

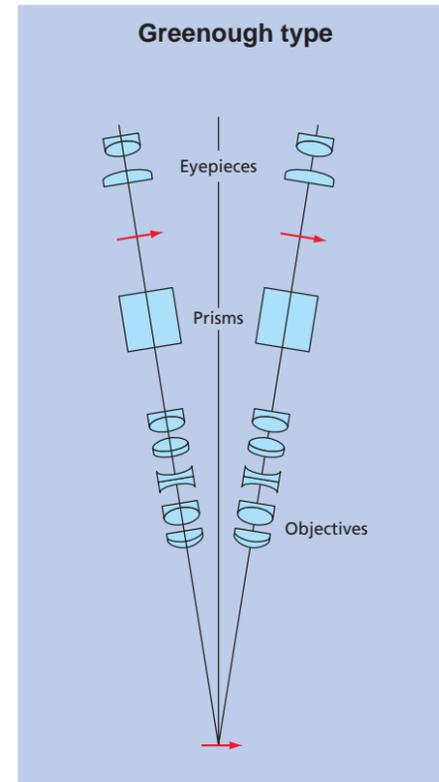
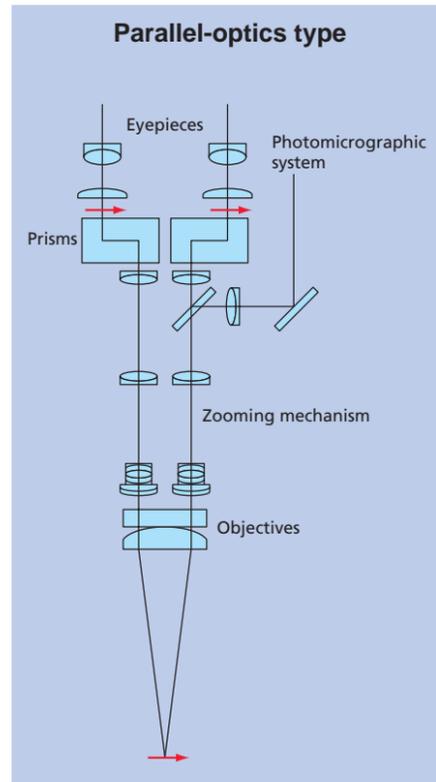
Optical Systems

Parallel-optics type (zooming type)

This system has a parallel optical path in which diverse intermediate equipment, including photomicrographic system, coaxial episcopic illuminator, teaching head, drawing tube and eye-level riser, can be inserted.

Greenough type (zooming type)

Allows a compact body that is suited for incorporation into other devices.



Stereoscopic Microscopes



Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. March 2008. ©2007-8 NIKON CORPORATION



WARNING

TO ENSURE CORRECT USAGE, READ THE CORRESPONDING MANUALS CAREFULLY BEFORE USING YOUR EQUIPMENT.



NIKON CORPORATION

6-3, Nishiohi 1-chome, Shinagawa-ku,
Tokyo 140-8601, Japan
(Industrial) phone: +81-3-3773-9026 fax: +81-3-3773-9062
(Bio Science) phone: +81-3-3773-8973 fax: +81-3-3773-8986
<http://www.nikon-instruments.jp/eng/>



ISO 9001 Certified
NIKON CORPORATION
Instruments Company



ISO 14001 Certified
NIKON CORPORATION
Yokohama Plant

NIKON INSTRUMENTS INC.

1300 Walt Whitman Road, Melville, N.Y. 11747-3064, U.S.A.
phone: +1-631-547-8500; +1-800-52-NIKON (within the U.S.A. only)
fax: +1-631-547-0306

<http://www.nikoninstruments.com/>

NIKON INSTRUMENTS EUROPE B.V.

Laan van Kronenburg 2, 1183 AS Amstelveen, The Netherlands
phone: +31-20-44-96-222 fax: +31-20-44-96-298
<http://www.nikoninstruments.eu/>

NIKON INSTRUMENTS (SHANGHAI) CO., LTD.

CHINA phone: +86-21-5836-0050 fax: +86-21-5836-0030
(Beijing branch) phone: +86-10-5869-2255 fax: +86-10-5869-2277
(Guangzhou branch) phone: +86-20-3882-0552 fax: +86-20-3882-0580

NIKON SINGAPORE PTE LTD

SINGAPORE phone: +65-6559-3618 fax: +65-6559-3668

NIKON MALAYSIA SDN. BHD.

MALAYSIA phone: +60-3-7809-3688 fax: +60-3-7809-3633

NIKON INSTRUMENTS KOREA CO., LTD.

KOREA phone: +82-2-2186-8410 fax: +82-2-555-4415

NIKON CANADA INC.

CANADA phone: +1-905-625-9910 fax: +1-905-625-0103

NIKON FRANCE S.A.S.

FRANCE phone: +33-1-45-16-45-16 fax: +33-1-45-16-00-33

NIKON GMBH

GERMANY phone: +49-211-9414-0 fax: +49-211-9414-322

NIKON INSTRUMENTS S.p.A.

ITALY phone: +39-55-3009601 fax: +39-55-300993

NIKON AG

SWITZERLAND phone: +41-43-277-2860 fax: +41-43-277-2861

NIKON UK LTD.

UNITED KINGDOM phone: +44-20-8541-4440 fax: +44-20-8541-4584

NIKON GMBH AUSTRIA

AUSTRIA phone: +43-1-972-6111-00 fax: +43-1-972-6111-40

NIKON BELUX

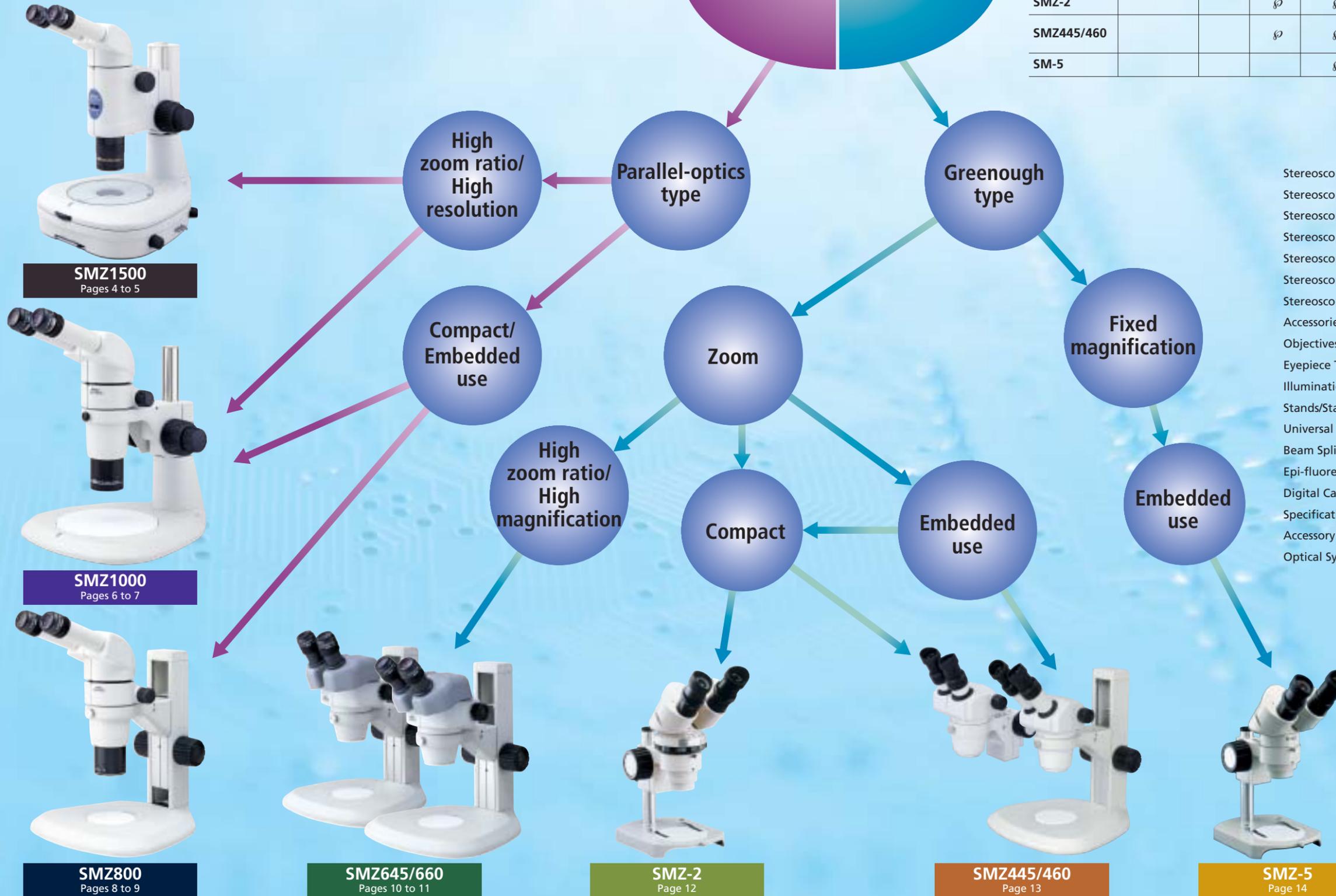
BELGIUM phone: +32-2-705-56-65 fax: +32-2-726-66-45

