

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)

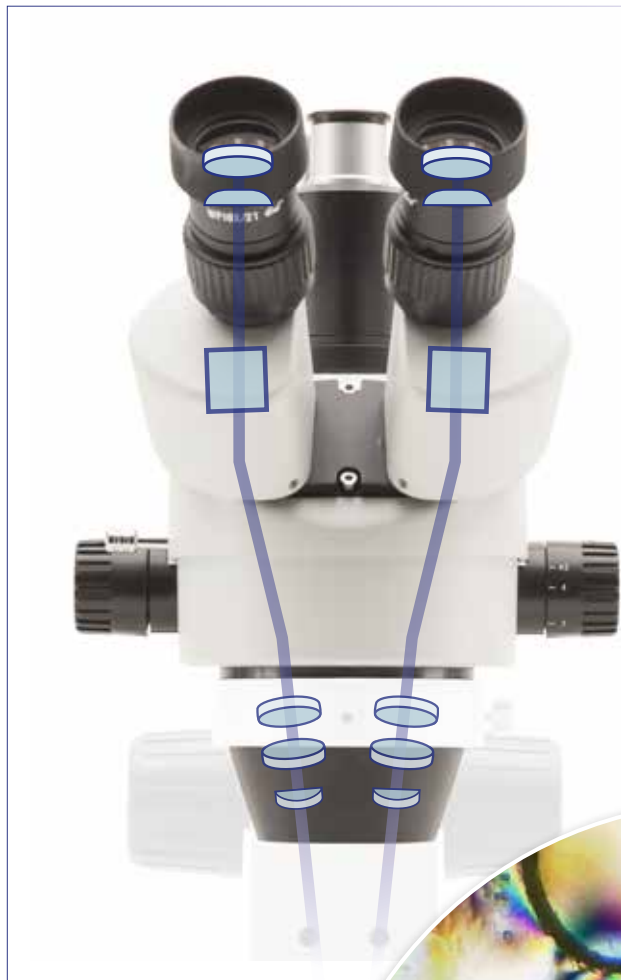
X-LED: RESPECTING COLORS

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

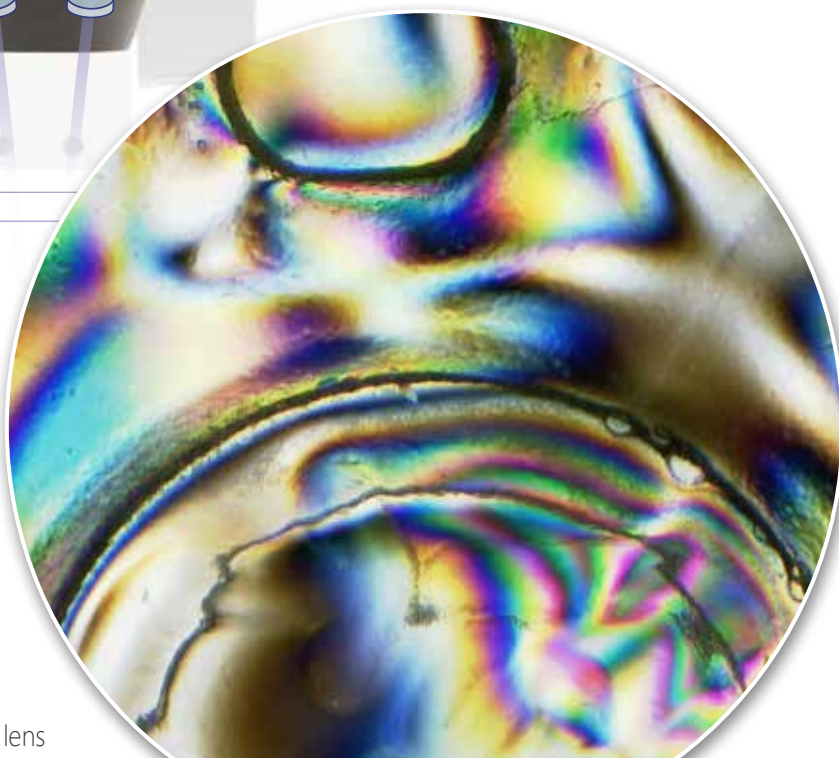


Greenough Optical System

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.

