

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.

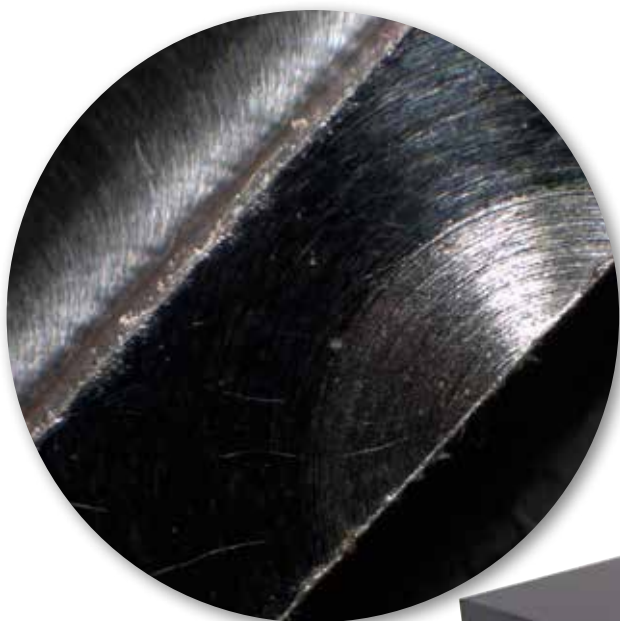
Large Working Distance And Field Of View Size Are Important!

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.



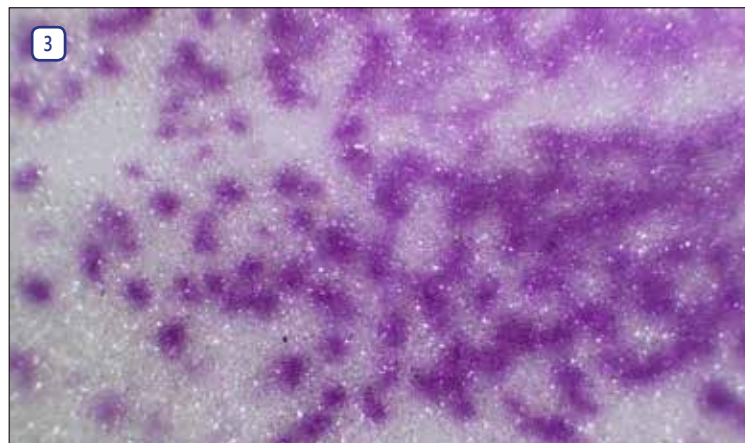
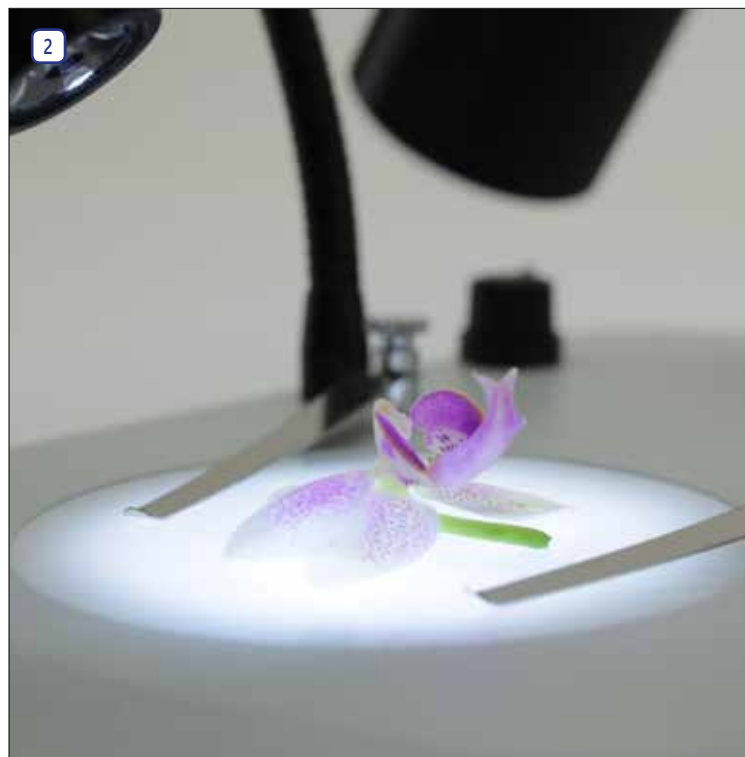
SZO Series

