



INSPECTION Microscopes

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Professional Stereo Microscopes

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Industrial Microscopes

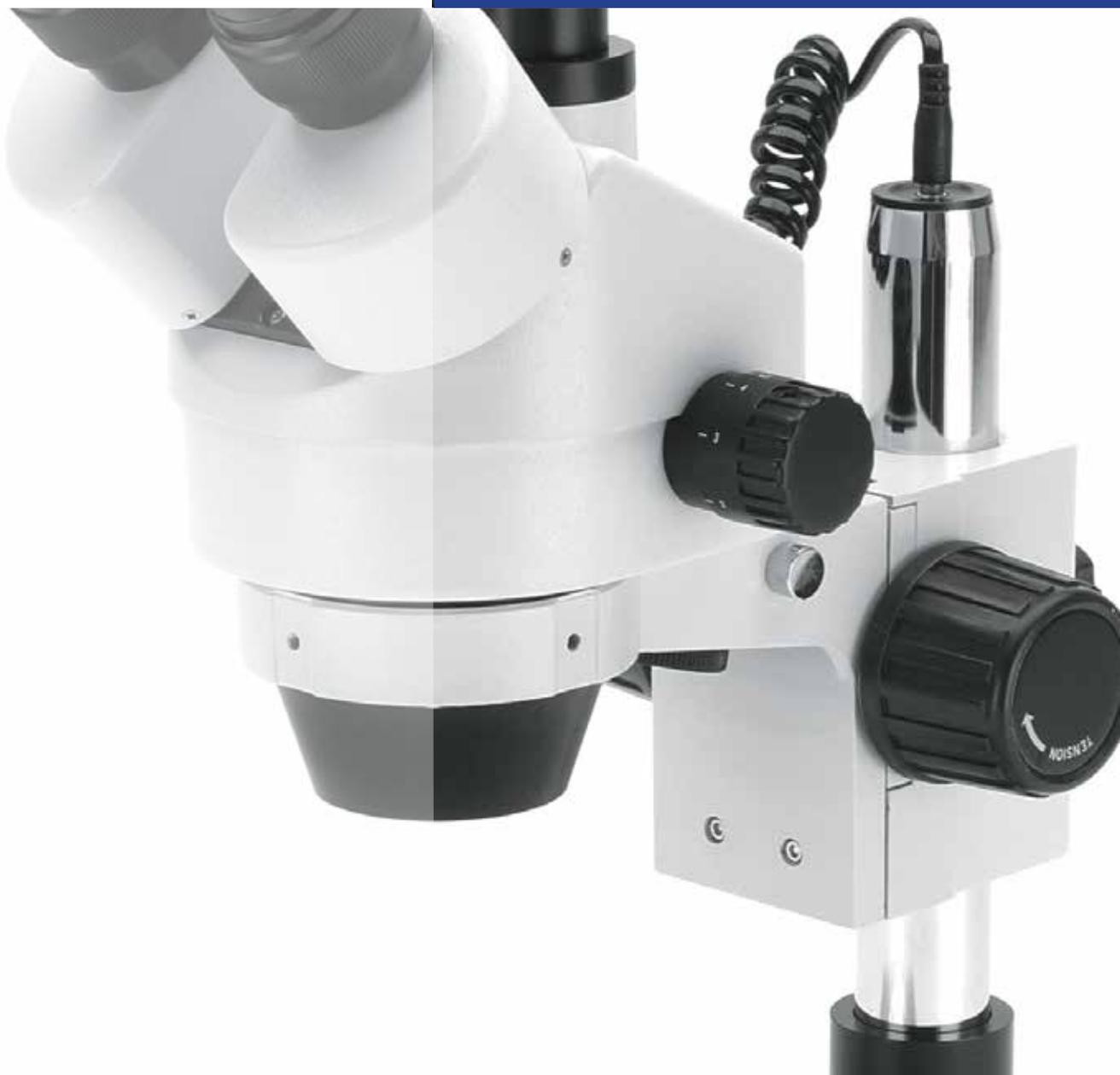
MET SERIES - Metallurgical Microscopes page 327

IS SERIES - Inspection Video Microscopes page 339

Icons

	Field number		W-Plan objectives (up to 22mm f.o.v)		USB connection
	Incident light		U-Plan objectives (up to to 24mm f.o.v)		Tablet screen size
	Transmitted light		Fluorescence		Camera resolution
	LED illuminator		Metallography		Software included
	X-LED illuminator		Polarized light		HDMI output
	Multi-Plug low voltage power supply		Darkfield		MicroSD slot
	Infinity corrected optics		Fixed objective		Wi-Fi
	N-Plan objectives (up to 20mm f.o.v)		Zoom objective		BlueTooth

SZM Series



Stereozoom Microscopes for Routine Inspections

FIELD OF VIEW - 21 mm Full Plan Field of View

10x/21mm PLAN EYEPIECES

Plan eyepieces with 21 mm field of view; high eye-point type, also suitable for the use of eyeglasses.

ZOOM OBJECTIVE

The High-Grade Zoom Objective grants a sharp and clear vision. With a zoom ratio of 6.43:1 it makes this series a perfect instrument for any application.



X-LED - Two Times Brighter Than Any Other



X-LED: A SEA OF LIGHT

On LED models both illuminators are equipped with X-LED systems:

- the incident illuminator with **X-LED³** (single LED, 3.6W)
- the transmitted illuminator with **X-LED¹¹** (18 LEDs)

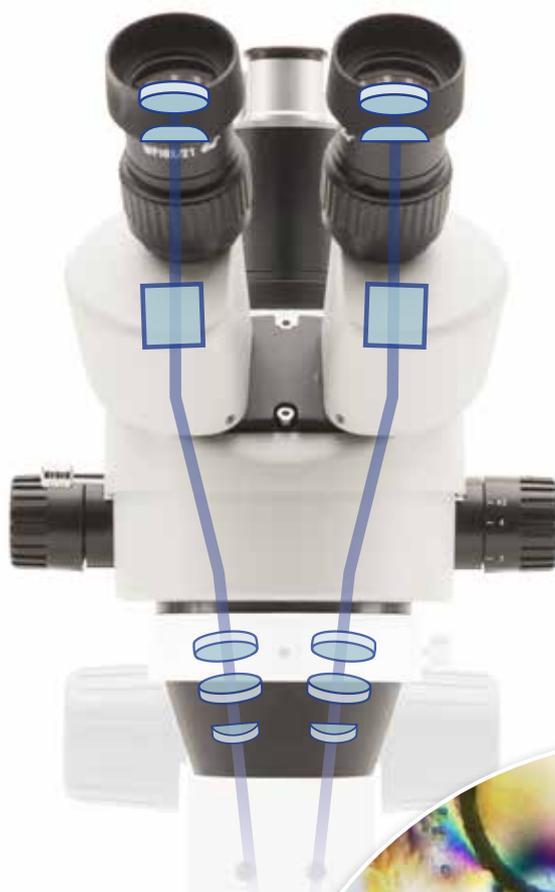
X-LED: RESPECTING COLORS

With 6,300K color temperature the samples are illuminated with the most natural light. It allows to respect their colors, without altering the nuances.



Multi-plug power supply

SZM Series



Greenough Optical System

The V-shape optical path of Greenough allows us to design a very compact and a slim unit, highly versatile and appreciated for the 3D viewing. Samples with significant depth can be quickly inspected. Binocular and trinocular heads are 45° inclined to grant comfortable posture to the user even after several hours of operation.

6.43:1 Zoom Ratio

SZM Series has 0.7x-4.5x zoom range (6.43:1 zoom ratio), being purposely designed for routine inspections. This zoom ratio enables most samples to be observed at the appropriate magnifications. When combined with proper accessories (2x additional lens and 20x eyepieces), SZM delivers excellent images up to 180x.



Plastic lens - 4.5x zoom - SZM-LED2 Polarizing

Stereozoom Microscopes for Routine Inspections

Overhanging Stand, In Case Of Large Samples

This stand is recommended for efficient, quick and precise observation and digital imaging of large samples, that cannot be processed with regular stands.

Achieve 360° rotation and smooth movement with no limits, as the mechanism can be tilted from right to left, backward to forward.

X-LED³ Exclusive Lighting Source

Special technology able to double the light intensity for incomparable performance, ensuring constant pure-white colour temperature.

Relevant money & energy saving thanks to the incredibly low energy consumptions allow you to cut the electricity bills by 90%!

On SZM-LED1, SZM-LED2



Get the most out of our accessories



ST-088.1 - Polarizing set

Polarizing set ST-088.1 is composed of a rotating polarizing stage (with graduation), a analyzer filter and it is the ideal accessory for analysis of birefringent materials.

Polarization is primarily used in the field of geology or petrography for the study of rocks and minerals, or many other applications, including medicine, chemistry, biology and metallurgy.

Materials that can be examined under a polarized microscope include minerals, ceramics, polymers, wood, urea, natural and synthetic fibers.

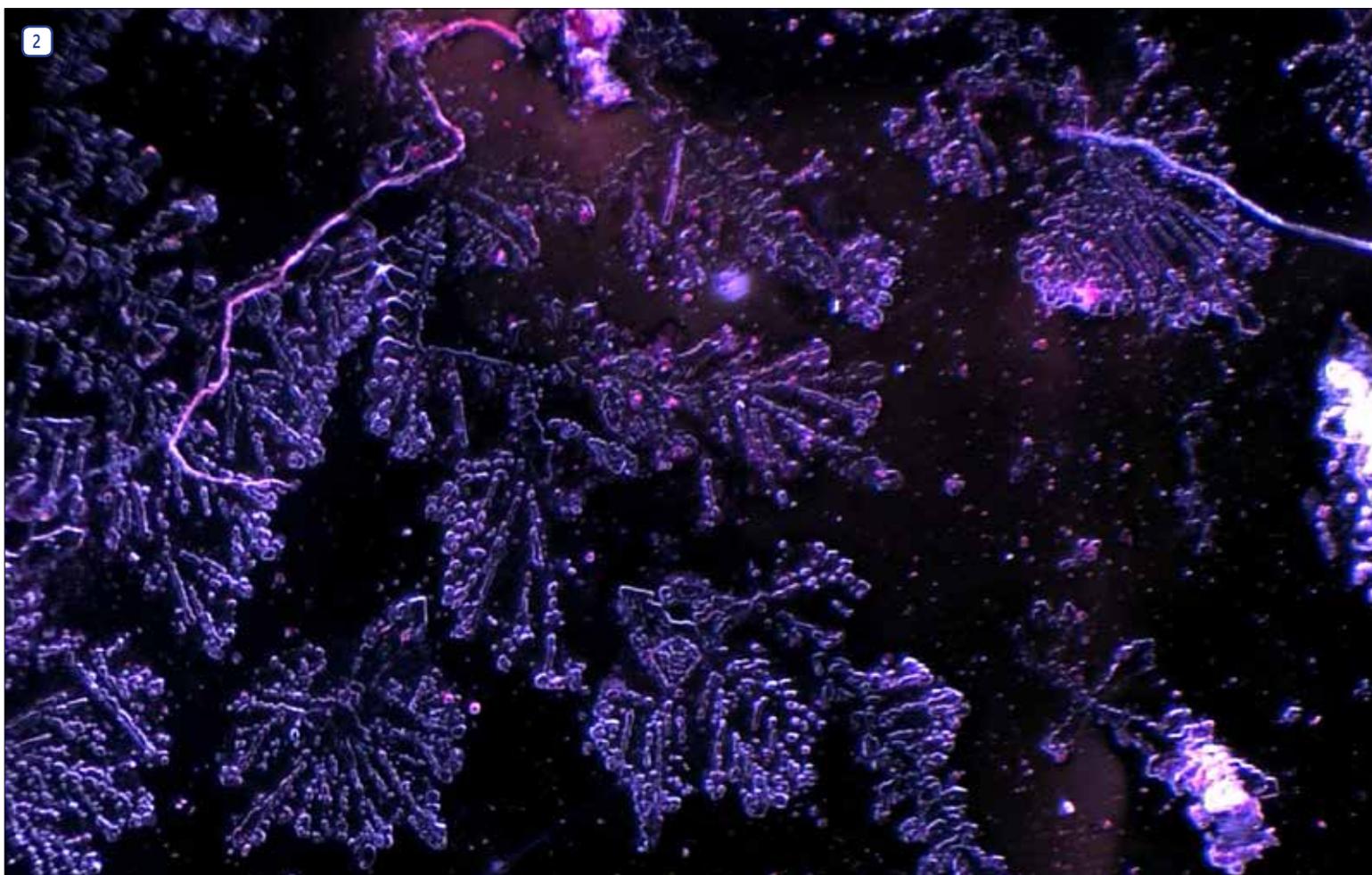
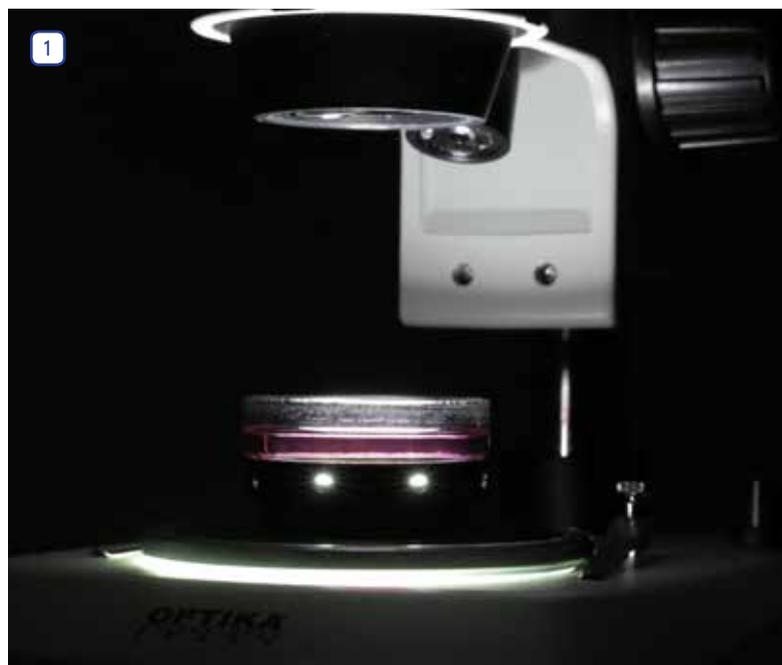
SZM Series

Applications

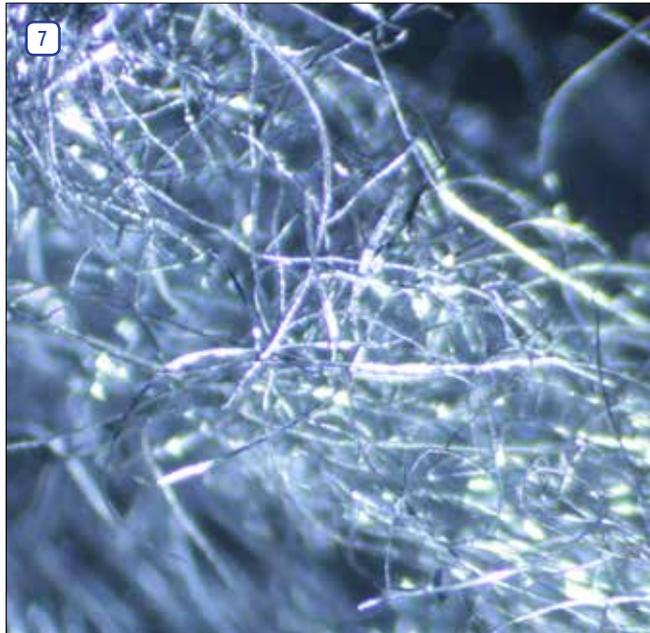
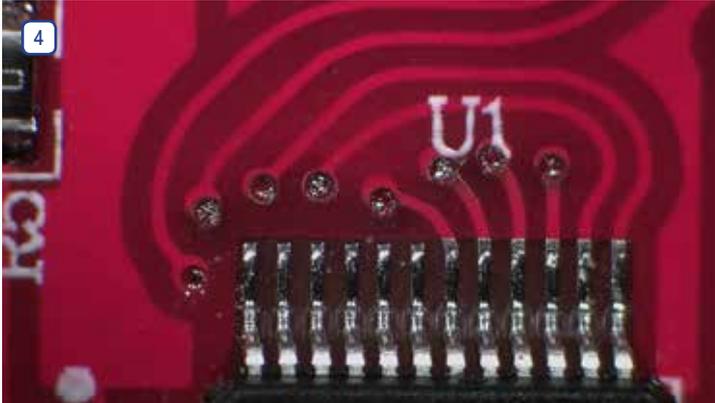
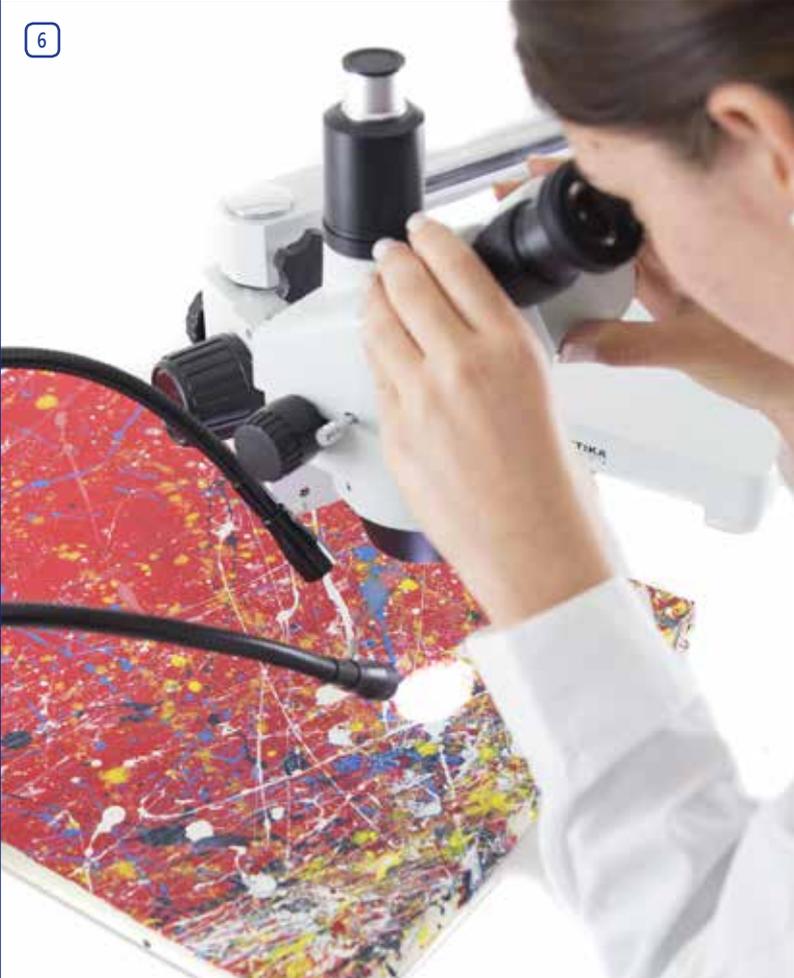
Some application examples demonstrating the versatility of SZM series. Routine applications are extremely facilitated!

Legend

1. SZM-LED2 with darkfield condenser.
2. Salt crystal, with SZM-LED2, 0.7x zoom with darkfield.
3. Mechanical part, with SZM-LED1, 1.5x zoom.
4. Electronic board, with SZM-2, 2x zoom.
5. QC of a mechanical component, with SZM-3.
6. Fine art inspection, with SZM-4 and CLD-01 + CL-11.1 illuminator.
7. Textile fiber, with, 4x zoom.



Stereozoom Microscopes For Routine Inspections



SZM-B



Part	Description
Head:	Binocular, 360° rotating on all stands and 45° inclined.
Interpup. distance:	Adjustable between 51 and 75 mm.
Dioptric adjustment:	On both eyepiece tubes.
Eyepieces:	WF10x/21 mm, high eye-point.
Objective:	Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).
Working distance:	100 mm

SZM-T



Part	Description
Head:	Trinocular, 360° rotating on all stands and 45° inclined. 2-position photo port: 100/0 and 0/100 (on right eyepiece tube).
Interpup. distance:	Adjustable between 51 and 75 mm.
Dioptric adjustment:	On both eyepiece tubes.
Eyepieces:	WF10x/21 mm, high eye-point.
Objective:	Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).
Working distance:	100 mm

SZM-1



Binocular stereomicroscope with pillar stand and illuminated stage with halogen transmitted and incident illumination, freely settable.

