 mm (d) | 21.6 kg

HIGHLIGHTS

- **Brightfield and darkfield EPi illumination**
- **Polarization**
- **Nomarski DIC (optional)**
- **Enhanced infinity corrected EIS optical system**
- **High contrast objectives with minimal aberrations**
- **Full apo, semi-apo and plan EIS objectives**
- **Super wide field SWF 10x/25mm eyepieces**
- **100 W halogen illumination**
- **Sextuple reversed nosepiece with slot for DIC**
- **Quintuple nosepiece for polarization models**

Revolver with slot for Nomarski DIC slider

SPECIFICATIONS

EYEPIECES

- Super wide field SWF 10x/25 mm, Ø 30 mm tubes
- Extended wide field EWF 10x/22 mm, Ø 30 mm tubes (optional)

STANDARD HEAD

Siedentopf trinocular with 30° inclined tubes. Interpupillary distance adjustable between 47 and 78 mm. The trinocular standard head has an optical path selector (100:0 / 80:20 / 0:100). Diopter adjustment on both eyepieces

ERGONOMIC TILTING HEAD

Optional ergonomic 0 to 35° tilting trinocular head supplied with SWF 10x/25 mm eyepieces, interpupillary distance between 47-78 mm and photo tube with a standard Ø 23.2 mm tube. The trinocular tilting head has an optical path selector (100:0 / 80:20 / 0:100). Diopter ± 5 adjustments on both eyepieces

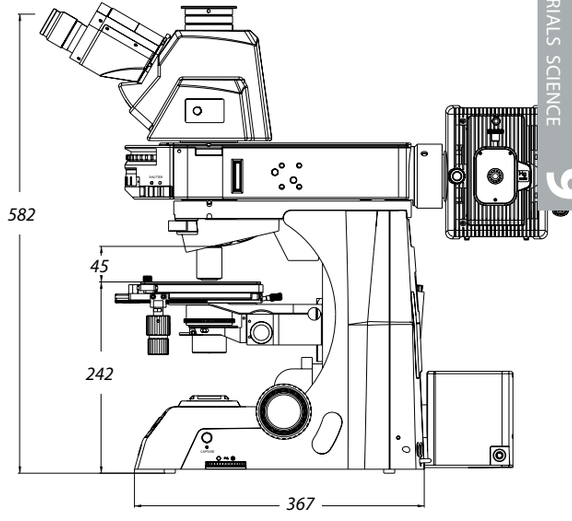
NOSEPIECE

Revolving sextuple reversed nosepiece on ball-bearings with 25 mm objectives mounting threads except the models for polarization applications which are equipped with a quintuple nosepiece

ENHANCED INFINITY SYSTEM (EIS)

The enhanced infinity system (EIS) of the Delphi-X Observer™ consists of super wide field SFWF 10x25 mm eyepieces, high numerical aperture 45 mm parfocal objectives and a 200 mm focal length tube lens. This tube lens reduces the angle of the light rays passing through the optics and as a direct result significantly improves the chromatic aberration corrections and contrast. The objectives with larger diameter enable much higher numerical apertures improving the overall resolving power of the optical system

For all these reasons the Delphi-X Observer™ offers superior optical performance for the most demanding applications



OBJECTIVES

The following infinity corrected EIS objectives are supplied with or available for the Delphi-X Observer™:

Plan semi-apo PLMi (BF/DF)		5x/0.15, WD 20 mm	10x/0.30, WD 11 mm	20x/0.45, WD 3.1 mm		
Plan apo PLMi (BF/DF)					50x/0.80, WD 1 mm	100x/0.90, WD 1 mm [1]
Plan semi-apo PLPOLRi [2] strain-free		5x/0.15, WD 20 mm	10x/0.30, WD 11 mm	20x/0.45, WD 3.0 mm	50x/0.80, WD 1 mm	
Plan PLPOLi (BF/POL) [3]	2x/0.06, WD 7.5 mm	4x/0.10, WD 20 mm	10x/0.25, WD 10.2 mm	20x/0.45, WD 12 mm	40x/0.65, WD 0.7 mm	60x/0.80, WD 0.3 mm [1]

[1] Optional
[2] For models for polarization applications with incident illumination. No cover glass correction
[3] For models for polarization applications without incident illumination. With 0.17 mm cover glass correction
All objectives are 45 mm parfocal and have a M25 x 0.7 mounting thread. All optics are anti-fungus treated and anti-reflection coated for maximum light throughput