Complete lineup delivers optimal observation performance

Nikon's broad range of stereoscopic microscopes and accessories respond to diverse observation needs. The SMZ series, represented by the high-end 1500, 1000 and 800 models, offers outstanding optical performance, flexible system expandability and superb operability. The basic SMZ645/660 is highly cost effective and the long-selling SMZ-2, SM-5 and the new SMZ445/460 provide ease of use. Nikon offers stereoscopic microscopes most appropriate for your specific requirements.

	System expandability	Image capture	Zoom	Embedded use	Total magnification*	Zoom ratio	Compact	Long working distance
SMZ1500	⌀	⌀	⌀		3.75–540x	15 : 1		
SMZ1000	⌀	⌀	⌀	⌀	4–480x	10 : 1		
SMZ800	⌀	⌀	⌀	⌀	5–378x	6.3 : 1		
SMZ645/660			⌀	⌀	4–300x	6.3 : 1		⌀
SMZ-2			⌀	⌀	4–120x	5 : 1	⌀	
SMZ445/460			⌀	⌀	4–70x (445) 3.5–60x (460)	4.4 : 1 (445) 4.3 : 1 (460)	⌀	
SM-5				⌀	10–60x	—	⌀	

* Depending on combination of eyepiece and objective lens

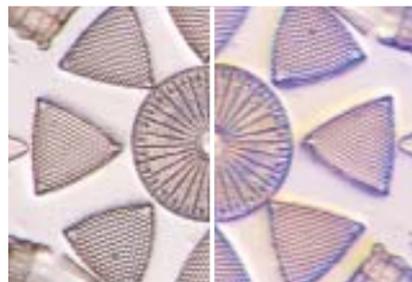


- Stereoscopic Zoom Microscope SMZ1500..... 4
- Stereoscopic Zoom Microscope SMZ1000..... 6
- Stereoscopic Zoom Microscope SMZ800..... 8
- Stereoscopic Zoom Microscopes SMZ645/660 10
- Stereoscopic Zoom Microscope SMZ-2 12
- Stereoscopic Zoom Microscopes SMZ445/460 13
- Stereoscopic Microscope SM-5 14
- Accessories 15
- Objectives/Auxiliary Objectives 15
- Eyepiece Tubes/Eye-level Riser 16
- Illumination Systems/Polarizing Attachment 16
- Stands/Stages 18
- Universal Table Stands/Focusing Mounts 19
- Beam Splitters/Teaching Head/Drawing Tube 20
- Epi-fluorescence Attachment..... 20
- Digital Cameras for Microscopes/Photomicrographic System 21
- Specifications 22
- Accessory Compatibility 22
- Optical Systems 24

A new standard for stereoscopic zoom microscopes—superb optical performance and ease of operation

SMZ1500

Nikon has developed a series of objectives featuring higher NA and incredible resolving power. For example, the P-HR Plan Apo 1.6x objective* delivers an NA of 0.21 and a resolving power of 630 lines/mm. These superb objectives feature optimum contrast and a minimum of flare across the entire view field out to the edges.



Diatom
Left: SMZ1500 with P-HR Plan Apo objective
Right: conventional model



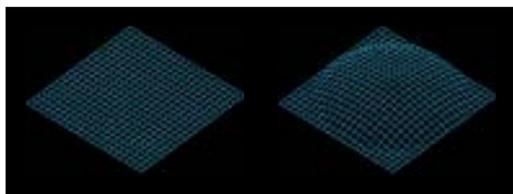
Resolving power chart
SMZ1500 with P-HR Plan Apo 1.6x objective



DMZ15B-DSD

*Patent pending regarding lens construction

Distortion that causes problems usually associated with stereoscopic microscopes, such as surface irregularities and the apparent bulging of objects, is minimized with these lenses. Now you can view stereoscopic images that appear natural-looking right out to the periphery.



Distortion causes a globular effect as shown above even when you actually observe a flat object.

Nikon's approach to reducing chromatic aberration results in a high degree of correction for axial and lateral chromatic aberrations. Although reducing chromatic aberrations and eliminating distortion were traditionally thought to be extremely difficult, Nikon has succeeded brilliantly, producing stereoscopic images with true-to-life colors.

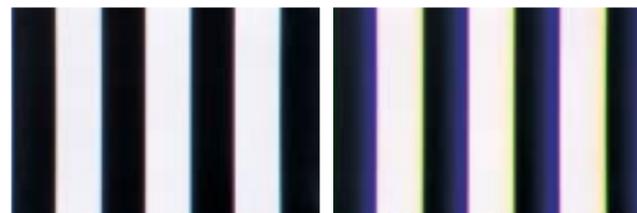
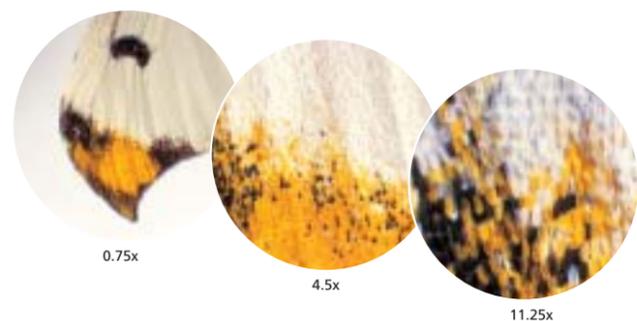


Image where chromatic aberration has been corrected in the SMZ1500
Image that exhibits chromatic aberration

Comparison of chromatic aberrations

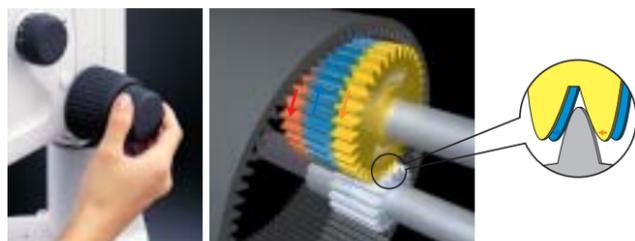
The SMZ1500 features the world's largest zoom ratio of 15x** covering a range from 0.75x to 11.25x. This extraordinary range makes changing lenses unnecessary, allowing you to concentrate on observations.

**Patent pending



In addition to the standard binocular eyepiece tube (P-BT) with 20° eyepiece inclination, Nikon offers a low eye-level binocular eyepiece tube (P-BTL), a tilting binocular eyepiece tube (P-BERG) that allows continuous adjustment of the eyepiece inclination from 0° to 30°, and an eye-level riser (P-IER) to help you achieve optimum eyepoint.

The SMZ1500 comes with a coaxial coarse/fine focusing unit that travels smoothly along the optical axis. Its new anti-backlash mechanism makes fine adjustment of focus easier and more accurate. A built-in counterbalance ensures easy movements.



Anti-backlash mechanism

To maximize the high performance of SMZ1500, various accessories including illumination systems and new diascopic stands are available.