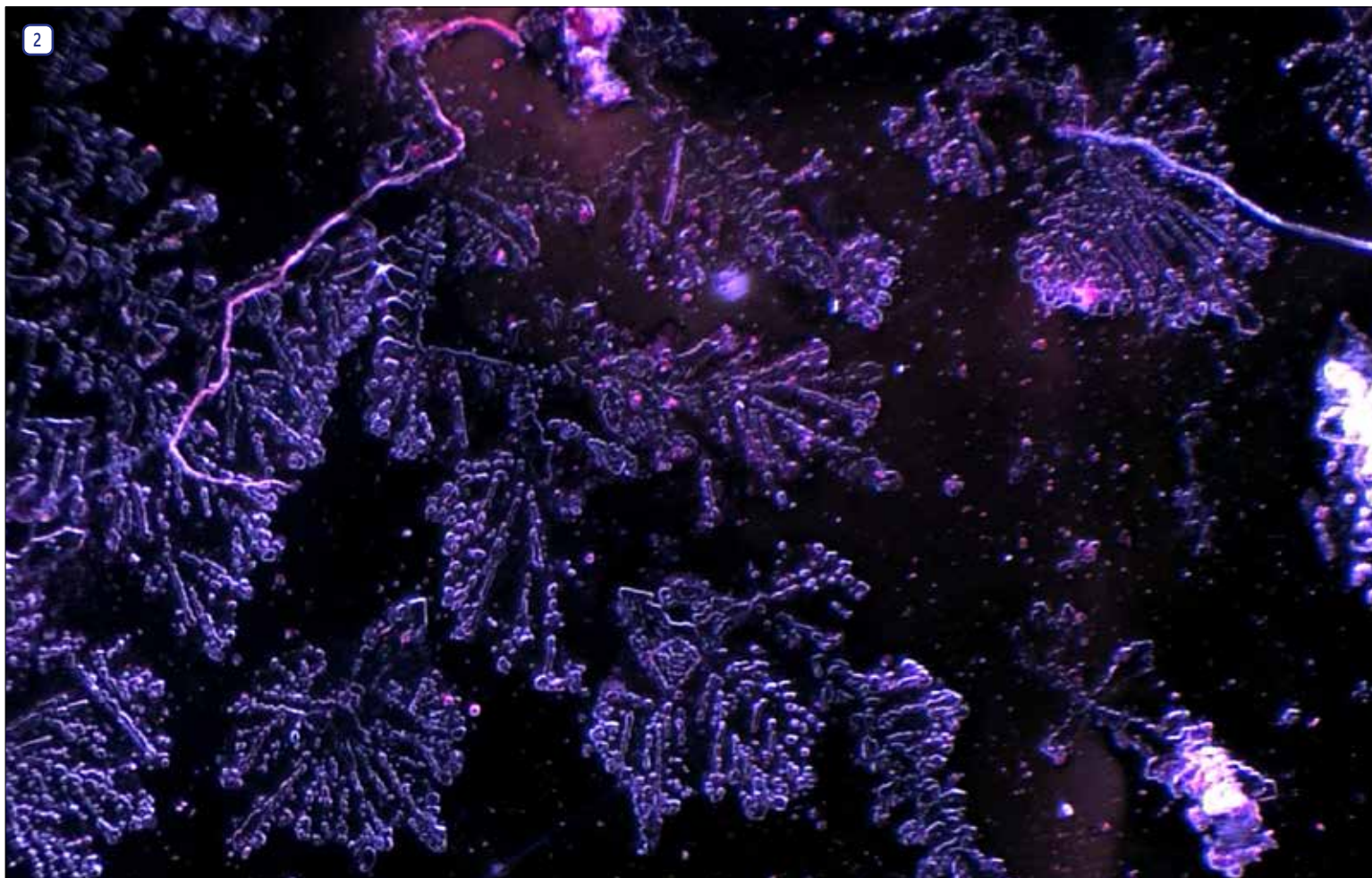
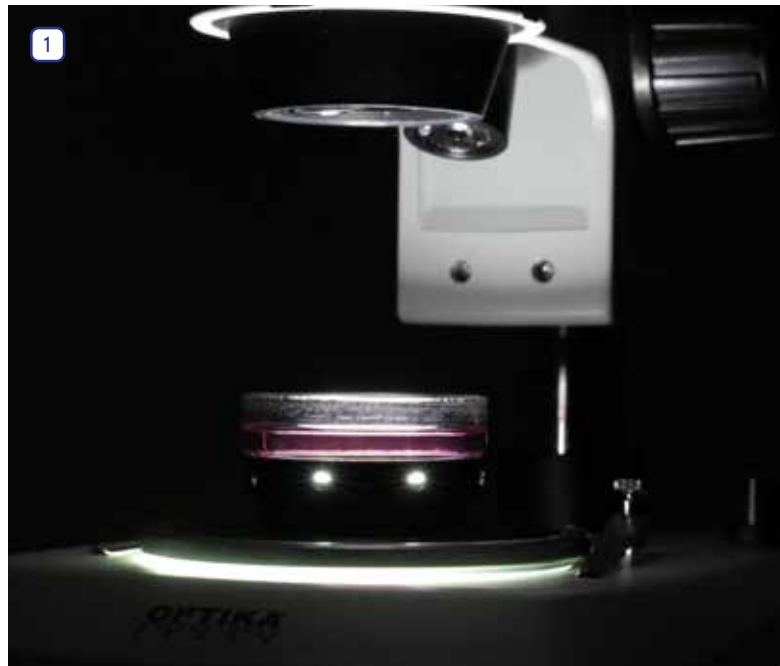
SZM Series