Observation mode: Brightfield.

Head: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/21 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).

Working distance: 100 mm.

Specimen stage: Fitted with a black/white disc, specimen clips and a frosted disc for transmitted light.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 250 mm high, base: 260x200x60h mm.

Illumination: Double, adjustable incident and transmitted light with separated brightness controls, fitted with two 12 V/15 W halogen bulbs.

SZM-2



Trinocular stereomicroscope with pillar stand and illuminated stage with halogen transmitted and incident illumination, freely settable.

Observation mode: Brightfield.

Head: Trinocular, 45° inclined, 360° rotating.
2-position photo port: 100/0 and 0/100 (on right eyepiece tube).

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/21 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).

Working distance: 100 mm.

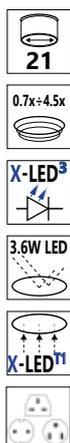
Specimen stage: Fitted with a black/white disc, specimen clips and a frosted disc for transmitted light.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 250 mm high, base: 260x200x60h mm.

Illumination: Double, adjustable incident and transmitted light with separated brightness controls, fitted with two 12 V/15 W halogen bulbs.

SZM-LED1



Binocular stereomicroscope, pillar stand and ultra-flat base, illuminated stage with **X-LED^{T1}** transmitted illumination and **X-LED³** incident illumination for outstanding brightness, freely settable.

Observation mode: Brightfield.

Head: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/21 mm, high eye-point.

Objective:

Working distance: 100 mm.

Specimen stage: Fitted with a black/white disc, specimen clips and a diffusing disc for transmitted light.

Specimen stage: Fitted with a black/white disc, specimen clips and a diffusing disc for transmitted light.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 315 mm high, base: 270x205x30h mm.

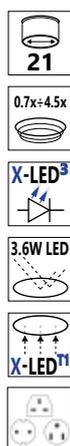
Illumination: Double, adjustable incident and transmitted light with separated brightness controls and 6,300K color temperature:

Incident illuminator: **X-LED³** (single LED, 3.6W).

Transmitted illuminator: **X-LED^{T1}** (18 LEDs).

Multi-plug 100-240Vac/6Vdc external power supply.

SZM-LED2



Trinocular stereomicroscope, pillar stand and ultra-flat base, illuminated stage with **X-LED^{T1}** transmitted illumination and **X-LED³** incident illumination for outstanding brightness, freely settable.

Observation mode: Brightfield.

Head: Trinocular, 45° inclined, 360° rotating.
2-position photo port: 100/0 and 0/100 (on right eyepiece tube).

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/21 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).

Working distance: 100 mm.

Specimen stage: Fitted with a black/white disc, specimen clips and a diffusing disc for transmitted light.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 315 mm high, base: 270x205x30h mm.

Illumination: Double, adjustable incident and transmitted light with separated brightness controls and 6,300K color temperature:

Incident illuminator: **X-LED³** (single LED, 3.6W).

Transmitted illuminator: **X-LED^{T1}** (18 LEDs).

Multi-plug 100-240Vac/6Vdc external power supply.

SZM-3



Binocular stereomicroscope with extremely stable overhanging stand complete of head holder and focusing system for perpendicular observation of particularly large specimens. Smooth horizontal and vertical movement are ensured. In case illumination is needed, choose from the wide choice of external illuminators available.

Observation mode: Brightfield.

Head: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/21 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).

Working distance: 100 mm.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Overhanging stand 420 mm high, 430 mm horizontal arm length, base 230x230 mm with following adjustments: height, longitudinal extension and head rotation angle (left-right).

SZM-4



Trinocular stereomicroscope with extremely stable overhanging stand complete of head holder and focusing system for perpendicular observation of particularly large specimens. Smooth horizontal and vertical movement are ensured. In case illumination is needed, choose from the wide choice of external illuminators available.

Observation mode: Brightfield.

Head: Trinocular, 45° inclined, 360° rotating.

2-position photo port: 100/0 and 0/100 (on right eyepiece tube).

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/21 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).

Working distance: 100 mm.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Overhanging stand 420 mm high, 430 mm horizontal arm length, base 230x230 mm with following adjustments: height, longitudinal extension and head rotation angle (left-right).

SZM-D



Digital binocular stereomicroscope with simultaneous view from both eyepieces and camera. The built-in camera can be connected to any PC.

Observation mode: Brightfield.

Head: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/21 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.7x..4.5x (zoom factor 6.43:1).

Working distance: 100 mm.

Specimen stage: Fitted with a black/white disc, specimen clips and a frosted disc for transmitted light.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 250 mm high, base: 260x200x60h mm.

Illumination: Double, adjustable incident and transmitted light with separated brightness controls, fitted with two 12 V/15 W halogen bulbs.



Technical specifications of the built-in camera

Resolution	1280 x 1024 pixels (1.3 MP)
Sensor	CMOS 1/3"
Pixel Size	3.6 μm x 3.6 μm
Frame Rate at Full Resolution	15 frames/sec
Frame Rate at 640x480	55 frames/sec
Optical Format	1/3"
Aspect Ratio	4:3
S/N Ratio	44 dB
Dynamic Range	71 dB
ADC	8 bit
Sensitivity	1.0V/Lux-second
System Requirements	Windows XP/Vista, Win7, Win8, Win10, 32/64bit, USB 2.0
Software	Optika Vision Lite, Optika view, TWAIN interface, several freeware for image elaboration
Capture Features	Continuous auto white balance, continuous auto exposure

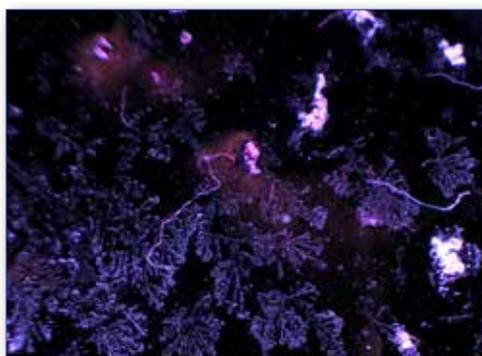
SZM Series - Comparison Chart

Model	Head	Eyepieces	Objectives	Working Distance	Stand	Illuminator
SZM-1	Binocular, 360° rotating, 45° inclined	Wide Field 10x/21mm, high eye-point	0.7x...4.5x zoom	100 mm	Pillar stand	Incident and transmitted 12V/15W halogen with separated brightness controls
SZM-LED1	Binocular, 360° rotating, 45° inclined	Wide Field 10x/21mm, high eye-point	0.7x...4.5x zoom	100 mm	Pillar stand	Incident: high power single X-LED ³ Transmitted: X-LED ^{T1} diffusing disc with separated brightness controls
SZM-2	Trinocular, 360° rotating, 45° inclined	Wide Field 10x/21mm, high eye-point	0.7x...4.5x zoom	100 mm	Pillar stand	Incident and transmitted 12V/15W halogen with separated brightness controls
SZM-LED2	Trinocular, 360° rotating, 45° inclined	Wide Field 10x/21mm, high eye-point	0.7x...4.5x zoom	100 mm	Pillar stand	Incident: high power single X-LED ³ Transmitted: X-LED ^{T1} diffusing disc with separated brightness controls
SZM-3	Binocular, 360° rotating, 45° inclined	Wide Field 10x/21mm, high eye-point	0.7x...4.5x zoom	100 mm	Overhanging stand	Without illumination; External light source needed
SZM-4	Trinocular, 360° rotating, 45° inclined	Wide Field 10x/21mm, high eye-point	0.7x...4.5x zoom	100 mm	Overhanging stand	Without illumination; External light source needed
SZM-D	Binocular, 360° rotating, 45° inclined	Wide Field 10x/21mm, high eye-point	0.7x...4.5x zoom	100 mm	Pillar stand	Incident and transmitted 12V/15W halogen with separated brightness controls

SZM Series - Optical Performance

Eyepiece	10x (ST-081)		15x (ST-082)		20x (ST-083)	
Field number (mm)	21		15		10	
Objective	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)
0.5x (W.D. 165 mm)	3.5x-22.5x	59.98-9.23	5.25x-33.75x	28.57-4.44	7x-45x	14.28-2.22
0.75x (W.D. 117 mm)	5.25x-33.75x	40.01-6.22	7.87x-50.62	19.06-2.96	10.50x-67.5x	9.52-1.48
1x (W.D. 100 mm)	7x-45x	30.00-4.66	10.5x-67.5x	0.95-2.22	14x-90x	7.14-1.11
1.5x (W.D. 47 mm)	10.50x-67.5x	20.00-3.11	15.75x-101.25x	9.52-1.48	21x-135x	4.76-0.74
2x (W.D. 33 mm)	14x-90x	14.99-2.33	21x-135x	7.14-1.11	28x-180x	3.57-0.55

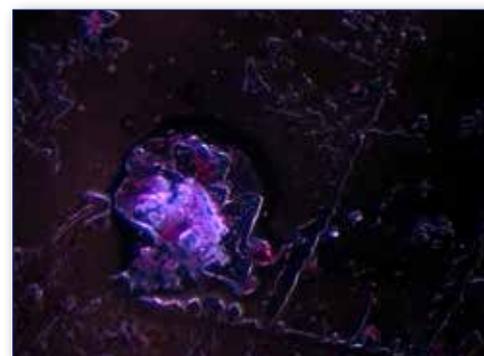
SZM Series - Zoom Comparison



Salt crystal- SZM-LED2 - 0.7x zoom



Salt crystal- SZM-LED2 -3x zoom



Salt crystal- SZM-LED2 - 4x zoom

SZM Series - Accessories

ACCESSORIES FOR SZM SERIES

- ST-036 Eyecups (pair).
- ST-081 Eyepieces (pair) WF10x/21mm.
- ST-082 Eyepieces (pair) WF15x/15mm.
- ST-083 Eyepieces (pair) WF20x/10mm.
- ST-084 Eyepiece micrometer WF10x/21mm, 10mm/100um.
- ST-085 Additional lens 0.5x (w.d. 165mm).
- ST-091 Additional lens 0.75x (w.d. 117mm).
- ST-086 Additional lens 1.5x (w.d. 47mm).
- ST-087 Additional lens 2x (w.d. 33mm).
- ST-088 Polarizing set (filters and rotating stage) for SZM-1 and SZM-2.
- ST-088.1 Polarizing set - filters and rotating stage (for models with transmitted illumination).
- ST-040 Darkfield condenser SZM-1 & SZM-2.
- ST-040.1 Darkfield condenser SZM-LED.
- ST-100 Hand moving stage SZM-1 & SZM-2.
- ST-100.1 Hand moving stage SZM-LED.
- ST-666 Heating stage for stereomicroscopes SZM.
- ST-666.1 Heating stage for stereomicroscopes SZM LED.
- ST-110 Moving stage, with coaxial knobs SZM.
- ST-110.1 Moving stage, with coaxial knobs SZM-LED.
- ST-111 Moving stage, with micrometric screws SZM.
- ST-111.1 Moving stage, with micrometric screws SZM-LED.
- ST-041 Sample clip.
- ST-090 0.35x focusable C-Mount adapter.
- ST-090.1 0.50x focusable C-Mount adapter.
- ST-090.2 0.66X focusable C-mount adapter.
- M-620.3 1.00x focusable C-mount adapter.
- M-173 Photo adapter for APS-C and Full Frame Reflex cameras. To be used together with M-699 universal adapter and with a specific T/2 ring (it depends on the camera brand).
- M-699 Universal adapter
- ST-092 Protective glass.
- ST-012 White/black stage plate, 95mm diameter.
- ST-014 Glass stage, 95mm diameter.
- ST-038 Halogen bulb, 12V/15W.
- ST-037 Halogen bulb, 12V/15W, with dichroic mirror.
- DC-002 Plastic dust cover, medium.
- DC-004 TNT dust cover, large.
- M-005 Micrometer slide for software calibration, 1mm/10um, 10mm/100um.
- VP-SZM IQ/OQ/PQ Validation Protocols.
- 15104 Cleaning kit.

ACCESSORIES FOR SZM-D

- ST-081 Eyepieces (pair) WF10x/21mm.
- ST-082 Eyepieces (pair) WF15x/15mm.
- ST-083 Eyepieces (pair) WF20x/10mm.
- ST-084 Eyepiece micrometer WF10x/21mm, 10mm/100um.
- ST-085 Additional lens 0.5x (w.d. 165mm).
- ST-091 Additional lens 0.75x (w.d. 117mm).
- ST-086 Additional lens 1.5x (w.d. 47mm).
- ST-087 Additional lens 2x (w.d. 33mm).
- ST-088 Polarizing set (filters and rotating stage).
- ST-040 Darkfield condenser.
- ST-041 Sample clip.
- ST-100 Hand moving stage.
- ST-036 Eye cups (pair).
- ST-012 White/black stage plate, 95mm diameter.
- ST-014 Glass stage, 95mm diameter.
- ST-038 Halogen bulb, 12V/15W.
- ST-037 Halogen bulb, 12V/15W, with dichroic mirror.
- DC-002 Plastic dust cover, medium.
- M-005 Micrometer slide for software calibration, 1mm/10um, 10mm/100um.
- 15104 Cleaning kit.

15104 - Cleaning kit

It cleans glass quickly and effectively, without leaving residue or odor. Ideal for precision lens or prism cleaning.



How to connect the cameras to our microscopes.

Please refer to the Adapter reference list on Digital section.

v 1.3.0 - OPTIKA reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products at any time without notice.

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SZO Series



Stereozoom Microscopes For Laboratory & Industry

FIELD OF VIEW - 23 mm Full Plan Field of View

10x/23mm PLAN EYEPIECES

Plan eyepieces with 23 mm field of view; high eye-point type, also suitable for the use of eyeglasses.

ZOOM OBJECTIVE

The High-Grade Zoom Objective grants a sharp and clear vision. With a zoom ratio of 6.72:1 it makes this series a perfect instrument for any application.



CLICK-STOP DETENTS

The zoom objective is equipped with a precise click-stop mechanism which makes easy to quickly find the default zoom positions: 0.67x, 0.80x, 1x, 1.2x, 1.5x, 2x, 2.5x, 3x, 3.5x, 4x, and 4.5x.



X-LED - Two Times Brighter Than Any Other



X-LED: A SEA OF LIGHT

Where present, both illuminators are equipped with X-LED systems:

- the incident illuminator with **X-LED³** (single LED, 3.6W)
- the transmitted illuminator with **X-LED^{T3}** (60 LEDs)

X-LED: RESPECTING COLORS

With 6,300K color temperature the samples are illuminated with the most natural light. It allows to respect their colors, without altering the nuances.



X-LED^{T3}: SIMPLY UNMATCHABLE

Top class illuminator for transmitted light. With 60 LEDs geometrically arranged, it grants a perfect light uniformity and the observation of large samples thanks to its 10cm diameter.



Multi-plug power supply

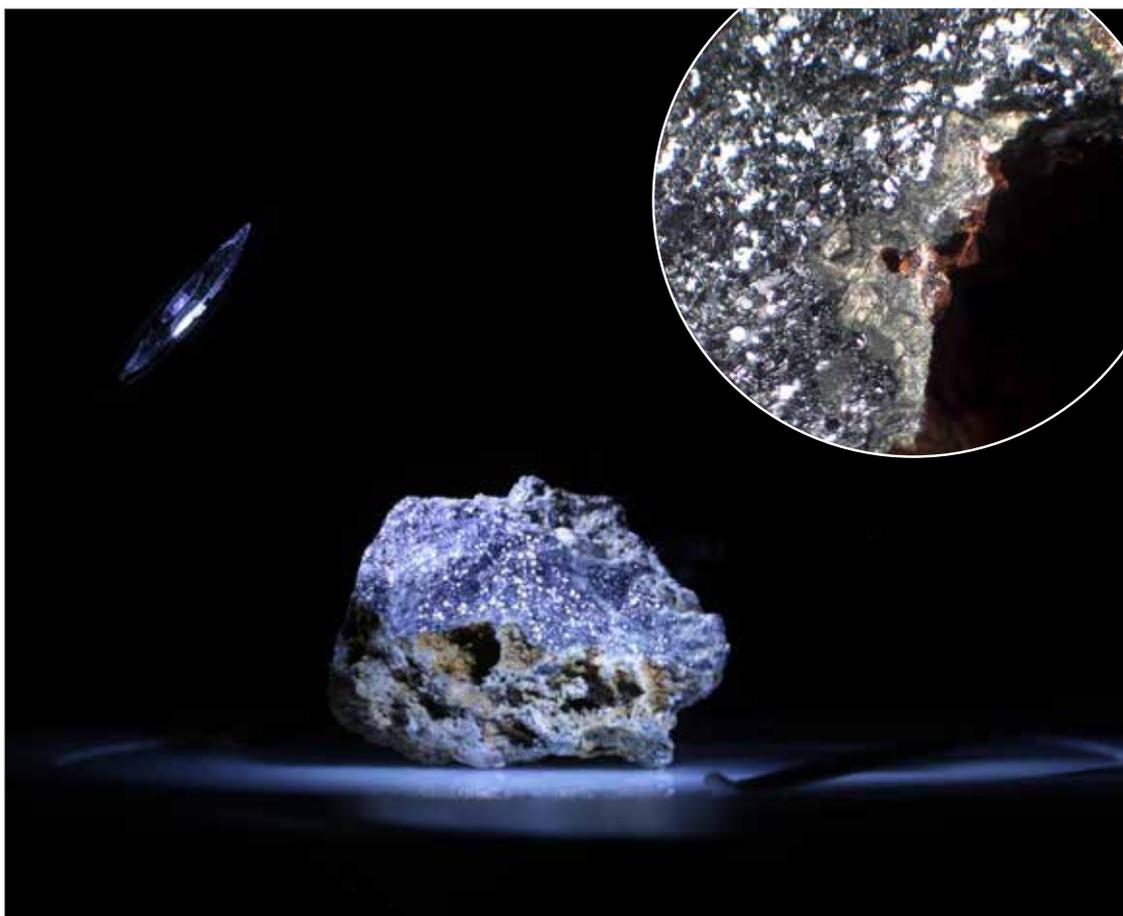
SZO Series

Greenough Optical System

The V-shape optical path of Greenough allows us to design a very compact and a slim unit, highly versatile and appreciated for the 3D viewing. Samples with significant depth can be quickly inspected. Binocular and trinocular heads are 45° inclined to grant comfortable posture to the user even after several hours of operation.

6.72:1 Zoom Ratio

SZO Series has 0.67x-4.5x zoom range (6.72:1 zoom ratio), being purposely designed for routine inspections. This zoom ratio enables most samples to be observed at the appropriate magnifications. When combined with proper accessories (2x additional lens and 25x eyepieces), SZO delivers excellent image quality up to 225x.



X-LED Exclusive Lighting Source

Special technology able to double the light intensity for incomparable performance, ensuring constant pure-white colour temperature.

Relevant money & energy saving thanks to the incredibly low energy consumptions allow you to cut the electricity bills by 90%! On SZO-3, SZO-4, SZO-5, SZO-6.

Stereozoom Microscopes For Laboratory & Industry

Overhanging Stand, In Case Of Large Samples

This stand is recommended for efficient, quick and precise observation and digital imaging of large samples, that cannot be processed with regular stands. Achieve 360° rotation and smooth movement with no limits, as the mechanism can be tilted from right to left, backward to forward. On SZO-7, SZO-8, SZO-9, SZO-10.