Magnification and focal depth (focal depth when using the C-W10xA eyepiece)

Objectives	Working distance	Zoom magnification	Focal depth (mm)
P-HR Plan Apo 0.5x	136	0.75x	5.392
		4x	0.320
		8x	0.140
		11.25x	0.103
P-HR Plan Apo 1x	54	0.75x	1.348
		4x	0.080
		8x	0.035
		11.25x	0.026
P-HR Plan Apo 1.6x	24	0.75x	0.527
		4x	0.031
		8x	0.014
		11.25x	0.010

How to calculate focal depth (mm, when wavelength is 550nm)

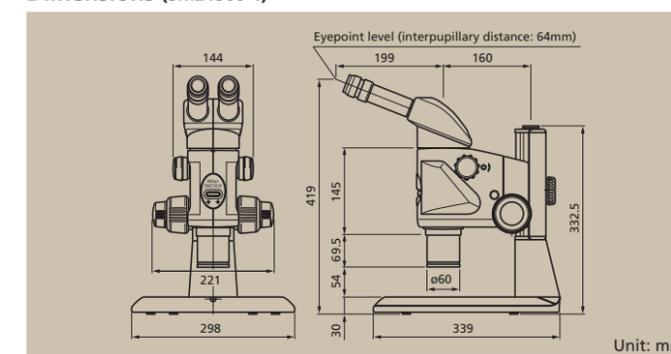
$$\frac{0.00055}{2(NA)^2} + \frac{1}{7m \cdot NA} \quad m: \text{total magnification}$$

Specifications

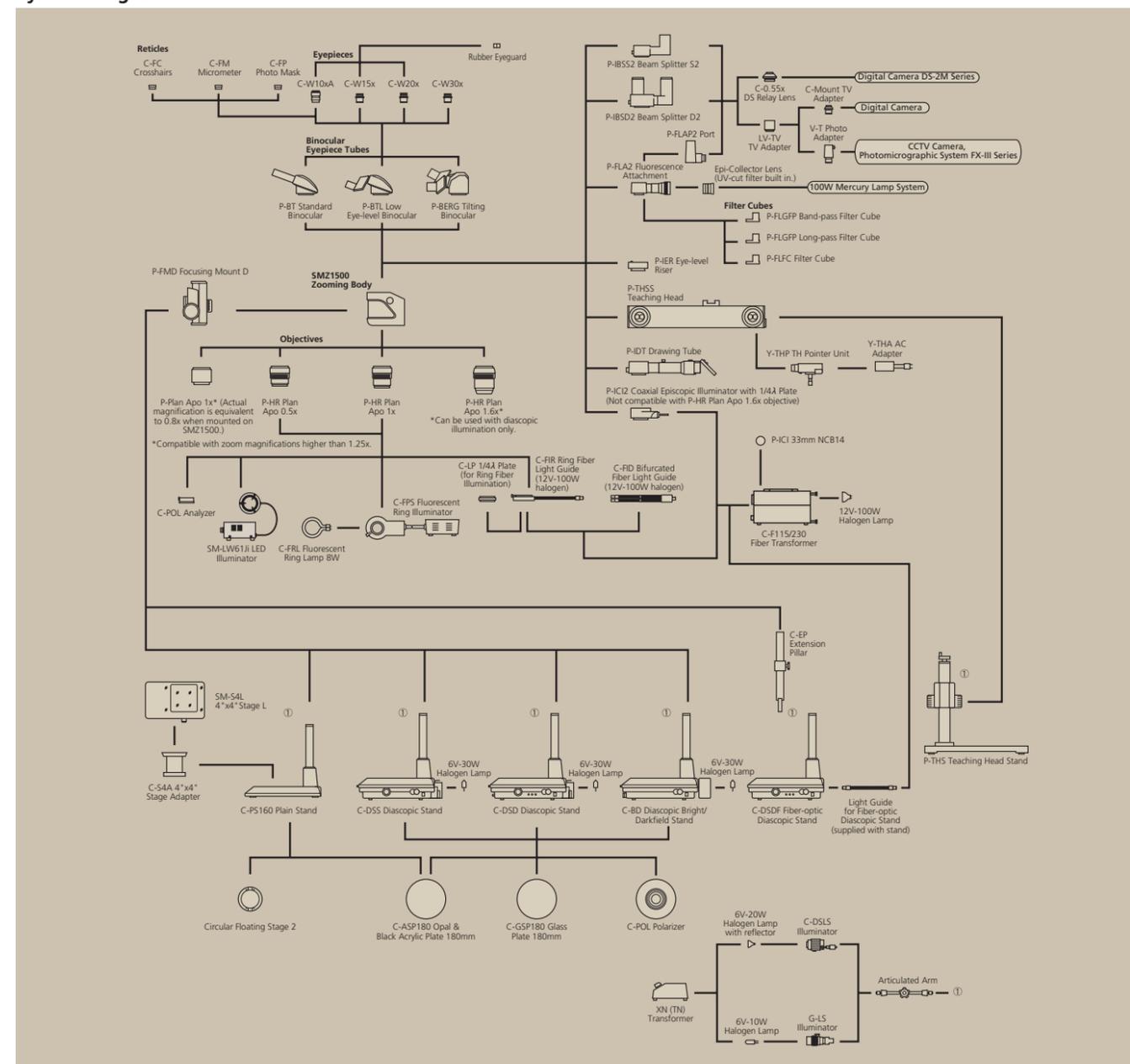
Optical system	Parallel-optics zoom system
Total magnification	3.75–540x (Depending on eyepiece and objective used.), 5.6–506x (When coaxial episcopic illuminator is attached.)
Eyepiece inclination	20° (Standard Binocular and Low Eye-level Binocular), 0°–30° (Tilting Binocular)
Interpupillary distance adjustment	48–75mm
Eyepieces (with diopter adjustment)	C-W10xA (F.N. 22), C-W15x (F.N. 16), C-W20x (F.N. 12.5), C-W30x (F.N. 7)
Zoom range	0.75–11.25x
Zoom ratio	15 : 1
Objectives	P-HR Plan Apo 0.5x, 1x, 1.6x P-Plan Apo 1x (Actual magnification is equivalent to 0.8x. Compatible with zoom magnifications higher than 1.25x.)

For possible combinations of accessories, please refer to the system diagram.

Dimensions (SMZ1500-1)



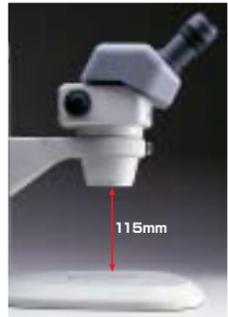
System diagram



Dramatically improved optical performance and handling comfort

SMZ645/660

- 6.3x zoom ratio offers magnifications of 0.8x to 5x. The zooming knob features click-stops that allow changes in magnification of 1x increments.
- Two models with eyepiece inclinations of 45° (SMZ645) and 60° (SMZ660) are available.



- Even at high magnification, a long working distance of 115mm, the longest in this microscope class, is realized.



SMZ660-1

SMZ645-1

- The new G-AL ERG auxiliary objective can be freely adjusted to match the operator's eye level.



- Various accessories including illumination systems and new diascopic stands are available.

Magnification and focal depth (focal depth when using the C-W10xA eyepiece)

Auxiliary objectives	Zoom magnification	Focal depth (mm)
Not used	0.8x	1.380
	3x	0.152
	5x	0.097
0.5x	0.8x	5.519
	3x	0.608
	5x	0.388
0.7x	0.8x	2.816
	3x	0.310
	5x	0.198
1.5x	0.8x	0.613
	3x	0.068
	5x	0.043
2x	0.8x	0.345
	3x	0.038
	5x	0.024

- Low-position focus knob for quick, effortless focusing



New three "A" design Airtight

By making joints airtight, contamination from dust, oil, water and other contaminants is prevented.

Anti-mold

Anti-mold design developed exclusively by Nikon ensures peace of mind when the microscope is used in environments subject to high heat or humidity.

Anti-electrostatic

Static electricity built up within the microscope is discharged almost instantly, ensuring higher yields.

