# SZ Series



**Stereozoom Microscopes For Laboratory & Industry** 

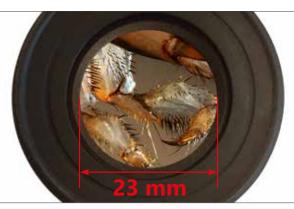
# FIELD OF VIEW - 23 mm Full Plan Field of View

#### 10x/22mm or 10x/23mm PLAN EYEPIECES

Plan eyepieces with 22 or 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 or 8.46:1 it makes this series a perfect instrument for any application.









# **X-LED** - Two Times Brighter Than Any Other

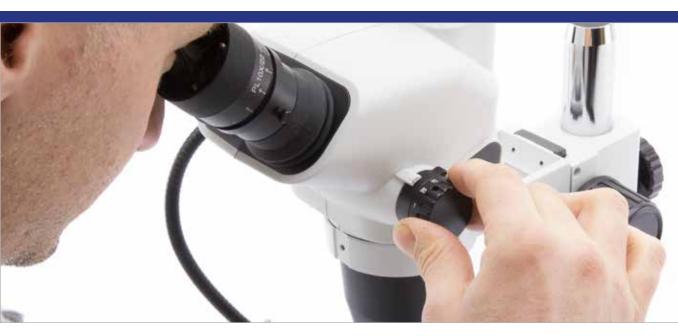
### **X-LED**: A SEA OF LIGHT

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

- the incident illuminator with **X-LED³** (single LED, 3.6W)
- the transmitted illuminator with **X-LED**<sup>T1-T3</sup> (12 or 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.





## **SZ** 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.

#### **Zoom Ratio**

SZ Series has 0.67x-4.5x or 0.65x-5.5x zoom range (6.72:1 or 8.46:1 zoom ratio, depending on the head), being purposely designed for routine and advanced inspections. These zoom ratios enable most samples to be observed at the appropriate magnifications. When combined with proper accessories (2x additional lens and 25x eyepieces), SZX-A delivers excellent image quality up to 275x.



#### **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%!



### **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. SZ series ensures an extended working distance of 110mm. 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.

### Get the most out of our accessories



# SZ Series - Modular Chart



# **SZ** Series - Modular Chart

**SZX-TA**WF 10X23
0.65x - 5.5x





**SZO-T WF 10X/23**0.67x...4.5x **Click-stops** 



**SZ-STLX**Advanced Precision Overhanging Stand with Coarse Focus Mechanism



**SZ-STL1**Overhanging Stand



**SZ-STL2**Advanced Overhanging Stand



### **SZ** Series - Heads

### SZX-B / SZX-T



#### SZX Heads - Excellent Price/Performance Ratio For Any Laboratory

- » Ideal for universities, experts & common routine lab requirements
- » 3D Greenough view for high resoluted images & large field depth
- » 22 mm field number and large working distance (up 110 mm)
- » 6.72:1 zoom ratio zoom magnification from 6.7x to 45x
- » Simultaneous eyepiece & camera observation (on SZX-T)
- » Cost-effective solution for diversified applications

#### Head:

**SZX-B:** Binocular, 360° rotating on all stands and 45° inclined.

**SZX-T:** Trinocular (split ratio: 50/50), 360° rotating on all stands and 45° inclined

Interpupillary distance: Adjustable between 51 and 75 mm.

**Dioptric adjustment:** On both eyepieces.

**Eyepieces:** WF10x/22 mm, high eyepoint, secured by screw and with integrated rubber cups.

**Objective:** Parfocal achromatic zoom 0.67x...4.5x (zoom factor 6.72:1)

Working distance: 110 mm.

### SZX-BA / SZX-TA



#### SZX-A Heads - Advanced Analysis With High Power Magnification

- » Purposely designed for particularly performing zoom conditions
- » 3D Greenough view for high resoluted images & large field depth
- » 23 mm field number and large working distance (up 110 mm)
- » 8.46:1 zoom ratio zoom magnification from 6.5x to 55x
- » Simultaneous eyepiece & camera observation (on SZX-TA)
- » High magnification change from overview to tiny details

#### Head:

SZX-BA: Binocular, 360° rotating on all stands and 45° inclined.