Applications

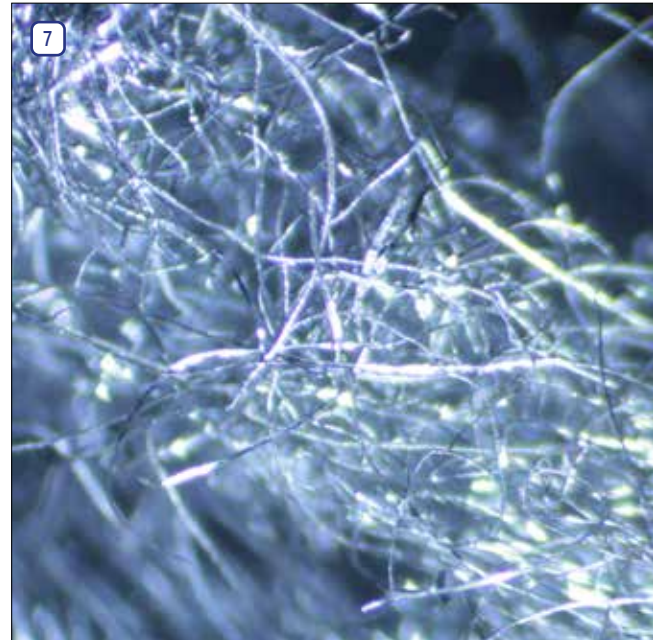
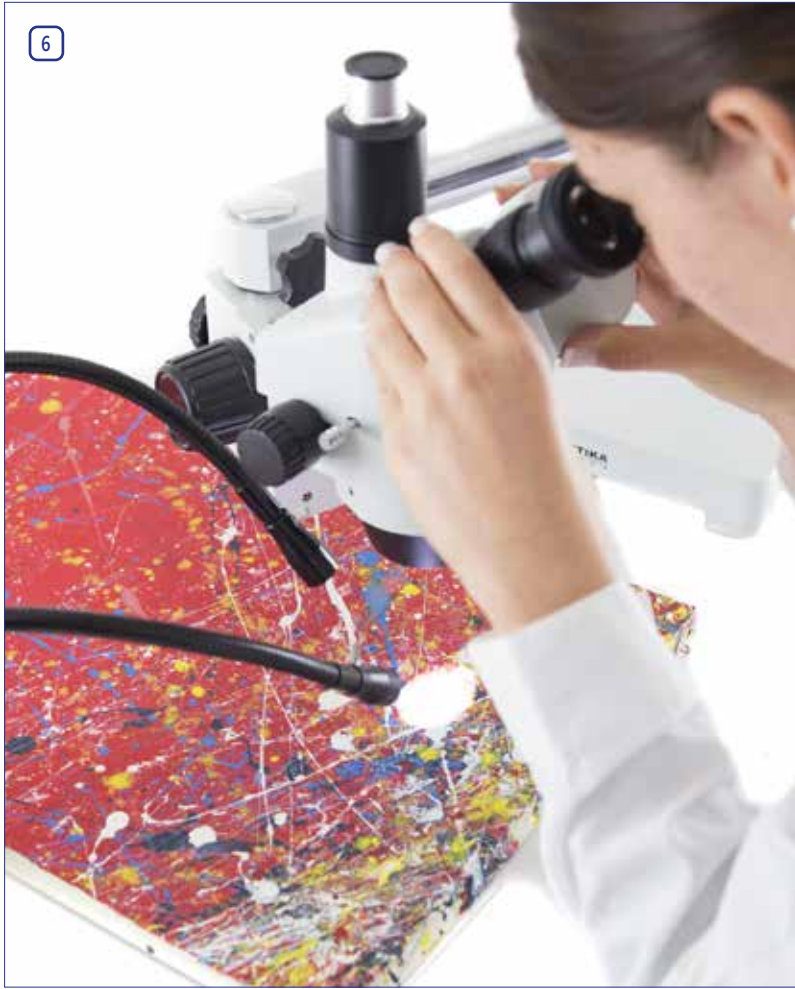
Some application examples demonstrating the versatility of SZM series. Routine applications are extremely facilitated!