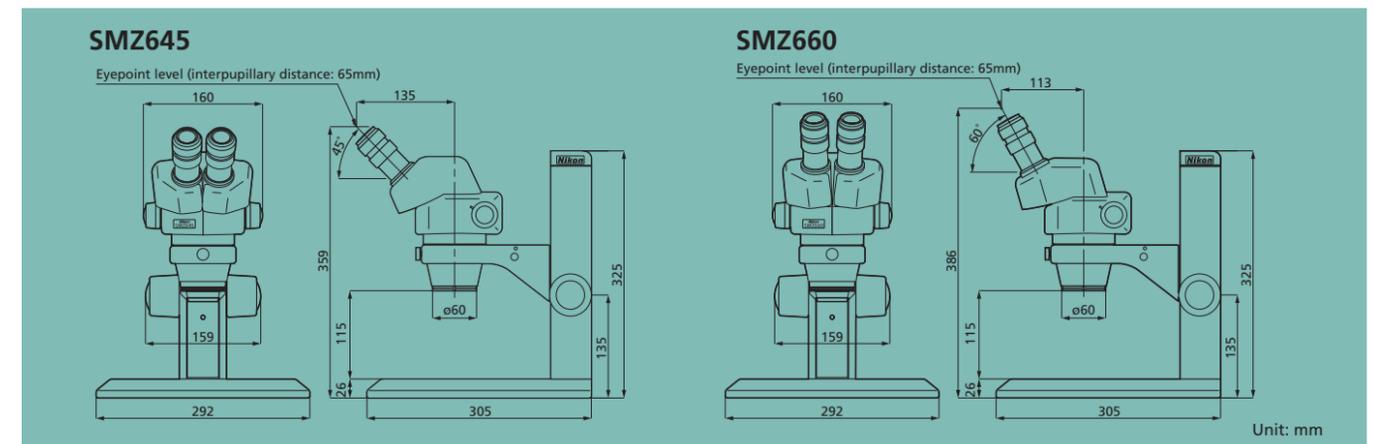
How to calculate focal depth (mm, when wavelength is 550nm)

$$\frac{0.00055}{2(NA)^2} + \frac{1}{7m \cdot NA} \quad m: \text{total magnification}$$

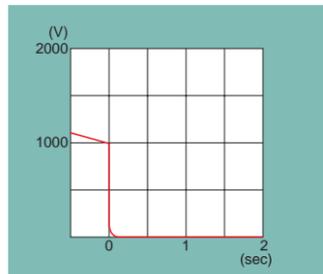
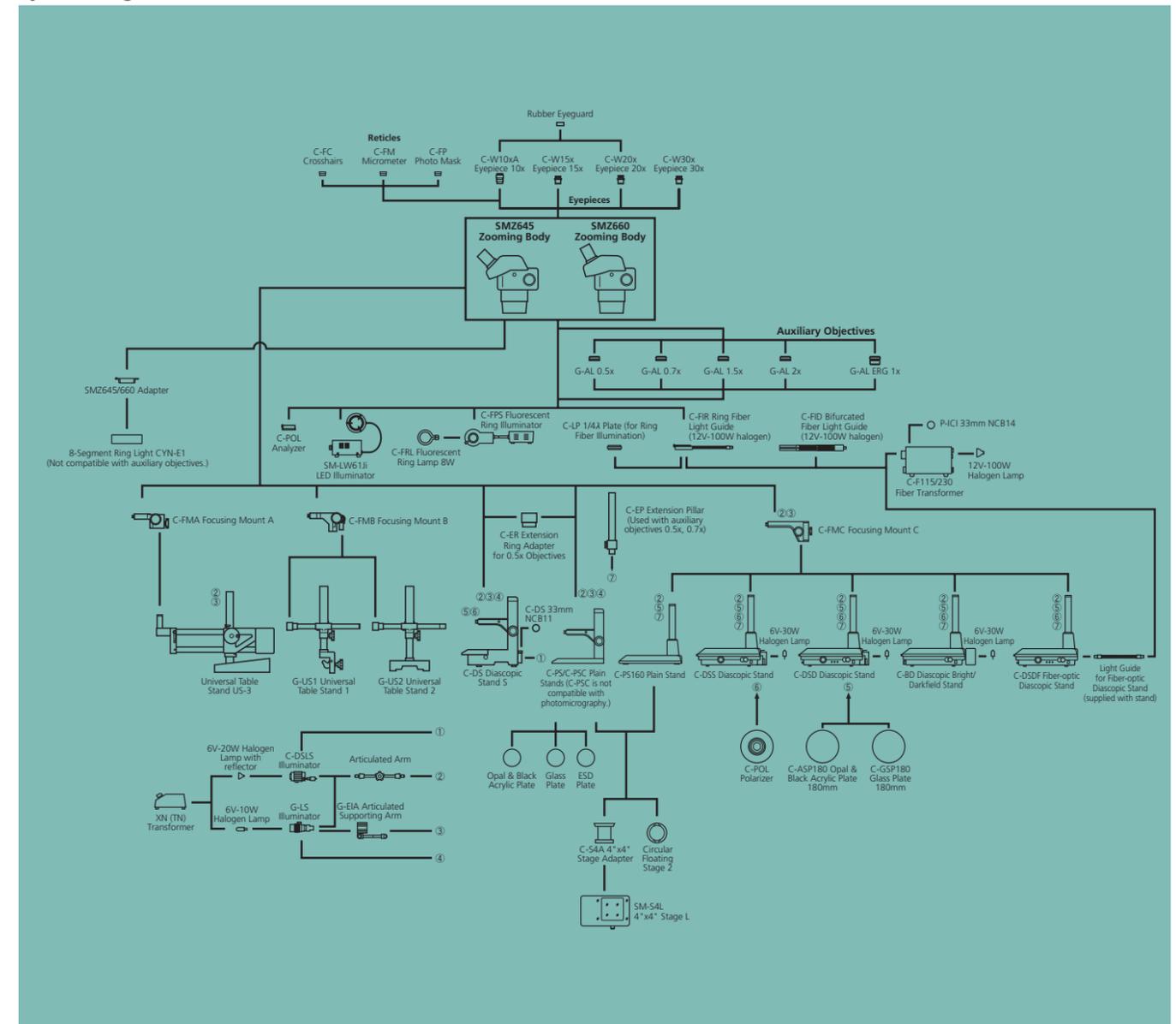
Specifications

Optical system	Twin zooming objective
Total magnification	4–300x (Depending on eyepiece and auxiliary objective used.)
Eyepiece inclination	45° (SMZ645), 60° (SMZ660)
Interpupillary distance adjustment	52–75mm
Eyepieces (with diopter adjustment)	C-W10xA (F.N. 22), C-W15x (F.N. 16), C-W20x (F.N. 12.5), C-W30x (F.N. 7)
Zoom range	0.8–5x
Zoom ratio	6.3 : 1
Auxiliary objectives	G-AL 0.5x (W.D. 211mm), 0.7x (W.D. 150mm), 1.5x (W.D. 61mm), 2x (W.D. 43.5mm) G-AL ERG 0.77–1.06x (W.D. 102–48mm)
Working distance	115mm (with standard configuration)
Antistatic function	1000–10V, discharge within 0.2 sec.
Airtight construction	JIS dew prevention standard Type 1 compliant

Dimensions



System diagram



High-resolution optics ideal for inspection, assembly and measurement

SMZ-2



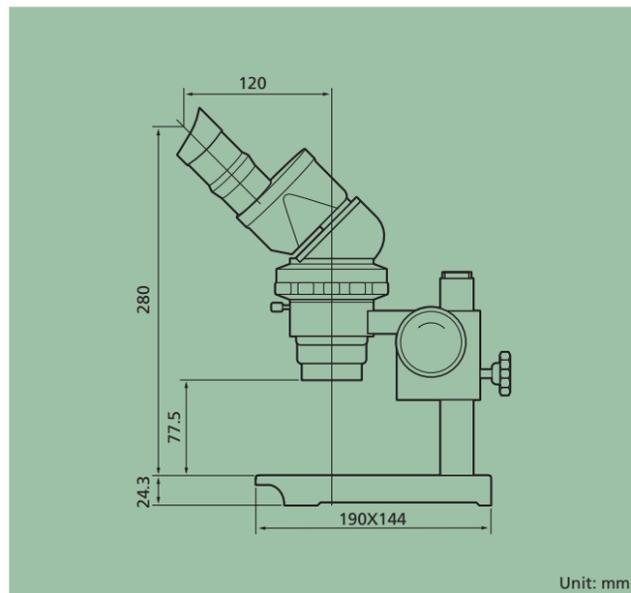
SMZ-2 (Clemmer is optional)