The nosepiece lowering attachment lowers the revolver with 40 mm allowing the stage to be used in a 40 mm lower position as well (DX.9887)

The eye-level riser can raise the eye-point height by 25.4 mm (DX.9885)

STAGE

- Large 215 x 170 mm stage with 105 x 105 mm integrated right-handed mechanical stage, with glass and metal insert. Stage height can be lowered for large samples (1 to 28 mm standard sample size, lowered to 55 mm sample size)
- Diameter 190 mm circular stage for models for polarization applications. 360° Rotatable with Vernier and two object clamps and an optional 30 x 30 mm X-Y mechanical stage

CONDENSER FOR POLARIZATION

Height adjustable Abbe N.A. 1.25 condenser with iris diaphragm and 306° rotatable polarizer

FOCUSING

Coaxial coarse and fine adjustment, 100 graduations, 1 µm precision, 100 µm per rotation, total travel range is approximately 35 mm. Supplied with an adjustable rack stop to prevent damage to sample and objectives. The coarse adjustments are equipped with friction control. The focusing knobs can be switched from left to right according to the user's preference

LONG WORKING DISTANCE CONDENSER

In height adjustable long working distance N.A. 0.65 condenser (10.2 mm) with numerical aperture identification marks allows easy setting

ILLUMINATION

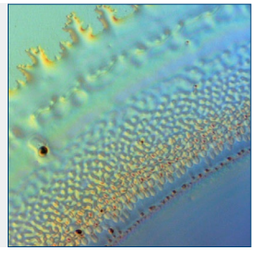
The Delphi-X Observer materials science microscope is equipped with epi and diascopic intensity adjustable 100 W halogen illumination with internal 100-240 Vac power supply. The diascopic halogen illumination comes with two push-in/push-out neutral density filters for smooth attenuation of the light intensity for all kinds of samples

The microscope comes with an analyzer and a polarizer which can easily be inserted into the free slots of the Epi-Illuminator for high quality polarized images. Furthermore a rotating cassette is implemented for quick changing between darkfield, brightfield and dimmed brightfield

NOMARSKI DIC (OPTIONAL)

With the redesign of the DIC-module visualization of height differences which normally cannot be displayed using brightfield techniques has greatly improved. These relief-like images are ideal for surface inspections of wafers, LCD screens, etc

A 3-dimensional or relief-like image produced with the DIC-module



ICARE SENSOR

The unique iCare Sensor is developed to avoid unnecessary loss of energy. The illumination of the microscope automatically switches off shortly after microscopists step away from their position

CARRYING GRIP

The carrying grip at the back of the microscope ensures safe transportation of the microscope and the integrated tool and holder makes sure the right tool is always available

PACKAGE CONTENT

Supplied with power cord, dust cover, a spare fuse, user manual and universal tool. All packed in a polystyrene box

MODELS	Fixed 30 degree Siedentopf head	Ergonomic tilting head	Plan EIS 2x/0.06 objective*	Plan EIS 4x/0.10, 10x/0.25 and 40x/0.65 objectives*	Plan semi-apo EIS 5x/0.15, 10x/0.30 and 20x/0.45 objectives*	Plan apo EIS 50x/0.80 objective*	Plan apo EIS 100x/0.90 objective*	100 W 12 V transmitted halogen Köhler illumination	100 W 12 V reflected halogen Köhler illumination	(DIC)
DX.2053-PLMRi	•		o		•	•	o		•	o
DX.2058-PLMRi		•	o		•	•	o		•	o
DX.2053-PLMi	•		o		•	•	o	•		o
DX.2058-PLMi		•	o		•	•	o	•		o
DX.2053-PLPOLRi	•		o	•		o	o	•	•	o
DX.2058-PLPOLRi		•	o	•		o	o	•	•	o
DX.2053-PLPOLi	•		o	•		o	o	•		o
DX.2058-PLPOLi		•	o	•		o	o	•		o

** Infinity corrected*
o = optional

DX.2053-PLPOLi

ACCESSORIES AND SPARE PARTS

EYEPIECES

DX.6010 Super wide field SWF 10x/25 mm eyepiece for Ø 30 mm tube

DX.6010-CM Super wide field SWF 10x/25 mm eyepiece with 10/100 micrometer and crosshairs for Ø 30 mm tube