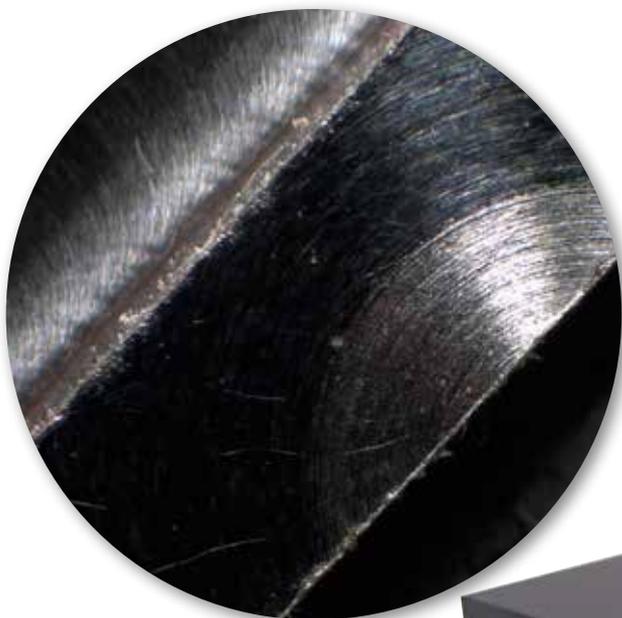
Large Working Distance And Field Of View Size Are Important!

If you need to work under the microscope, you will need a large working distance. SZO Series ensures an extended working distance of 110mm compared to the standard 100mm. Keep in my mind your application, always: if you are soldering a printed circuit board, it may be more important to have a long working distance; if you are counting items, then a large field of view will be of great assistance.

**LWD
110mm**



Get the most out of our accessories



ST-111.1 - Moving stage

Moving stage ST-111.1 is a micrometer positioning stage with XY graduation of 0.01mm. Whenever you need to precisely move the sample or make measurements, this is the ideal solution. It works with both incident and transmitted illumination, and it is equipped with rotating stage and sample clips. It is suggested to use it in conjunction with the optional micrometer eyepieces.



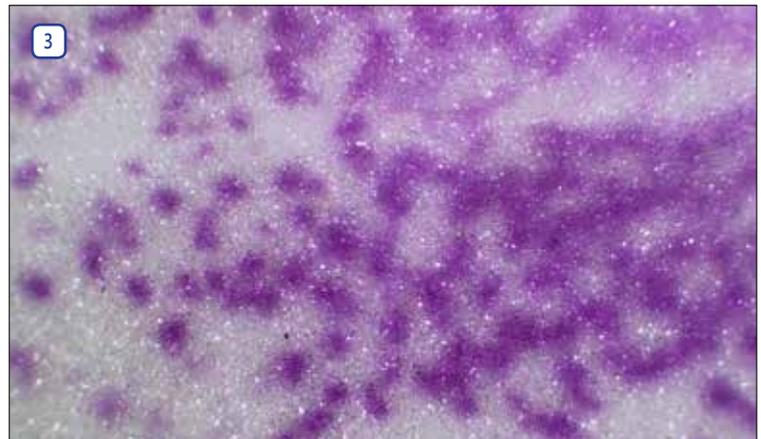
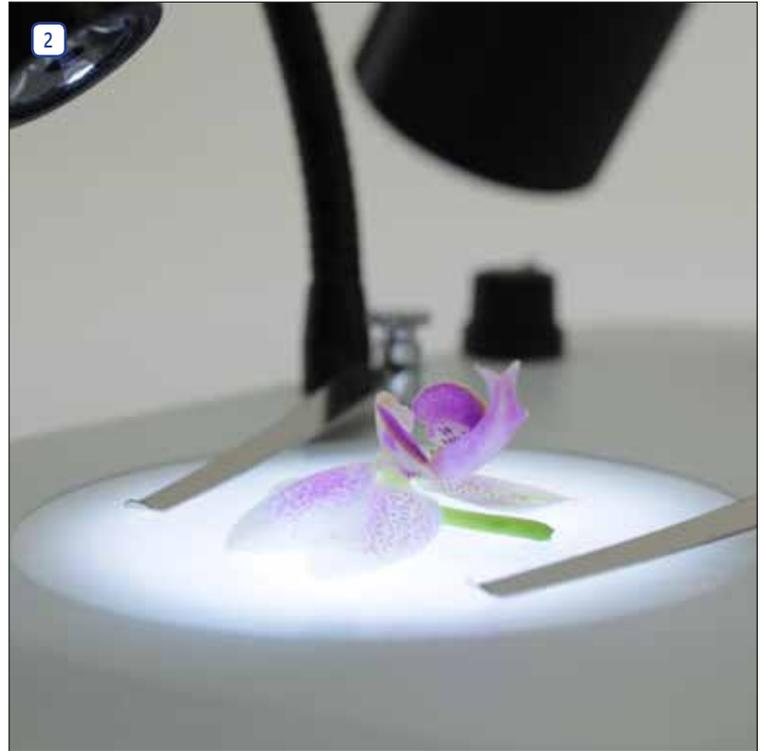
SZO Series

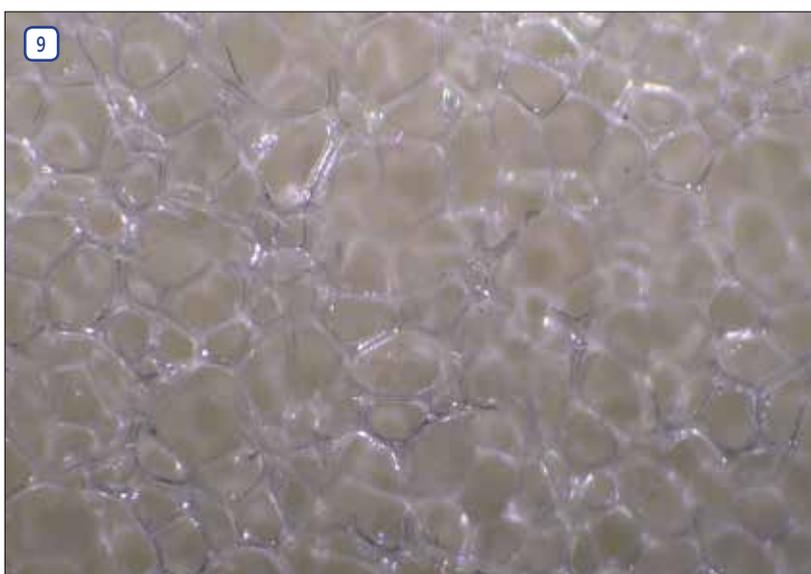
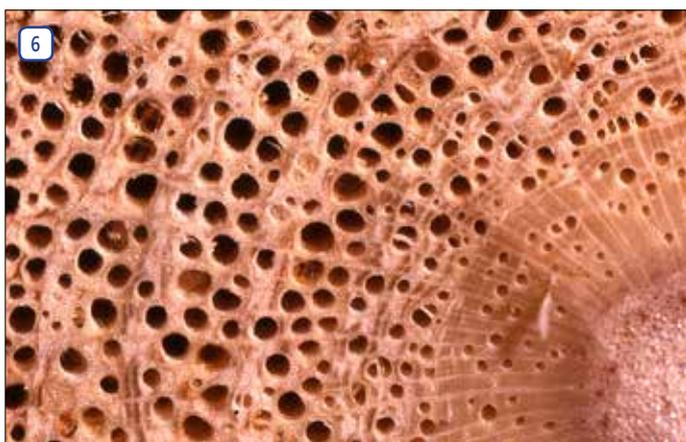
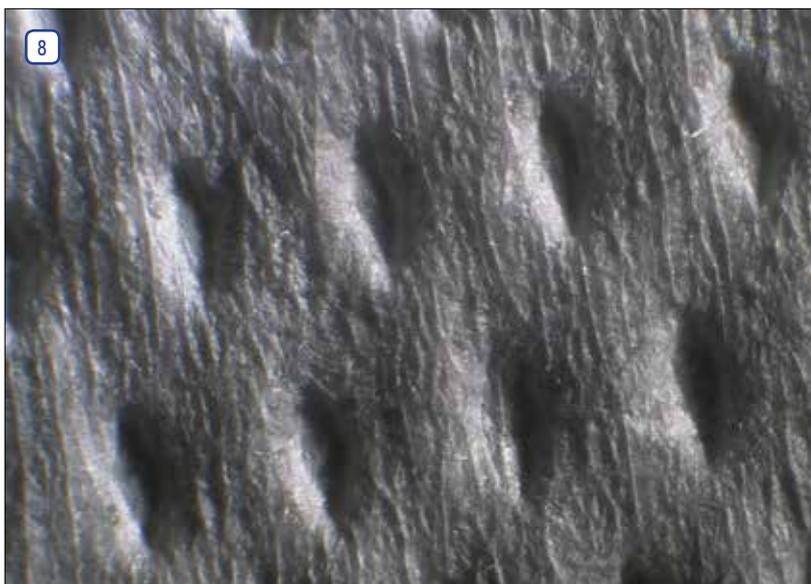
Applications

Some application examples demonstrating the versatility of SZO series. Applications in industrial and research are extremely facilitated by the advanced functionality offered.

Legend

1. Mineral rock, with SZO-5.
2. Orchid petal, with SZO-6 and X-LED transmitted light.
3. Orchid petal, with SZO-6, 0.67x zoom.
4. Orchid petal, with SZO-6, 4.5x zoom.
5. Mechanical component, with SZO-4, 0.67x zoom.
6. Trunk wisteria sinensis, with SZO-8, 3.5x zoom.
7. Solanum, with SZO-6, 0.67x zoom.
8. Embossed paper, with SZO-6, 0.67x zoom.
9. Foam, with SZO-8, 2x zoom.





SZO-B



Part	Description
Head:	Binocular, 360° rotating on all stands and 45° inclined.
Interpup. distance:	Adjustable between 51 and 75 mm.
Dioptric adjustment:	On both eyepieces.
Eyepieces:	WF10x/23 mm, high eye-point.
Objective:	Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.
Working distance:	110 mm

SZO-T



Part	Description
Head:	Trinocular (fixed photo port 70/30), 360° rotating on all stands and 45° inclined.
Interpup. distance:	Adjustable between 51 and 75 mm.
Dioptric adjustment:	On both eyepieces.
Eyepieces:	WF10x/23 mm, high eye-point.
Objective:	Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.
Working distance:	110 mm

SZO-1



Binocular stereomicroscope with pillar stand and ultra-flat base. In case illumination is needed, choose from the wide choice of external illuminators available.

Observation mode: Brightfield.

Head: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepieces.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.

Working distance: 110 mm

Specimen stage: Fitted with a black/white disc, specimen clips and a diffusing disc for external light.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 315 mm high, base: 270x210x30h mm.

SZO-2



Trinocular stereomicroscope with pillar stand and ultra-flat base. In case illumination is needed, choose from the wide choice of external illuminators available.

Observation mode: Brightfield.

Head: Trinocular (fixed photo port 70/30), 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepieces.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.

Working distance: 110 mm

Specimen stage: Fitted with a black/white disc, specimen clips and a diffusing disc for external light.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 315 mm high, base: 270x210x30h mm.

SZO Series - Range

SZO-3



Binocular stereomicroscope with pillar stand and ultra-flat base, illuminated stage with **X-LED⁷³** transmitted illumination and **X-LED³** incident illuminator for outstanding brightness, freely settable.

Observation mode: Brightfield.

Head: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepieces.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.

Working distance: 110 mm

Specimen stage: Fitted with a diffusing disc for transmitted light, specimen clips and with a black/white disc.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 315 mm high, base: 270x210x30h mm.

Illumination: Double, adjustable incident and transmitted light with separated brightness controls and 6,300K color temperature:

Incident illuminator: **X-LED³** (single LED, 3.6W).

Transmitted illuminator: **X-LED⁷³** (60 LEDs).

Multi-plug 100-240Vac/12Vdc external power supply.

SZO-4



Trinocular stereomicroscope with pillar stand and ultra-flat base, illuminated stage with **X-LED⁷³** transmitted illumination and **X-LED³** incident illuminator for outstanding brightness, freely settable.

Observation mode: Brightfield.

Head: Trinocular (fixed photo port 70/30), 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepieces.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.

Working distance: 110 mm

Specimen stage: Fitted with a diffusing disc for transmitted light, specimen clips and with a black/white disc.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 315 mm high, base: 270x210x30h mm.

Illumination: Double, adjustable incident and transmitted light with separated brightness controls and 6,300K color temperature:

Incident illuminator: **X-LED³** (single LED, 3.6W).

Transmitted illuminator: **X-LED⁷³** (60 LEDs).

Multi-plug 100-240Vac/12Vdc external power supply.

SZO-5



Binocular stereomicroscope with pillar stand and ultra-flat base, illuminated stage with **X-LED^{T3}** transmitted illumination and **X-LED³** incident double arm light for outstanding brightness, freely settable.

Observation mode: Brightfield.

Head: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepieces.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.

Working distance: 110 mm

Specimen stage: Fitted with a diffusing disc for transmitted light, specimen clips and with a black/white disc.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 315 mm high, base: 270x210x30h mm.

Illumination: Double, adjustable incident and transmitted light with separated brightness controls and 6,300K color temperature:

Incident illuminator: Two **X-LED³** (single LED, 3.6W) on flexible gooseneck. Illuminance: 170,000 lux (at 10 cm distance).

Transmitted illuminator: **X-LED^{T3}** (60 LEDs).
Multi-plug 100-240Vac/12Vdc external power supply.

SZO-6



Trinocular stereomicroscope with pillar stand and ultra-flat base, illuminated stage with **X-LED^{T3}** transmitted illumination and **X-LED³** incident double arm light for outstanding brightness, freely settable.

Observation mode: Brightfield.

Head: Trinocular (fixed photo port 70/30), 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepieces.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.

Working distance: 110 mm

Specimen stage: Fitted with a diffusing disc for transmitted light, specimen clips and with a black/white disc.

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Pillar stand 32 mm diameter and 315 mm high, base: 270x210x30h mm.

Illumination: Double, adjustable incident and transmitted light with separated brightness controls and 6,300K color temperature:

Incident illuminator: Two **X-LED³** (single LED, 3.6W) on flexible gooseneck. Illuminance: 170,000 lux (at 10 cm distance).

Transmitted illuminator: **X-LED^{T3}** (60 LEDs).
Multi-plug 100-240Vac/12Vdc external power supply.

SZO-7



Binocular stereomicroscope with extremely stable overhanging stand complete of head holder and focusing system for perpendicular observation of particularly large specimens. Smooth horizontal and vertical movements are ensured. In case illumination is needed, choose from the wide choice of external illuminators available.

Observation mode: Brightfield.

Head: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepieces.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.

Working distance: 110 mm

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Overhanging stand 420 mm high, 430 mm horizontal arm length, base 230x230 mm with following adjustments: height, longitudinal extension and head rotation angle (left-right).

SZO-8



Trinocular stereomicroscope with extremely stable overhanging stand complete of head holder and focusing system for perpendicular observation of particularly large specimens. Smooth horizontal and vertical movements are ensured. In case illumination is needed, choose from the wide choice of external illuminators available.

Observation mode: Brightfield.

Head: Trinocular (fixed photo port 70/30), 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepieces.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.

Working distance: 110 mm

Specimen stage: Fitted with a black/white disc and specimen clips

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Overhanging stand 420 mm high, 430 mm horizontal arm length, base 230x230 mm with following adjustments: height, longitudinal extension and head rotation angle (left-right).

SZO Series - Range

SZO-9



Binocular stereomicroscope with extremely stable, hinged and long overhanging stand complete of head holder and focusing system for observation of particularly large specimens. The head can be easily tilted for inspection at oblique angles ideal e.g. for stone setters. Smooth horizontal and vertical movement are ensured. In case illumination is needed, choose from the wide choice of external illuminators available.

Observation mode: Brightfield.

Head: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepieces.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x..4.5x (zoom factor 6.72:1) with click-stop detents.

Working distance: 110 mm

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Overhanging stand 420 mm high, 550 mm horizontal arm length, base 260x210 mm with following adjustments: height, longitudinal extension and head rotation angle (left-right) and head inclination angle.

SZO-10



Binocular stereomicroscope with extremely stable, hinged and long overhanging stand complete of head holder and focusing system for observation of particularly large specimens. The head can be easily tilted for inspection at oblique angles ideal e.g. for stone setters. Smooth horizontal and vertical movement are ensured. In case illumination is needed, choose from the wide choice of external illuminators available.

Observation mode: Brightfield.

Head: Trinocular (fixed photo port 70/30), 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepieces.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x..4.5x (zoom factor 6.72:1) with click-stop detents.

Working distance: 110 mm

Focusing: Rack and pinion mechanism controlled by a pair of knobs placed on both sides of the stand.

Stand: Overhanging stand 420 mm high, 550 mm horizontal arm length, base 260x210 mm with following adjustments: height, longitudinal extension and head rotation angle (left-right) and head inclination angle.

3 SZO Series - Optical System



SZO Series - Optical Performance

Eyepiece	10x (ST-301)		15x (ST-302)		20x (ST-303)		25x (ST-144)	
Field number (mm)	23		16		12		9	
Objective	Total magnification	Field of View (mm)						
0.3x (W.D: 287 mm)	2.01x – 13.5x	114.42-17.04	3.02x – 20.25x	52.98-7.902	4.02x – 27x	29.85-4.44	5.02x – 33.75x	17.93-2.67
0.5x (W.D: 177 mm)	3.35x – 22.5x	68.65-10.22	5.02x – 33.75x	31.87-4.74	6.7x – 45x	17.91-2.67	8.37x – 56.25x	10.75-1.6
0.75x (W.D: 120 mm)	5.02x – 33.75x	45.81-6.82	7.54x – 50.62x	21.22-3.16	10.05x – 67.5x	11.94-1.78	12.56x – 84.37x	7.17-1.07
1x (W.D: 110 mm)	6.7x – 45x	34.33-5.11	10.05x – 67.5x	15.24-2.37	13.4x – 90x	8.96-1.33	16.75x – 112.5x	5.37-0.80
1.5x (W.D: 47 mm)	10.05x – 67.5x	22.89-3.41	15.07x – 101.25	10.62-1.58	20.1x – 135x	5.97-0.89	25.12x – 168.75x	3.58-0.53
2x (W.D: 26 mm)	13.4x – 90x	17.16-2.55	20.1x – 135x	7.96-1.19	26.8x – 180x	4.48-0.67	33.5x – 225x	2.69-0.40

SZO Series - Comparison Chart

Model	Head	Eyepiece	Objectives	Working Distance	Stand	Illumination
SZO-1	Binocular, 360° rotating, 45° inclined	Extra Wide Field 10x/23, high eye-point	0.67....4.5x	110mm	Pillar stand with rack and pinion system	Without illumination; External light source needed
SZO-2	Trinocular, 360° rotating, 45° inclined	Extra Wide Field 10x/23, high eye-point	0.67....4.5x	110mm	Pillar stand with rack and pinion system	Without illumination; External light source needed
SZO-3	Binocular, 360° rotating, 45° inclined	Extra Wide Field 10x/23, high eye-point	0.67....4.5x	110mm	Pillar stand with rack and pinion system	Transmitted: OPTIKA X-LED ³ , 100 mm LED disc (60 LEDs). Incident: OPTIKA X-LED ³ . With separated brightness controls
SZO-4	Trinocular, 360° rotating, 45° inclined	Extra Wide Field 10x/23, high eye-point	0.67....4.5x	110mm	Pillar stand with rack and pinion system	Transmitted: OPTIKA X-LED ³ , 100 mm LED disc (60 LEDs). Incident: OPTIKA X-LED ³ . With separated brightness controls
SZO-5	Binocular, 360° rotating, 45° inclined	Extra Wide Field 10x/23, high eye-point	0.67....4.5x	110mm	Pillar with rack and pinion system	Transmitted: OPTIKA X-LED ³ , 100 mm LED disc (60 LEDs). Incident: double arm OPTIKA X-LED ³ . With separated brightness controls
SZO-6	Trinocular, 360° rotating, 45° inclined	Extra Wide Field 10x/23, high eye-point	0.67....4.5x	110mm	Pillar with rack and pinion system	Transmitted: OPTIKA X-LED ³ , 100 mm LED disc (60 LEDs). Incident: double arm OPTIKA X-LED ³ . With separated brightness controls
SZO-7	Binocular, 360° rotating, 45° inclined	Extra Wide Field 10x/23, high eye-point	0.67....4.5x	110mm	Simple overhanging stand	Without illumination; External light source needed
SZO-8	Trinocular, 360° rotating, 45° inclined	Extra Wide Field 10x/23, high eye-point	0.67....4.5x	110mm	Simple overhanging stand	Without illumination; External light source needed
SZO-9	Binocular, 360° rotating, 45° inclined	Extra Wide Field 10x/23, high eye-point	0.67....4.5x	110mm	Hinged overhanging stand	Without illumination; External light source needed
SZO-10	Trinocular, 360° rotating, 45° inclined	Extra Wide Field 10x/23, high eye-point	0.67....4.5x	110mm	Hinged overhanging stand	Without illumination; External light source needed



SZO Series - Accessories

ACCESSORIES FOR SZO SERIES

ST-301	WF10x/23 eyepieces (pair), high eyepoint, with dioptic adjustment & rubber cup.
ST-302	WF15x/16 eyepieces (pair), high eyepoint, with dioptic adjustment & rubber cup.
ST-303	WF20x/12 eyepieces (pair), high eyepoint, with dioptic adjustment & rubber cup.
ST-144	WF25x/9 eyepieces (pair), high eyepoint, with dioptic adjustment & rubber cup.
ST-305	WF10x/23 eyepiece, high eyepoint, with with micrometer scale (10mm/100um), dioptic adjustment & rubber cup.
ST-102	Additional lens 0.3x (w.d. 287mm).
ST-103	Additional lens 0.5x (w.d. 177mm).
ST-104	Additional lens 0.75x (w.d. 120mm).
ST-105	Additional lens 1.5x (w.d. 47mm).
ST-106	Additional lens 2x (w.d. 26mm).
ST-090	0.35x focusable C-Mount adapter (stereomicroscopes).
ST-090.1	0.5x focusable C-Mount adapter (stereomicroscopes).
ST-090.2	0.65x focusable C-Mount adapter (stereomicroscopes).
M-620.3	1x focusable C-Mount adapter (biological microscopes).
M-173	Photo adapter for APS-C and Full Frame Reflex cameras. To be used together with M-699 universal adapter and with a specific T/2 ring (it depends on the camera brand).
M-699	Universal adapter for M-173.
ST-041	Sample clip.
ST-042	White/black object-plate, 100mm diameter.
ST-043	Glass stage, 100mm diameter.
ST-092	Protective glass for stereohead.
ST-088.1	Polarising set (filters and rotating stage), 100mm diameter.
ST-040.1	Darkfield condenser, 100mm diameter.
ST-100.1	Hand moving stage, 100mm diameter.
ST-110.1	Moving stage, coaxial knobs, 100mm diameter.
ST-111.1	Moving stage, micrometric screws, 100mm diameter.
ST-666.1	Heating stage, with digital temperature controller (only for stereomicroscopes, 100mm diameter).
M-005	Micrometric slide, 26x76mm, with 2 X scales (1mm/100div. for biological / 10mm/100div. for stereo).
DC-002	Plastic dust cover, medium - 490(l)x490(h) mm.
DC-004	TNT dust cover, large - 700(l)x550(h) mm.
VP-SZO	IQ/OQ/PQ Validation Protocols.
15104	Cleaning kit.