- Diopter of both eyes can be adjusted individually, providing a clear image when zooming.
- Twin zooming objective optical system maintains focus when magnification is changed. Focus point movement and magnification difference between eyes are minimal.
- Compact design with horizontally positioned zooming ring (rotation: 90°)
- Eyepiece inclination of 45° for comfortable observation

Specifications

Optical system	Twin zooming objective
Total magnification	4–120x (Depending on eyepiece and auxiliary objective used.)
Eyepiece inclination	45°
Interpupillary distance adjustment	56–75mm
Eyepieces (with diopter adjustment)	SM E10xA (F.N. 23, standard), SM E15xA (F.N. 14), SM E20xA (F.N. 12), C-W30x (F.N. 7)
Zooming range	0.8–4x
Zooming ratio	5 : 1
Working distance	77.5mm (with standard configuration)

Dimensions



Unit: mm

Magnification and focal depth (mm)

Magnification	Eyepieces			
	10x	15x	20x	30x
0.8x	0.794	0.613	0.523	0.433
1x	0.496	0.383	0.326	0.269
2x	0.183	0.145	0.126	0.107
3x	0.122	0.099	0.088	0.077
4x	0.105	0.088	0.080	0.071

Designed for excellent cost performance

SMZ445/460

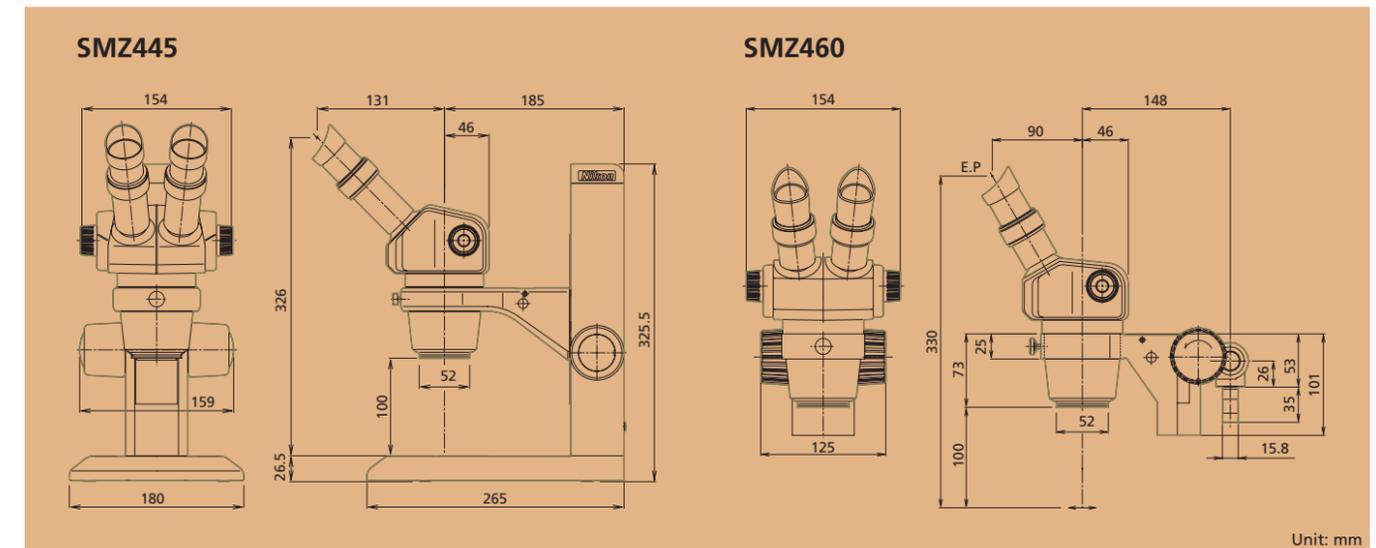
- Compact design with ease-of-use and high optical performance
- Lightweight optics thanks to the use of porro-mirrors
- ESD protection guards against electrostatic damage to samples.
- The SMZ445 has a 45° eyepiece tube inclination, and the SMZ460 has a 60° eyepiece tube inclination, which is ideal for embedded use.

Specifications

	SMZ445	SMZ460
Optical system	Twin zooming objective	
Total magnification	4x–70x	3.5x–60x
Eyepiece inclination	45°	60°
Interpupillary distance adjustment	54–75mm	
Eyepieces	SM 10xB (F.N. 21), SM 15xB (F.N. 14), SM 20xB (F.N. 12)	
Zooming range	0.8–3.5x	0.7–3x
Zooming ratio	4.4 : 1	4.3 : 1
Auxiliary objectives (option)	AL5 (0.5x), AL7 (0.7x)	
Working distance	100mm (standard)	



Dimensions



Unit: mm

Standard stereoscopic microscope with fixed objective magnification

SM-5

Accessories



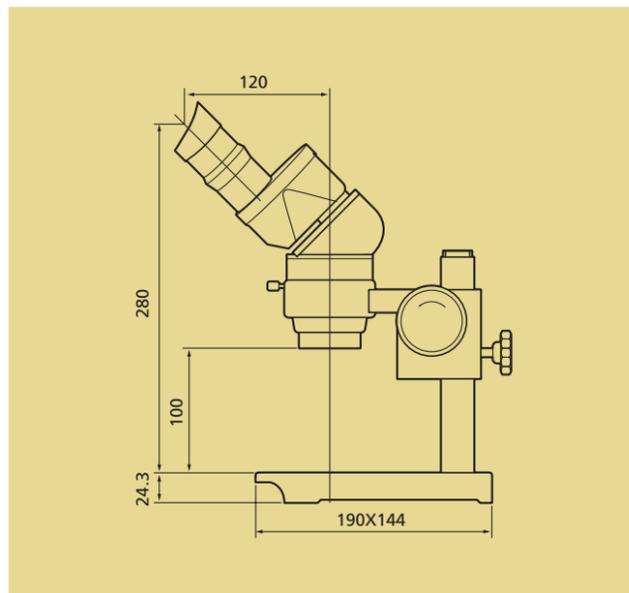
SMZ-2 (Clemmer is optional)

- Optical axis passes through the middle of the lens, eliminating chromatic aberration and providing sharp images.
- Objective has fixed magnification of 2x. Total magnification ranges from 10x to 60x depending on eyepiece and auxiliary objective used.
- Focal plane is positioned on distinct vision, eliminating eye fatigue during lengthy use.
- 45° eyepiece tube inclination is ideal for use on a desk or other work surface.

Specifications

Optical system	Fixed type
Total magnification	10x–60x (Depending on the eyepiece and auxiliary objective used.)
Eyepiece inclination	45°
Interpupillary distance adjustment	56–75mm
Eyepieces	SM E10xA (F.N. 23, standard), SM E15xA (F.N. 14), SM E20xA (F.N. 12), C-W30x (F.N. 7)
Objectives	2x
Auxiliary objectives (option)	AL5 (0.5x), AL7 (0.7x)
Working distance	100mm (standard)

Dimensions



Magnification and focal depth (mm)

Auxiliary objectives	Eyepieces			
	10x	15x	20x	30x
Not used	0.181	0.142	0.123	0.104
AL5 (0.5x)	0.723	0.569	0.492	0.415
AL7 (0.7x)	0.369	0.290	0.251	0.212

Objectives SMZ1500 SMZ1000 SMZ800

P-HR Plan Apo Series

This series of objectives, which feature high NA and incredible resolving power, has been developed in pursuit of sharper and brighter images. For example, the P-HR Plan Apo 1.6x objective* delivers an NA of 0.21 and a resolving power of 630 lines/mm.

*Can be used with diasopic illumination only.