DX.6210 Super wide field SWF 10x/22 mm eyepiece for Ø 30 mm tube

DX.6210-CM Super wide field SWF 10x/22 mm eyepiece with micrometer and crosshairs for Ø 30 mm tube

DX.6012 Wide field WF 12.5x/17.5 mm eyepiece for Ø 30 mm tube

DX.6015 Wide field WF 15x/16 mm eyepiece for Ø 30 mm tube

DX.6020 Wide field WF 20x/12 mm eyepiece for Ø 30 mm tube

DX.6099-L Eyecup for eyepiece

INFINITY CORRECTED OBJECTIVES

(all objectives below have a M26x0.7 thread)

DX.8102 Infinity EIS 45 mm plan PLMi 2x/0.06 objective. WD 7.5 mm *

DX.8105 Infinity EIS 45 mm plan semi-apochromatic SAMi 5x/0.15 objective. WD 20 mm *

DX.8110 Infinity EIS 45 mm plan semi-apochromatic SAMi 10x/0.30 objective. WD 11 mm *

DX.8120 Infinity EIS 45 mm plan semi-apochromatic SAMi 20x/0.45 objective. WD 3.0 mm *

DX.8150 Infinity EIS 45 mm plan apochromatic PLAMi 50x/0.80 objective. WD 1 mm *

DX.8100 Infinity EIS 45 mm plan apochromatic PLAMi 100x/0.90 objective. WD 1 mm

** No cover glass correction*

DX.7905-R Infinity EIS 45 mm plan Semi-apochromatic PLPOLi 5x/0.15 strain-free objective. WD 20 mm. No cover glass correction

DX.7910-R Infinity EIS 45 mm plan Semi-apochromatic PLPOLi 10x/0.30 strain-free objective. WD 11 mm. No cover glass correction

DX.7920-R Infinity EIS 45 mm plan Semi-apochromatic PLPOLi 20x/0.45 strain-free objective. WD 3.0 mm. No cover glass correction

DX.7950-R Infinity EIS 45 mm plan apochromatic PLPOLi 50x/0.80 strain-free objective. WD 1 mm. No cover glass correction

DX.7904-T Infinity EIS 45 mm plan PLPOLi 4x/0.10 strain-free objective. WD 20 mm. With 0.17 mm cover glass correction

DX.7910-T Infinity EIS 45 mm plan PLPOLi 10x/0.25 strain-free objective. WD 10.2 mm. With 0.17 mm cover glass correction

DX.7920-T Infinity EIS 45 mm plan PLMi 20x/0.40 strain-free objective. WD 12 mm. With 0.17 mm cover glass correction

DX.7940-T Infinity EIS 45 mm plan PLPOLi 40x/0.65 strain-free objective. WD 0.7 mm. With 0.17 mm cover glass correction

DX.7960-T Infinity EIS 45 mm plan PLMi 60x/0.80 strain-free objective. WD 0.3 mm. With 0.17 mm cover glass correction

DX.7900-T Infinity EIS 45 mm plan PLPOLi S100x/1.25 strain-free oil-immersion objective. WD 0.2 mm. With 0.17 mm cover glass correction

WD = working distance

POLARIZATION ATTACHMENT

without incident illumination

DX.9604 Slider with quartz wedge plate

DX.9608 Slider with 0-360° rotatable analyzer, 0.1° divisions

DX.9610 Slider with Lambda plate first red

DX.9612 Slider with Lambda/4 plate

POLARIZATION ATTACHMENT

with incident illumination

DX.9602-R Slider with rotatable polarizer

DX.9608-R Slider with 0-360° rotatable analyzer, 0.1° divisions

MATERIALS SCIENCE STAGES

DX.9502-R Plain mechanical stage right handed

DX.9502-L Plain mechanical stage left handed

DX.9501-R Stage with Gorilla glass, hole and specimen holder. Right handed

DX.9501-L Stage with Gorilla glass, hole and specimen holder. Left handed

DX.9504-R Stage with Sapphire glass, hole and specimen holder. Right handed

DX.9504-L Stage with Sapphire glass, hole and specimen holder. Left handed

CAMERA ACCESSORIES

DX.9810 C-mount with 1 magnification for C-mount camera

DX.9835 C-mount with high resolution relay 0.35x objective for 1/3 inch C-mount camera

