

Research Stereo Microscope

SMZ25/SMZ18

Evolutionary stereo microscope

Nikon has developed an all-new stereo microscope that features a large zoom ratio of 25:1, high resolution and exceptional fluorescence transmission capability. The new stereo microscope meets the increasing needs for imaging systems that span spatial scales from single cells to whole organisms.

World's widest zoom range and highest resolution for a stereo microscope

- First stereo microscope to offer a 25:1 zoom range (SMZ25)
- Both eye paths boast numerical apertures (NA) of up to 0.156, using the SHR Plan Apo 1x objective and SMZ25

Automation and digital imaging

- Motorized focus and zoom operation (SMZ25)
- Imaging Software NIS-Elements enables the use of multiple imaging, processing and analysis modalities, including z-stack capture, time-lapse imaging and EDF image generation



SMZ25 Motorized zoom model with the highest zoom ratio and resolution in the SMZ series

Bright, high-contrast fluorescent images

- Fly-eye lens ensures uniform brightness over the entire field of view even at the lowest magnifications
- Breakthroughs in optical design mean significantly improved signal to noise ratio and crystal clear fluorescent images

Easy to use

- User-friendly remote control (SMZ25)
- Easy-to-operate slim LED DIA base with OCC illumination
- Wide range of illuminators and accessories that accommodate a variety of observation methods



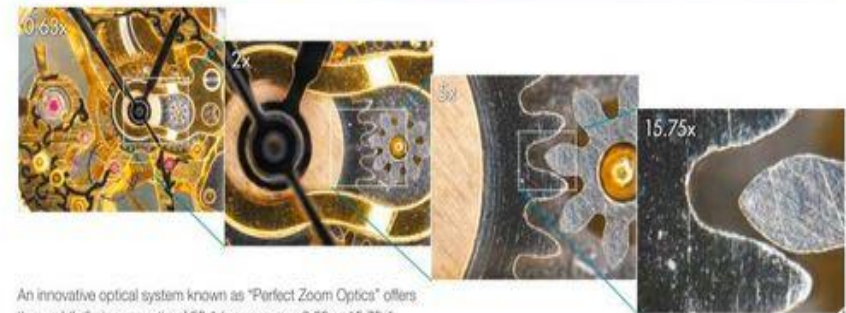
SMZ18 Manual zoom model providing advanced optical performance and incredibly bright fluorescence at an attractive price

| Model | SMZ25 | SMZ18 |
|-----------------------|--|---|
| Type | Motorized zoom | Manual zoom |
| Observation | Brightfield/Darkfield/Fluorescence/Simple polarizing | |
| Zoom ratio | 25:1 | 18:1 |
| Magnification range | 0.63x - 15.75x ¹ | 0.75x - 13.5x ² (with 0.75/1/2/3/4/5/6/8/10/12/13.5x click stops) |
| Maximum magnification | 315x ¹ | 270x ¹ |
| Maximum FOV | ø70 mm ² | ø59 mm ² |
| Maximum NA of | 0.312 ² | 0.3 ² |

¹: Using SHR Plan Apo 2x/ C-W10x8 ²: Using SHR Plan Apo 0.5x/ C-W10x8 ³: Using SHR Plan Apo 2x

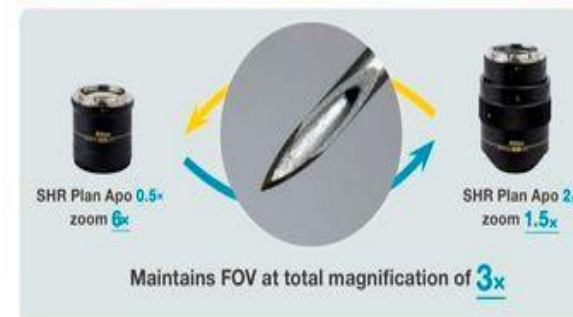
Remarkable resolution and the world's widest zoom range

Dynamic zoom ratio of 25:1 SMZ25



An innovative optical system known as "Perfect Zoom Optics" offers the world's first zoom ratio of 25:1 (zoom range: 0.63x - 15.75x"; "as of May 2013). The SMZ25 can seamlessly capture the entire dish while simultaneously delivering microscopic details.

