



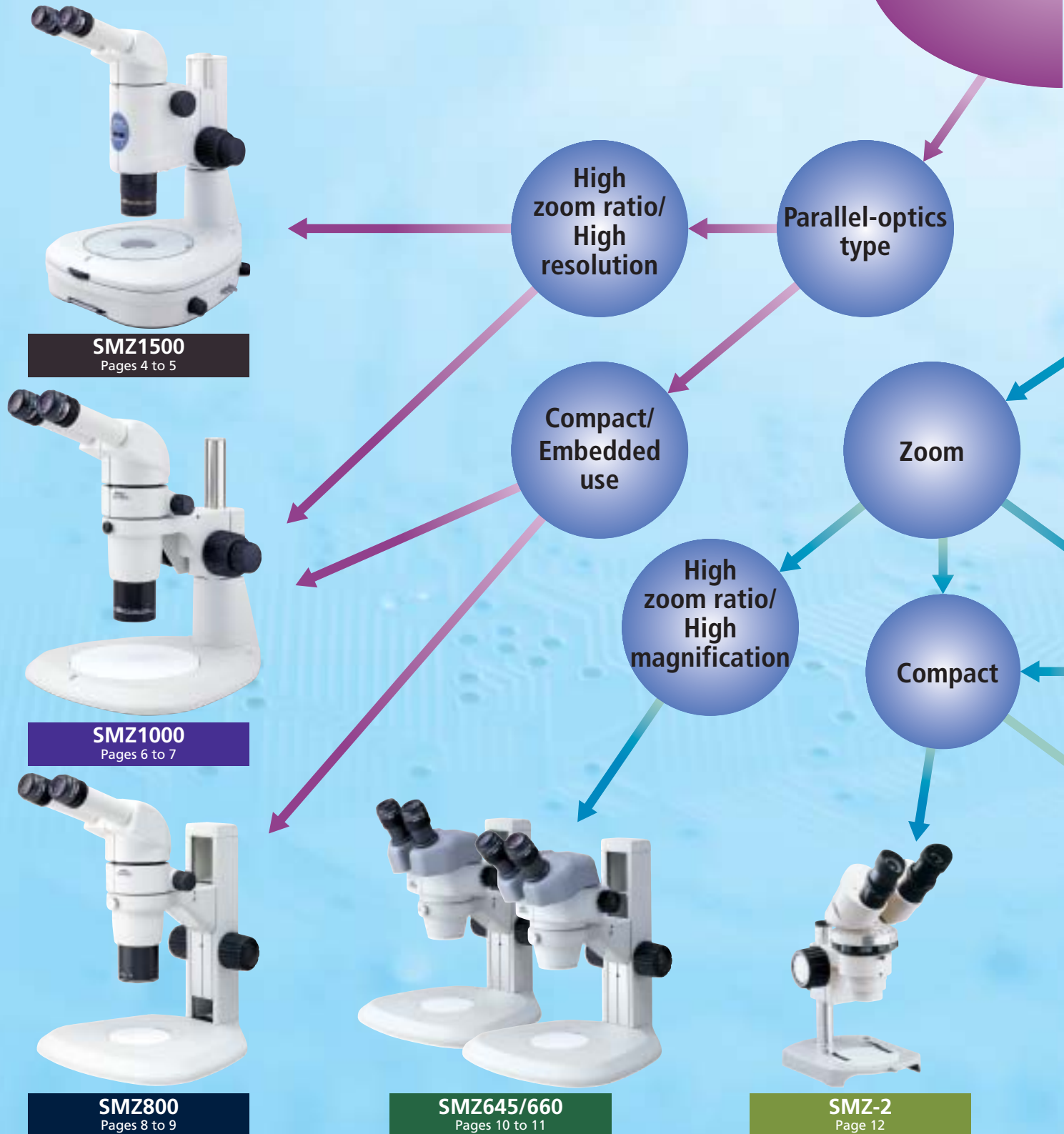
Stereoscopic Microscopes



Complete lineup delivers opti

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.

Image capture

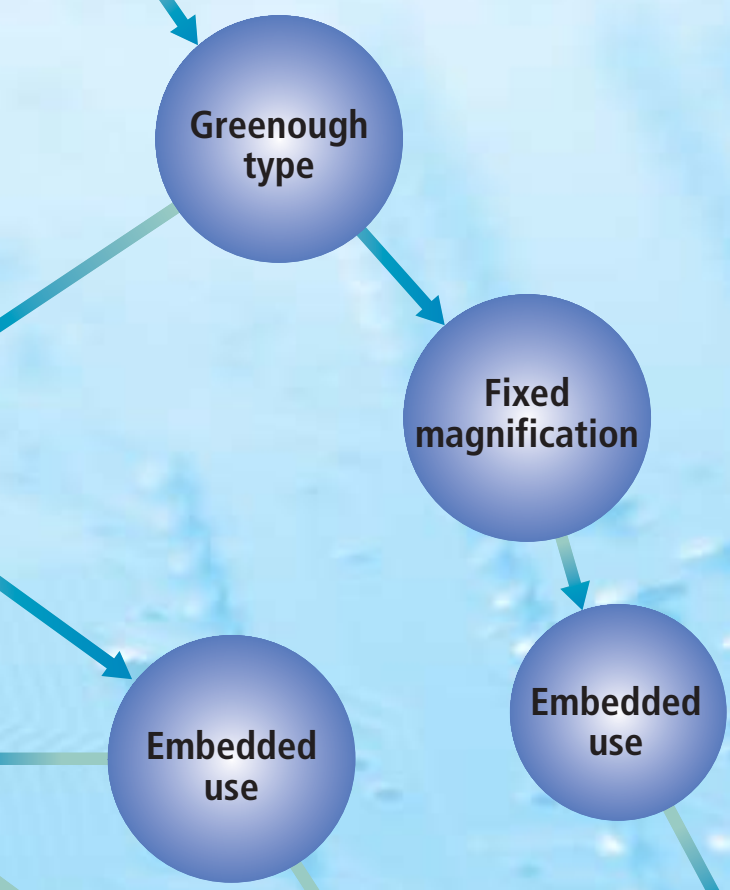


Optimal observation performance

Observation only

	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



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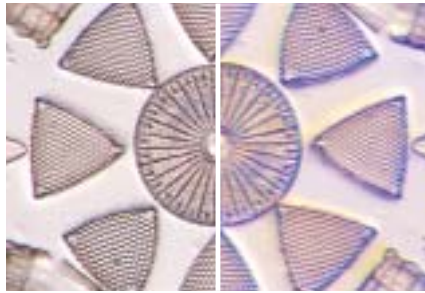
SMZ445/460
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SMZ-5
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A new standard for stereoscopic zoom microscopes— and ease of operation

- 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.