How to connect the cameras to our microscopes.

Please refer to the Adapter reference list on Digital section.

15104 - Lens cleaner, 50ml

It cleans glass quickly and effectively, without leaving residue or odor. Ideal for precision lens or prism cleaning.



v 1.3.0 - OPTIKA reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products at any time without notice.

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MODULAR Series



Advanced Modular Stereozoom Microscopes



Modular Series

Identify The Most Suitable Heads For Your Needs

OPTIKA provides three series of stereomicroscope heads based on different field number, zoom level (and consequently, zoom ratio), inclination, and working distance.

An even more substantial differentiating element is also the optical system: choose between Greenough or Galilean.

Multiple Mounting Stands and Configurations

An extremely wide stand selection gives you the chance to create your tailored stereomicroscope! Choose among the several models available to virtually cover every customers' needs, in terms of illumination, arm extension, and focusing system.



Modular Stereozoom Microscopes

Overhanging Stand, In Case Of Large Samples

This stand is recommended for efficient, quick and precise observation and digital imaging of large samples, that cannot be processed with regular stands. Achieve 360° rotation and smooth movement with no limits, as the mechanism can be tilted from right to left, backward to forward.

ST-172

Get the most out of our accessories

ST-172 - Iris diaphragm module

With this accessory, the depth of field of the final image can be adjusted, for applications where different planes all in focus are needed.



OUT-OF-FOCUS AREA

With iris diaphragm open

FOCUS PLANE



IN-FOCUS AREA

With iris diaphragm close

Soldered Led Pin - SZP-8 with iris diaphragm module and ST-156 stand.



Modular Series

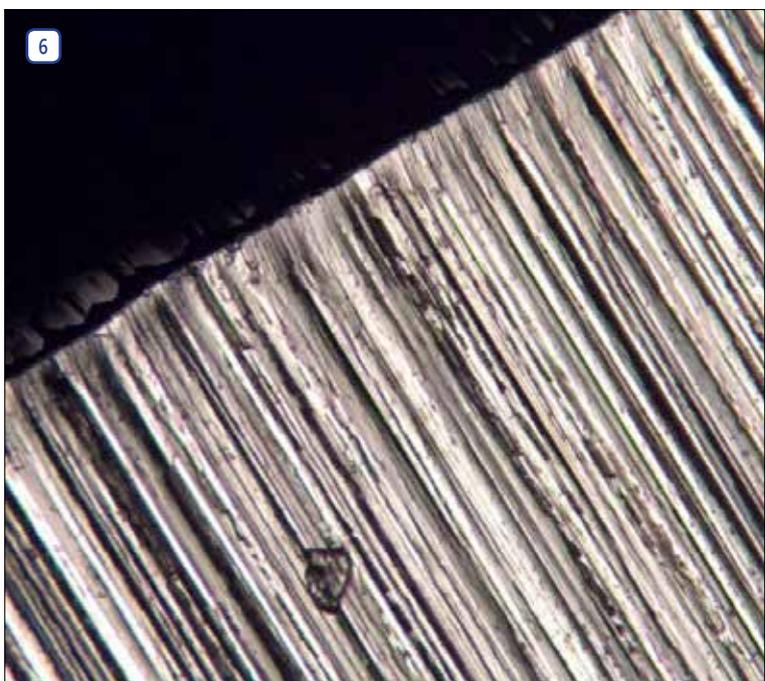
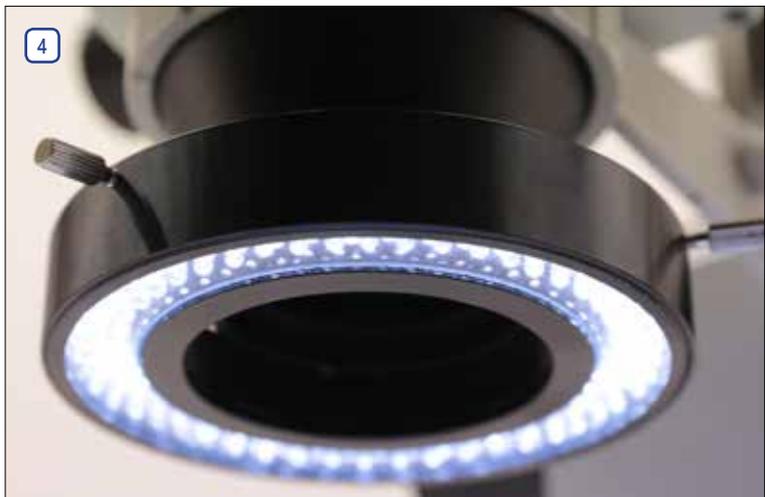
Applications

Some application examples demonstrating the versatility of stereomicroscopes with SZM, SZO and SZP heads. Applications in industrial and research are extremely facilitated by the advanced functionality offered.

Legend

1. Matrix LED adjustable incident illuminator on ST-156.
2. SZ-STL2H overhanging stand, SZO-T head and CL-41 flexible arm LED illuminator.
3. Sample of copper-brass weld interface.
4. CL-16.1 LED ring illuminator.
5. Oblique illumination using a CLD-01 cold light generator.
6. Inspection of a steel blade.
7. Applications in electronics manufacturing.
8. CLD-01 LED illuminator with CL-11.1 double-arm optical fiber guide.





MODULAR Series - Heads

OPTIKA provides three series of stereomicroscope heads based on different field number, zoom level (and consequently, zoom ratio), inclination, and working distance. An even more substantial differentiating element is also the optical system: choose between Greenough or Galilean, according to the application.



SZP-10e

SZM-B

SZM-T

SZP-8e

SZO-B

SZP-6e

SZO-T

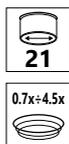
SZP-10

SZP-6

SZP-8

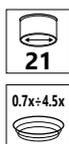
MODULAR Series - Heads

SZM-B



Part	Description
Head:	Binocular, 360° rotating on all stands and 45° inclined.
Interpup. distance:	Adjustable between 51 and 75 mm.
Dioptric adjustment:	On both eyepiece tubes.
Eyepieces:	WF10x/21 mm, high eye-point.
Objective:	Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).
Working distance:	100 mm
Optical system:	Greenough (15° inclined)

SZM-T



Part	Description
Head:	Trinocular, 360° rotating on all stands and 45° inclined. 2-position photo port: 100/0 and 0/100 (on right eyepiece tube).
Interpup. distance:	Adjustable between 51 and 75 mm.
Dioptric adjustment:	On both eyepiece tubes.
Eyepieces:	WF10x/21 mm, high eye-point.
Objective:	Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).
Working distance:	100 mm
Optical system:	Greenough (15° inclined)

MODULAR Series - Heads

SZO-B



Part	Description
Head:	Binocular, 360° rotating on all stands and 45° inclined.
Interpup. distance:	Adjustable between 51 and 75 mm.
Dioptric adjustment:	On both eyepieces.
Eyepieces:	WF10x/23 mm, high eye-point.
Objective:	Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.
Working distance:	110 mm
Optical system:	Greenough (15° inclined)

SZO-T



Part	Description
Head:	Trinocular (fixed photo port 70/30), 360° rotating on all stands and 45° inclined.
Interpup. distance:	Adjustable between 51 and 75 mm.
Dioptric adjustment:	On both eyepieces.
Eyepieces:	WF10x/23 mm, high eye-point.
Objective:	Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.
Working distance:	110 mm
Optical system:	Greenough (15° inclined)

MODULAR Series - Heads

SZP-6, SZP-8, SZP-10



Part	Description
Head:	Binocular, 360° rotating on all stands and 30° inclined.
Interpup. distance:	Adjustable between 52 and 75 mm.
Dioptric adjustment:	On both eyepieces.
Eyepieces:	WF10x/24 mm, high eye-point.
SZP-6 zoom body:	Parfocal achromatic zoom 0.8x...5.0x (zoom factor 6.25:1).
SZP-8 zoom body:	Parfocal achromatic zoom 0.8x...6.4x (zoom factor 8:1).
SZP-10 zoom body:	Parfocal achromatic zoom 0.8x...8.0x (zoom factor 10:1).
Objective lens:	Plan Achromatic 1x.
Working distance:	80 mm.
Optical system:	Galilean (Parallel, infinity corrected).



SZP-6e, SZP-8e, SZP-10e



Part	Description
Head:	Ergonomical binocular, 360° rotating on all stands and freely inclinable from 0° to 35°.
Interpup. distance:	Adjustable between 55 and 80 mm.
Dioptric adjustment:	On both eyepieces.
Eyepieces:	WF10x/24 mm, high eye-point.
SZP-6e zoom body:	Parfocal achromatic zoom 0.8x...5.0x (zoom factor 6.25:1).
SZP-8e zoom body:	Parfocal achromatic zoom 0.8x...6.4x (zoom factor 8:1).
SZP-10e zoom body:	Parfocal achromatic zoom 0.8x...8.0x (zoom factor 10:1).
Objective lens:	Plan Achromatic 1x.
Working distance:	80 mm.
Optical system:	Galilean (Parallel, infinity corrected).



MODULAR Series - Optical Performance

SZM Heads

Eyepiece	10x (ST-081)		15x (ST-082)		20x (ST-083)	
Field number (mm)	21		15		10	
Objective	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)
0.5x (W.D: 165 mm)	3.5x-22.5x	59.99-9.32	5.25x-33.75x	28.57-4.44	7x-45x	14.28-2.22
0.75x (W.D: 117 mm)	5.25x-33.75x	40-6.21	7.87x-50.62	19.06-2.96	10.50x-67.5x	9.52-1.48
1x (W.D: 100 mm)	7x-45x	29.99-4.66	10.5x-67.5x	0.95-2.22	14x-90x	7.14-1.11
1.5x (W.D: 47 mm)	10.50x-67.5x	20-3.10	15.75x-101.25x	9.52-1.48	21x-135x	4.76-0.74
2x (W.D: 33 mm)	14x-90x	14.99-2.33	21x-135x	7.14-1.11	28x-180x	3.57-0.55

SZO Heads

Eyepiece	10x (ST-301)		15x (ST-302)		20x (ST-303)		25x (ST-144)	
Field number (mm)	23		16		12		9	
Objective	Total magnification	Field of View (mm)						
0.3x (W.D: 287 mm)	2.01x - 13.5x	114.42-17.04	3.02x - 20.25x	52.98-7.902	4.02x - 27x	29.85-4.44	5.02x - 33.75x	17.93-2.67
0.5x (W.D: 177 mm)	3.35x - 22.5x	68.65-10.22	5.02x - 33.75x	31.87-4.74	6.7x - 45x	17.91-2.67	8.37x - 56.25x	10.75-1.6
0.75x (W.D: 120 mm)	5.02x - 33.75x	45.81-6.82	7.54x - 50.62x	21.22-3.16	10.05x - 67.5x	11.94-1.78	12.56x - 84.37x	7.17-1.07
1x (W.D: 110 mm)	6.7x - 45x	34.33-5.11	10.05x - 67.5x	15.24-2.37	13.4x - 90x	8.96-1.33	16.75x - 112.5x	5.37-0.80
1.5x (W.D: 47 mm)	10.05x - 67.5x	22.89-3.41	15.07x - 101.25	10.62-1.58	20.1x - 135x	5.97-0.89	25.12x - 168.75x	3.58-0.53
2x (W.D: 26 mm)	13.4x - 90x	17.16-2.55	20.1x - 135x	7.96-1.19	26.8x - 180x	4.48-0.67	33.5x - 225x	2.69-0.40

SZP Heads

Optical performance SZP-6 / SZP-6e

Eyepiece	10x (ST-160)		15x (ST-161)		20x (ST-162)	
Field number (mm)	24		15		10	
Objective	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)
0.3x (W.D: 280 mm)	2.4x-15x	100.03 - 16.03	3.6x - 22.5x	41.7 - 6.7	4.8x - 30x	20.8 - 3.3
0.5x (W.D: 165 mm)	4x - 25x	55 - 9.60	6x - 37.5x	25 - 4	8x - 50x	12.5 - 2
1x (W.D: 80 mm)	8x - 50x	30 - 5.23	12x - 75x	12.5 - 2	16x - 100x	6.3 - 1
2x (W.D: 32.5 mm)	16x - 100x	15.05 - 2.40	24x - 150x	6.3 - 1	32x - 200x	3.1 - 0.5

Optical performance SZP-8 / SZP-8e

Eyepiece	10x (ST-160)		15x (ST-161)		20x (ST-162)	
Field number (mm)	24		15		10	
Objective	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)
0.3x (W.D: 280 mm)	2.4x - 19.2x	100.03 - 16.03	3.6x - 28.8x	41.7 - 5.2	4.8x - 38.4x	20.8 - 2.6
0.5x (W.D: 165 mm)	4x - 32x	55 - 9.60	6x - 48x	25 - 3.1	8x - 64x	12.5 - 1.6
1x (W.D: 80 mm)	8x - 64x	30 - 5.23	12x - 96x	12.5 - 1.6	16x - 128x	6.3 - 0.8
2x (W.D: 32.5 mm)	16x - 128x	15.05 - 2.40	24x - 192x	6.3 - 0.8	32x - 256x	3.1 - 0.4

Optical performance SZP-10 / SZP-10e

Eyepiece	10x (ST-160)		15x (ST-161)		20x (ST-162)	
Field number (mm)	24		15		10	
Objective	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)
0.3x (W.D: 280 mm)	2.4x - 24x	100.03 - 16.03	3.6x - 36x	41.7 - 4.2	4.8x - 48x	20.8 - 2.1
0.5x (W.D: 165 mm)	4x - 40x	55 - 9.60	6x - 60x	25 - 2.5	8x - 80x	11.2 - 1.3
1x (W.D: 80 mm)	8x - 80x	30 - 5.23	12x - 120x	12.5 - 1.3	16x - 160x	6.3 - 0.6
2x (W.D: 32.5 mm)	16x - 160x	15.05 - 2.40	24x - 240x	6.3 - 0.6	32x - 320x	3.1 - 0.3

MODULAR Series - Accessories for Heads

ACCESSORIES FOR SZM HEADS

- ST-036 Eyecups (pair), curved.
- ST-081 EW10x/21 eyepieces (pair), high eyepoint.
- ST-082 WF15x/15 eyepieces (pair), high eyepoint.
- ST-083 WF20x/10 eyepieces (pair), high eyepoint.
- ST-084 WF10x/21 eyepiece, high eyepoint, with micrometric scale (10mm/100um) & rubber cup (retractable).
- ST-085 Additional lens 0.5x (w.d. 165mm).
- ST-091 Additional lens 0.75x (w.d. 117mm).
- ST-086 Additional lens 1.5x (w.d. 47mm).
- ST-087 Additional lens 2x (w.d. 33mm).
- ST-090 0.35x focusable C-Mount adapter (stereomicroscopes).
- ST-090.1 0.5x focusable C-Mount adapter (stereomicroscopes).
- ST-090.2 0.65x focusable C-Mount adapter (stereomicroscopes).
- M-620.3 1x focusable C-Mount adapter (biological microscopes).
- M-173 Photo adapter for APS-C and Full Frame Reflex cameras. To be used together with M-699 universal adapter and with a specific T/2 ring (it depends on the camera brand).
- M-699 Universal adapter.
- ST-092 Protective glass for stereohead.
- M-005 Micrometric slide, 26x76mm, with 2 X scales (1mm/100div. for biological / 10mm/100div. for stereo).
- VP-SZM IQ/OQ/PQ Validation Protocols.
- 15104 Cleaning kit.
- DC-002 Plastic dust cover, medium 490(l)x490(h) mm.

ACCESSORIES FOR SZP HEADS

- ST-160 WF10x/24 eyepiece, high eyepoint, with dioptic adjustment & rubber cup.
- ST-161 WF15x/16 eyepieces (pair), with dioptic adjustment & rubber cup.
- ST-162 WF20x/12 eyepieces (pair), with dioptic adjustment & rubber cup.
- ST-163 WF10x/24 eyepiece, high eyepoint, with micrometric scale (10mm/100um), dioptic adjustment & rubber cup (retractable).
- ST-165 0.3x objective (w.d. 280mm).
- ST-166 0.5x objective (w.d. 118mm).
- ST-167 2x objective (w.d. 32.5mm).
- ST-172 Iris diaphragm module.
- ST-170 Photo/Video beam splitter - 1 port.
- ST-171 Photo/Video beam splitter - 2 ports.
- ST-090 0.35x focusable C-Mount adapter (stereomicroscopes).
- ST-090.1 0.5x focusable C-Mount adapter (stereomicroscopes).
- ST-090.2 0.65x focusable C-Mount adapter (stereomicroscopes).
- M-620.3 1x focusable C-Mount adapter (biological microscopes).
- M-173 Photo adapter for APS-C and Full Frame Reflex cameras. To be used together with M-699 universal adapter and with a specific T/2 ring (it depends on the camera brand).
- M-699 Universal adapter.
- SZP-FL Fluorescence attachment for SZP series.
- M-151 HBO100W high-pressure mercury bulb for fluorescence.
- M-151.1 HBO 100W high-pressure mercury bulb for fluorescence (OSRAM High-Grade).
- ST-176 Protective glass for SZP Series.
- M-005 Micrometric slide, 26x76mm, with 2 X scales (1mm/100div. for biological / 10mm/100div. for stereo).
- VP-SZP IQ/OQ/PQ Validation Protocols.
- 15104 Cleaning kit.
- DC-002 Plastic dust cover, medium 490(l)x490(h) mm.