Auto Link Zoom (ALZ) supports seamless viewing at different scales SMZ25



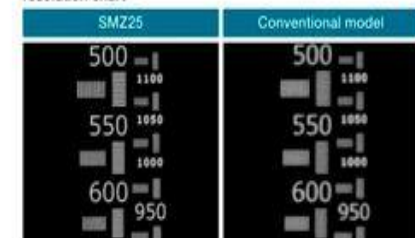
ALZ automatically adjusts the zoom factor to maintain the same field of view when switching objective lenses. This function enables seamless switching between whole organism imaging at low magnifications and detailed imaging at high magnifications.

Superior resolution never before seen on a stereo microscope SMZ25 SMZ18

Newly developed SHR (Super High Resolution) Plan Apo series objective offers a resolution of 1100LP/mm (observed value, using SHR Plan Apo 2x at maximum zoom). The 0.5x, 1x, or 1.6x lower magnification objectives deliver a bright field of view and brilliant images with true-to-life colors.



Comparison of resolution and color aberration by resolution chart



The Next Revolution in Microscopy

A Giant Step Forward in Stereo Microscopy

Nikon offers a broad range of stereo microscopes and accessories, including a research stereo microscope system with the world's highest zoom ratio, superb resolution and bright fluorescence imaging. Also features other versatile parallel-optics type models suitable for various applications and Greenough-type models that are user-friendly and affordable.

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| | SMZ25 | SMZ18 | SMZ1270/ 1270i | SMZ800N |
|--|--|--|---|---|
| Optical system | Parallel-optics type | | | |
| |  |  |  NEW |  NEW |
| Zoom ratio | 25:1 | 18:1 | 12.7:1 | 8:1 |
| Zooming range | 0.63-15.75x | 0.75-13.5x | 0.63-8x | 1-8x |
| Total magnification*1 (with standard set*2) | 3.15-945x (6.3-157.5X) | 3.75-810x (7.5-135X) | 3.15-480x (6.3-80X) | 5-480x (10-80X) |
| Working distance*3 | 60mm | 60mm | 70mm | 78mm |
| Image capture | ○ | ○ | ○ | ○ |
| System expandability | ○ | ○ | ○ | ○ |
| Embedded use | — | — | ○ | ○ |

| | SMZ745/SMZ745T | SMZ445/ SMZ460 | SMZ-2 | |
|--|--|--|--|--|
| Optical system | Greenough type | | | Optical system |
| |  |  |  | |
| Zoom ratio | 7.5:1 | 4.4:1 / 4.3:1 | 5:1 | Zoom ratio |
| Zooming range | 0.67-5x | 0.8-3.5x / 0.7-3x | 0.8-4x | Zooming range |
| Total magnification*1 (with standard set*2) | 3.35-300x (6.7-50X) | 4-70x (8-35X) 3.5-60x (7-30X) | 4-120x (8-40X) | Total magnification*1 (with standard set*2) |
| Working distance*3 | 115mm | 100mm | 77.5mm | Working distance*3 |
| Image capture | ○ (SMZ745T) | — | — | Image capture |
| System expandability | — | — | — | System expandability |
| Embedded use | ○ | ○ | ○ | Embedded use |

*1 Depends on the combination of eyepiece and objective lens

*2 With a 10x eyepiece and a 1x objective

*3 With a 1x magnification without auxiliary objective

Parallel-optics type

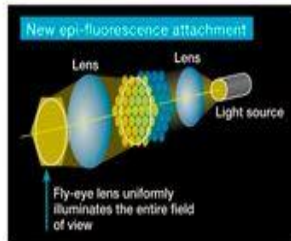
Bright, high-contrast fluorescent images SMZ25 SMZ18

Enhanced brightness and uniform illumination in a low magnification range

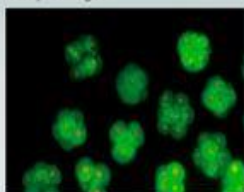
The SMZ25 series is the first stereo microscope in the world to use a fly-eye lens on an epi-fluorescence attachment. This ensures bright, uniform illumination even at low magnifications across a large field of view.