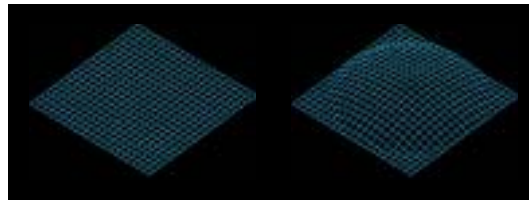
Diatom
Left: SMZ1500 with P-HR Plan Apo objective
Right: conventional model



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

*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.



DMZ15B-DSD

- 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

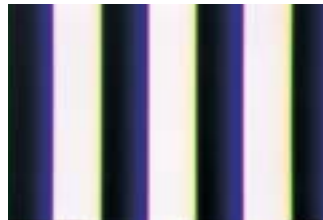
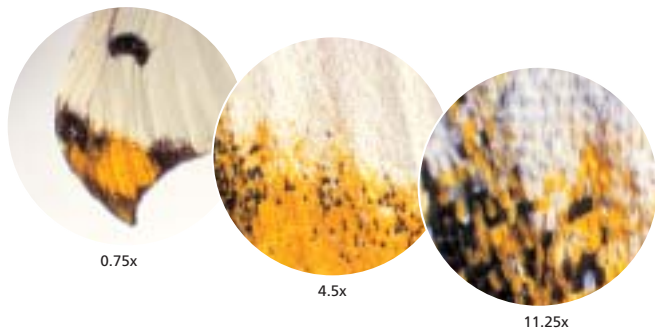


Image that exhibits chromatic aberration

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



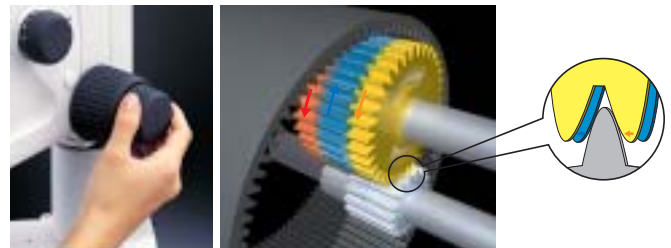
0.75x

4.5x

11.25x

- 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
P-HR Plan Apo 1.6x	24	11.25x	0.026
		0.75x	0.527
		4x	0.031
		8x	0.014
		11.25x	0.010

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

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

—superb optical performance

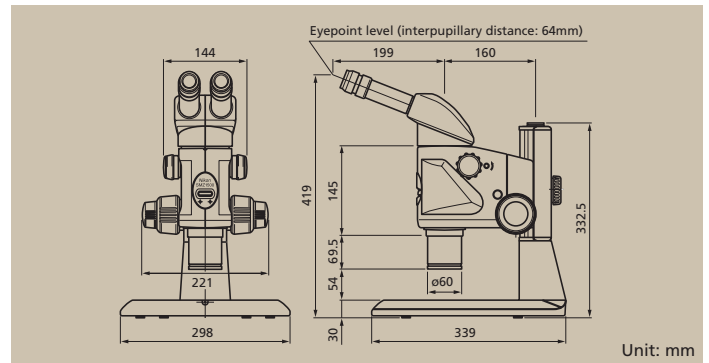
SMZ1500

Specifications

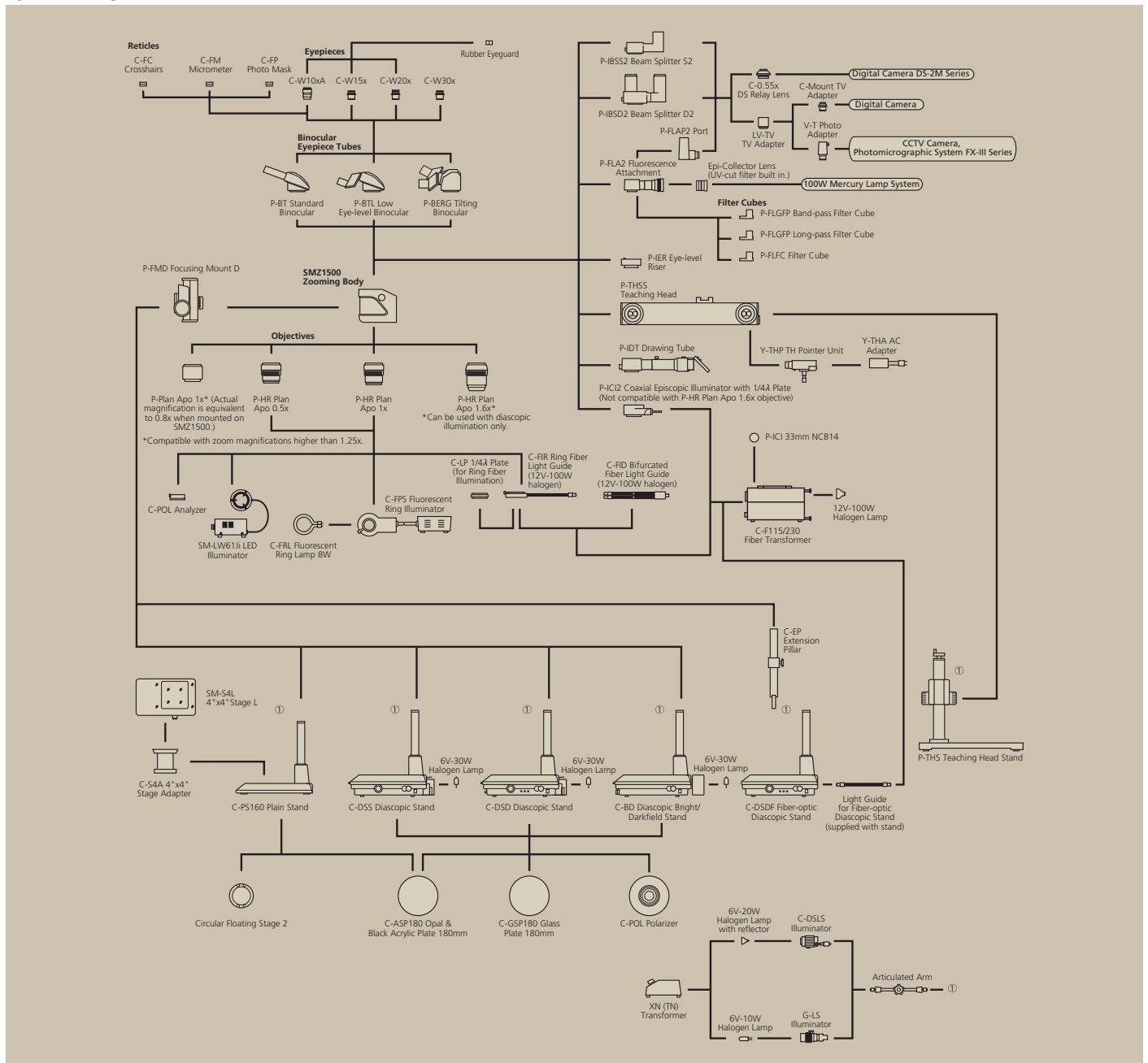
Optical system	Parallel-optics zoom system
Total magnification	3.75–540x (Depending on eyepiece and objective used.), 5.6–506x (When coaxial episcopic illuminator is attached.)
Eyepiece inclination	20° (Standard Binocular and Low Eye-level Binocular), 0°–30° (Tilting Binocular)
Interpupillary distance 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