**SZX-TA:** Trinocular (split ratio: 50/50), 360° rotating on all stands and 45° inclined

**Interpupillary distance:** Adjustable between 51 and 75 mm.

**Dioptric adjustment:** On both eyepieces.

**Eyepieces:** WF10x/23 mm, high eyepoint, secured by screw and with integrated rubber cups.

**Objective:** Parfocal achromatic zoom 0.65x...5.5x (zoom factor 8.46:1).

Working distance: 110 mm.

### **SZ** Series - Heads

### SZO-B / SZO-T



#### SZO Heads - Addressed For Extreme Reliability & Repeatability

- » Ensuring the sharpest vision, high productivity, repetitive analysis
- » 3D Greenough view for high resoluted images & large field depth
- » 23 mm field number and large working distance (up 110 mm)
- » 6.72:1 zoom ratio zoom magnification from 6.7x to 45x
- » Simultaneous eyepiece & camera observation (on SZO-T)
- » Multi-position click-stop no need to move eyes from eyepieces

#### Head:

**SZO-B:** Binocular, 360° rotating on all stands and 45° inclined.

**SZO-T:** Trinocular (split ratio: 70/30), 360° rotating on all stands and 45° inclined

**Interpupillary distance:** Adjustable between 51 and 75 mm.

**Dioptric adjustment:** On both eyepieces.

**Eyepieces:** WF10x/23 mm, high eyepoint, secured by screw and with retractable rubber cups.

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

Working distance: 110 mm.



#### **CLICK-STOP DETENTS**

On SZO Heads 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.



# **SZ** Series - Zoom Heads Comparison Chart

Model	Head	Eyepieces	Zoom Objective	Zoom Ratio	Click-Stops Detents	Working Distance	Photo Tube
SZX-B	Binocular 45° inclined	WF 10x/22	0.67x4.5x	6.72:1	-	110 mm	-
SZX-T	Trinocular 45° inclined	WF 10x/22	0.67x4.5x	6.72:1	-	110 mm	Fixed 50%-50%
SZX-BA	Binocular 45° inclined	WF 10x/23	0.65x5.5x	8.46:1	-	110 mm	-
SZX-TA	Trinocular 45° inclined	WF 10x/23	0.65x5.5x	8.46:1	-	110 mm	Fixed 50%-50%
SZO-B	Binocular 45° inclined	WF 10x/23	0.67x4.5x	6.72:1	0.67x, 0.80x, 1x, 1.2x, 1.5x, 2x, 2.5x, 3x, 3.5x, 4x, and 4.5x	110 mm	-
SZO-T	Trinocular 45° inclined	WF 10x/23	0.67x4.5x	6.72:1	0.67x, 0.80x, 1x, 1.2x, 1.5x, 2x, 2.5x, 3x, 3.5x, 4x, and 4.5x	110 mm	Fixed 70%-30%

### **SZ** Series - Pillar Stands

### SZ-ST1



Extremely stable, ultra-slim and modern stand to be matched with a focusing system and stereozoom head. The 25 mm height makes this stand very effective in preventing fatigue during operation, increasing the ergonomy and the performance as a result. In case illumination is needed, choose from the wide choice of

external illuminators available.

Width: 210 mm

Length: 270 mm
Thickness: 25 mm
Pillar diameter: 32 mm

Pillar height: 275 mm

Stage: 95 mm dia., black and white disc with sample clips

Incident illumination: None
Transmitted illumination: None

To be used in combination with a focusing mechanism (SZ-A1/A6)

### SZ-ST2 / SZ-ST3



### Top-class X-LED<sup>T</sup> transmitted light, with geometrically arranged LEDs and X-LED<sup>3</sup> incident light

The impressive incident illumination generated by the exclusive X-LED<sup>3</sup> swivelling illuminator (3.6 W) is combined with an extralarge, settable 12-LED X-LED<sup>T</sup> disc (2 W, on SZ-ST2) or 60-LED X-LED<sup>T3</sup> disc (4 W, on SZ-ST3) for transmitted illumination.

**Incident illumination:** X-LED<sup>3</sup> with white 3.6 W LED and brightness control. Color temperature: 6,300 K.

#### **Transmitted illumination:**

**SZ-ST2:** 12-LED X-LED<sup>T1</sup> disc with white 2 W LED and brightness control. Color temperature: 6,300 K. Multi-plug 100-240Vac/6Vdc external power supply. **SZ-ST3:** 60-LED X-LED<sup>T3</sup> disc with white 4 W LED and brightness control. Color temperature: 6,300 K. Multi-plug 100-240Vac/12Vdc external power supply.