Improved S/N ratio and crystal clear fluorescent images thanks to an improved optical system

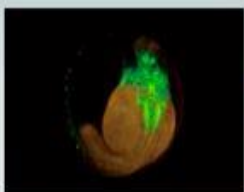
Nikon has succeeded in improving the signal and reducing noise in fluorescent images by using a short-wavelength, high-transmission Fluor lens. This enables observations of cell division and samples with weak fluorescence, both of which are difficult using conventional stereo microscopes.



Sample images



Fertilized mouse egg
Image courtesy of Kazuo Yanagita, Ph.D., Center for Genetic Analysis of Biological Responses, Research Institute for Microbial Diseases, Osaka University



2 days old Transgenic Zebrafish embryo, Tg (mlt-GFP)
Using SRH Plan Apo 1x at zoom magnification of 6x with SMZ25
Image courtesy of Hisaya Kakegawa, Ph.D., Laboratory for Developmental Gene Regulation, Developmental Brain Science Group, RIKEN Brain Science Institute



Board

Automation and digital imaging SMZ25 SMZ18

A wide range of digital imaging capabilities with the Digital Sight series and NIS-Elements imaging software

Easily obtain the information required, such as Z drive position, zoom factor, objective lens, filter cube and LED DIA brightness, by using the Digital Sight series and NIS-Elements or Digital Sight series DS-L3 together with the microscope.



| Detected observation condition/available control | ○: Detector and control of observation condition possible | | ○: Detection of observation condition possible | |
|---|--|---|--|---|
| | SMZ25 | | SMZ18 | |
| | <ul style="list-style-type: none"> Motorized focus unit Motorized epi-fluorescence set (control box A) | | <ul style="list-style-type: none"> Manual focus unit Manual epi-fluorescence set (relay box and control box B) | |
| Zoom magnification | ○ | ○ | ○ | ○ |
| Focusing | ○ | ○ | — | — |
| Objective (with nosepiece) | ○ | ○ | ○ | ○ |
| Diasonic LED illumination stand (ON/OFF, light intensity control) | ○ | ○ | ○ | ○ |
| Fluorescence illuminator (light intensity control) | ○ | ○ | ○ | ○ |
| Filter cube | ○ | ○ | ○ | ○ |

For other combinations, please confirm with Nikon.

* With NIS-Elements F (free package), functions above are not available. Use NIS-Elements D/B/Ac.

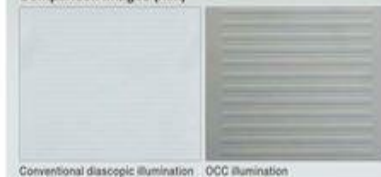
Improved observation efficiency

Easy-to-use OCC illumination SMZ25 SMZ18

The new LED DIA Base with built-in OCC illuminator generates minimal heat, consumes little power and has a long life. The illuminator also enhances the contrast of uneven surfaces, such as those of film.



Comparison images (film)



Conventional diasonic illumination · OCC illumination

What is OCC illumination?

OCC stands for oblique coherent contrast, a form of oblique lighting method developed by Nikon. Compared to conventional diasonic illumination that illuminates directly from below, OCC illumination applies coherent light to samples in a diagonal direction, adding contrast to colorless and transparent sample structures.

The OCC illuminator can be controlled using a slide lever. Thanks to scales on the slide lever, the user can save and reproduce desired illumination levels. In addition, an OCC plate can be inserted into the illumination unit from the front and rear sides, so images with different shadow direction can be observed.