DX.9850 C-mount with high resolution relay 0.50x objective for 1/2 inch C-mount camera

DX.9863 C-mount with high resolution relay 0,63x objective for 2/3 inch C-mount camera

AE.5130 Universal SLR-adapter with built-in 2x lens for standard 23.2 mm tube. Needs T2 adapter

AE.5025 T2 adapter for Nikon D SLR-digital camera

AE.5040 T2 adapter for Canon EOS SLR-digital camera

MISCELLANEOUS

DX.9696 DIC attachment for materials sciences Delphi-X Observer models

DX.9704 Yellow filter for lamphouse, diameter 45 mm

DX.9885 25.4 mm eye-level riser (1 inch)

DX.9887 40 mm nosepiece and stage lowering attachment

DX.9961 100 Watt 12 V halogen bulb for Delphi-X Observer (revision-2 models)

AE.5216 Fuses 5A 250 V, per 10 pcs. models with 100 W halogen

DX.9522 Optional 30 x 40 mm X-Y mechanical stage for polarization microscopes

DISPOSABLES

PB.5245 Lens cleaning paper, 100 sheets per pack

PB.5255 Immersion oil, 25 ml. Refraction index n = 1.482

PB.5274 Isopropyl alcohol 99%, 200 ml

PB.5275 Cleaning kit: lens fluid, lint free lens tissue paper, brush, air blower, cotton swabs

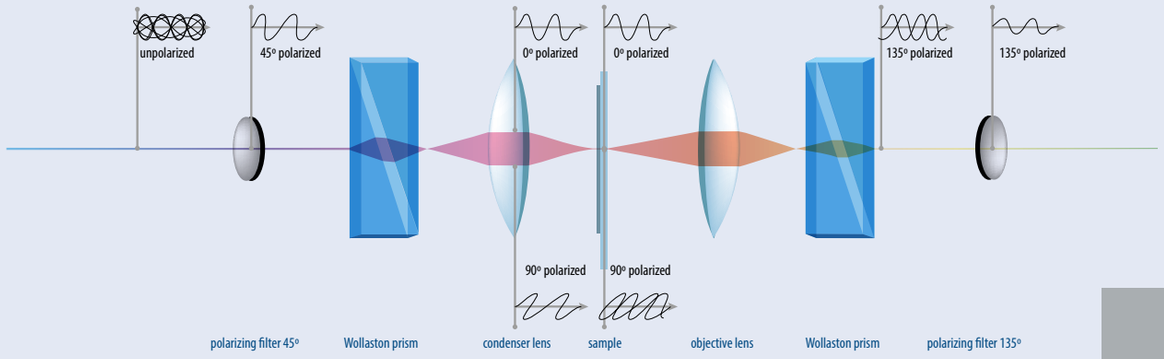
PB.5276 Microscope maintenance and servicing kit, 16pcs: cleaning brush, 6 pcs screwdriver set, air blower, 3 pcs Allen key, 1.5, 2, 2.5 mm, lens cleaning fluid 20 ml, cleaning cloth 140 x 140 mm, 100 pcs lens tissue sheets, tube of maintenance grease, 10 ml bottle of oil, packed in a nice toolbox

about

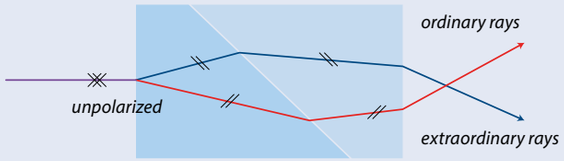
differential interference contrast

Differential interference contrast (DIC) technique helps in microscopy to enhance the contrast of samples

The technique is based on interferometry to obtain information about the small difference in optical path length between two orthogonally polarized light rays coming from the sample
This results in an image of the sample appearing as a three-dimensional physical relief. Polarized light is split into two orthogonally polarized coherent light rays by means of a Nomarski-modified Wollaston prism. Subsequently the sample spatially shifts the light rays slightly



By passing a second Nomarski-modified Wollaston prism, the spatially shifted polarized light is recombined. These recombined light rays pass through a second polarization filter that blocks useless direct transmitted light. The interference of the two rays is sensitive to the optical path difference and by introducing an adjustable offset, the contrast is proportional to the path length so that the heights and depths of the sample appear as three-dimensional objects. Discontinuities on the surface, edges, lines and height differences on the sample create optical path differences that are turned into amplitude / intensity differences in the image, enhancing details in a topographically incorrect way but enables imaging of otherwise invisible details