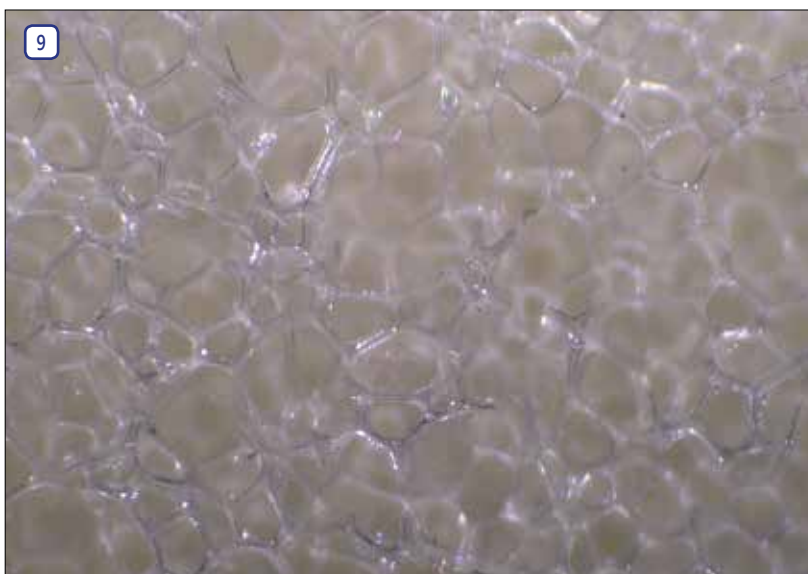
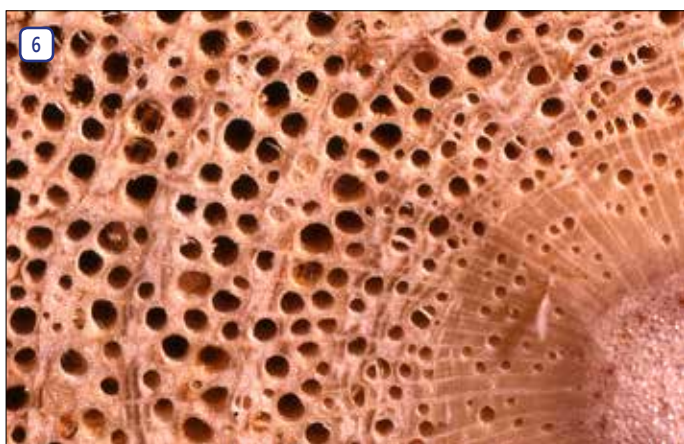
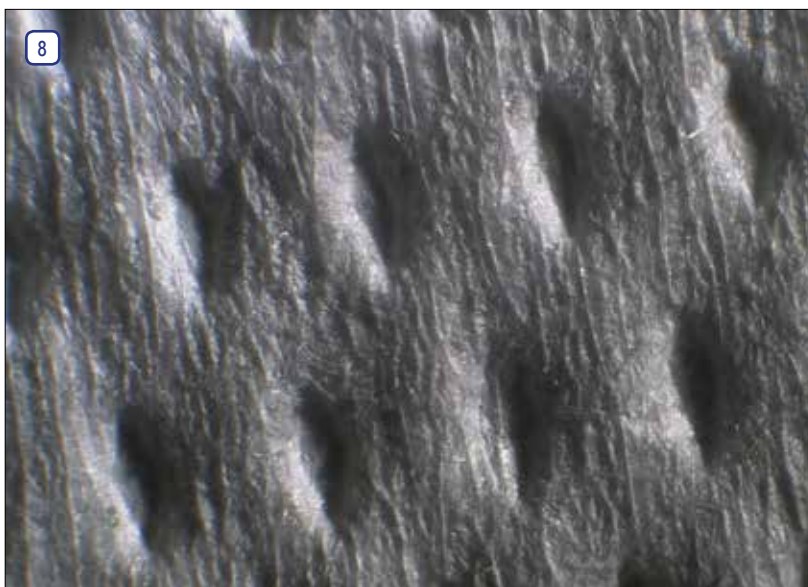
Applications

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 Series - Range

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-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-LED³** 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-LED³** (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-LED³** 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.

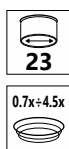
Illumination: Double, adjustable incident and transmitted light with separated brightness controls and 6,300K color temperature:

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

Transmitted illuminator: **X-LED³** (60 LEDs).
Multi-plug 100-240Vac/12Vdc external power supply.

SZO Series - Range

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.

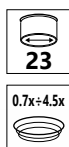
Objective: Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1) with click-stop detents.

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) | Total magnification | Field of View (mm) | Total magnification | Field of View (mm) | 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. |

15104 - Lens cleaner, 50ml

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



SZ-EXT

* SZ-EXT Working distance enlarger required when using fixed arm stands (like ST-152, ST-153, ST-155 & ST-156)



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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