User-friendly remote control SMZ25

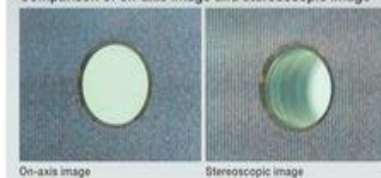
The all-new remote control provides easy access to zoom and focus controls and is designed for both right- and left-hand use. The remote control contains an LCD monitor with an adjustable backlight that provides at-a-glance information about zoom factor, objective lens, filter cube and LED DIA brightness.



On-axis imaging for digital images SMZ25 SMZ18

Easily switch between stereo position (stereoscopic view) and mono position (on-axis view) when using the P2-RN12 Intelligent Nosepiece by simply moving the objective lens.

Comparison of on-axis image and stereoscopic image



On-axis image

Stereoscopic image

Wide range of dedicated accessories for SMZ25/SMZ18 for all types of observation

Base Unit, Focus Unit, Stand/Focus Mount

Base Unit

Nikon has improved ease of use by moving the controls to the front of the base, including the brightness adjustment dial and the on/off switch.

Fiber DIA base

The Fiber DIA base features condenser lenses that can be switched between low and high magnifications. Furthermore, the OCC illumination system allows high-contrast illumination.



1 P2-DBF Fiber Dioscopic Illumination Base

Slim Bases

The slimmer LED DIA Base and Plain Base help increase efficiency of sample manipulation by bringing the level of the sample closer to the table.



2 P2-PB Plain Base

Focus Unit

The focus unit is combined with the base unit. Choose from either a manual or motorized focus unit.



1 P2-MFU Motorized Focus Unit



2 P2-FU Focus Unit

Stand/Focus Mount SMZ18

SMZ18 can be mounted on various compact stands using a focus mount.



1 P2-FM2N Focus Mount
2 P2-FS32 Plain Stand

3 P2-DBF32 Fiber Dioscopic Illumination Stand

4 P2-DBL32 LED Dioscopic Illumination Stand

SHR Plan Apo Objective Series

The SHR Plan Apo series features higher NA, wider field of view and superior flatness and color aberration correction. These objective lenses can be seamlessly switched because all magnifications have the same parfocal distance. The new bayonet mount design allows lenses to be safely and easily removed.

| | | SHR Plan Apo 0.5x | SHR Plan Apo 1x | SHR Plan Apo 1.6x | SHR Plan Apo 2x |
|------------------|-------|-------------------|-----------------|-------------------|------------------|
| Maximum NA | SMZ25 | 0.078 | 0.156 | 0.25 | 0.321 |
| | SMZ18 | 0.075 | 0.15 | 0.24 | 0.3 |
| Working distance | | 71 mm | 60 mm | 30 mm | 20 mm |
| Correction ring | | - | - | - | 3 mm water depth |
| Wavelength | | 380-700 nm | | | |



1 P2-SHR Plan Apo 0.5x
2 P2-SHR Plan Apo 1.6x
3 P2-SHR Plan Apo 1x
4 P2-SHR Plan Apo 2x

Tubes

Choose from two types of tilting trinocular tube and one type of low eyelevel trinocular tube. All tubes have a camera port for seamless integration with the Digital Sight series.



1 P2-TR100 Trinocular Tilting Tube (eyepiece port 100.0 / 0.100)

2 P2-TR100 Trinocular Tilting Tube (eyepiece port 100.0/50.0)

3 P2-TL100 Trinocular Tube L (eyepiece port 100.0 / 0.100)

Nosepiece/Focus Mount Adapter

Both single and double nosepieces are available.



1 P2-FN2 Intelligent Nosepiece

2 P2-FM Focus Mount Adapter

Stage

The stage features an XY stroke of 6x4" inches (150 mm x 100 mm) and can be attached to any of the bases, making it effective for capturing large images when used in combination with imaging software NIS-Elements. A sliding stage and tilting stage are also available. *Limited Y travel with 32 mm column bases.



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