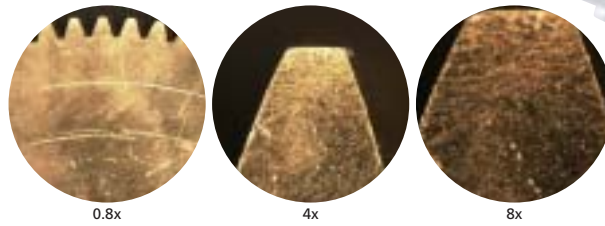


Unrivalled optical performance, system expandability

- The SMZ1000 features a large 10x zoom ratio, extending from 0.8x to 8x. This gives you a total magnification of 4x to 480x, depending on the combination of eyepiece and objective used. The 10x zoom lens eliminates the need to change lenses, allowing users to concentrate on observation.

- Nikon has developed a new objective featuring a high NA of 0.1 and a high resolving power of 300 lines/mm.

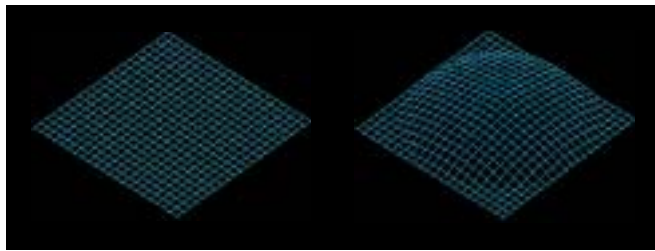
- Chromatic aberration and distortion in the lens that cause surface irregularities in the image are offset to a high degree. Now you can view stereoscopic images that appear undistorted in all their brilliant, true-to-life colors.



SMZ1000 Conventional model
Comparison of resolving power and chromatic aberration factors

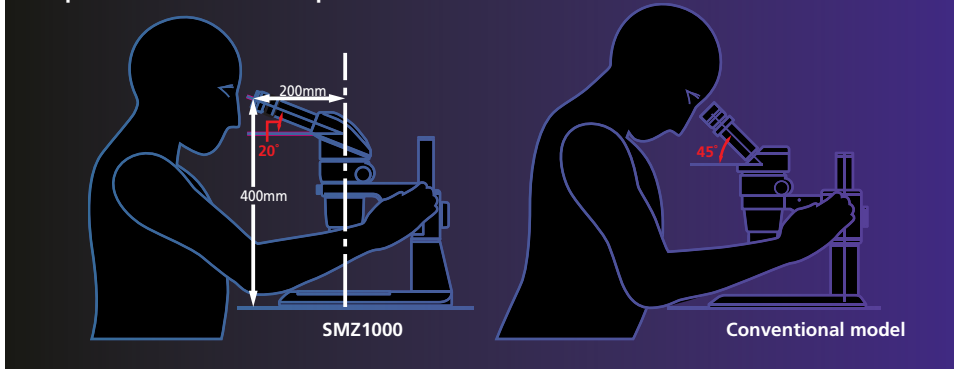


SMZ10B-DSD



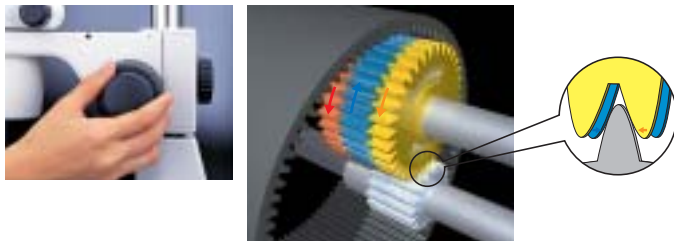
Distortion causes a globular effect even on a flat object.

Comparison of observation postures



- 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 the optimum eyepoint.

- The C-FMC Focusing Mount C 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 SMZ1000, 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-Plan Apo 0.5x	123.6	0.8x	4.886
		4x	0.378
		8x	0.181
P-Plan Apo 1x	70	0.8x	1.221
		4x	0.095
		8x	0.045
P-ED Plan 1.5x	44.5	0.8x	0.543
		4x	0.042
		8x	0.020
P-ED Plan 2x	32.5	0.8x	0.305
		4x	0.024
		8x	0.011