ACCESSORIES FOR SZO HEADS

- ST-301 Eyepieces (pair) WF10x/23mm.
- ST-302 Eyepieces (pair) WF15x/16mm.
- ST-303 Eyepieces (pair) WF20x/12mm.
- ST-144 Eyepieces (pair) WF25x/9mm.
- ST-305 Eyepiece micrometer WF10x/23mm, 10mm/100um.
- ST-102 Additional lens 0.3x (w.d. 287mm).
- ST-103 Additional lens 0.5x (w.d. 177mm).
- ST-104 Additional lens 0.75x (w.d. 120mm).
- ST-105 Additional lens 1.5x (w.d. 47mm).
- ST-106 Additional lens 2x (w.d. 26mm).
- ST-090 0.35x focusable C-Mount adapter (stereomicroscopes).
- ST-090.1 0.5x focusable C-Mount adapter (stereomicroscopes).
- ST-090.2 0.65x focusable C-Mount adapter (stereomicroscopes).
- M-620.3 1x focusable C-Mount adapter (biological microscopes).
- M-173 Photo adapter for APS-C and Full Frame Reflex cameras. To be used together with M-699 universal adapter and with a specific T/2 ring (it depends on the camera brand).
- M-699 Universal adapter
- ST-092 Protective glass for stereohead.
- M-005 Micrometric slide, 26x76mm, with 2 X scales (1mm/100div. for biological / 10mm/100div. for stereo).
- VP-SZO IQ/OQ/PQ Validation Protocols.
- 15104 Cleaning kit.
- DC-002 Plastic dust cover, medium 490(l)x490(h) mm.



Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B Blue	460 - 500	505	510LP
G Green	510 - 550	570	575LP

SZP-FL HBO fluorescence attachment for SZP heads

Description: SZP fluorescence attachment for biology, industrial inspection, criminal justice, etc. Essential tool for security printing and mineral research.

Illumination: 100W HBO high-pressure mercury bulb. Average lamp lifetime: 400 hours. Input voltage: 110/240Vac, 50/60Hz, 1A ; Fuse: F8AL 250V. Maximum input power: 125W. Current and time counter LED displays.

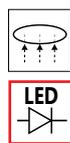
Photo Attachment: Trinocular output Photo/Video port.

MODULAR Series - Stands

An extremely wide stand selection gives you the chance to create your tailored stereomicroscope! Choose among the several models available to virtually cover every customers' needs, in terms of illumination, arm extension, and focusing system.



ST-150



Large, simple plain stand with head holder and focusing mechanism. **Pillar type.**

Base size: 320x280 mm. Pillar size: Ø32x360 mm.

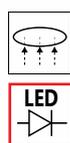
ST-151



Large plain stand with **LED transmitted illumination** and adjustable intensity control, head holder and focusing mechanism. **Pillar type.**

Base size: 320x280 mm. Pillar size: Ø32x360 mm.

ST-152



Large, simple plain stand with head holder and focusing mechanism. **Fixed arm type.**

Base size: 320x280 mm. Fixed arm height: 360 mm.

ST-153

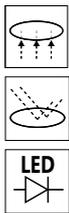


Large plain stand with **LED transmitted illumination**, and adjustable intensity control, head holder and focusing mechanism. **Fixed arm type.**

Base size: 320x280 mm. Fixed arm height: 360 mm.

3 MODULAR Series - Stands

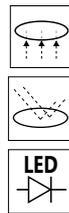
ST-155



ST-155 with SZP-8 head

Modern, large plain stand equipped with **LED transmitted and incident illumination**, both with **intensity control**. It comes complete of head holder and focusing mechanism.
 Base size: 330x285 mm. Height: 38 mm. Fixed arm height: 340 mm.
 Head not included.

ST-156



ST-156 with -8 head

Modern, large plain stand equipped with **LED transmitted and incident illumination**, both with **intensity control**. It comes complete of head holder and **coaxial coarse and fine focusing system**. Base size: 330x285 mm. Height: 38 mm.
 Fixed arm height: 340 mm. Head not included.

SZ-STL8



X-LED³: 60-LED illuminator for transmitted light

Modern stand equipped with the **exclusive X-LED³ lighting system** located in two flexible arms and extra-large **settable X-LED³ transmitted illumination** for enhanced brightness and improved sample observation.
Incident illuminator: Two X-LED3 (single LED, 3.6W) on flexible gooseneck. Illuminance: 170,000 lux (at 10 cm distance).
Transmitted illuminator: X-LED³ (60 LEDs).
 Base size: 270x205 mm. Height: 30 mm. Pillar: Ø32x315 mm.
 Multi-plug 100-240Vac/12Vdc external power supply.

SZ-STL1H



Extremely stable overhanging stand **complete of head holder and focusing system** for perpendicular observation of particularly large specimens. **Smooth horizontal and vertical movements** are ensured. In case illumination is needed, choose from the wide choice of **external illuminators** available.

Base dimensions: 230x230 mm.
Pillar: Ø32x420 mm.
Horizontal arm: 430 mm.

SZ-STL2H



Extremely stable, hinged and long overhanging stand complete of head holder and focusing system for observation of particularly large specimens. The head can be easily tilted for inspection at **oblique angles** ideal e.g. for stone setters. **Smooth horizontal and vertical movement** are ensured. In case illumination is needed, choose from the wide choice of **external illuminators** available.

Base dimensions: 260x210 mm.
Pillar: Ø32x420 mm.
Horizontal arm: 550 mm.

MODULAR Series - Stands

SZ-STL5



SZ-STL5L with SZO-T head



Wall mount & table clamp,
both included

Highly versatile flexible arm stand, 360°rotating, ideal for industrial applications. It comes complete of head holder with focusing system and all the supports for table clamp and wall mount. Small footprint is ensured when not in use, saving valuable space on the bench. Head not included.

SZ-STL5LED



Mechanical component
SZ-STL5LED and SZM-T



SZ-STL5LED with SZP-8 head

Highly versatile flexible arm stand, 360°rotating, ideal for industrial applications. It comes complete of the settable and exclusive X-LED³ incident illumination system, head holder with focusing system and all the supports for table clamp and wall mount. Small footprint is ensured when not in use, saving valuable space on the bench. Head not included. Multi-plug 100-240Vac/6Vdc external power supply.

SZ-STLX



Extremely stable, long overhanging stand complete of head holder and focusing system for observation of particularly large specimens. The head can be easily **swivelled** and **tilted** for inspection at **oblique angles**. **Smooth horizontal and vertical movements** are ensured. In case illumination is needed, choose from the wide choice of **external illuminators** available.

Base dimensions: 210×257 mm.
Pillar: Ø32×425 mm.
Horizontal arm: 750 mm (movement range 330 mm).
Swivel: 360°
Tilt: 180°
Weight: 16.25 kg
Head not included.

SZ-STLX with SZN-B head



SZ-STLX with SZ0-B head and CLD-01 + CL11.1

MODULAR Series - Accessories

Most of the time, it is of fundamental importance to combine a stereomicroscope with the right accessories, such as attachments, illuminators, to provide an efficient illumination and achieve the best working conditions possible. and moving or heating stages are necessary for some specific applications.



ST-666



M-666



SZP-FL



CLD-01



CL-30



ST-111



CL-31



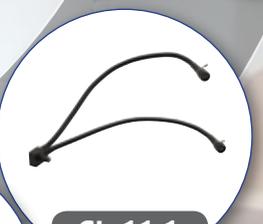
ST-110



CL-41



ST-100



CL-11.1



CL-12



CL-16.1



CL-20

SZP-FL - Epi-Fluorescence Attachment

Attachment for fluorescence applications for SZP stereomicroscopes only.

Used in many applications like biology, botany, electronics, materials, forensics. Equipped with HBO 100W mercury lamp illuminator.
To be combined with ST-150 or ST-151 stand.



FL



SZP-6



SZP-8



SZP-10



SZP-e



ST-150



ST-151

Name	Excitation filter (nm)	Dichroic mirror cut-off (nm)	Emission filter (nm)
B Blue	460 - 500	505	510LP
G Green	510 - 550	570	575LP

SZP-FL HBO fluorescence attachment for SZP heads

Description: SZP fluorescence attachment for biology, industrial inspection, criminal justice, etc. Essential tool for security printing and mineral research.

Illumination: 100W HBO high-pressure mercury bulb. Average lamp lifetime: 400 hours. Input voltage: 110/240Vac, 50/60Hz, 1A ; Fuse: F8AL 250V. Maximum input power: 125W. Current and time counter LED displays.

Photo Attachment: Trinocular output Photo/Video port.

MODULAR Series - Illuminators

CLD-01



Flexible and professional cold light illuminator with high power, extra-efficiency 14W LED system, extremely bright and uniform. Optical power: >1000 lumen. Color temperature: pure white 6,300 K. Brightness control potentiometer, external power supply.

CLD-01 with CL-11.1



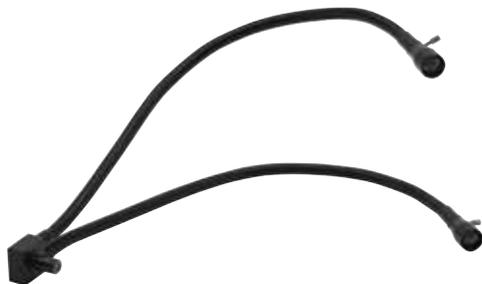
CL-17.1: Additional polarizing filters for CL-11.1

CLD-01 Accessories

The output can be coupled to the following accessories:

- CL-11.1: Double-arm optical fiber guide with focusing lenses. Arm length 500 mm.
- CL-17.1: Polarizing filters (pair) for CL-11.1.
- CL-12: Ring optical fiber guide (length 700 mm).
Guide diameter 16 mm.
Diameter of the fixing ring: 55mm.
The circular end is suitable for all stereo series.

CL-11.1



Double-arm guide for CLD-01, with focusing lenses.
Arm length 500 mm. Each arm fitted with focusable lens adapter.
Illuminance (at 10 cm distance): 100.000 lux.
Optional accessory:
CL-17.1: Polarizing filters (pair) for CL-11.1.

CL-12



Ring optical fiber guide for CLD-01.
Length 700 mm, diameter 16 mm.
The circular end is suitable for all series, by using the three locking screws. Diameter of the fixing ring: 55 mm.
Illuminance (at 10 cm distance): 40,000 lux.

CL-30



Double-arm Led illuminator.

Light sources: LED (x2); With 2W high efficiency LEDs.

Color temperature: pure white 6,300 K;

Luminous flux: 80 lm each arm;

Illuminance: 50,000 lux (at 10 cm distance).

Multi-plug 100-240Vac/12Vdc external power supply.

CL-31



Double-arm Led illuminator, with brightness control.

Light sources: LED (x2); With 2W high efficiency LEDs.

Color temperature: pure white 6,300 K;

Luminous flux: 80 lm each arm.

Illuminance: 50,000 lux (at 10 cm distance).

Multi-plug 100-240Vac/12Vdc external power supply.

CL-41



Double-arm X-LED³ illuminator, with brightness control.

Light sources: With 3,6 W high efficiency X-LED³.

Color temperature: pure white 6,300 K;

Luminous flux: 400 lm each arm;

Illuminance: 170,000 lux (at 10 cm distance).

Multi-plug 100-240Vac/12Vdc external power supply.

CL-14



56-LED ring light illuminator, with brightness control.

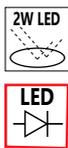
Compact, with 360° rotating ring connector.

Illuminance (at 10 cm distance): >8,000 lux.

Suitable for LAB, SZM and SZO.

MODULAR Series - Illuminators

CL-16.1



Professional lighting system including 144 LEDs (2W total power) for enhanced light uniformity and brightness. The ring light illumination is divided into 4 different zones, individually adjustable for **selectable light zones**. The **separated, external control panel** prevents interferences during use, whilst the sturdy metal structure makes it **more durable and resistant**. Diameter of the fixing ring: 60mm. **Color temperature:** pure white 6,300 K. **Illuminance:** 6,000 lux (at 10 cm distance).

SZM-T with CL-16.1

MODULAR Series - Stages

ST-100 & ST-100.1



ST-110 & ST-110.1



Hand moving stage

Dimensions: 185x145mm.
Range: 56mm (X) x 35mm (Y).
> ST-100: model for SZM-1 and SZM-2.
> ST-100.1: model for SZM-LED1, SZM-LED2 and SZO.
Please note that this item cannot be combined with SZO-5, SZO-6 and SZ-STL8. Specific versions available also for other models.
Note: Fastening on microscope base on request.

Moving stage, with knobs

Manual positioning stage, using knobs for X-Y movements.
Dimensions: 180x155mm. Range: 75mm (X) x 54mm (Y).
> ST-110: model for SZM-1 and SZM-2.
> ST-110.1: model for SZM-LED1, SZM-LED2 and SZO.
Please note that this item cannot be combined with SZO-5, SZO-6 and SZ-STL8. Specific versions available also for other models.
Note: Fastening on microscope base on request.

ST-111 & ST-111.1



ST-666 & ST-666.1



Moving stage, with micrometer screws

Manual positioning stage, using micrometer screws.

Dimensions: 185x145mm. Range: 25mm (X) x 25mm (Y).

Micrometer screws resolution: 0.01mm.

> ST-111: model for SZM-1 and SZM-2.

> ST-111.1: model for SZM-LED1, SZM-LED2 and SZO.

Please note that this item cannot be combined with SZO-5, SZO-6 and SZ-STL8. Specific versions available also for other models.

Note: Fastening on microscope base on request.

Heating stage, round

Temperature range: 20°C (room temperature) – 50°C.

Temperature setting resolution: 1°C. Temperature measuring resolution:

0.1°C. Display: LED display for set temperature.

LED display for measured temperature.

> ST-666: model for SZM-1 and SZM-2.

> ST-666.1: model for SZM-LED1, SZM-LED2, SZO and SZ-STL8.

Specific versions available also for other models.

Note: Fastening on microscope base on request.



MODULAR Series - General Accessories

DUST COVERS

- DC-002 Plastic dust cover, medium.
- DC-004 TNT dust cover, large (IM, SZM, SZO, SZP Series with overhanging stand) 700(l)x550(h) mm

CLEANING KIT

- I 15104 Cleaning kit.

15104 - Cleaning kit

It cleans glass quickly and effectively, without leaving residue or odor. Ideal for precision lens or prism cleaning.



MICROMETER SLIDE

- I M-005 Micrometer slide for software calibration, 1mm/10um, 10mm/100um.



How to connect the cameras to our microscopes.

Please refer to the Adapter reference list on Digital section.

v 1.3.0 - OPTIKA reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products at any time without notice.

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GEM Series



Stereozoom Microscopes For Gemology

GEM Series



As a leading company in the supply of gemological microscopes, OPTIKA offers 3 series of microscopes purposely designed for this sector by using both brightfield and darkfield methods, SZM-GEM-1 / SZM-GEM-2, OPTIGEM-1 / OPTIGEM-2 and OPTIGEM-3 / OPTIGEM-4. Every microscope has been designed and manufactured in order to satisfy the requests of a very demanding industry; brightfield/darkfield, immersion analysis, light color temperature: no detail has been left to chance.

Specifically Designed for Specialists

Gemological stereomicroscopes are meant to help with stone inspection. Jewels and gems have a variety of grades (or quality levels), which ultimately influence their value and cost on the market; therefore it is important to have solutions that are purposely designed for gemology. These stereomicroscopes are equipped with iris and darkfield condenser on the bottom light source, and with a set of on stage tweezers to hold the stone in place.

Much More Than Gemological Stereomicroscopes

OPTIGEM-1 & OPTIGEM-2 are two-in-one gemology instruments that can be used both in vertical and horizontal position in a very easy way, just by turning one knob (no disassembling and re-assembling operations are required). The horizontal position extends the use of a gemological microscope, giving the possibility to perform immersion analysis by submerging a sample in liquid. If the stone's refractive index is close to the liquid's one, immersion makes the interior more visible by reducing the effects of refraction and surface reflection. This enables you to see a gem's inclusions or color distribution more easily. Immersion is also necessary to see crystal growth structures, which might help you separate natural from synthetic corundum. Features like curved growth striae in flame-fusion synthetics, or separation planes in assembled stones, are often far easier to see when the stone is immersed.



Vertical position for standard gem analysis with darkfield illumination and polarizing technique



Horizontal position for immersion gem analysis

Incredibly Versatile Operations

OPTIGEM Series offers multiple options for illumination and contrast techniques, such as incident, transmitted and oblique brightfield darkfield, polarization and immersion analysis only on Optigem 1 & 2. They come with a special optical condenser configuration to ensure real, perfect darkfield application (see the dedicated chapter for further information).

Stereozoom Microscopes For Gemology

Ultrabright LED Condenser for Optimized Illumination

An ultrabright LED-based electronic condenser with intensity control allows to switch from brightfield to darkfield; it also produces perfectly the colour of daylight. The condenser uses a new optical configuration especially created in order to obtain a perfect darkfield application.

With darkfield observation, the unscattered beams from the image are excluded: as a result, the field around the specimen is generally dark.

An additional flexible arm and velvet-field slider produce extra contrast for crisp and vibrant images. The illumination of OPTIGEM microscopes is greatly performing and this brings this series to be ideal for precious stones and jewels evaluation.



Get the most out of our accessories

A wide range of optional accessories completes these instruments: from gemology clip, iris aperture diaphragm, polarization analysis kit, optical unit to switch the darkfield from a "sharp" (gem exhibition) to a "soft" (diamond analysis) mode, translating cell holder with vacuum pick-up and quartz immersion cells complete and enhance the OPTIGEM-1 & OPTIGEM-2 performances. All the accessories can be stacked, in any order, while using the microscope both horizontally and vertically.



ST-202

ST-202 - Polarizing analysis kit

Polarization technique allows to quickly determine if the stone at hand is isotropic or anisotropic or, at best, to determine the optic character of gemstones (twin planes, strain, pleochroism, etc.). It is also the preferred tool for separating synthetic Quartz from its natural counterparts. In addition, the polarizing microscope may be very useful for distinguishing solid inclusions from negative inclusions as well as for spotting polysynthetic twinning.