The Nomarski prism consists of two birefringent crystal wedges cemented together at the hypotenus. One wedge is a Wollaston wedge, the second wedge of the prism is modified by cutting the crystal so that the optical axis is oriented obliquely with respect to the flat surface of the prism

Oxion

OX.3245

Oxion

for materials science

Oxion microscopes for materials science are specifically designed for the observation of many types of materials in university and in industrial research laboratories and by professionals

Thanks to the high resolution optics and state-of-the-art components, these microscopes can be widely used for routine and fundamental applications

OX.3245
430 (h) x 180 (w) x 430 mm (d) | 9.9 kg

OX.3245

HIGHLIGHTS

- **Trinocular model**
- **HWF 10x/22 mm eyepieces**
- **Reversed quintuple nosepiece**
- **Plan M-IOS objectives**
- **Transmitted 3 W NeoLED™ illumination**
- **Reflected 3 W NeoLED™ illumination**
- **Polarization and analyzer filters**
- **10 Years warranty**

SPECIFICATIONS

EYEPIECES

HWF 10x/22mm eyepieces. All eyepieces can be secured with an Allen screw

HEAD

Trinocular Siedentopf heads with 30° inclined tubes. Interpupillary distance from 48 to 75 mm. Diopter ± 5 diopter adjustment on both eyepieces. A unique rotating system allows ergonomic positioning of both tubes in an upper (431 mm) and in a lower position (397 mm)

Reflected illumination unit with oblique lighting feature

NOSEPIECE

Reversed nosepiece for a maximum of five objectives on ball bearings

OBJECTIVES

(IOS-infinity corrected system)
Standard configurations equipped with infinity corrected DIN long working distance LWD plan M-IOS 5x/0.14, 10x/0.25, 20x/0.40 and plan semi apochromatic LWD 50x/0.55 and 100x/0.80 objectives
All optics have an anti-reflection coating for maximum light throughput and are anti-fungus treated

FOCUSING

Coaxial coarse and fine adjustments, 200 graduations, 1 µm per graduation, 200 µm per rotation, total travel range is approximately 28 mm.
Supplied with an adjustable rack stop to prevent damage to sample and objectives. The coarse adjustments are equipped with friction control

STAGE

180 x 145 mm stage with integrated mechanical 78 x 45 mm X-Y stage. Is supplied with plain metal and plain glass inserts

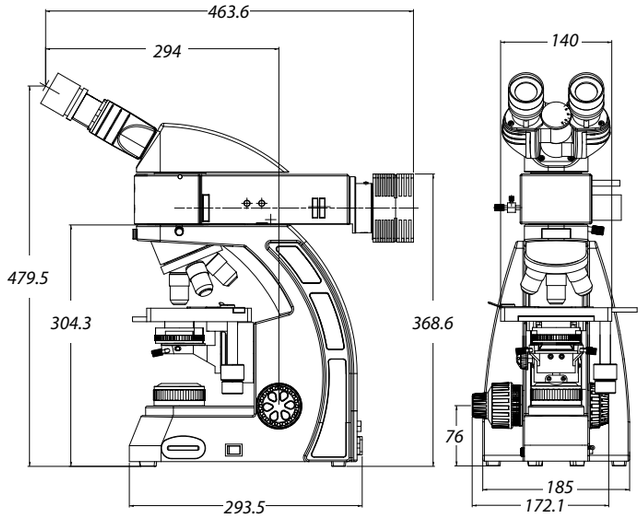
A ceramic stage is also available on request

CONDENSER FOR TRANSMITTED ILLUMINATION

Height adjustable Abbe condenser N.A. 1.25 with iris diaphragm and filter holder

TRANSMITTED ILLUMINATION

All models are supplied with 3 W adjustable NeoLed™ illumination with integrated 100-240 V power supply. Köhler illumination with field diaphragm



REFLECTED EPI-ILLUMINATION

Intensity adjustable 3 W NeoLED™ Köhler illumination with external 110-240 Vac / 5 Vdc power supply. Push-pull type 90° rotatable polarizer and fixed analyzer. Built-in condenser with field and aperture iris diaphragm. Oblique lighting feature. Supplied with blue and green filter