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

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

SMZ1000 plus ergonomic design

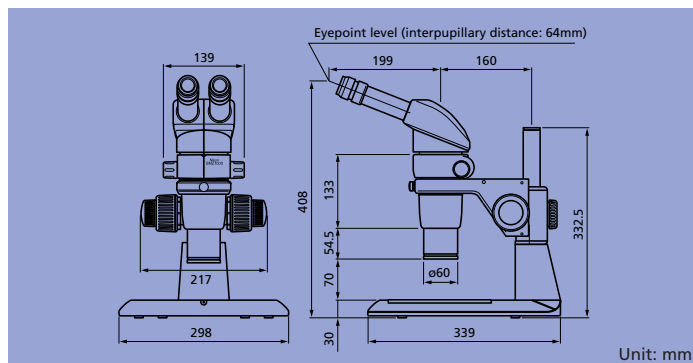
SMZ1000

Specifications

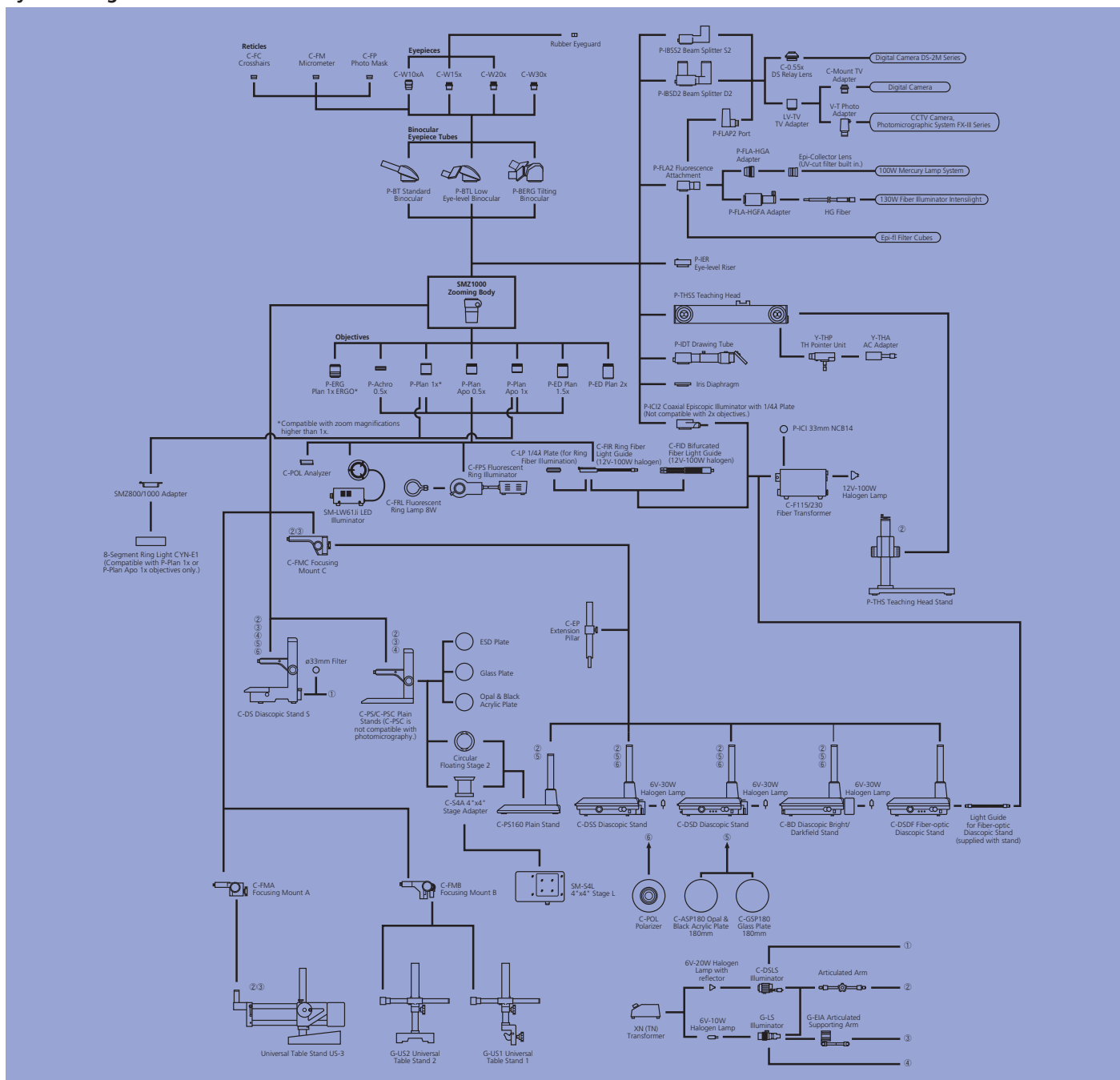
Optical system	Parallel-optics zoom system
Total magnification	4–480x (Depending on eyepiece and objective used.), 6–540x (When coaxial episcopic illuminator is attached.)
Eyepiece inclination	20° (Standard Binocular and Low Eye-level Binocular), 0°–30° (Tilting Binocular)
Interpupillary distance adjustment	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	0.8–8.0x
Zoom ratio	10 : 1
Objectives	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.

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

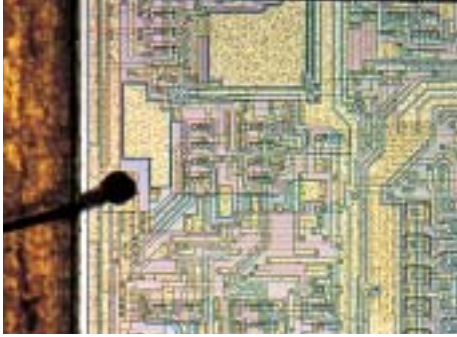
Dimensions (SMZ1000-1)



System diagram



Pursuing ergonomic design, image clarity and low c

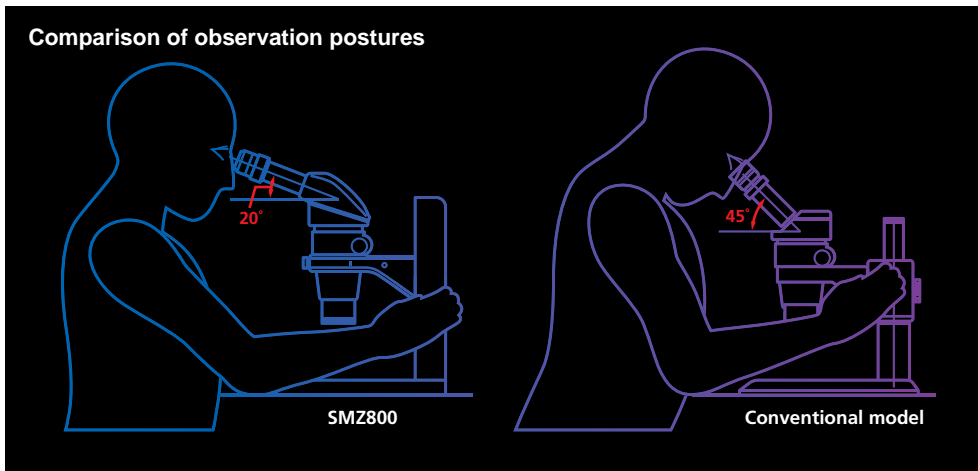


- Easy-to-use 6.3x zoom ratio (1–6.3x)
- New objectives feature high NA and high resolving power
- Chromatic aberration and distortion in the lens that cause surface irregularities in the image are offset to a high degree. Now you can view stereoscopic images that appear undistorted in all their brilliant, true-to-life colors.
- 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 the optimum eyepoint.



SMZ800-1

- With the ergonomic objective (Plan 1x ERGO), the instrument's eye level is adjusted without the magnification or working distance being changed.



Ergonomic objective can be extended or retracted to adjust eye level.