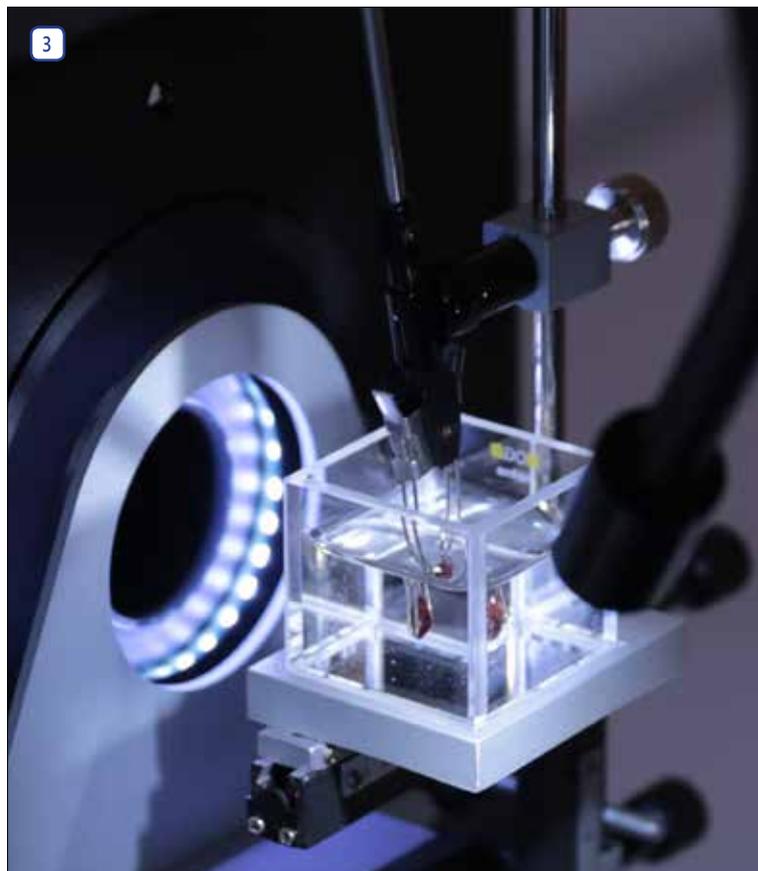
GEM Series

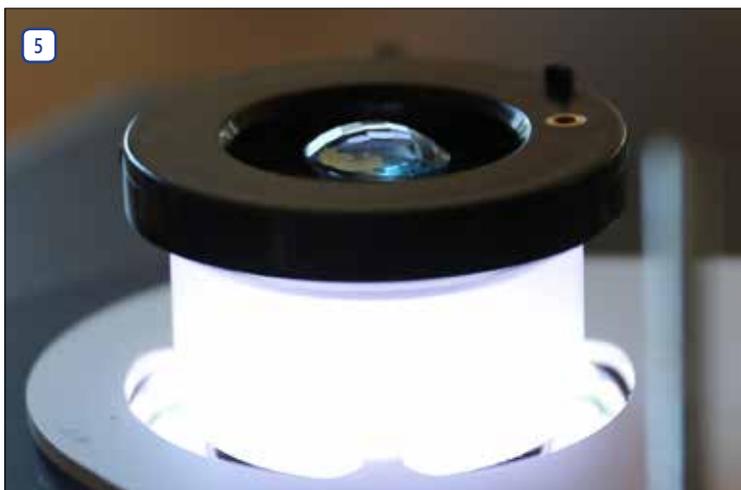
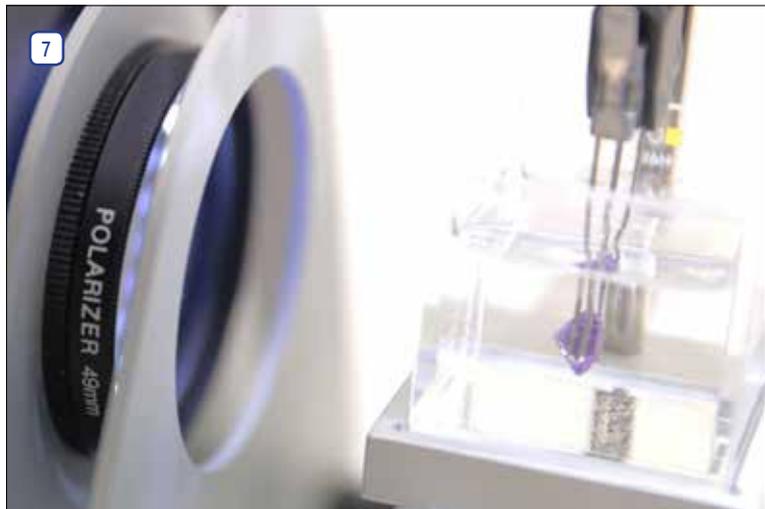
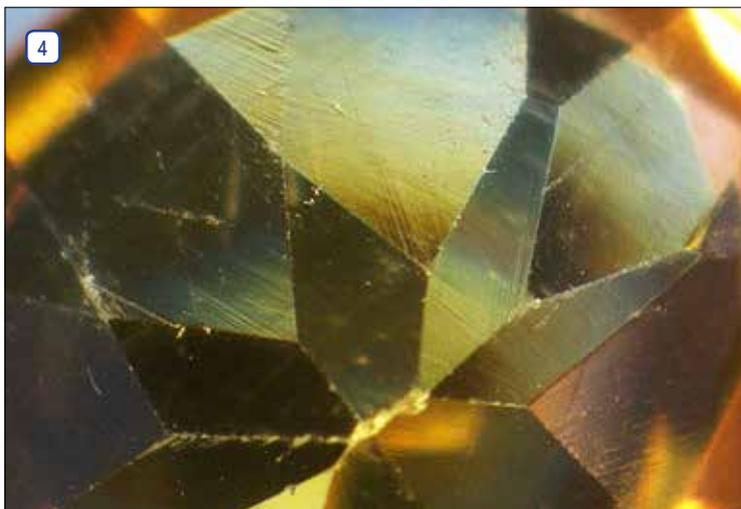
Applications

Some application examples demonstrating the performance of OPTIGEM Series, especially designed to observe samples of precious stones and jewels and provided with specific features for gemological needs.

Legend

1. Inspection of stones with SZM-GEM-1.
2. Inspection of stones with pure white darkfield illumination.
3. Immersion cell (ST-203) on a translating support (ST-204).
4. Sample of Citrine.
5. ST-201 accessory creates a soft darkfield illumination ideal for diamond analysis.
6. Optigem can be easily rotated to a horizontal working position.
7. ST-201 accessory for analysis under polarized light.
8. Working with Optigem and its accessories (they can be stacked for increased functionality).





GEM Series - Range

OPTIGEM 1

-  21
-  0.7x-4.5x
-  X-LED
-  3W LED
-  4W LED
-  DF



Binocular gemological stereomicroscopes for brightfield and darkfield applications with special side-emitting **LED** illumination ring for true darkfield illumination. Equipped also with an incident **LED** flexible arm and a diffusive **LED** disc for transmitted illumination. The instrument can be easily tilted horizontally for immersion analysis.

Observation mode: Brightfield, darkfield.

Heads: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/21 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).

Working distance: 100 mm.

Specimen stage: Gemological stage, with clamp for holding gems.

Focusing: Rack and pinion mechanism controlled by a pair of knobs.

Stand: Fixed arm stand with tilting system (with position lock control). It can be totally overturned and rotated allowing in this way to obtain a 2-in-one instrument: an instrument for standard observations and one for observation of water-immersed gems.

Darkfield illumination: Equipped with a state-of-the-art illuminator for darkfield observation. It consist of an innovative side-emitting LEDs ring with an emission angle of 38°. With brightness control.

Transmitted light illumination: Equipped with a LED illuminator, located under the stage. With brightness control.

Incident illumination: Equipped with a flexible gooseneck-arm LED illuminator. With brightness control.

Color temperature: Pure white 6,300 K

OPTIGEM 2

-  21
-  0.7x-4.5x
-  X-LED
-  3W LED
-  4W LED
-  DF



Trinocular gemological stereomicroscopes for brightfield and darkfield applications with special side-emitting **LED** illumination ring for true darkfield illumination. Equipped also with an incident **LED** flexible arm and a diffusive **LED** disc for transmitted illumination. The instrument can be easily tilted horizontally for immersion analysis.

Observation mode: Brightfield, darkfield.

Heads: Trinocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/21 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).

Working distance: 100 mm.

Specimen stage: Gemological stage, with clamp for holding gems.

Focusing: Rack and pinion mechanism controlled by a pair of knobs.

Stand: Fixed arm stand with tilting system (with position lock control). It can be totally overturned and rotated allowing in this way to obtain a 2-in-one instrument: an instrument for standard observations and one for observation of water-immersed gems.

Darkfield illumination: Equipped with a state-of-the-art illuminator for darkfield observation. It consist of an innovative side-emitting LEDs ring with an emission angle of 38°. With brightness control.

Transmitted light illumination: Equipped with a LED illuminator, located under the stage. With brightness control.

Incident illumination: Equipped with a flexible gooseneck-arm LED illuminator. With brightness control.

Color temperature: Pure white 6,300 K

OPTIGEM 3



Binocular gemological stereomicroscopes for brightfield and darkfield applications. The darkfield condenser uses a typical optical configuration, based on halogen illumination and a classic reflecting system. A flexible arm with a fluorescent tube simulates the color of daylight for accurate color grading. The stand can be inclined backward by 45° for to increase comfort and ergonomoy.

Observation mode: Brightfield, darkfield.

Heads: Binocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.7:1).

Working distance: 110 mm.

Specimen stage: Gemological stage, with clamp for holding gems.

Focusing: Rack and pinion mechanism controlled by a pair of knobs.

Stand: Fixed arm stand with tilting system. It can be inclined up to 45°

Darkfield illumination: Equipped with a 30W halogen illuminator and a darkfield condenser. With brightness control.

Transmitted light illumination: Selectable by using a specific darkfield/brightfield switching control, it uses the same halogen source of darkfield illuminator. With brightness control.

Incident illumination: Equipped with a flexible gooseneck-arm with fluorescent tube. With brightness control.

Color temperature: Pure white 6,300 K

OPTIGEM 4



Trinocular gemological stereomicroscopes for brightfield and darkfield applications. The darkfield condenser uses a typical optical configuration, based on halogen illumination and a classic reflecting system. A flexible arm with a fluorescent tube simulates the color of daylight for accurate color grading. The stand can be inclined backward by 45° for to increase comfort and ergonomoy.

Observation mode: Brightfield, darkfield.

Heads: Trinocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/23 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.7:1).

Working distance: 110 mm.

Specimen stage: Gemological stage, with clamp for holding gems.

Focusing: Rack and pinion mechanism controlled by a pair of knobs.

Stand: Fixed arm stand with tilting system. It can be inclined up to 45°

Darkfield illumination: Equipped with a 30W halogen illuminator and a darkfield condenser. With brightness control.

Transmitted light illumination: Selectable by using a specific darkfield/brightfield switching control, it uses the same halogen source of darkfield illuminator. With brightness control.

Incident illumination: Equipped with a flexible gooseneck-arm with fluorescent tube. With brightness control.

Color temperature: Pure white 6,300 K

GEM Series - Range

SZM-GEM-1 / SZM-GEM-2



SZM-GEM-1
Gemological microscope
with binocular head



SZM-GEM-2
Gemological microscope
with trinocular head

Gemological stereomicroscopes with pillar stand and illuminated stage for brightfield and darkfield applications with special LED illumination ring for true darkfield illumination.

Observation mode: Brightfield, darkfield.

Heads: Binocular or trinocular, 45° inclined, 360° rotating.

Interpupillary distance: Adjustable between 51 and 75 mm.

Dioptric adjustment: On both eyepiece tubes.

Eyepieces: WF10x/21 mm, high eye-point.

Objective: Parfocal achromatic zoom 0.7x...4.5x (zoom factor 6.43:1).

Working distance: 100 mm.

Specimen stage: Gemological stage, with clamp for holding gems.

Focusing: Rack and pinion mechanism controlled by a pair of knobs.

Stand: Pillar stand 32 mm diameter and 250 mm high, base: 260x200x60h mm.

Darkfield illumination: Equipped with a state-of-the-art illuminator for darkfield observation. It consist of an innovative side-emitting LEDs ring with an emission angle of 38°. With brightness control.

Transmitted light illumination: Equipped with a LED illuminator, located under the stage. With brightness control.

Incident illumination: Dichroic halogen lamp 12V/15W. With brightness control.

Color temperature: Pure white 6,300 K

SZM-GEM-1: Equipped with binocular head.

SZM-GEM-2: Equipped with trinocular head.

GEM Series - Comparison chart

Model	Head	Eyepieces	Objective	Stand	Illumination
OPTIGEM-1	Binocular, 360° rotating, 45° inclined	Wide Field 10x/21mm	0.7 4.5x Zoom	Gemological stand	Incident illumination: LED flexible arm with brightness adjustment. Transmitted illumination: Diffusive LED disc for observation in brightfield and side-emitting LED ring for observation in darkfield.
OPTIGEM-2	Trinocular, 360° rotating, 45° inclined	Wide Field 10x/21mm	0.7 4.5x Zoom	Gemological stand	Incident illumination: LED flexible arm with brightness adjustment. Transmitted illumination: Diffusive LED disc for observation in brightfield and side-emitting LED ring for observation in darkfield.
OPTIGEM-3	Binocular, 360° rotating, 45° inclined	Wide Field 10x/23mm	0.67 4.5x Zoom	Gemological stand	Incident illumination: flexible arm with fluorescent tube 7W (pure white). Transmitted illumination: 30W halogen bulb and a dedicated reflecting system for observation with brightfield and darkfield.
OPTIGEM-4	Trinocular, 360° rotating, 45° inclined	Wide Field 10x/23mm	0.67 4.5x Zoom	Gemological stand	Incident illumination: flexible arm with fluorescent tube 7W (pure white). Transmitted illumination: 30W halogen bulb and a dedicated reflecting system for observation with brightfield and darkfield.
SZM-GEM-1	Binocular, 360° rotating, 45° inclined	Wide Field 10x/21mm	0.7x...4.5x zoom	Pillar stand	Incident illumination: dichroic halogen lamp 12V/15W. Transmitted illumination: Diffusive LED disc for observation in brightfield and side-emitting LED ring for observation in darkfield.
SZM-GEM-2	Trinocular, 360° rotating, 45° inclined	Wide Field 10x/21mm	0.7x...4.5x zoom	Pillar stand	Incident illumination: dichroic halogen lamp 12V/15W. Transmitted illumination: Diffusive LED disc for observation in brightfield and side-emitting LED ring for observation in darkfield.

GEM Series - Optical Performance

OPTIGEM-1 / OPTIGEM-2 - Optical performance

Eyepiece	10x (ST-081)		15x (ST-082)		20x (ST-083)	
Field number (mm)	21		15		10	
Objective	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)
0.5x (W.D. 165 mm)	3.5x-22.5x	59.98-9.23	5.25x-33.75x	28.57-4.44	7x-45x	14.28-2.22
0.75x (W.D. 117 mm)	5.25x-33.75x	40.01-6.22	7.87x-50.62	19.06-2.96	10.50x-67.5x	9.52-1.48
1x (W.D. 100 mm)	7x-45x	30.00-4.66	10.5x-67.5x	0.95-2.22	14x-90x	7.14-1.11
1.5x (W.D. 47 mm)	10.50x-67.5x	20.00-3.11	15.75x-101.25x	9.52-1.48	21x-135x	4.76-0.74
2x (W.D. 33 mm)	14x-90x	14.99-2.33	21x-135x	7.14-1.11	28x-180x	3.57-0.55

OPTIGEM-3 / OPTIGEM-4 - Optical performance

Eyepiece	10x (ST-301)		15x (ST-302)		20x (ST-303)		25x (ST-144)	
Field number (mm)	23		16		12		9	
Objective	Total magnification	Field of View (mm)						
0.3x (W.D. 287 mm)	2.01x - 13.5x	114.42-17.04	3.02x - 20.25x	52.98-7.902	4.02x - 27x	29.85-4.44	5.02x - 33.75x	17.93-2.67
0.5x (W.D. 177 mm)	3.35x - 22.5x	68.65-10.22	5.02x - 33.75x	31.87-4.74	6.7x - 45x	17.91-2.67	8.37x - 56.25x	10.75-1.6
0.75x (W.D. 120 mm)	5.02x - 33.75x	45.81-6.82	7.54x - 50.62x	21.22-3.16	10.05x - 67.5x	11.94-1.78	12.56x - 84.37x	7.17-1.07
1x (W.D. 110 mm)	6.7x - 45x	34.33-5.11	10.05x - 67.5x	15.24-2.37	13.4x - 90x	8.96-1.33	16.75x - 112.5x	5.37-0.80
1.5x (W.D. 47 mm)	10.05x - 67.5x	22.89-3.41	15.07x - 101.25	10.62-1.58	20.1x - 135x	5.97-0.89	25.12x - 168.75x	3.58-0.53
2x (W.D. 26 mm)	13.4x - 90x	17.16-2.55	20.1x - 135x	7.96-1.19	26.8x - 180x	4.48-0.67	33.5x - 225x	2.69-0.40

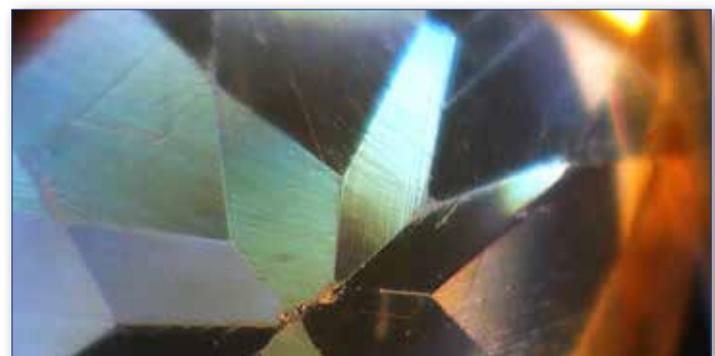
SZM-GEM-1 / SZM-GEM-2 - Optical performance

Eyepiece	10x (ST-081)		15x (ST-082)		20x (ST-083)	
Field number (mm)	21		15		10	
Objective	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)	Total magnification	Field of View (mm)
0.5x (W.D. 165 mm)	3.5x-22.5x	59.98-9.23	5.25x-33.75x	28.57-4.44	7x-45x	14.28-2.22
0.75x (W.D. 117 mm)	5.25x-33.75x	40.01-6.22	7.87x-50.62	19.06-2.96	10.50x-67.5x	9.52-1.48
1x (W.D. 100 mm)	7x-45x	30.00-4.66	10.5x-67.5x	0.95-2.22	14x-90x	7.14-1.11
1.5x (W.D. 47 mm)	10.50x-67.5x	20.00-3.11	15.75x-101.25x	9.52-1.48	21x-135x	4.76-0.74
2x (W.D. 33 mm)	14x-90x	14.99-2.33	21x-135x	7.14-1.11	28x-180x	3.57-0.55

GEM Series - Contrast method comparison



Citrine - OPTIGEM-2 - 0.7x zoom - Brightfield



Citrine - OPTIGEM-2 - 0.7x zoom - Darkfield

GEM Series - Accessories

ACCESSORIES FOR OPTIGEM-1 / OPTIGEM-2

- ST-201 Iris aperture diaphragm for darkfield (only for OPTIGEM 1 & 2).
- ST-207 Iris aperture diaphragm for standard illuminator (only for OPTIGEM 1 & 2).
- ST-202 Polarizing analysis kit (only for OPTIGEM 1 & 2).
- ST-203 Glass immersion cell (only for OPTIGEM 1 & 2).
- ST-204 Translating cell holder (only for OPTIGEM 1 & 2).
- ST-205 Vacuum pick-up (with electric vacuum pump).
- ST-081 Eyepieces (pair) WF10x/21 mm.
- ST-082 Eyepieces (pair) WF15x/15 mm.
- ST-083 Eyepieces (pair) WF20x/10 mm.
- ST-084 Eyepiece micrometer WF10x/21 mm, 10mm/100um.
- ST-086 Additional lens 1.5x (w.d. 47mm).
- ST-087 Additional lens 2x (w.d. 26mm).
- ST-090 0.35x focusable C-Mount adapter.
- ST-090.1 0.50x focusable C-Mount adapter.
- ST-090.2 0.66X focusable C-mount adapter.
- M-620.3 1.00x focusable C-mount adapter.
- M-173 Photo adapter for APS-C and Full Frame Reflex cameras. To be used together with M-699 universal adapter and with a specific T/2 ring (it depends on the camera brand).
- M-699 Universal adapter
- ST-092 Protective glass.
- M-005 Micrometer slide for software calibration, 1mm/10um, 10mm/100um.
- DC-002 Plastic dust cover, medium.
- 15104 Cleaning kit.

ACCESSORIES FOR SZM-GEM-1 / SZM-GEM-2

- ST-230 Polarizing analysis kit (only for SZM-GEM series).
- ST-081 Eyepieces (pair) WF10x/21 mm.
- ST-082 Eyepieces (pair) WF15x/15mm.
- ST-083 Eyepieces (pair) WF20x/10mm.
- ST-084 Eyepiece micrometer WF10x/21mm., 10mm/100um
- ST-086 Additional lens 1.5x (w.d. 47mm).
- ST-087 Additional lens 2x (w.d. 33mm).
- ST-090 0.35x focusable C-Mount adapter.
- ST-090.1 0.50x focusable C-Mount adapter.
- ST-090.2 0.66X focusable C-mount adapter.
- M-620.3 1.00x focusable C-mount adapter.
- M-173 Photo adapter for APS-C and Full Frame Reflex cameras. To be used together with M-699 universal adapter and with a specific T/2 ring (it depends on the camera brand).
- M-699 Universal adapter
- ST-092 Protective glass.
- M-005 Micrometer slide for software calibration, 1mm/10um, 10mm/100um.
- DC-002 Plastic dust cover, medium.
- 15104 Cleaning kit.