Base dimensions: 270×210 mm.

Pillar dimensions: Ø32×280 mm.

Weight: 1.90 kg

To be used in combination with a focusing mechanism (SZ-A1/A6)



SZ-ST2: 12-Led X-LED<sup>TT</sup>
Transmitted Illuminator



**SZ-ST3:** 60-Led **X-LED**<sup>T3</sup>
Transmitted Illuminator

### **SZ** Series - Pillar Stands

### SZ-ST7 / SZ-ST8



Top-class X-LED<sup>™</sup> transmitted light, with geometrically arranged LEDs and freely orientable, flexible double gooseneck X-LED<sup>®</sup> incident light

The impressive incident illumination generated by the exclusive X-LED<sup>3</sup> lighting system located in two flexible gooseneck arms (3.6 W each, for a total of 7.2 W) is combined with an extra-large, settable 12-LED X-LED<sup>T1</sup> disc (2 W, on SZ-ST7) or 60-LED X-LED<sup>T3</sup> disc (4 W, on SZ-ST8) for transmitted illumination.

**Incident illumination:** Two flexible X-LED<sup>3</sup> gooseneck arms with white 3.6 W LED/each and brightness control. Illuminance: 170,000 lux (at 10 cm distance). Color temperature: 6,300 K.

#### **Transmitted illumination:**

**SZ-ST7:** 12-LED X-LED<sup>T1</sup> disc with white 2 W LED and brightness control. Illuminance: 4,000 lux. Color temperature: 6,300 K. Multi-plug 100-240Vac/12Vdc external power supply.

**SZ-ST8:** 60-LED X-LED<sup>T3</sup> disc with white 4 W LED and brightness control. Illuminance: 8,000 lux. Color temperature: 6,300 K. Multi-plug 100-240Vac/12Vdc external power supply.

**Base dimensions:** 270×210 mm. **Pillar dimensions:** Ø32×280 mm.

Weight: 2.40 kg.

To be used in combination with a focusing mechanism (SZ-A1/A6)



SZ-ST7: 12-Led X-LED<sup>TI</sup>
Transmitted Illuminator



SZ-ST8: 60-Led *X-LED*<sup>73</sup>
Transmitted Illuminator

### **SZ** Series - Pillar Stands Comparison Chart

Model	Base	Pillar	Stage	Incident Illumination	Transmitted Illumination
SZ-ST1	270x210x25h mm	32dia.x275h mm	95 mm dia., black and white disc with sample clips	None	None
SZ-ST2	270x210x30h mm	32dia.x280h mm	95 mm dia., white disc with sample clips	<b>X-LED³</b> (single Led, 3.6 W); brightness control	<b>X-LED</b> <sup>17</sup> (12-Led); brightness control
SZ-ST3	270x210x30h mm	32dia.x280h mm	95 mm dia., white disc with sample clips	<b>X-LED³</b> (single Led, 3.6 W); brightness control	<b>X-LED</b> <sup>73</sup> (60-Led); brightness control
SZ-ST7	270x210x30h mm	32dia.x280h mm	95 mm dia., white disc with sample clips	Double <b>X-LED³</b> (total 7.2 W) on flexible goosencks; brightness control	X-LED <sup>TT</sup> (12-Led); brightness control
SZ-ST8	270x210x30h mm	32dia.x280h mm	95 mm dia., white disc with sample clips	Double <b>X-LED³</b> (total 7.2 W) on flexible goosencks; brightness control	X-LED <sup>73</sup> (60-Led); brightness control

# **SZ** Series - Boom Stands

### **SZ-STLX**



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

**Base dimensions:** : 210×255 mm **Pillar dimensions:** Ø32×430 mm

Horizontal arm: 790 mm

Maximum sample height: 270 mm

Tilting movement: 180°

Swivelling movement: 360°

Weight: 16.3 kg

### SZ-STL1



### SZ-STL2



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

**Base dimensions:** 230×230 mm **Pillar dimensions:** Ø32×435 mm.

Horizontal arm: 415 mm

Maximum sample height: 400 mm

**Swivelling movement:** 360°

**Weight:** 14.00 kg

To be used in combination with a focusing mechanism (SZ-A1 or SZ-A6)

Extremely stable, hinged and long overhanging stand for observation of particularly large specimens to be matched with a focusing system and stereozoom head. Smooth horizontal and vertical movements are ensured and the head can be easily swivelled and tilted for inspection at oblique angles.