- To maximize the high performance of SMZ800, 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-Plan 1x	78	1x	0.782
		3x	0.132
		6.3x	0.059
P-Achro 0.5x	189	1x	3.127
		3x	0.529
		6.3x	0.237

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

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

m: total magnification

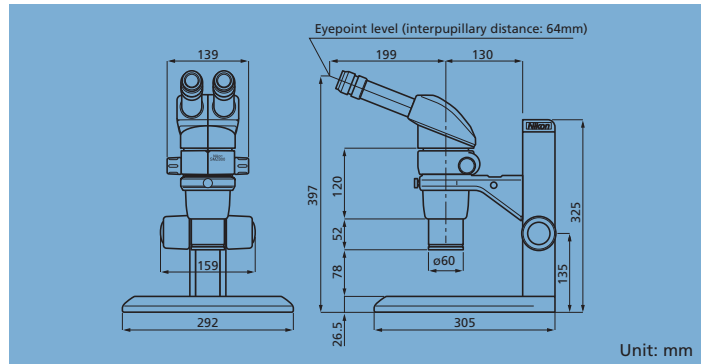
SMZ800

Specifications

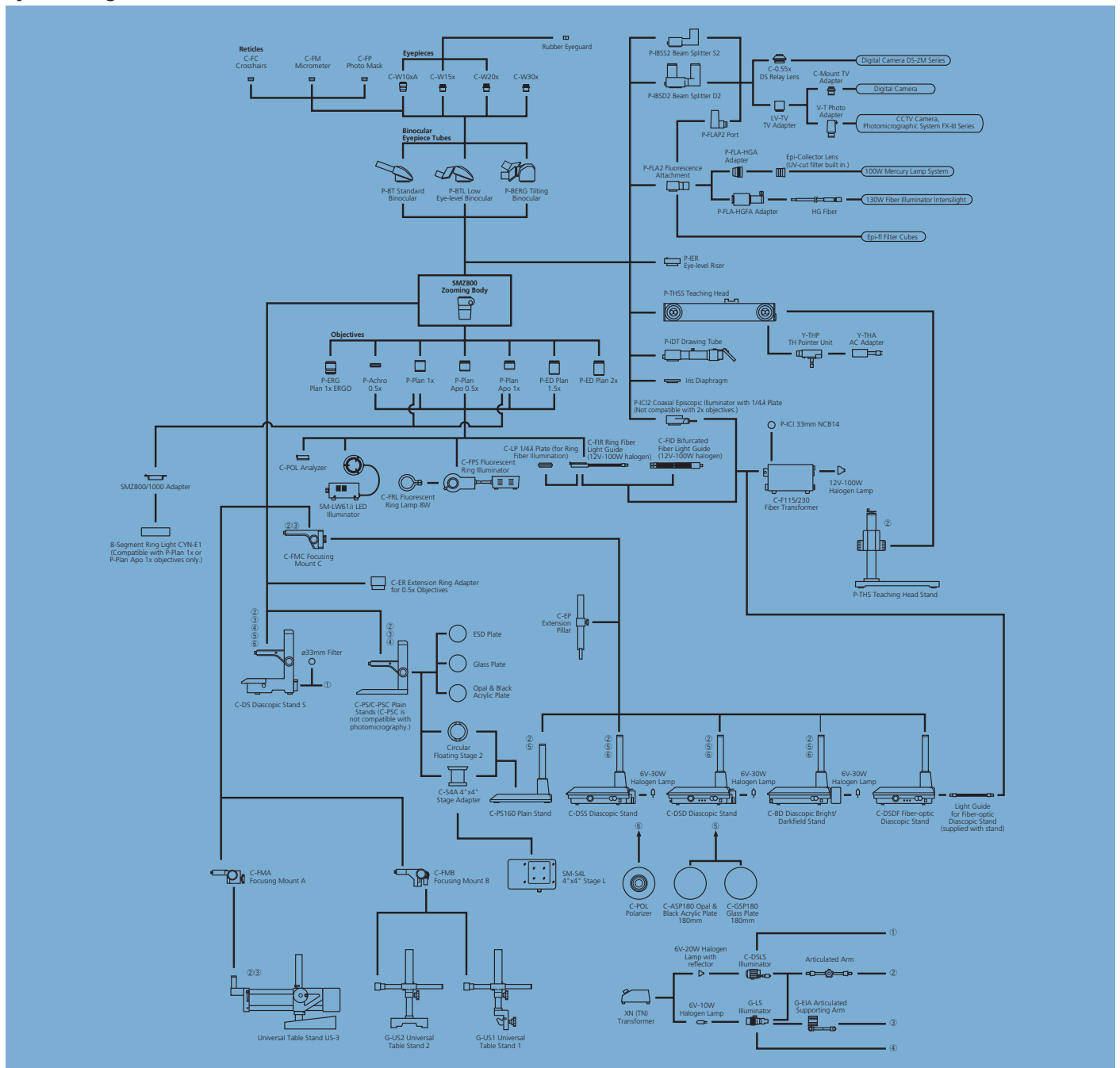
Optical system	Parallel-optics zoom system
Total magnification	5–378x (Depending on eyepiece and objective used.), 7.5–425x (When coaxial episcopic illuminator is attached.)
Eyepiece inclination	20° (Standard Binocular and Low Eye-level Binocular), 0°–30° (Tilting Binocular)
Interpupillary distance adjustment	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	1–6.30x
Zoom ratio	6.3 : 1
Objectives	P-Plan Apo 0.5x, 1x, P-ED Plan 1.5x, 2x, P-Plan 1x, P-Achro 0.5x, P-ERGO Plan 1x ERGO

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

Dimensions (SMZ800-1)

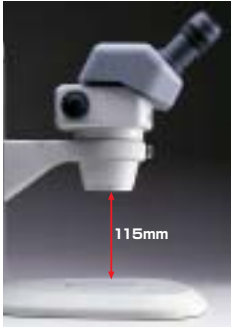


System diagram



Dramatically improved optical performance and handling

- 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.

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



- Low-position focus knob for quick, effortless focusing



New three "A" design Airtight

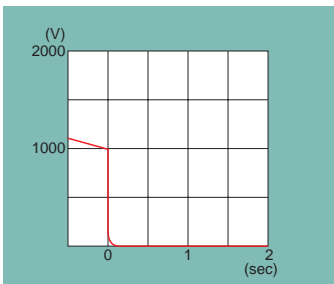
By making joints airtight, contamination from dust, oil, water and other contaminants is prevented.

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.