P-HR Plan Apo 0.5x, working distance: 136mm

P-HR Plan Apo 1x, working distance: 54mm

P-HR Plan Apo 1.6x, working distance: 24mm

P-Plan Apo Series

This series of objectives, which boasts high NA and high resolving power, provides excellent image flatness. Chromatic aberration has been corrected.

P-Plan Apo 0.5x, working distance: 123.6mm

P-Plan Apo 1x, working distance: 70mm

P-ED Plan/P-Plan/P-Achro Objectives

Objectives of various magnifications and working distances are available.

P-ED Plan 1.5x, working distance: 44.5mm

P-ED Plan 2x, working distance: 32.5mm

P-Plan 1x, working distance: 78mm

P-Achro 0.5x, working distance: 189mm



From left to right: P-HR Plan Apo 1x, P-HR Plan Apo 1.6x, and P-HR Plan Apo 0.5x

Ergonomic Objective

Eye level can be adjusted precisely without changing magnification or working distance.



P-ERG Plan 1x



Auxiliary Objectives

Ergonomic Auxiliary Objective

Eye level can be adjusted precisely.



G-AL ERG 0.77–1.06x (working distance: 102–48mm)

Auxiliary Objectives

Microscopes	Auxiliary objectives	Working distance (mm)
SMZ645/660	G-AL ERG 0.7–1.06x	102–48
	G-AL 0.5x	211
	G-AL 0.7x	150
	G-AL 1.5x	61
	G-AL 2x	43.5
SMZ-2	AL5 (0.5x)	103
	AL7 (0.7x)	95
SMZ445/460	AL5 (0.5x)	181
	AL7 (0.7x)	127.5
SM-5	AL5 (0.5x)	168
	AL7 (0.7x)	128

Eyepiece Tubes/Eye-level Riser



(1) P-BT standard binocular eyepiece tube, (2) P-BTL low eye-level eyepiece tube, (3) P-BERG tilting eyepiece tube, (4) P-IER eye-level riser

P-BT Standard Eyepiece Tube

The standard binocular eyepiece tube is inclined 20°, allowing you to observe samples without having to lean forward. This reduces fatigue during long hours of operation by reducing strain on your neck, shoulders, and back.

P-BTL Low Eye-level Eyepiece Tube

The low eye-level binocular eyepiece tube enables comfortable observation even when using a diascopic stand or when an intermediate tube is inserted.

P-BERG Tilting Eyepiece Tube

The tilting binocular eyepiece tube allows continuous adjustment of the eyepiece inclination from 0° to 30°. You can also adjust the eye level a maximum of 157mm by swinging the eyepieces up 180° and tilting them.

P-IER Eye-level Riser

Lets you increase the eyepoint height 25mm per riser for a total of 50mm.

SMZ1500 SMZ1000 SMZ800

Illumination Systems/Polarizing Attachment

C-DSLS Lamphouse (6V-20W halogen)

Using a 6V-20W halogen lamp as light source, the C-DSLS can be externally attached to generate epi-fluorescence illumination. It can also be mounted to the C-DS Diascopic Stand.



SMZ1500 SMZ1000 SMZ800
SMZ645/660 SMZ445/460

SMZ-U Episcopic Arm

This arm can be mounted to the C-DSLS Lamphouse or the G-LS Episcopic Illuminator.



SMZ645 configured with G-LS Episcopic Illuminator and SMZ-U Episcopic Arm (Clemmer is optional)

SMZ1500 SMZ1000 SMZ800 SMZ645/660
SMZ445/460

G-LS Episcopic Illuminator (6V-10W halogen)

This illuminator offers sufficient brightness with reflection light originating from a 6V-10W halogen lamp. It can be mounted on the C-PS Plain Stand where its illumination angle can be easily adjusted.



SMZ645 configured with G-LS Episcopic Illuminator (Clemmer is optional)

SMZ1500 SMZ1000 SMZ800 SMZ645/660
SMZ445/460

Illumination Systems

C-FIR Fiber-optics Ring Illuminator (12V-100W halogen)

This illuminator incorporates a 12V-100W halogen lamp with reflection mirrors. It supplies conical-shaped light through an optical fiber from above the sample to its center, minimizing unwanted shadow.



SMZ1500 configured with C-FIR Fiber-optics Ring Illuminator

SMZ1500 SMZ1000 SMZ800
SMZ645/660 SMZ-2 SMZ445/460
SM-5



SMZ1500 configured with C-FID Fiber-optics Bifurcated Illuminator

C-FID Fiber-optics Bifurcated Illuminator (12V-100W halogen)

This illuminator incorporates a 12V-100W halogen lamp with reflection mirrors to project light beams onto the desired position via two optical-fiber arms. The direction and angle of the illumination can be changed with simple adjustments of these flexible arms.

SMZ1500 SMZ1000 SMZ800 SMZ645/660
SMZ-2 SMZ445/460 SM-5



SMZ1500 configured with P-ICI2 Coaxial Episcopic Illuminator

P-ICI2 Coaxial Episcopic Illuminator

This illuminator uses a 12V-100W fiber-optics light source to deliver bright illumination over the entire sample surface. The thickness of the 1/4λ plate has been reduced, minimizing spherical aberrations in high NA objectives.

*Zoom magnifications that can be used vary depending on objective. For details, consult a Nikon representative.

SMZ1500 SMZ1000 SMZ800

G-EIA Flexible Arm

This arm can be flexibly bent so that the G-LS Episcopic Illuminator can be set to the appropriate position.



SMZ645 configured with G-EIA Flexible Arm

SMZ1000 SMZ800 SMZ645/660
SMZ445/460

C-FPS Fluorescent Ring Illuminator

A ring-shaped fluorescent tube provides uniform illumination over the entire visual field without shadows. This illuminator uses a long-life CRT of 160V-30mA, and it lights up immediately after switching ON.



SMZ645 configured with C-FPS Fluorescent Ring Illuminator

SMZ1500 SMZ1000 SMZ800 SMZ645/660
SMZ-2 SMZ445/460 SM-5

SM-LW61Ji LED Illuminator

This is a high-intensity illuminator incorporating 60 long-life white LEDs. Flickering is suppressed by adjusting the intensity control.



SMZ645 configured with SM-LW61Ji LED Illuminator

SMZ1500 SMZ1000 SMZ800 SMZ645/660
SMZ-2 SMZ445/460 SM-5

8-Segment LED Ring Light CYN-E1

Because the optimum direction of illumination can be selected from eight directions, it is now possible to clearly see the edges of plastic mold parts and drills.

SMZ1000 SMZ800 SMZ645/660

C-POL Polarizing Attachment

The polarizer is set on the stage while the analyzer is fitted on the objective lens cover, through which diascope illumination light passes, making it possible to observe flakes of rock or mined ore, or double refraction images of samples.

SMZ1500 SMZ1000 SMZ800 SMZ645/660

Stands



SMZ1500 configured with C-PS160 Plain Stand



SMZ645 configured with C-PS Plain Stand

SMZ645 configured with C-PSC Plain Stand



SMZ645 configured with C-DS Diascopic Stand

C-PS160 Plain Stand

This stand features a thin design, a large $\phi 180\text{mm}$ stage plate and a long 160mm distance between the pillar and optical axis to boost your working efficiency.

SMZ1500 SMZ1000 SMZ800
SMZ645/660 SMZ445/460

C-PS/C-PSC Plain Stands

The narrow design offers a comfortable work area and allows easy handling of samples. The C-PSC stand has a small base that saves desk space.

SMZ1000 SMZ800 SMZ645/660
SMZ445/460



SMZ1500 configured with C-DSS Diascopic Stand

C-DSS Diascopic Stand

This stand accommodates a light source and power supply in a simple design. The angle of the built-in mirror can be easily adjusted with the knob.

SMZ1500 SMZ1000 SMZ800
SMZ645/660 SMZ445/460

Light source	6V-10W halogen lamp
Illumination	Brightfield illumination, oblique (high contrast) illumination
Built-in filter	Not equipped
Magnification	* $\phi 45\text{mm}$ filter slot provided Observable with all objectives; observable at all zoom ranges (0.5x objective is compatible with zoom magnification higher than 1.5x.)
Fine focus knob	Equipped



SMZ1500 configured with C-DSD Diascopic Stand

C-DSD Diascopic Stand

The high-end C-DSD Diascopic Stand features condenser lenses that can be switched between low and high magnifications. Furthermore, the Oblique Coherent Contrast (OCC) Illumination system has been developed in response to user requests for high-contrast illumination. The system allows colorless and transparent samples to be observed in high relief.