In case illumination is needed, choose from the wide choice of external illuminators available.

**Base dimensions:** 260×210 mm **Pillar dimensions:** Ø32×425 mm

Horizontal arm: 515 mm

Maximum sample height: 440 mm

**Swivelling movement:** 360°

Tilting movement: 180°

**Weight:** 18.8 kg

To be used in combination with a focusing mechanism (SZ-A1 or SZ-A6)

# **SZ** Series - Focusing Mechanisms

### SZ-A1



Entry-level coarse focusing to raise or lower the head to focus Coarse focusing system (76 mm head holder, 32 mm pillar) with adjustable tension for standard stereomicroscope requirements.

Type: Coarse

Coarse total travel: 50 mm Adjustable tension: Yes

**Head holder internal diameter:** 76 mm

Pillar diameter: 32 mm

### SZ-A6



### Coaxial coarse and fine focusing results in easy, precise conditions

Coaxial coarse and fine focusing system (76 mm head holder, 32 mm pillar) with 2 µm fine resolution and adjustable tension ideal for extremely precise fine adjustments and smooth movements.

Type: Coaxial coarse and fine

Coarse total travel: 50 mm

Fine total travel (per single rotation): 0.2 mm.

Fine graduations: 100 Fine resolution: 2 µm Adjustable tension: Yes

Head holder internal diameter: 76 mm

Pillar diameter: 32 mm





# SZ Series - Optical Performance

# **SZX-B and SZX-T** Heads

Eyepiece	10x (ST-141)		15x (ST-302)		20x (ST-303)		25x (ST-144)	
Field number (mm)	22		16		12		9	
Objective	Total magnification	Field of View (mm)						
0.3x (W.D: 287 mm)	2.01x-13.5x	109.45-16.30	3.02x-20.25x	79.60-11.85	4.02x-27x	59.70-8.89	5.02x-33.75x	44.78-6.67
0.5x (W.D: 177 mm)	3.35x-22.5x	65.67-9.78	5.02x-33.75x	47.76-7.11	6.7x-45x	35.82-5.33	8.37x-56.25x	26.87-4.0
0.75x (W.D: 120 mm)	5.02x-33.75x	43.78-6.52	7.54x-50.62x	31.84-4.74	10.05x-67.5x	23.88-3.56	12.56x-84.37x	17.91-2.67
1x (W.D: 110 mm)	6.7x-45x	32.84-4.89	10.05x-67.5x	23.88-3.56	13.4x-90x	17.91-2.67	16.75x-112.5x	13.43-2.0
1.5x (W.D: 47 mm)	10.05x-67.5x	21.89-3.26	15.07x-101.25	15.92-2.37	20.1x-135x	11.94-1.78	25.12x-168.75x	8.96-1.33
2x (W.D: 26 mm)	13.4x-90.0x	16.42-2.44	20.1x-135x	11.94-1.78	26.8x-180x	8.96-1.33	33.5x-225x	6.72-1.0

### **SZX-BA and SZX-TA** Heads

Eyepiece	10x (ST-306)		15x (ST-302)		20x (S	Т-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)	1.95x-15.5x	117.95-13.94	2.93x-23.25x	82.05-9.70	3.9x-31.0x	61.54-7.27	4.88x-38.75x	46.15-5.45
0.5x (W.D: 177 mm)	3.25x-27.5x	70.77-8.36	4.88x-41.25x	49.23-5.82	6.5x-55x	36.92-4.36	8.13x-68.75x	27.69-3.27
0.75x (W.D: 120 mm)	4.87x-41.25x	47.18-5.58	7.31x-61.88x	32.82-3.88	9.74x-82.5x	24.62-2.91	12.18x-103.13x	18.46-2.18
1x (W.D: 110 mm)	6.5x-55x	35.38-4.18	9.75x-82.5x	24.62-2.91	13.0x-110x	18.46-2.18	16.25x-137.5x	13.85-1.64
1.5x (W.D: 47 mm)	9.75x-82.5x	23.59-2.79	14.63x-123.75	16.41-1.94	19.5x-165x	12.31-1.45	24.38x-206.25x	9.23-1.09
2x (W.D: 26 mm)	13.0x-110.0x	17.69-2.09	19.5x-165x	12.31-1.45	26.0x-210x	9.23-1.09	32.5x-262.5x	6.92-0.82