SMZ660-1

SMZ645-1

- 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

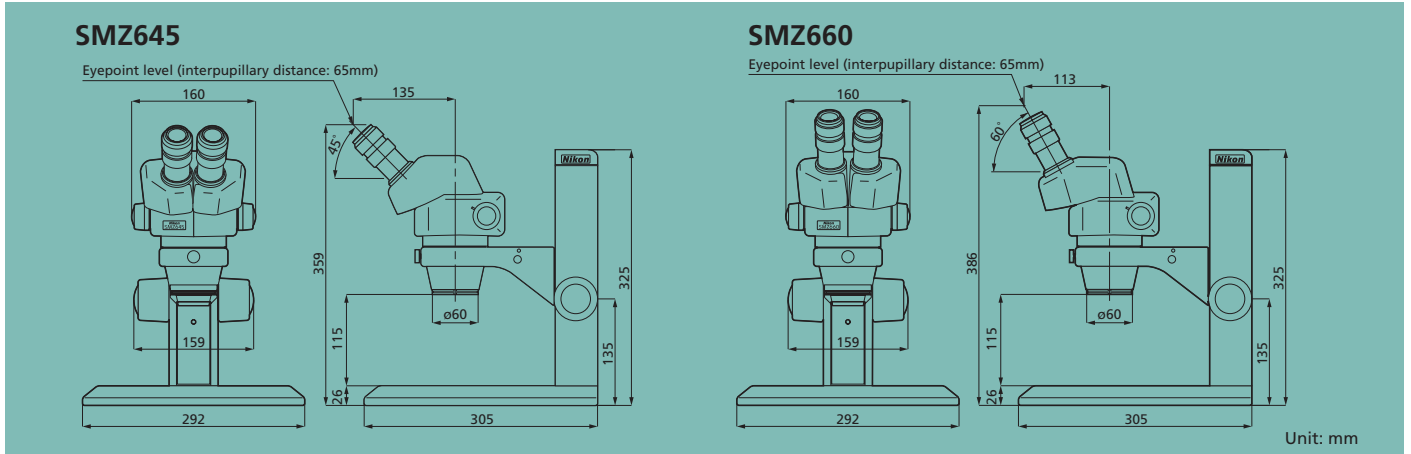
How to calculate focal depth (mm, when wavelength is 550nm)

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

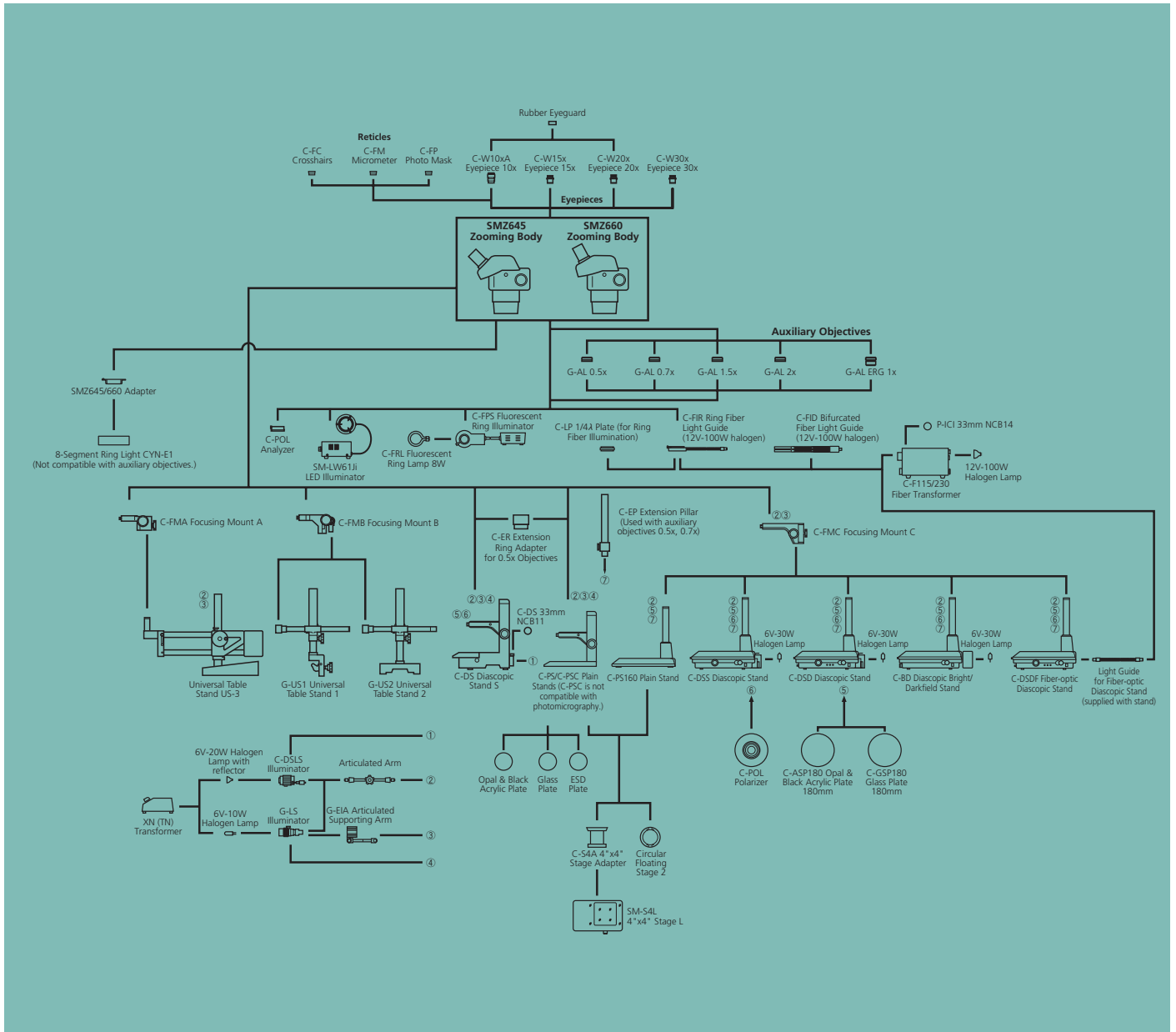
Specifications

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



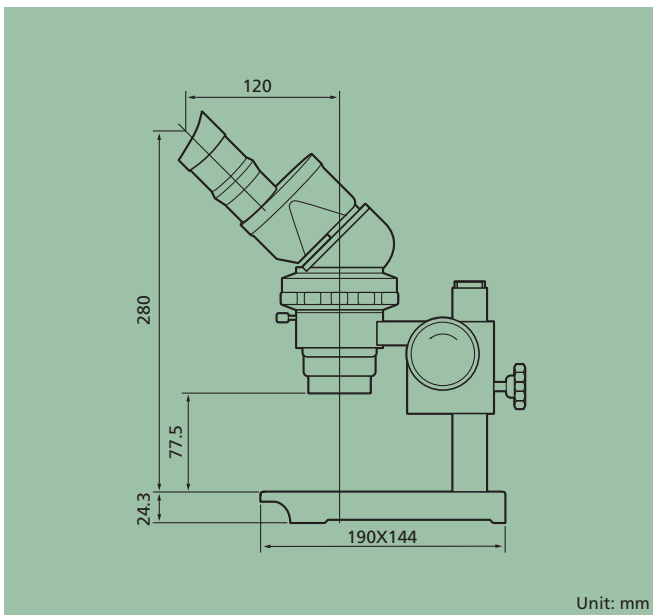
SMZ-2 (Clemmer is optional)