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 Series - Range

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.

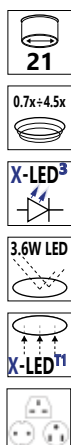
Specimen stage: Fitted with a black/white disc, specimen clips and a frosted disc for transmitted light.

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.

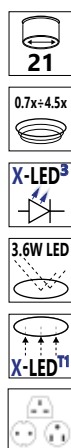
Illumination: Double, adjustable incident and transmitted light with separated brightness controls and 6,300K color temperature:

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

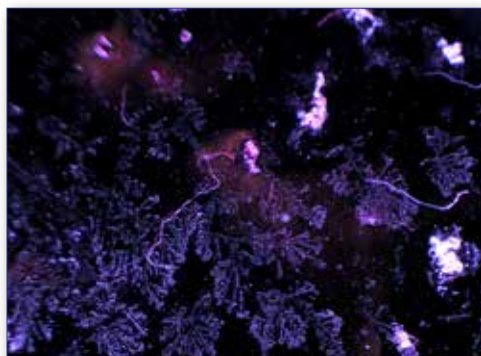
SZM Series - Comparison Chart

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

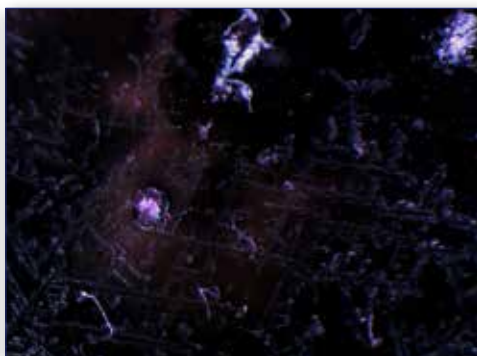
SZM Series - Optical Performance

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	60.00-9.23	5.25x-33.75x	42.86-6.67	7x-45x	28.57-4.44
0.75x (W.D. 117 mm)	5.25x-33.75x	40.00-6.22	7.875x-50.625x	28.57-4.44	10.50x-67.5x	19.05-2.96
1x (W.D. 100 mm)	7x-45x	30.00-4.66	10.5x-67.5x	21.43-3.33	14x-90x	14.29-2.22
1.5x (W.D. 47 mm)	10.50x-67.5x	20.00-3.11	15.75x-101.25x	14.29-2.22	21x-135x	9.52-1.48
2x (W.D. 33 mm)	14x-90x	15.00-2.33	21x-135x	10.71-1.67	28x-180x	7.14-1.11