PACKAGE CONTENT

Supplied with power cord, dust cover, a spare fuse and user manual. All packed in a polystyrene box

Detail of reflected illumination

OX.3240

MODELS	Trinocular	M-IOS 5x/10x/20x/50x objectives	M-IOS 100x objective	Transmitted illumination 3 W NeoLED™	Reflected illumination 3 W NeoLED™
OX.3240	•	•		•	•
OX.3245	•	•	•	•	•

ACCESSORIES AND SPARE PARTS

EYEPIECES

AE.3210 HWF 10x/22 mm eyepiece
AE.3215 HWF 15x/13 mm eyepiece
AE.3223 HWF 10x/22 mm eyepiece with 10 mm/100 micrometer
AE.3225 Pair of eyecups

OBJECTIVES

AE.3172 Plan achromatic M-IOS DIN PL 5x/0.15 objective.* WD 10.8 mm
AE.3173 Plan achromatic M-IOS DIN PL 10x/0.30 objective.* WD 10 mm
AE.3175 Plan achromatic M-IOS DIN PL 20x/0.45 objective.* WD 4 mm
AE.3177 Plan semi apochromatic M-IOS DIN 50x/0.55 objective.* WD 7.9 mm
AE.3179 Plan semi apochromatic M-IOS DIN 100x/0.80 objective.* WD 2.1 mm

** No cover glass correction*

POLARIZATION ATTACHMENTS

AE.3190 Polarizer/analyzer set for transmitted illumination
AE.3192 Polarizer slider for nosepiece
AE.3194 Polarizer for lamphouse
AE.3193 Analyzer for reflected illumination unit
AE.3195 Polarizer, 360° rotatable (for reflected illumination unit)

FILTERS

AE.3196 Frosted filter 45 mm, for lamphouse
AE.3198 Blue filter 45 mm, for lamphouse
AE.3200 Yellow filter 45 mm, for lamphouse
AE.3202 Green filter 45 mm, for lamphouse
AE.3205 Blue interference 480 nm filter (for reflected illumination unit)
AE.3206 Green interference 520-570 nm filter (for reflected illumination unit)
AE.3208 White color balance interference filter (for reflected illumination unit)

CAMERA ACCESSORIES

AE.5120-2 Standard 23.2 mm diameter tube for Oxion photo port revision-2
AE.5130 Universal SLR camera adapter with 2x projection lens for 23.2 mm tubes. Needs T2 adapter and AE.5120 or AE.5120-2
AE.5025 T2 adapter for Nikon D digital SLR cameras
AE.5040 T2 adapter for Canon EOS digital SLR cameras
OX.9810 C-mount with 1.0x objective
OX.9833 C-mount with 0.33x objective for 1/3" sensors cameras
OX.9850 C-mount with 0.5x objective for 1/2" sensors cameras

MISCELLANEOUS

OX.9515 Metal plain insert for mechanical stage
OX.9518 Glass plain insert for mechanical stage
AE.3185 Slider with darkfield stop for transmitted illumination (only for objectives 10x, 20x and S40x)
AE.3199 Glass fuses 3.15 A 250 V, 10 pieces

DISPOSABLES

PB.5245 Lens cleaning paper, 100 sheets
PB.5274 Cleaning liquid, isopropanol alcohol 99% (200ml)
PB.5275 Cleaning kit: lens cleaning fluid, lint free lens tissue, brush, air blower and cotton swabs

WD = working distance

● *Plain stage*

Oxion inverso

FEATURED

OX.2153-PLM

Oxion Inverso
for materials science

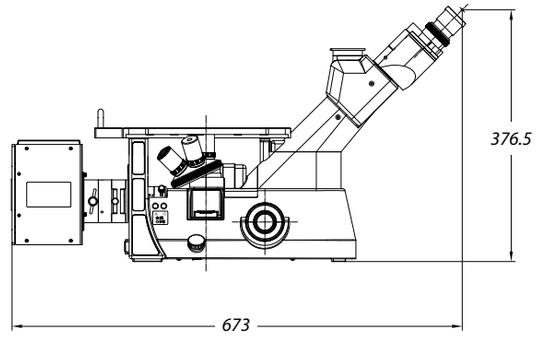
The Oxion Inverso inverted microscopes for materials science are intensively used for observation of large pieces of material, made for example of metal, wood or plastics