- 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



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

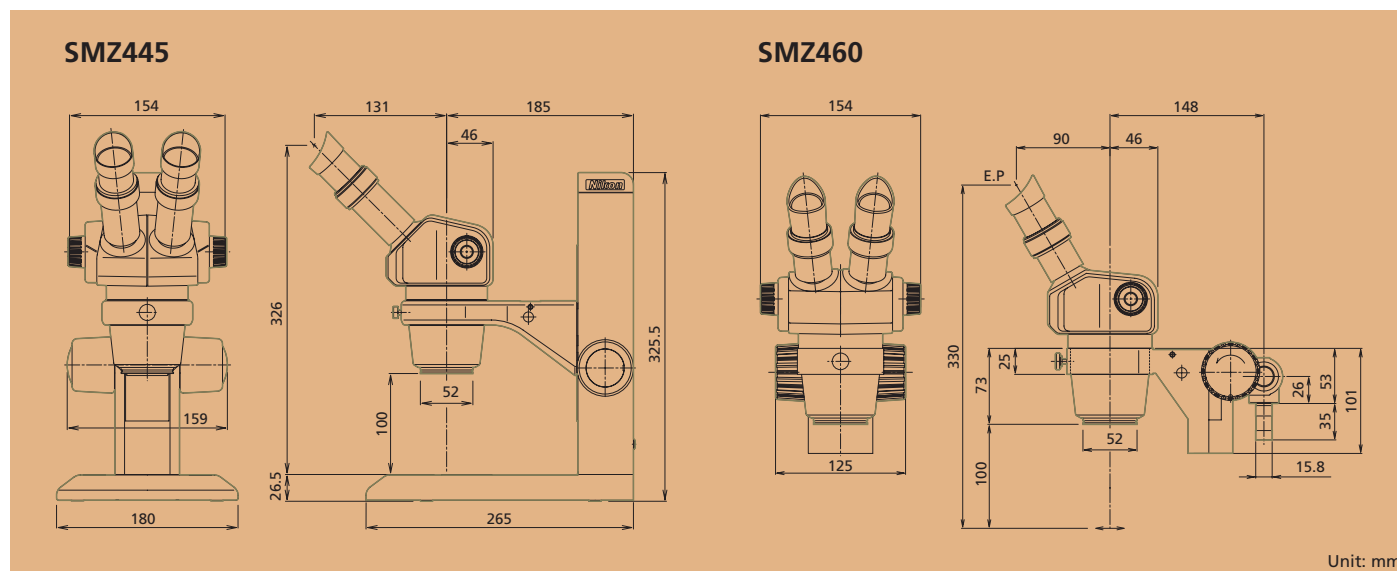
- Compact design with ease-of-use and high optical performance
- Lightweight optics thanks to the use of porro-mirrors
- ESD protection guards against electrostatic damage to samples.
- The SMZ445 has a 45° eyepiece tube inclination, and the SMZ460 has a 60° eyepiece tube inclination, which is ideal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



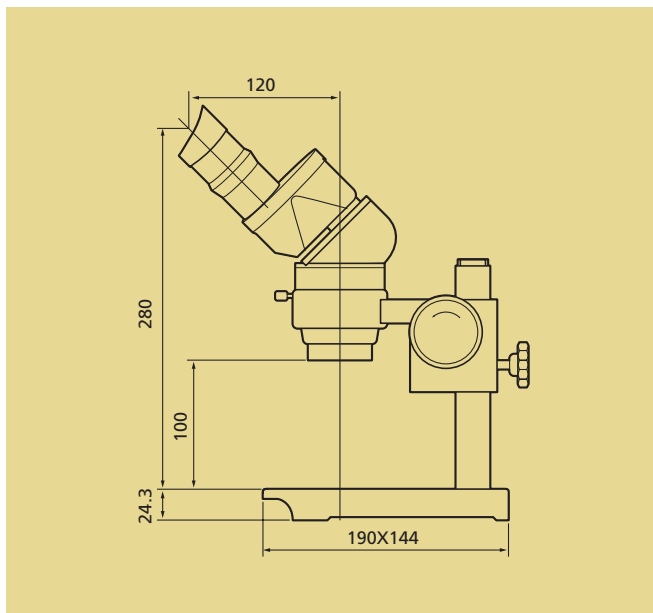
SMZ-2 (Clemmer is optional)

- 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 diascopic 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 SMZ1500 SMZ1000 SMZ800



(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.

Illumination Systems



SMZ1500 configured with P-IC12 Coaxial Episcope Illuminator

P-IC12 Coaxial Episcope Illuminator

This illuminator uses a 12V-100W fiber-optics light source to deliver bright illumination over the entire sample surface. The thickness of the $1/4\lambda$ 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

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

Accessories

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

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 diascopic 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 $\varnothing 180\text{mm}$ 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



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 * $\varnothing 45\text{mm}$ filter slot provided
Magnification	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

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-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

C-DS Diascopic Stand

This stand features a hand rest that ensures comfortable operation and a large-diameter stage glass for observation of large samples. Used in conjunction with 6V-20W halogen lamp.

SMZ1000 SMZ800 SMZ645/660
SMZ445/460



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) * $\varnothing 45\text{mm}$ 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 $\varnothing 40\text{mm}$.