SMZ1500 SMZ1000 SMZ800
SMZ645/660 SMZ445/460

Light source	6V-10W halogen lamp
Illumination	Brightfield illumination, OCC (high contrast) illumination
Built-in filter	NCB11, ND4/16
Magnification	Observable with all objectives; observable at all zoom ranges (0.5x objective is compatible with zoom magnifications higher than 1.5x.)
Fine focus knob	Equipped



SMZ1500 configured with C-BD Diascopic Bright/Darkfield Stand

C-BD Diascopic Bright/Darkfield Stand

This stand uses a seven-sided toroidal mirror to substantially reduce stray light that causes a decrease in contrast when using short-working distance objectives under darkfield diascopic illumination. Consequently, it enables high S/B ratio darkfield images.

SMZ1500 SMZ1000 SMZ800
SMZ645/660 SMZ445/460

Light source	6V-10W halogen lamp
Illumination	Brightfield illumination, darkfield illumination
Built-in filter	NCB11 (brightfield only, insertion/detachment impossible) * $\phi 45\text{mm}$ filter slot provided
Magnification	Observable with all objectives; observable at all zoom ranges (0.5x objective is compatible with zoom magnifications higher than 1.5x.)
Fine focus knob	Equipped

The C-DSDF Fiber-optic Diascopic Stand is also available.

Stages

SM-S4L 4 x 4 Stage

Used in combination with an optional extension pillar, the 4 x 4 Stage allows precise movement in the XY direction, facilitating fine alignment during high-magnification observations under episcopic illumination. (Although mountable on a diascopic stand, it is not suitable for observation as it blocks illumination.)

SMZ1500 SMZ1000 SMZ800 SMZ645/660 SMZ445/460



SM-S4L 4 x 4 Stage

Sliding Stage 2

Loaded with a sample, the stage can be easily moved in the desired direction simply with a light push to its edges. Travel range is within $\phi 40\text{mm}$.

SMZ1500 SMZ1000 SMZ800
SMZ645/660 SMZ SMZ445/460 SM-5

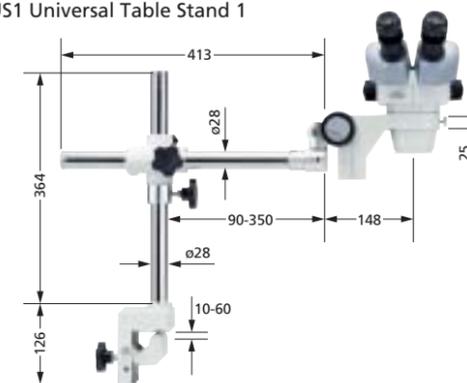
Universal Table Stands/Focusing Mounts

Universal Table Stands G-US1/G-US2

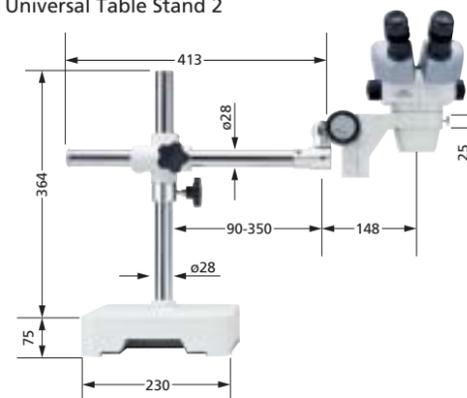
These stands are handy in microscopy with large samples not loaded onto the standard stand. The microscope unit is mounted to the stand arm via a focusing mount. The G-US1 is a table clamp type (table top thickness: 10 to 60 mm).

- Used in conjunction with the C-FMB Focusing Mount B on the SMZ645/660/445/460.
- Used in conjunction with the SM Focusing Mount and the G-USA SM US Adapter on the SM-5.
- Can not be used with the SMZ1000/800 when photomicrographic equipment is mounted on these models.

G-US1 Universal Table Stand 1



G-US2 Universal Table Stand 2



Unit: mm

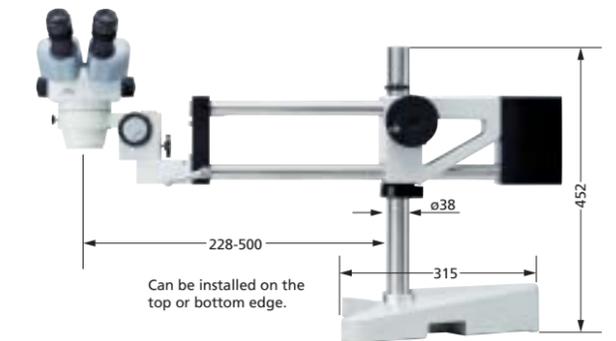
The image is a configuration sample with the SMZ645.

Universal Table Stand P

Not only can it be used for a large sample, but this extremely stable stand also easily accommodates photographic equipment.

- Used in conjunction with the C-FMA Focusing Mount A on the SMZ1000/800/645/660/445/460.
- Used in conjunction with the SM Focusing Mount on the SM-5.

Universal Stand P



Unit: mm

The image is a configuration sample with the SMZ645.

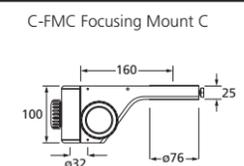
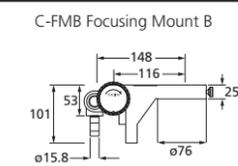
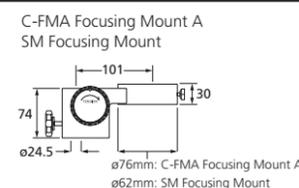
Specifications

Model	G-US1	G-US2	P
Vertical cross travel	245mm		229mm
Horizontal cross travel	260mm		272mm
Weight (approx.)	4.4kg	23.0kg	30.5kg
C-FMA Focusing Mount A	—	—	○
C-FMB Focusing Mount B	○	—	—
C-FMC Focusing Mount C	—	—	—
SM Focusing Mount	○*	—	○
Use of photomicrographic equipment	—	—	○

○: Possible * G-USA Adapter is required

Focusing Mounts

Various types of focusing mounts are available depending on use. They are used to incorporate stereoscopic microscope bodies into IC bonders or other devices. (SM Focusing Mount is for SMZ-2 and SM-5.) These mounts can also be used when attaching microscopes to Universal Table Stands.



Unit: mm

	C-FMA Focusing Mount A	C-FMB Focusing Mount B	C-FMC Focusing Mount C	SM Focusing Mount
Focusing area	40mm	50mm	50mm	40mm
Weight (approx.)	0.6kg	0.8kg	1.6kg	0.6kg
Compatible microscopes	SMZ1000/800/645/660/445/460			SMZ-2, SM-5

Beam Splitters/Teaching Head/Drawing Tube SMZ1500 SMZ1000 SMZ800

Beam Splitters (P-IBSS2, P-IBSD2)

Using a beam splitter and adapter, an FX-III series photomicrographic system, CCTV camera, or a digital still camera can be attached. The P-IBSD2 Beam Splitter D2 has two ports, allowing one photomicrographic system and one CCTV camera to be mounted at the same time.

Beam-split ratios

Beam splitter	Observation		Photomicrography	
	Left	Right	Rear port	Side port
P-IBSD2	100%	100%	0%	0%
	0%	100%	100%	0%
	50%	50%	50%	50%
P-IBSS2	100%	100%	—	0%
	100%	50%	—	50%

P-THSS Teaching Head

This teaching head enables the simultaneous observation of the same sample by two persons, making it ideal for teaching and educational purposes. The side-by-side configuration places less restriction on installation space and allows comfortable operation.

P-IDT Drawing Tube

The drawing tube, mounted between microscope body and eyepiece tube, enables the drawing of images while viewing. Within the visual field, the drawing is overlaid on top of the image, allowing the user to draw the image simply by tracing it. The drawing can be removed from view by using the knob to block the light path.