ACCESSORIES FOR OPTIGEM-3 / OPTIGEM-4

- ST-231 Polarizing analysis kit (only for OPTIGEM 3 & 4).
- ST-301 Eyepieces (pair) WF10x/23mm.
- ST-302 Eyepieces (pair) WF15x/16mm.
- ST-303 Eyepieces (pair) WF20x/12mm.
- ST-144 Eyepieces (pair) WF25x/9mm.
- ST-305 Eyepiece micrometer WF10x/23mm, 10mm/100um.
- ST-105 Additional lens 1.5x (w.d. 58mm).
- ST-106 Additional lens 2x (w.d. 26mm).
- ST-090 0.35x focusable C-mount adapter.
- ST-090.1 0.50x focusable C-mount adapter.
- ST-090.2 0.65x focusable C-mount adapter.
- M-620.3 1.00x focusable C-mount adapter.
- M-173 Photo adapter for APS-C and Full Frame Reflex cameras. To be used together with M-699 universal adapter and with a specific T/2 ring (it depends on the camera brand).
- M-699 Universal adapter
- ST-092 Protective glass.
- M-621 Halogen bulb 6V/30W.
- M-005 Micrometer slide for software calibration, 1mm/10um, 10mm/100um.
- DC-002 Plastic dust cover, medium.
- 15104 Cleaning kit.

15104 - Cleaning kit

It cleans glass quickly and effectively, without leaving residue or odor. Ideal for precision lens or prism cleaning.



How to connect the cameras to our microscopes.

Please refer to the Adapter reference list on Digital section.

v 1.3.0 - OPTIKA reserves the right to make corrections, modifications, enhancements, improvements and other changes to its products at any time without notice.

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MET SERIES



Metallurgical Microscopes

Metallurgical Microscopy

Metallography is the study of the physical structure and components of metals, by using microscopy. Many different microscopy techniques are used in metallographic analysis.

Prepared specimens should be examined with the unaided eye after etching to detect any visible areas that have responded to the etchant differently from the norm as a guide to where microscopical examination should be employed. Light optical microscopy (LOM) examination should always be performed prior to any electron metallographic (EM) technique, as these are more time-consuming to perform and the instruments are much more expensive.

Further, certain features can be best observed with the LOM, e.g., the natural color of a constituent can be seen with the LOM but not with EM systems. Also, image contrast of microstructures at relatively low magnifications, e.g., <500X, is far better with the LOM than with the scanning electron microscope (SEM), while transmission electron microscopes (TEM) generally cannot be utilized at magnifications below about 2000 to 3000X. LOM examination is fast and can cover a large area. Thus, the analysis can determine if the more expensive, more time-consuming examination techniques using the SEM or the TEM are required and where on the specimen the work should be concentrated.

Brightfield and darkfield microscopy

Most LOM observations are conducted using bright-field (BF) illumination, where the image of any flat feature perpendicular to the incident light path is bright, or appears to be white. But, other illumination methods can be used and, in some cases, may provide superior images with greater detail. Dark-field microscopy (DF), is an alternative method of observation that provides high-contrast images and actually greater resolution than bright-field. In dark-field illumination, the light from features perpendicular to the optical axis is blocked and appears dark while the light from features inclined to the surface, which look dark in BF, appear bright, or "self-luminous" in DF. Grain boundaries, for example, are more vivid in DF than BF.

Polarized light microscopy

Polarized light (PL) is very useful when studying the structure of metals with non-cubic crystal structures (mainly metals with hexagonal close-packed (hcp) crystal structures). If the specimen is prepared with minimal damage to the surface, the structure can be seen vividly in cross-polarized light (the optic axis of the polarizer and analyzer are 90 degrees to each other, i.e., crossed). In some cases, an hcp metal can be chemically etched and then examined more effectively with PL. Tint etched surfaces, where a thin film (such as a sulfide, molybdate, chromate or elemental selenium film) is grown epitaxially on the surface to a depth where interference effects are created when examined with BF producing color images, can be improved with PL. If it is difficult to get a good interference film with good coloration, the colors can be improved by examination in PL using a sensitive tint (ST) filter.

Differential interference contrast microscopy

Another useful imaging mode is differential interference contrast (DIC), which is usually obtained with a system designed by the Polish physicist Georges Nomarski. This system gives the best detail. DIC converts minor height differences on the plane-of-polish, invisible in BF, into visible detail. The detail in some cases can be quite striking and very useful. If an ST filter is used along with a Wollaston prism, color is introduced. The colors are controlled by the adjustment of the Wollaston prism, and have no specific physical meaning, per se. But, visibility may be better.

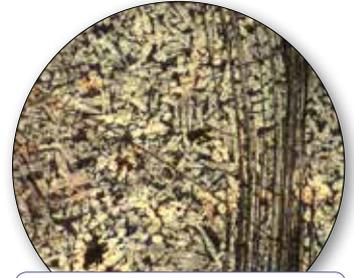


Oblique illumination

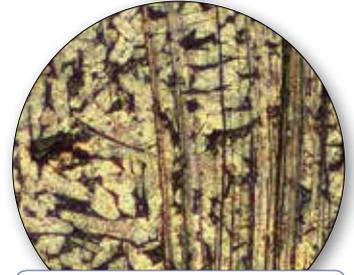
DIC has largely replaced the older oblique illumination (OI) technique, which was available on reflected light microscopes prior to about 1975. In OI, the vertical illuminator is offset from perpendicular, producing shading effects that reveal height differences. This procedure reduces resolution and yields uneven illumination across the field of view. Nevertheless, OI was useful when people needed to know if a second phase particle was standing above or was recessed below the plane-of-polish, and is still available on a few microscopes. OI can be created on any microscope by placing a piece of paper under one corner of the mount so that the plane-of-polish is no longer perpendicular to the optical axis.

B-383MET - Metallurgical Microscope

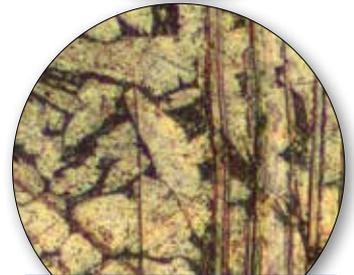
Brightfield upright microscope with IOS W-PLAN MET objectives and metallurgical attachment combining the exclusive **X-LED³** lighting source both for incident and transmitted illumination. The NCG (no cover glass) objectives are especially designed for microscopy use without a cover slip ideal for metallographic samples and other opaque specimens.



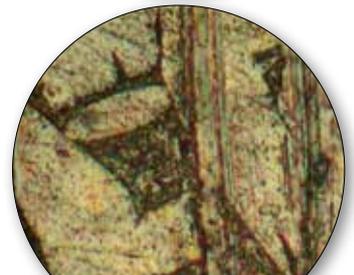
4x



10x



20x



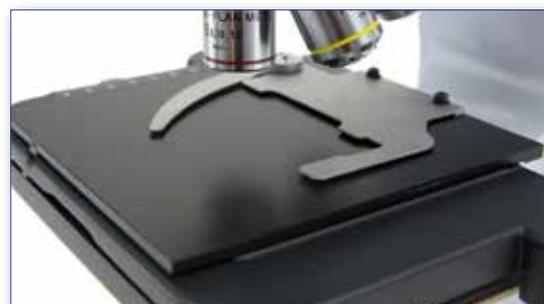
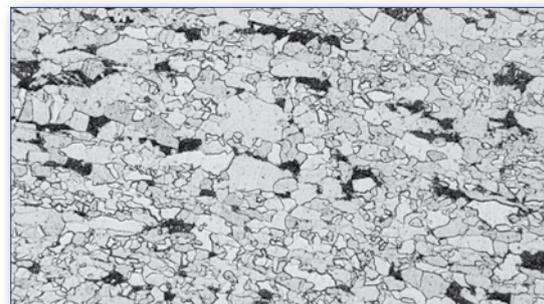
50x

Part	Description
Observation mode:	Brightfield, incident polarized light.
Epi-illumination and polarizing filters:	X-LED ³ with white 3.6 W LED (6.300 K) with brightness control. Field and aperture diaphragms, polarizer & analyzer filters.
Head:	Trinocular (fixed 50/50), 30° inclined, 360° rotating.
Interpupillary distance:	Adjustable between 48 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/20 mm, high eye-point and secured by screw.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.

Part	Description
Objectives (strain-free):	IOS W-PLAN MET 4x/0.10 IOS W-PLAN MET 10x/0.25 IOS W-PLAN MET 20x/0.40 IOS W-PLAN MET 50x/0.75 All with anti-fungus treatment.
Specimen stage:	Double layer rackless mechanical stage, 233x147 mm, 78x54 mm X-Y range. With tempered glass plate.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.
Condenser:	Abbe N.A. 1.25, with objective-coded iris diaphragm, focusable and centerable.
Transmitted illumination (Fixed Koehler type):	X-LED ³ with white 3.6 W LED (6.300 K) with brightness control. Multi-plug 100-240Vac/6Vdc external power supply.

B-510MET - Metallurgical Microscope

Advanced routine laboratory microscope with IOS W-PLAN MET objectives and metallurgical attachment with the exclusive **X-LED³** lighting source for incident illumination only. The NCG (no cover glass) objectives are especially designed for microscopy use without a cover slip ideal for metallographic samples and other opaque specimens.

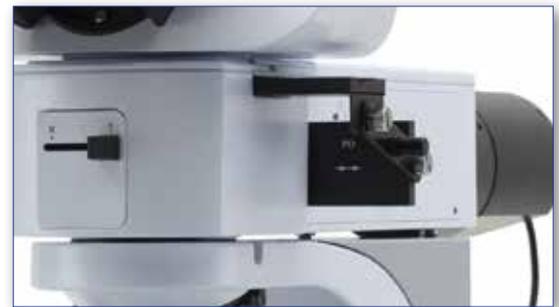
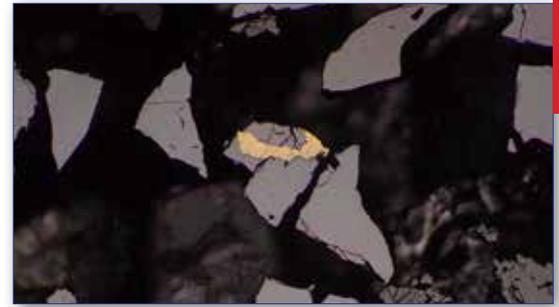


Part	Description
Observation mode:	Brightfield, simple polarized light, oblique illumination on incident light.
Epi-illumination and polarizing filters:	X-LED ³ with white 8 W LED (6.300 K) with brightness control. With aperture and field diaphragms, and oblique illumination system. With polarizer and analyzer. Multi-plug 100-240Vac/6Vdc external power supply.
Head:	Trinocular (fixed 50/50), 30° inclined, 360° rotating.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/22 mm, high eye-point and with rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.

Part	Description
Objectives (strain-free):	IOS W-PLAN MET 5x/0.12 IOS W-PLAN MET 10x/0.25 IOS W-PLAN MET 20x/0.40 IOS W-PLAN MET 50x/0.75 All with anti-fungus treatment.
Specimen stage:	Double layer rackless mechanical stage, 233x147 mm, 78x54 mm X-Y range.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.

B-510METR - Metallurgical Microscope

Advanced routine laboratory microscope with IOS W-PLAN MET objectives and metallurgical attachment with the exclusive **X-LED³** lighting source for both transmitted and incident illumination. The NCG (no cover glass) objectives are especially designed for microscopy use without a cover slip ideal for metallographic samples and other opaque specimens.

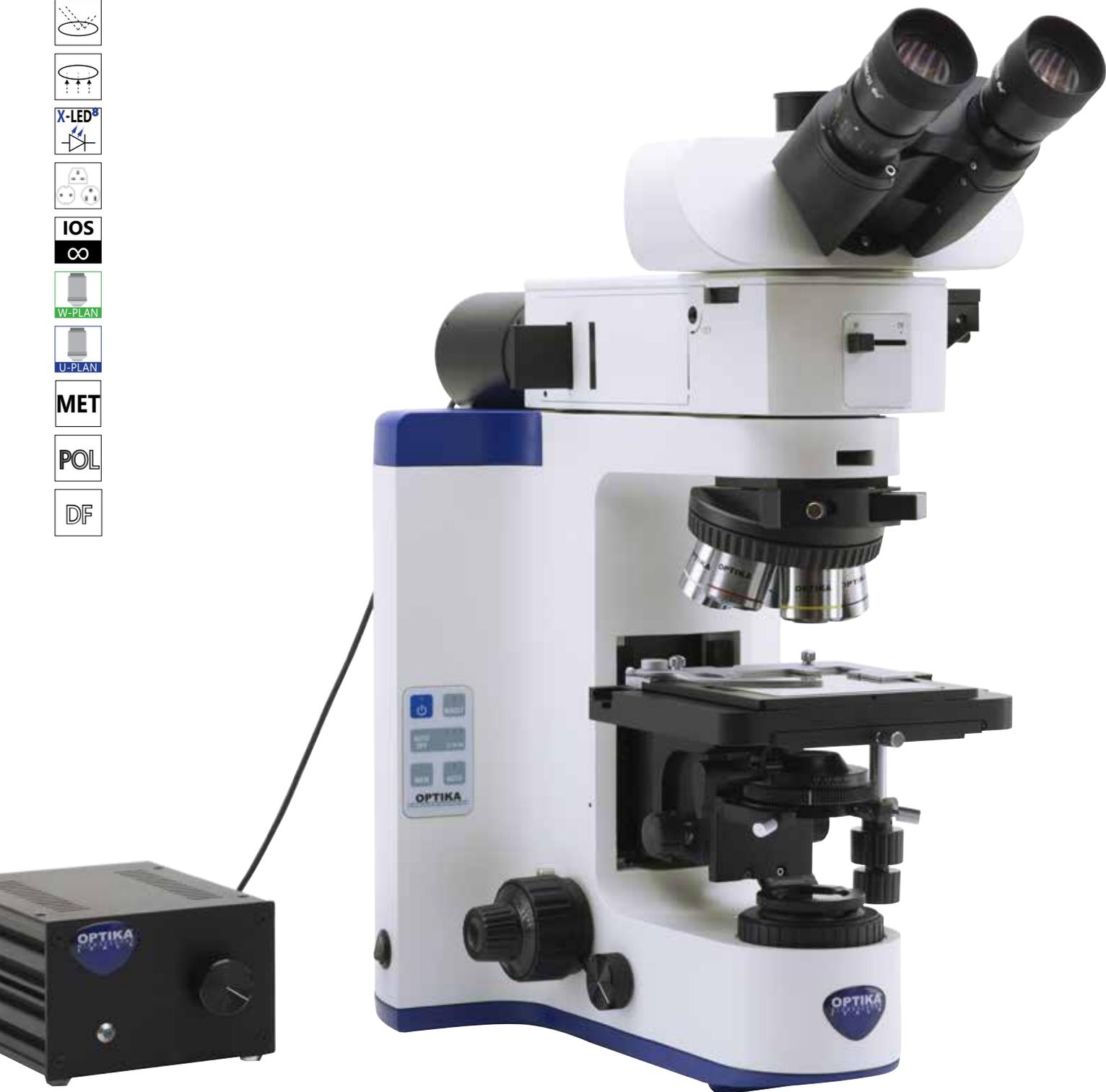


Part	Description
Observation mode:	Brightfield on transmitted light. Brightfield, simple polarized light, oblique illumination on incident light.
Epi-illumination and polarizing filters:	X-LED ⁸ with white 8 W LED (6.300 K) with brightness control. With aperture and field diaphragms, and oblique illumination system. With polarizer and analyzer.
Head:	Trinocular (fixed 50/50), 30° inclined, 360° rotating.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/22 mm, high eye-point and with rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.

Part	Description
Objectives (strain-free):	IOS W-PLAN MET 5x/0.12 IOS W-PLAN MET 10x/0.25 IOS W-PLAN MET 20x/0.40 IOS W-PLAN MET 50x/0.75 All with anti-fungus treatment.
Specimen stage:	Double layer rackless mechanical stage, 233x147 mm, 78x54 mm X-Y range. With tempered glass plate.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.
Condenser:	Swing-out N.A. 0.2/0.9, with iris diaphragm, focusable and centerable.
Transmitted illumination (Full Koehler type):	X-LED ³ with white 3.6 W LED (6.300 K) with brightness control. Multi-plug 100-240Vac/6Vdc external power supply.

3 B-1000MET - Metallurgical Microscope

The modular OPTIKA B-1000 is available with brightfield and darkfield incident light, helping you working in a comfortable way during extended periods of use and performing reliable, accurate and rapid diagnosis benefiting from modularity, which gives the chance to create customized configurations tailored on customer needs. Versatile, robust, durable and sturdy, B-1000 offers premium quality optics, the state-of-the-art, exclusive **X-LED[®]** (8 W) illumination system, designed by OPTIKA and the Koehler diaphragm. Incident light through 100 W halogen lamp or 18 W LED illumination. B-1000 gives multiple options as manual or motorized configuration.



B-1000MET - Configuration Chart

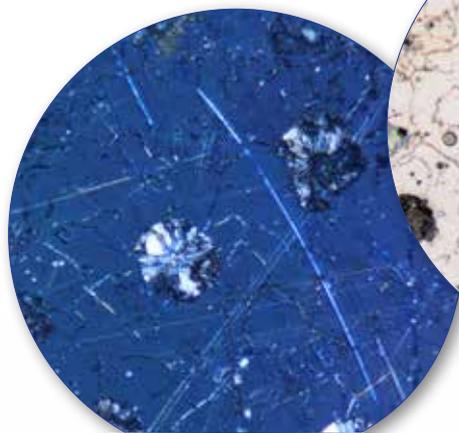
Build the microscope that suites your needs by choosing among the components



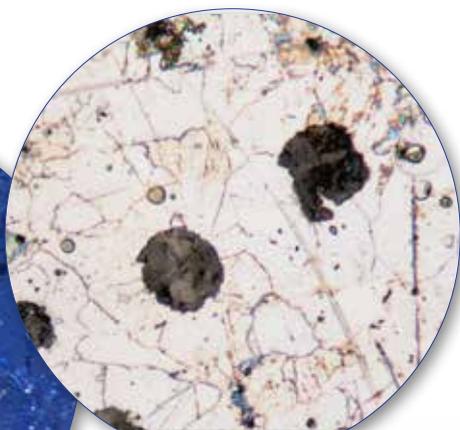
* Code M-1156 must be added only **once** for any motorized configuration

IM-3MET- Metallurgical Microscope

Routine inverted microscope with IOS LWD U-PLAN MET objectives for material science and metallographic applications, combining a sturdy yet compact structure with dedicated components required in this field, like the NCG (no cover glass) objectives working without cover slide ideal for metallographic samples and other opaque specimens. A particularly simple and ingenious optical design allows stable alignments and smooth and accurate movements.



CAST IRON
POLARIZED LIGHT



CAST IRON
BRIGHTFIELD



IM-3 Series - Specifications



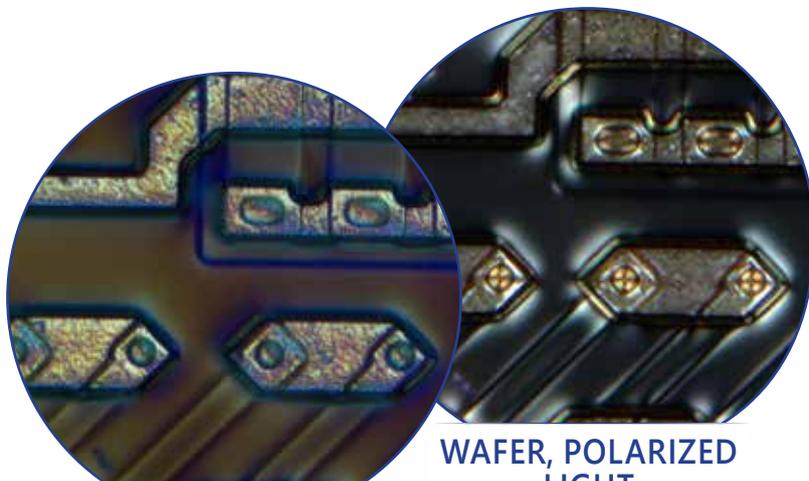
Part	Description
Observation mode:	Brightfield, simple polarized light on incident light.
Epi-illumination and polarizing filters:	Halogen 12 V/50 W with brightness control. With aperture and field (centrable) diaphragms. With polarizer and analyzer.
Head:	Trinocular (2-position 100/0, 50/50), 45° inclined.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On the left eyepiece tube.
Eyepieces:	WF10x/22 mm, high eye-point and with rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings.
Objectives	IOS LWD U-PLAN MET 5x/0.15 IOS LWD U-PLAN MET 10x/0.30 IOS LWD U-PLAN MET 20x/0.45 IOS LWD U-PLAN MET 50x/0.75 All with anti-fungus treatment.
Specimen stage:	Fixed stage, 250x160 mm, with metal stage insert.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.