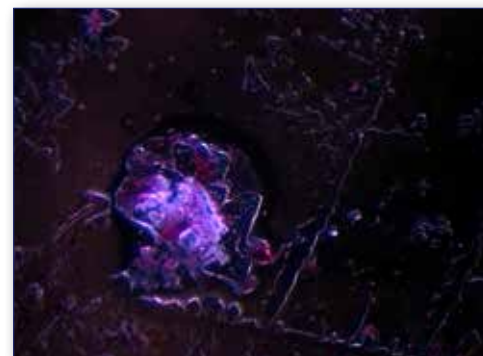
SZM Series - Zoom Comparison



Salt crystal- SZM-LED2 - 0.7x zoom



Salt crystal- SZM-LED2 -3x zoom



Salt crystal- SZM-LED2 - 4x zoom

SZM Series - Accessories

Eyecups & Eyepieces

- ST-036 Eyecups (pair), curved
- ST-081 EW10x/21 eyepieces (pair), high eyepoint, with rubber cup
- ST-082 WF15x/15 eyepieces (pair), high eyepoint
- ST-083 WF20x/10 eyepieces (pair), high eyepoint
- ST-084 WF10x/21 micrometric eyepiece, high eyepoint, with rubber cup

Objectives & Additional Lenses

- ST-091 Additional lens 0.75x (w.d. 105mm)
- ST-087 Additional lens 2x (w.d. 33mm)

Stages

- ST-100 Hand moving stage, 95mm diameter (only for SZM-1, SZM-2 and SZM-D)
- ST-110 Moving stage, coaxial knobs, 95mm diameter (only for SZM-1, SZM-2 and SZM-D)
- ST-100.1 Hand moving stage, 100mm diameter (only for SZM-LED1 & SZM-LED2)
- ST-110.1 Moving stage, coaxial knobs, 100mm diameter (only for SZM-LED1 & SZM-LED2)
- ST-111 Moving stage, micrometric screws, 95mm diameter (only for SZM-1, SZM-2 and SZM-D)
- ST-111.1 Moving stage, micrometric screws, 100mm diameter (only for SZM-LED1 & SZM-LED2)
- ST-666 Applicable heating stage (stereomicroscopes, 95mm diameter), EU (only for SZM-1, SZM-2 and SZM-D)
- ST-666.1 Applicable heating stage (stereomicroscopes, 100mm diameter), EU (only for SZM-LED1 & SZM-LED2)

Condenser & Filters

- ST-040 Darkfield condenser, 95mm diameter (only for SZM-1, SZM-2 and SZM-D)
- ST-040.1 Darkfield condenser, 100mm diameter (only for SZM-LED1 & SZM-LED2)
- ST-088 Polarising set (filters and rotating stage), 95mm diameter (only for SZM-1, SZM-2 and SZM-D)
- ST-088.1 Polarising set (filters and rotating stage), 100mm diameter (only for SZM-LED1 & SZM-LED2)

Camera Adapters

- M-113.1 Ring adapter, 30mm (for monocular and binocular microscopes)
- M-115 0.35x C-Mount projection lens
- M-114 0.5x C-Mount projection lens
- M-118 0.75x C-Mount projection lens
- M-173 C-Mount projection lens for APS-C/full frame reflex cameras (trino)
- M-699 Universal adapter for C-Mount projection lens (trino)
- 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 & stereomicroscopes)

Miscellaneous

- 15104 Cleaning kit
- DC-002 Plastic dust cover, medium, 490(l)x490(h) mm
- DC-003 TNT dust cover, medium, 600(l)x550(h) mm
- DC-004 TNT dust cover, large, 700(l)x550(h) mm
- M-005 Micrometric slide, 26x76mm, with 2 scales (1mm/100 & 10mm/100)
- ST-012 White/black object-plate, 95mm diameter (only for SZM-1, SZM-2 and SZM-D)
- ST-014 Glass object-plate, 95mm diameter (only for SZM-1, SZM-2 and SZM-D)
- ST-037 Halogen bulb 12V/15W, with dichroic mirror (only for SZM-1, SZM-2 and SZM-D)
- ST-038 Halogen bulb 12V/15W (only for SZM-1, SZM-2 and SZM-D)
- ST-041 Sample clip (only for SZM-1, SZM-2, SZM-LED1 and SZM-LED2)
- ST-042 White/black object-plate, 100mm diameter (only for SZM-LED1 & SZM-LED2)
- ST-043 Glass object-plate, 100mm diameter (only for SZM-LED1 & SZM-LED2)
- ST-092 Protective glass for stereohead
- VP-SZM IQ/OQ/PQ manual for SZM series

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 1.4.0 - 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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