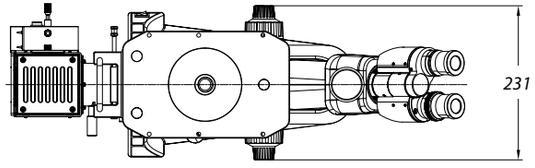
The Oxion Inverso is available with a powerful 50 W halogen brightfield contrast illumination and a large mechanical stage. The polarization and color filters make this instrument suitable for a wide variety of applications

OX.2153-PLM / OX.2653-PLM
376.5 (h) x 231 (w) x 673 mm (d) | 10.8 kg

HIGHLIGHTS

- **Materials science applications**
- **Observation of all types of materials**
- **Brightfield with polarization options**
- **Long working IOS plan achromatic objectives**
- **Long working IOS plan semi apochromatic objectives**
- **Revolving quintuple nosepiece**
- **50 W halogen Köhler illumination**
- **10 Years warranty**





SPECIFICATIONS

EYEPIECES
Pair of DIN HWF plan 10x/22 mm eyepieces

NOSEPIECE
Revolving quintuple nosepiece on ball-bearings

HEAD
Trinocular 45° inclined tubes with extended low and high positions. One diopter adjustment on left eyepiece. Interpupillary distance of 54 to 75 mm.
Trinocular head with light path selector 100-0/80-20

OBJECTIVES
Infinity color corrected long working distance 5x/0.15, 10x/0.14, 20x/0.45 plan achromatic IOS objectives and a plan semi apochromatic S50x/0.55 IOS objective. Model OX.2153-PLM also has a plan semi apochromatic S100x/0.80 IOS objective. No cover glass correction
All optics are anti-fungus treated and anti-reflection coated for maximum light throughout

STAGE
Stage 250 x 230 mm equipped with a coaxial mechanical 120 x 78 mm X-Y stage, delivered with:
- metallic insert with Ø 12 mm hole and Ø 25 mm hole
- metallic insert with hole for mechanical stage

CONDENSER
Abbe condenser with iris diaphragm

FOCUSING
Coaxial 25 mm coarse and fine adjustments, 2 µm precision and with friction adjustment

ILLUMINATION
Transmitted Köhler 50 W halogen Intensity adjustable with internal 100-240 V power supply. Fuse holder 3.15 A / 250 V

POLARIZATION
Standard polarization filter and 360° rotating analyzer

FILTERS
Blue and green filter mounted in slider, that can be inserted at the back of the illumination attachment. Polarization filter in slider, to be inserted under nosepiece

PACKAGE CONTENT
Supplied with power cord, dust cover, blue and green filters and user manual. Microscope is supplied in an aluminum transport case

MODELS	LWD plan 5x/10x/20x objectives	LWD plan apochromatic 50x objective	LWD plan apochromatic 100x objective	Mechanical stage
OX.2653-PLM	•	•		•
OX.2153-PLM	•	•	•	•

LWD = long working distance

ACCESSORIES AND SPARE PARTS

EYEPIECES

OX.6010 HWF 10x/22 mm eyepiece
OX.6015 HWF 15x/16 mm eyepiece
OX.6110 HWF 10x/22 mm eyepiece with micrometer reticule
OX.6099 Pair of eyecups

OBJECTIVES

OX.8205 Plan achromatic PLM 5x/0.15 IOS objective*. WD 10.8 mm
OX.8210 Plan achromatic PLM 10x/0.30 IOS objective*. WD 10 mm
OX.8220 Plan achromatic PLM 20x/0.45 IOS objective*. WD 4 mm
OX.8250 Plan semi apochromatic PLM S50x/0.55 IOS objective*. WD 7.9 mm
OX.8200 Plan semi apochromatic PLM S100x/0.80 IOS objective*. WD 2.1 mm

** No cover glass correction*

STAGE AND ACCESSORIES

OX.9500 Mechanical coaxial X-Y 120 x 78 mm stage
OX.9506 Transparent glass insert with hole
OX.9508 Metal insert with Ø 12 mm hole
OX.9509 Metal insert with Ø 25 mm hole
OX.9535 Metal insert for Petri dish Ø 35 mm
OX.9599 Universal culture-dish holder for translation stage