### **SZO-B and SZO-T** 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	114.43-17.04	3.02x-20.25x	79.60-11.85	4.02x-27x	59.70-8.89	5.02x-33.75x	44.78-6.67
0.5x (W.D: 177 mm)	3.35x-22.5x	68.66-10.22	5.02x-33.75x	47.76-7.11	6.7x-45x	35.82-5.33	8.37x-56.25x	26.87-4.0
0.75x (W.D: 120 mm)	5.02x-33.75x	45.77-6.81	7.54x-50.62x	31.84-4.74	10.05x-67.5x	23.88-3.56	12.56x-84.37x	17.91-2.67
1x (W.D: 110 mm)	6.7x-45x	34.33-5.11	10.05x-67.5x	23.88-3.56	13.4x-90x	17.91-2.67	16.75x-112.5x	13.43-2.0
1.5x (W.D: 47 mm)	10.05x-67.5x	22.89-3.41	15.07x-101.25	15.92-2.37	20.1x-135x	11.94-1.78	25.12x-168.75x	8.96-1.33
2x (W.D: 26 mm)	13.4x-90.0x	17.16-2.56	20.1x-135x	11.94-1.78	26.8x-180x	8.96-1.33	33.5x-225x	6.72-1.0

# **SZ** Series - Best Selling Configurations



SZO-B + SZ-A1 + SZ-ST1



SZX-B + SZ-A1 + SZ-ST3



SZX-BA + SZ-A1 + SZ-ST7



SZO-T + SZ-A1 + SZ-ST8



SZO-T + SZ-A1 + SZ-STL1



SZO-T + SZ-A1 + SZ-STL2

### **SZ** Series - Accessories

#### **Eyecups & Eyepieces**

- ST-141 WF10x/22 eyepieces (pair), high eyepoint, focusable, rubber cup (only for SZX-B & SZX-T)
- ST-145 WF10x/22 micrometric eyepiece, high eyepoint, focusable, rubber cup (only for SZX-B & SZX-T)
- ST-144 WF25x/9 eyepieces (pair), high eyepoint, focusable, with rubber cup
- ST-301 WF10x/23 eyepieces (pair), high eyepoint, focusable, with rubber cup (only for SZO-B & SZO-T) WF15x/16 eyepieces (pair), high eyepoint, focusable, with rubber cup
- ST-302
- ST-303 WF20x/12 eyepieces (pair), high eyepoint, focusable, with rubber cup
- ST-305 WF10x/23 micrometric eyepiece, high eyepoint, focusable, rubber cup (only for SZO-B & SZO-T)
- WF10x/23 eyepieces (pair), high eyepoint, focusable, rubber cup (only for SZX-BA & SZX-TA) ST-306
- WF10x/23 micrometric eyepiece, high eyepoint, focusable, rubber cup (only for SZX-BA & SZX-TA) ST-310

#### **Objectives & Additional Lenses**

- ST-102 Additional lens 0.3x (w.d. 287mm)
- ST-103 Additional lens 0.5x (w.d. 177mm)
- Additional lens 0.75x (w.d. 120mm) ST-104
- ST-105 Additional lens 1.5x (w.d. 47mm)
- ST-106 Additional lens 2x (w.d. 26mm)

#### **Stages**

- ST-100 Hand moving stage, 95mm diameter
- ST-110 Moving stage, coaxial knobs, 95mm diameter
- ST-111 Moving stage, micrometric screws, 95mm diameter
- ST-666-EU Applicable heating stage (stereomicroscopes, 95mm diameter), EU
- ST-666-UK Applicable heating stage (stereomicroscopes, 95mm diameter), UK ST-666-US Applicable heating stage (stereomicroscopes, 95mm diameter), US
- ST-666-SW Applicable heating stage (stereomicroscopes, 95mm diameter), CH

#### **Condenser & Filters**

- ST-040 Darkfield condenser, 95mm diameter
- Polarising set (filters and rotating stage), 95mm diameter ST-088

#### Camera Adapters

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

- <u>15104</u> 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)
- M-069 Solar charger
- White/black object-plate, 95mm diameter ST-012
- ST-014 Glass object-plate, 95mm diameter
- ST-041 Sample clip
- ST-092 Protective glass for stereohead
- IQ/OQ/PQ manual for SZ series VP-SZ

#### 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.

#### **Headquarters and Manufacturing Facilities**

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