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

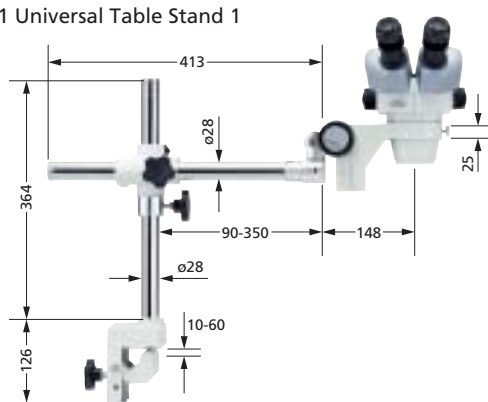
Universal Table Stands/Focusing Mounts

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

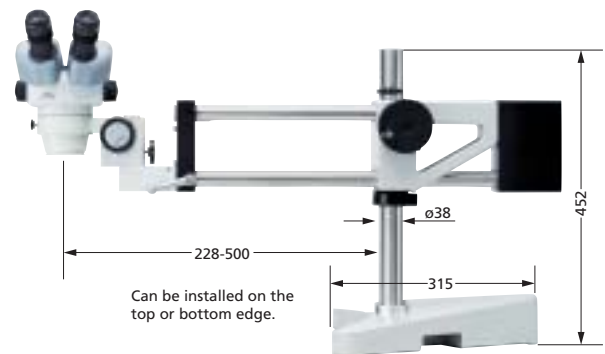
The image is a configuration sample with the SMZ645.

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

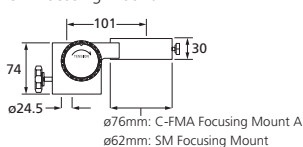
Model	G-US1	G-US2	P
Vertical cross travel	245mm		229mm
Horizontal cross travel	260mm		272mm
Weight (approx.)	4.4kg	23.0kg	30.5kg
C-FMA Focusing Mount A	—	—	○
C-FMB Focusing Mount B	○	—	—
C-FMC Focusing Mount C	—	—	—
SM Focusing Mount	○*	—	○
Use of photomicrographic equipment	—	—	○

○: Possible * G-USA Adapter is required

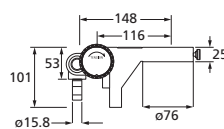
Focusing Mounts

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.

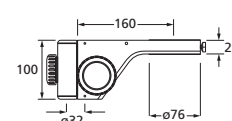
C-FMA Focusing Mount A
SM Focusing Mount



C-FMB Focusing Mount B



C-FMC Focusing Mount C



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%



SMZ1500 configured with P-IBSS2 Beam Splitter S2 and H-III-P Photomicrographic System



SMZ1500 configured with P-IBSD2 Beam Splitter D2, H-III-P Photomicrographic System, and CCTV camera

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.

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

Accessories

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

Photomicrographic System **SMZ1500** **SMZ1000** **SMZ800**

H-III

Compact and easy-to-operate photographic system. Nikon's swing-out prism offers fast shutter speeds and high contrast images without internal reflection. Covers a wide range of uses.



SMZ1000 configured with P-IBSD2 Beam Splitter D2, H-III-P Photomicrographic System, and CCTV camera

Specifications

Model	SMZ1500	SMZ1000	SMZ800
Optical system	Parallel-optics type (zooming type)		
Total magnification (Depending on eyepiece and objective used)	3.75–540x	4–480x	5–378x
(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		
Eyepiece inclination	20° (Standard Binocular and Low Eye-level Binocular), 0°–30° (Tilting Binocular)		
Interpupillary distance adjustment	48–75mm		
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)		
Zoom range	0.75–11.25x	0.8–8.0x	1–6.3x
Zoom ratio	15 : 1	10 : 1	6.3 : 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.)	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
Auxiliary objectives	—		
Working distance (with standard configuration or 1x objective)	54mm	70mm	78mm
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)

Accessory compatibility

		SMZ1500	SMZ1000	SMZ800	SMZ645/660	SMZ-2	SMZ445/460	SM-5
Illumination Systems	P-ICI2 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.

	SMZ645/660	SMZ-2	SMZ445/460	SM-5
	Greenough type (zooming type)			Fixed type
	4–300x	4–120x	4–70x (SMZ445), 3.5–60x (SMZ460)	10–60x
	Fixed			
	45° (SMZ645), 60° (SMZ660)	45°	45° (SMZ445), 60° (SMZ460)	45°
	52–75mm	56–75mm	54–75mm	56–75mm
		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)
	0.8–5x	0.8–4x	0.8–3.5x (SMZ445), 0.7–3x (SMZ460)	—
		5 : 1	4.4 : 1 (SMZ445), 4.3 : 1 (SMZ460)	—
	—			2x (fixed)
	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)
	115mm	77.5mm	100mm	
	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)

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

○ : compatible

△ : adapter is required

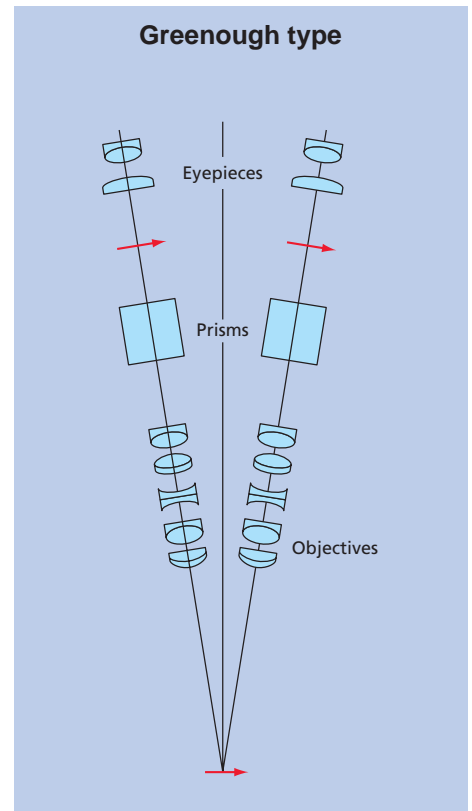
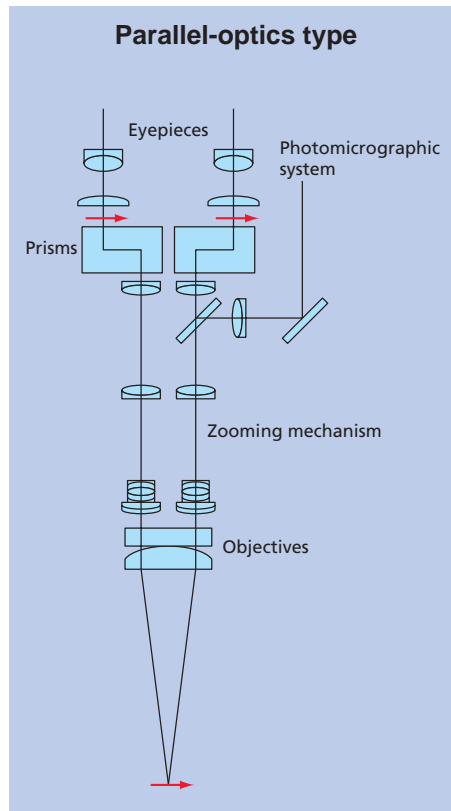
Optical Systems

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.



Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. June 2007.

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