Large stage with X-Y mechanical stage

FILTERS

OX.9700 Blue filter in slider, for illumination attachment
OX.9702 Green filter in slider, for illumination attachment
OX.9710 Polarization filter in slider, fits under nosepiece

C-MOUNT ADAPTERS

OX.9810 CS/C mount with 1.0x objective
OX.9833 CS/C mount with 0.33x objective for 1/3" sensor cameras
OX.9850 CS/C mount with 0.5x objective for 1/2" sensor cameras

MISCELLANEOUS

AE.3199 Glass fuses 3.15 A 250 V, 10 pcs
SL.3679 Halogen spare bulb 12 V 50 W
AE.5120-2 Standard 23.2 mm diameter tube for Oxion Inverso photo port revision-2
AE.5130 Universal SLR camera adapter with 2x projection lens for 23.2 mm tube. Needs T2 adapter and AE.5120 or AE.5120-2
AE.5025 T2 adapter for Nikon D digital SLR cameras
AE.5040 T2 adapter for Canon EOS digital SLR cameras
AE.3199 Glass fuses 3.15 A 250 V packed, per 10 pieces

PB.5155 Microscope slides 76 x 26 mm, ground edges, 50 pieces
PB.5165 Cover glasses 18 x 18 mm, thickness 0.13 - 0.17 mm, 100 pieces
PB.5168 Cover glasses 22 x 22 mm, thickness 0.13 - 0.17 mm, 100 pieces
PB.5245 Lens cleaning paper, 100 sheets per pack
PB.5255 Immersion oil, n = 1.482 (25 ml)
PB.5274 Isopropyl alcohol 99% (200 ml)
PB.5275 Cleaning kit: lens cleaning fluid, lint free lens tissue, brush, air blower and cotton swabs

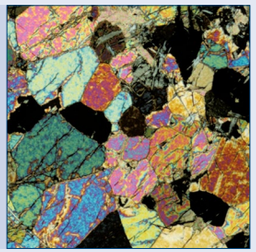
TECHNICAL FACTS

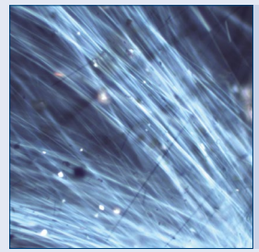
about
petrological microscopy

Euromex microscopes for polarization are intensively used in petrology and optical mineralogy to identify rocks, minerals in thin sections and asbestos fibers

Conventional brightfield microscopes are turned into a petrological microscope by:
- replacing the conventional rectangular stage with a circular 360° rotating stage
- adding strain free objectives for correct color rendering
- adding a removable polarization filter into the light path
- adding a second removable 360° rotating polarization filter - called analyzer - into the light path
- adding a Bertrand lens* for observation of conoscopic interference fringes
- adding compensation wave plates
- adding reflected illumination

Mineral petrology

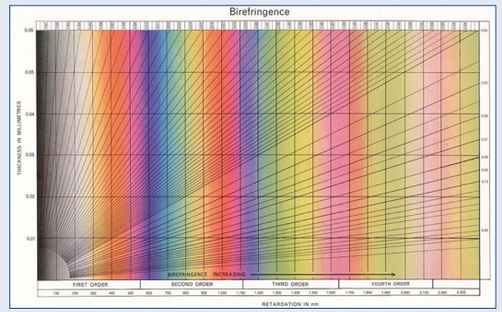




Crocodolite asbestos fiber

The most common compensators are:

- 1 λ Wave plate is often referred to as a first-order red plate or as a sensitive tint because it produces the interference color having a tint similar to the first-order red seen in the Michel-Levy chart. Introduce an optical path difference of circa 540-570 nm
- 1/4 λ Wave plate is often referred to as a mica plate and is usually made from quartz or muscovite crystals sandwiched between two glass windows. Introduce an optical path difference of circa 140 nm
- Quartz wedge is the simplest compensator, which is utilized to vary the optical path length difference to match that of the specimen
- Other attachments such as DSO (Dispersion Staining Objectives) and phase contrast equipment can be added for specific identification of asbestos fibers



Michel-Levy chart

** A so-called Bertrand lens - positioned between the analyzer and the eyepieces allows the microscopist to observe interference fringes. These images appear in the objective rear focal plane when an optically anisotropic specimen is viewed between crossed polarizers*