IM-3 Series - Optical performance

Eyepiece		10x (M-780)			15x (M-601)	
Field number (mm)			22		16	
Objective	N.A.	W.D. (mm)	Total magnification	Field of view (mm)	Total magnification	Field of view (mm)
5x	0.15	10.80	50x	4.40	75x	3.20
10x	0.30	10	100x	2.20	150x	1.60
20x	0.45	4	200x	1.10	300x	0.80
50x	0.55	7.90	500x	0.44	750x	0.32
100x	0.80	2.10	1000x	0.22	1500x	0.16

IM-5MET - Metallurgical Microscope

OPTIKA IM-5MET is a new inverted research microscope for metallography providing a high-end solution in the field of material science. Brightfield, darkfield, polarized light and DIC - Nomarski technique all-in-one for an extremely valuable instrument able to provide ergonomic handy controls and significant unique features, such as the highest F.O.V. available on an inverted microscope.



WAFER, DIC

WAFER, POLARIZED LIGHT



IM-5MET - Specifications



Part	Description
Observation mode:	Brightfield, simple polarized light on incident light. DIC as optional.
Epi-illumination and polarizing filters:	Halogen 12 V/100 W with brightness control. Brightfield and darkfield lever. With polarizer and analyzer. With aperture and field diaphragms, both centrable.
Head:	Trinocular (2-position 100/0, 0/100), 45° inclined.
Interpupillary distance:	Adjustable between 50 and 75 mm.
Dioptric adjustment:	On both eyepieces.
Eyepieces:	PL10x/24 mm, with dioptric adjustment, high eye-point and rubber cups.
Nosepiece:	Quintuple revolving nosepiece, rotation on ball bearings, with DIC slot. M26 thread holes (and adapter rings for RMS objectives).
Objectives:	Selectable according to customer's preferences.
Specimen stage:	Fixed stage, 250x215 mm, with glass and metal inserts. Mechanical rackless stage, 250x240 mm, 50x50 mm X-Y range.
Focusing:	Coaxial coarse (adjustable tension) and fine focusing mechanism with limit stop to prevent the contact between objective and specimen.

IM-5MET is freely configurable in terms of objectives, by choosing among:

Included ■ Optional □

MET Infinity-corrected Plan-Achromatic, Long Working Distance objectives, field flatness up to F.N. 25:		
M-1100	IOS LWD U-PLAN MET objective 5x/0.15	□
M-1101	IOS LWD U-PLAN MET objective 10x/0.30	□
M-1102	IOS LWD U-PLAN MET objective 20x/0.45	□
M-1103	IOS LWD U-PLAN MET objective 50x/0.55	□
M-1104	IOS LWD U-PLAN MET objective 100x/0.80 (dry)	□

MET Infinity-corrected Semi-Apochromatic, Long Working Distance objectives, field flatness up to F.N. 25:		
M-1171	IOS LWD U-PLAN F MET objective 5x/0.15	□
M-1172	IOS LWD U-PLAN F MET objective 10x/0.30	□
M-1173	IOS LWD U-PLAN F MET objective 20x/0.50	□
M-1174	IOS LWD U-PLAN F MET objective 50x/0.80	□
M-1175	IOS LWD U-PLAN F MET objective 100x/0.90 (dry)	□

MET Infinity-corrected Plan-Achromatic, Long Working Distance objectives, for brightfield and darkfield, field flatness up to F.N. 25:		
M-1094	IOS LWD U-PLAN MET BD objective 5x/0.15	□
M-1095	IOS LWD U-PLAN MET BD objective 10x/0.30	□
M-1096	IOS LWD U-PLAN MET BD objective 20x/0.45	□
M-1097	IOS LWD U-PLAN MET BD objective 50x/0.55	□
M-1098	IOS LWD U-PLAN MET BD objective 100x/0.80 (dry)	□

MET Infinity-corrected Semi-Apochromatic, Long Working Distance objectives, for brightfield and darkfield, field flatness up to F.N. 25:		
M-1180	IOS LWD U-PLAN F MET BD objective 5x/0.15	□
M-1181	IOS LWD U-PLAN F MET BD objective 10x/0.30	□
M-1182	IOS LWD U-PLAN F MET BD objective 20x/0.50	□
M-1183	IOS LWD U-PLAN F MET BD objective 50x/0.80	□
M-1184	IOS LWD U-PLAN F MET BD objective 100x/0.90 (dry)	□

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IS SERIES



Inspection Video Microscopes

Discover how inspections can be **extremely easy and quick** with OPTIKA!

Forget about looking into the eyepieces: go for **convenient, cost effective & extremely flexible** solutions. The digital microscopy camera technology allows you to observe small objects and to document your work, enabling also multiple viewers at the same time and thereby greatly improves collaboration.

Ergonomy plays an important role in inspections, and OPTIKA range is considering this aspect to **increase the efficiency and eliminate strains**.

Know more about the comprehensive OPTIKA range: suitable in a variety of quality control processes as well as R&D efforts or in repair and rework, in an endless range of segments.



IS Series



IS-01 - Overview

OPTIKA IS-01 is a compact, all-in-one video microscope with integrated HDMI camera and Android.

Ideal for achieving **high magnifications** and measurements, it is recommended when **repeatability** is required thanks to the click-stop magnification.

The professional 11.5" screen allows an **incredibly clear, deep and detailed image view** thanks to its high contrast LCD matrix and **1080p resolution**.

Its angle of view is adjustable in order to grant the best vision ergonomics.



Android system



Zoom objective,
0.7x - 5.0x with click
stops



1/3" CMOS 4MP HDR camera

It is possible to perform
measurements

On-board controls

Maximum magnification: **170x**
on 11.5" screen, with 1.4x lens
(supplied)

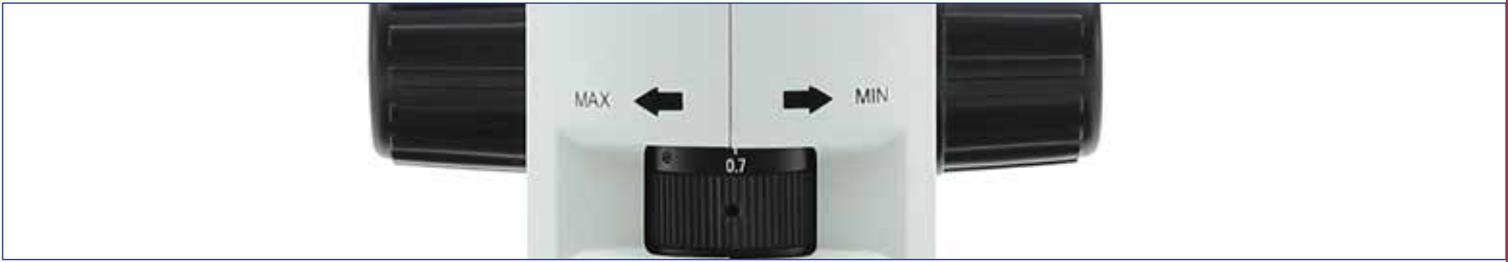
Double LED ring (for reflected
or oblique light) with separate
brightness control

Auxiliary lenses supplied:
- 0.5x (185 mm working distance)
- 1.0x (105mm working distance)
- 1.4x (110mm working distance)

Stable and resistant base to allocate specimen

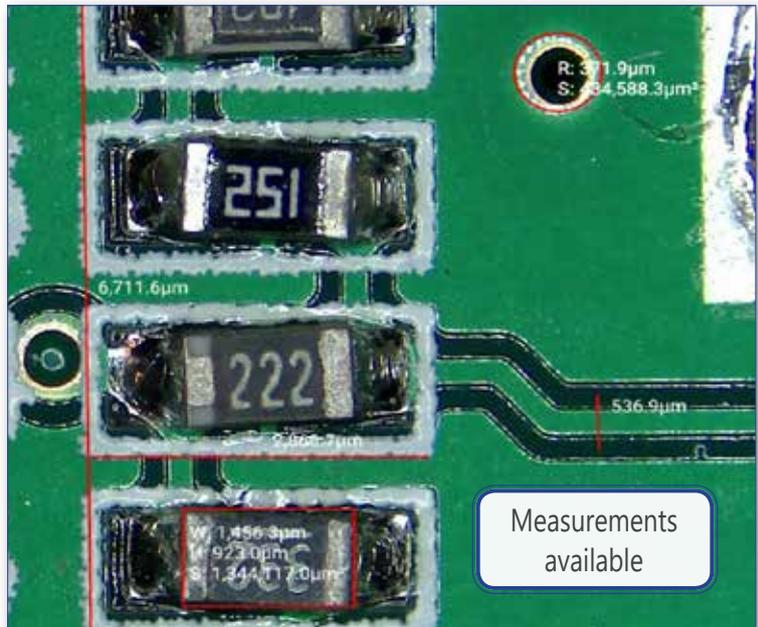


IS-01 - Technical Specifications



IS-01

Part	Description
Observation mode:	Brightfield, incident light.
Stand:	Base dimensions: 320x260mm. Vertical column with precision rack Rack range: 225mm.
Camera:	1/3" CMOS 4MP HDR Camera.
Objective:	Zoom objective, 0.7x - 5.0x with click stops.
Auxiliary Lenses:	- 0.5x (185mm working distance) - 1.0x (105mm working distance) - 1.4x (110mm working distance).
Screen:	11.5" Full HD HDMI LCD Screen.
Connections:	- HDMI video output - USB 2.0 for mouse connection - mini USB - Sd Card port for image/video storing.
Illumination:	Double LED Ring with separate brightness control.
Accessories (Included):	1.5m USB cable, Wireless Mouse, 8GB SD card, 30 cm HDMI cable and Power supply.



3 IS-02 - Overview

Advanced video inspection system, consisting in an extremely solid, accurate **boom stand** and a **full HD autofocus camera (C-HAF)**.

OPTIKA C-HAF is a real-time full HD auto-focus inspection camera, with 2 MP resolution to view crystal clear **1080p** images/videos on HD monitor, through HDMI connection at **60 fps**. Its angle of view is **fully adjustable**.

Achieve **instant focus** without the need to constantly adjust your lens with the incredibly fast focusing system (acquisition time is lower than 1 sec.). The working distance is between 10cm and infinity, making it the ideal solution to inspect multi-layered objects, extremely quickly.

The camera is equipped with **1x-14x optical zoom** and 1x-6x electronic zoom.

All functions are controlled **directly from the screen**.

The boom stand is equipped with a special joint to enable any rotation (both transverse and longitudinal): the longitudinal movement is through the sliding of the horizontal rail (lockable); whilst also the overall height is both adjustable and lockable.



Reduce inspection time with real-time focus from any angle



IS-02 - Technical Specifications



IS-02

CAMERA

Image Sensor:	CMOS sensor Sony Exmor
Sensor dimensions:	1/2.8"
Effective pixels:	2 MP
Output:	HDMI
Power:	DC5V
Operation control:	Remote control
Scanning:	Progressive Scanning
White balance :	Manual/Auto/OnePush
Exposure:	Manual/Auto
Shutter speed :	1/50s(1/60s)-1/10000s
SNR:	>50dB
Frame Rate:	1080p@60fps
Operating Temp:	0°C - 50°C
Weight:	500g
Optical Zoom	1x-14x
Digital Zoom	1x-6x
Working Distance:	From 10cm to Infinity
Focusing System:	Autofocus / Manual focus

STAND

Type: High-performance boom stand. 3D-joint for easy camera positioning. Sliding horizontal rail for longitudinal positioning. Adjustable longitudinal limit. Adjustable and lockable height. Mount for LCD screen.

Base dimensions: 210×257 mm.

Pillar: Ø32×425 mm.

Horizontal arm: 750 mm (movement range 330 mm).

Swivel: 360°

Tilt: 180°

Weight: 16.25 kg

SCREEN

11.5" Full HD HDMI LCD Screen. 360° rotating. Freely inclinable for ergonomic vision.

ACCESSORIES

Accessories Included: Wireless mouse, 30 cm HDMI cable, 8 GB micro SD, Power supply.

No need to constantly re-adjust the lens focus

1/2.8" CMOS 2MP camera with powerful 1x-14x optical zoom (plus electronic zoom)

High-performance boom stand with special joint for customized camera positioning

Working distance is between 10 cm and infinity, making it the ideal solution to inspect multi-layered and large objects

Sliding horizontal rail for longitudinal positioning; adjustable longitudinal limit; adjustable and lockable height

Sensor's main features are the high sensitivity and incredible color fidelity: save money (no need of external illuminators or ring lights)

Wireless mouse and SD card are included

On-board controls and cross grid

3 IS-03 - Overview

Advanced video inspection system, consisting in an extremely compact, flexible **boom stand** and a **full HD autofocus camera (C-HAF)**.

OPTIKA C-HAF is a real-time full HD auto-focus inspection camera, with 2 MP resolution to view crystal clear **1080p** images/videos on HD monitor, through HDMI connection at **60 fps**. Its angle of view is **fully adjustable**.

Achieve **instant focus** without the need to constantly adjust your lens with the incredibly fast focusing system (acquisition time is lower than 1 sec.). The working distance is between 10cm and infinity, making it the ideal solution to inspect multi-layered objects, extremely quickly.

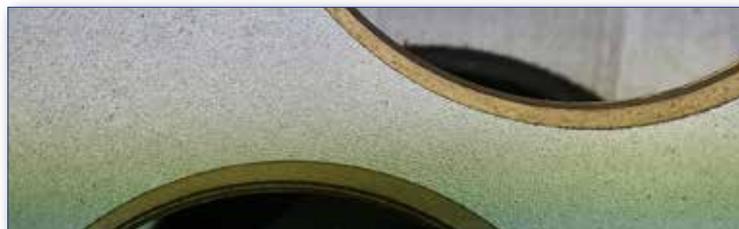
The camera is equipped with **1x-14x optical zoom** and 1x-6x electronic zoom.

All functions are controlled **directly from the screen**.

Highly versatile flexible arm stand, 360°rotating, it is ideal when needing to process high and large samples and on every bench thanks to its compact footprint, saving valuable space on the bench. A wall mounting system is also included.



Reduce inspection time with real-time focus from any angle



IS-03 - Technical Specifications



IS-03

CAMERA

Image Sensor:	CMOS sensor Sony Exmor
Sensor dimensions:	1/2.8"
Effective pixels:	2 MP
Output:	HDMI
Power:	DC5V
Operation control:	Remote control
Scanning:	Progressive Scanning
White balance :	Manual/Auto/OnePush
Exposure:	Manual/Auto
Shutter speed :	1/50s(1/60s)-1/10000s
SNR:	>50dB
Frame Rate:	1080p@60fps
Operating Temp:	0°C - 50°C
Weight:	500g
Optical Zoom	1x-14x
Digital Zoom	1x-6x
Working Distance:	From 10cm to Infinity
Focusing System:	Autofocus / Manual focus

STAND

Type:	High-performance flexible arm stand. 3D-joint for easy camera positioning, freely rotatable and tiltable. Adjustable and lockable height. Table mount and wall mount. Mount for LCD screen.
Pillar:	Ø35×327 mm.
Maximum Extension:	577 mm.
Depth from Pole (Closed):	75 mm
Tilt adjustment:	+/- 90° degree.
Swing adjustment:	+/- 90° degree.
Pivot:	360° / 180° / 360° degree.
Weight:	7.50 kg

SCREEN

11.5" Full HD HDMI LCD Screen. 360° rotating. Freely inclinable for ergonomic vision.

ACCESSORIES

Accessories Included: Wireless mouse, 30 cm HDMI cable 8 GB micro SD, Power supply.

No need to constantly re-adjust the lens focus

1/2.8" CMOS 2MP camera with **powerful 1x-14x optical zoom** (plus electronic zoom)

On-board controls and cross grid

Sensor's main features are the **high sensitivity** and **incredible color fidelity**: save money (no need of external illuminators or ring lights)

Working distance is between 10 cm and infinity, making it the ideal solution to inspect multi-layered and large objects

Small footprint to save valuable space on the bench; **table-clamp and wall-mount**

Freely orientable arm and joint

Wireless mouse and SD card are included

Real-time Full HD Auto-Focus Inspection Camera

OPTIKA C-HAF is a real-time full HD auto-focus inspection camera, with 2 MP resolution to view crystal clear **1080p** images/videos on HD monitor, through HDMI connection at **60 fps**. Its angle of view is **fully adjustable**.

Achieve **instant focus** without the need to constantly adjust your lens with the incredibly fast focusing system (acquisition time is lower than 1 sec.) without the inconvenience of having to constantly re-adjust the lens focus.

Working distance is between 10cm and infinity, making it the ideal solution to inspect multi-layered objects, extremely quickly. The camera is equipped with **1x-14x optical zoom** and 1x-6x electronic zoom.

All functions are controlled **directly from the screen**, with the support of mouse, and images and videos can be directly acquired on SD card (mouse and SD card are included).

Main functions are:

- Possibility to perform automatic or manual white balance, independently setting RGB parameters for a perfect color reproduction
- Choose between automatic or manual exposure
- With HDR function, a sequence of images is captured at different exposures, and they are combined into a single image
- Trigger function allows the connection with an external controller and the file acquisition is possible with a determined sequence
- Possibility to set horizontal and vertical lines, in different colors and positions, to generate a custom grid directly on the HDMI screen

OPTIKA C-HAF comes with fixing holes to be connected with "custom" supports or brackets.

It is available also combined with a boom stand (as **IS-02**) or a compact stand with table clamp or wall-mount (as **IS-03**).



Reduce inspection time with real-time focus from any angle

C-HAF - Technical Specifications

No need to constantly re-adjust the lens focus.



1/2.8" CMOS 2MP camera with **powerful 1x-14x optical zoom** (plus electronic zoom)

Part	Description
Image Sensor:	CMOS sensor Sony Exmor
Sensor dimensions:	1/2.8"
Effective pixels:	2 MP
Output:	HDMI
Power:	DC5V
Operation control:	Remote control
Scanning:	Progressive Scanning
White balance :	Manual/Auto/OnePush
Exposure:	Manual/Auto
Shutter speed :	1/50s(1/60s)-1/10000s
SNR:	>50dB
Frame Rate:	1080p@60fps
Operating Temp:	0°C - 50°C
Weight:	500g
Optical Zoom	1x-14x
Digital Zoom	1x-6x
Working Distance:	From 10cm to Infinity
Focusing System:	Autofocus / Manual focus

Sensor's main features are the **high sensitivity** and **incredible color fidelity**: save money (no need of external illuminators or ring lights)

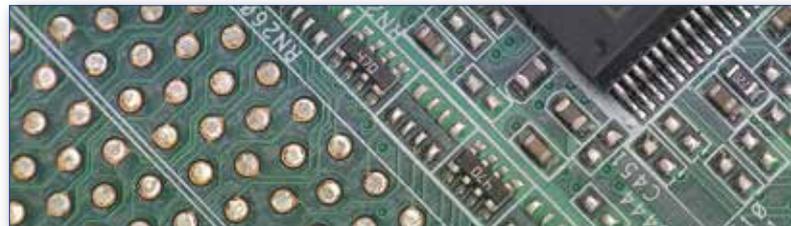


Working distance is between 10 cm and infinity, making it the ideal solution to inspect multi-layered and large objects



On-board controls and cross grid

Wireless mouse and SD card are included



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