Digital Cameras for Microscopes SMZ1500 SMZ1000 SMZ800

A wide range of digital cameras is available to meet the increasing use of digital images.

DXM1200C High-definition Digital Camera for Microscopes
 Digital Sight DS-Fi1-L2/U2 Digital Cameras for Microscopes
 Digital Sight DS-5Mc-L2/U2 Digital Cameras for Microscopes
 Digital Sight DS-2Mv-L2/U2 Digital Cameras for Microscopes
 Digital Sight DS-2MBW-L2/U2 Digital Cameras for Microscopes
 Digital Sight DS-2MBWc-L2/U2 Digital Cameras for Microscopes



SMZ1000 configured with P-IBSS2 Beam Splitter S2 and DS-Fi1-L2

Epi-fluorescence Attachment SMZ1500 SMZ1000 SMZ800

P-FLA2 Epi-fluorescence Attachment

Nikon developed the P-FLA2 Epi-fluorescence Attachment for stereoscopic microscopes to allow easy observation of living cells under fluorescence methods such as GFP. Switching between the fluorescence method and brightfield method is quick and easy. If you add an optional photo port to this attachment, you can mount a photomicrographic system or a CCTV camera without using a beam splitter. Because 100% of the light is delivered to the photo port, bright images are ensured.

Magnification	1x
Mountable filter blocks	Max. 4
Light source	100W mercury lamp EXFO fiber 12V-85W mercury lamp
Filter blocks	2 dedicated types (Not compatible with biological microscopes.) P-FL GFP-B (EX460-500, DM505, BA510-560) P-FL GFP-L (EX460-500, DM505, BA510)
Light path of dedicated side port (option)	Left eyepiece : right eyepiece : output port = 100 : 100 : 0, 0 : 50 : 100



SMZ1500 configured with P-FLA2 Epi-fluorescence Attachment and DS-5Mc-L2

Specifications

Model	SMZ1500	SMZ1000	SMZ800	SMZ645/660	SMZ-2	SMZ445/460	SM-5
Optical system	Parallel-optics type (zooming type)			Greenough type (zooming type)			Fixed type
Total magnification (Depending on eyepiece and objective used)	3.75–540x	4–480x	5–378x	4–300x	4–120x	4–70x (SMZ445), 3.5–60x (SMZ460)	10–60x
(When coaxial episcopic illuminator is attached)	5.6–506x	6–540x	7.5–425x				
Eyepiece tube	P-BT Standard Binocular, P-BTL Low Eye-level Binocular, P-BERG Tilting Binocular			Fixed			
Eyepiece inclination	20° (Standard Binocular and Low Eye-level Binocular), 0°–30° (Tilting Binocular)			45° (SMZ645), 60° (SMZ660)	45°	45° (SMZ445), 60° (SMZ460)	45°
Interpupillary distance adjustment	48–75mm			52–75mm	56–75mm	54–75mm	56–75mm
Eyepieces	C-W10xA (F.N. 22), C-W15x (F.N. 16), C-W20x (F.N. 12.5), C-W30x (F.N. 7) (with diopter adjustment)			SM E10xA (F.N. 23, standard), SM E15xA (F.N. 14), SM E20xA (F.N. 12), C-W30x (F.N. 7)		SM 10xB (F.N. 21), SM 15xB (F.N. 14), SM 20xB (F.N. 12)	SM E10xA (F.N. 23, standard), SM E15xA (F.N. 14), SM E20xA (F.N. 12), C-W30x (F.N. 7)
Zoom range	0.75–11.25x	0.8–8.0x	1–6.3x	0.8–5x	0.8–4x	0.8–3.5x (SMZ445), 0.7–3x (SMZ460)	—
Zoom ratio	15 : 1	10 : 1	6.3 : 1		5 : 1	4.4 : 1 (SMZ445), 4.3 : 1 (SMZ460)	—
Objectives	P-HR Plan Apo 0.5x, 1x, 1.6x P-Plan Apo 1x (Actual magnification is equivalent to 0.8x. Compatible with zoom magnifications higher than 1.25x.)	P-Plan Apo 0.5x, 1x P-ED Plan 1.5x, 2x P-Plan 1x* P-Achro 0.5x P-ERG Plan 1x ERGO* *Compatible with zoom magnifications higher than 1x.	P-Plan Apo 0.5x, 1x P-ED Plan 1.5x, 2x P-Plan 1x P-Achro 0.5x P-ERG Plan 1x ERGO	—			2x (fixed)
Auxiliary objectives	—			G-AL 0.5x (W.D. 211mm), 0.7x (W.D. 150mm), 1.5x (W.D. 61mm), 2x (W.D. 43.5mm) G-AL ERG 0.77–1.06x (W.D. 102–48mm)	AL5 (0.5x, W.D. 103mm), AL7 (0.7x, W.D. 95mm)	AL5 (0.5x, W.D. 181mm), AL7 (0.7x, W.D. 127.5mm)	AL5 (0.5x, W.D. 168mm), AL7 (0.7x, W.D. 128mm)
Working distance (with standard configuration or 1x objective)	54mm	70mm	78mm	115mm	77.5mm	100mm	
Weight (approx.)	7.5kg (with P-BT Standard Binocular and C-PS160 Plain Stand)	6.5kg (with P-BT Standard Binocular and C-PS160 Plain Stand)	5kg (with P-BT Standard Binocular and C-PS160 Plain Stand)	4.5kg	2.1kg (body), 1.9kg (C-PSC Plain Stand)	1.0kg (body), 1.9kg (C-PSC Plain Stand)	1.5kg (body), 1.9kg (C-PSC Plain Stand)

Accessory compatibility

		SMZ1500	SMZ1000	SMZ800	SMZ645/660	SMZ-2	SMZ445/460	SM-5
Illumination Systems	P-IC12 Coaxial Episcopic Illuminator (12V-100W halogen)	○	○	○				
	C-FIR Fiber-optics Ring Illuminator	○	○	○	○	△	△	△
	C-FID Fiber-optics Bifurcated Illuminator (12V-100W halogen)	○	○	○	○	○	○	○
	C-DSLS Lamphouse (6V-20W halogen)			○	○			
	G-LS Episcopic Illuminator (6V-10W halogen)			○	○	△		△
	C-FPS Fluorescent Ring Illuminator	○	○	○	○	△	△	△
	SM-LW61Ji LED Illuminator		○	○	○	△	△	△
	8-Segment LED Ring Light CYN-E1		○*	○*	○**			
Epi-fluorescence Attachment	P-FLA2 Epi-fluorescence attachment	○	○	○				
Polarizing Attachment	C-POL Polarizing Attachment	○	○	○	○			
Iris Diaphragm	SMZ-10A Iris Diaphragm		○	○				
Stands	C-PS160 Plain Stand	○	○	○	○			
	C-PS/C-PSC Plain Stands		○	○	○		○	
	C-DS Diascopic Stand		○	○	○		○	
	C-DSS Diascopic Stand	○	○	○	○		○	

* Can be used with P-Plan 1x or P-Plan Apo 1x objective only.
** Can not be used with auxiliary objective.

		SMZ1500	SMZ1000	SMZ800	SMZ645/660	SMZ-2	SMZ445/460	SM-5
Stands	C-DSD Diascopic Stand	○	○	○	○		○	
	C-BD Diascopic Bright/Darkfield Stand	○	○	○	○		○	
	C-DSDF Fiber-optic Diascopic Stand	○	○	○	○		○	
Stages	SM-S4L 4 x 4 Stage (for episcopic illumination only)	○	○	○	○		○	
	Sliding Stage 2	○	○	○	○	○	○	○
Stands	Universal Table Stands G-US1/G-US2		○	○	○	○	○	○
	Universal Table Stand P		○	○	○	○	○	○
Others	P-THSS Teaching Head	○	○	○				
	P-IDT Drawing Tube	○	○	○				
	P-IBSS2 Beam Splitter	○	○	○				
	P-IBSD2 Beam Splitter	○	○	○				
Digital Cameras	See page 21	○	○	○				
Photomicrographic System	H-III	○	○	○				

○ : compatible
△ : adapter is required