Stereo Microscopes

The World Leading Stereo Microscope Range
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.

Index

Stereo Microscopes
- SMZ25, SMZ18 .......................... 4
- SMZ1270/1270i, SMZ800N .......... 8
- SMZ445/745T .......................... 12
- SMZ445/460, SMZ-2 .................. 13

Accessories (for SMZ25, SMZ18)
- Base Unit, Focus Unit, Stand/Focus Mount 14
- Objectives, Tubes, Nosepiece/Focus Mount Adapter, Stage 15
- Controller, Darkfield Observation Accessory, Polarizing Observation Accessory, Epi-fluorescence Set 16
- Fiber Illuminator Set, Coaxial Illuminator, Ring LED Illuminator 17

Accessories (for SMZ1270/1270i, SMZ800N, SMZ445/745T, SMZ445/460, SMZ-2)
- Objectives, Auxiliary Objectives 18
- Nosepieces, Tubes, Eye-level Riser, Intermediate Tubes 19
- Stages, Observation Attachments 20
- Illumination Systems 21
- Stands 22
- Universal Table Stands/Focusing Mounts 23

Specifications/System Diagrams
- System Diagrams (SMZ25/18) 24
- Specifications (SMZ25/18) 25
- System Diagrams (SMZ1270/1270i/800N, SMZ745/745T) 26
- Specifications 28

Specifications/System Diagrams
- System Diagrams (SMZ25/18) 24
- Specifications (SMZ25/18) 25
- System Diagrams (SMZ1270/1270i/800N, SMZ745/745T) 26
- Specifications 28

Zoom ratio
- 25:1
- 18:1
- 12.7:1
- 8:1

Zooming range
- 15-15x
- 0.75-13.5x
- 0.63-8x
- 1-8x

Total magnification*1 (with standard set*2)
- 3.15-945x
- 3.75-810x
- 3.15-480x
- 5-480x

Working distance*3
- 60mm
- 60mm
- 70mm
- 78mm

Image capture
- ○
- ○
- ○
- ○

System expandability
- ○
- ○
- ○
- ○

Embedded use
- ○
- ○
- ○
- ○

Optical system
- Parallel-optics type
- Greenough type

SMZ445/SMZ745T
- 7.5:1
- 0.67-5x
- 3.35-300x
- 115mm

Zooming range
- 0.67-5x
- 0.8-3.5x / 0.7-3x
- 3.5-60x (7-30x)
- 17.5mm

Total magnification*1
- 3.35-300x
- 4-70x / 8-35x
- 3.5-60x (7-30x)
- 17.5mm

Working distance*3
- 60mm
- 70mm
- 78mm
- 17.5mm

Image capture
- ○
- ○
- ○
- ○

System expandability
- ○
- ○
- ○
- ○

*1 Depends on the combination of eyepiece and objective lens
*2 With a 1x magnification without auxiliary objective
*3 With a 10x eyepiece and a 1x objective

Image courtesy of Julie C. Canman, Ph.D., Columbia University
**Newly developed SHR (Super High Resolution) Plan Apo series objectives offers a resolution of 1100LP/mm (observed value, using SHR Plan Apo 2x at maximum zoom).**

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

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

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

### Evolutionary stereo microscope
Nikon has developed a stereo microscope that features a large zoom ratio of 25:1, high resolution and exceptional fluorescence transmission capability. These models meet 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

### 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

### Automation and digital imaging
- Motorized focus and zoom operation (SMZ25)
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### 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

### Superior resolution never before seen on a stereo microscope
- Newly developed SHR (Super High Resolution) Plan Apo series objectives 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. All the SHR lenses are perfect with each other. When used together with the accessory nosepiece, refocusing after a lens change will not be needed.

### Auto Link Zoom (ALZ) supports seamless viewing at different scales
- 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.

### Remarkable resolution and the world’s widest zoom range
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). The SMZ25 can seamlessly capture the entire dish while simultaneously delivering microscopic details.

### Comparison of resolution and color aberration by resolution chart
- Comparison of resolution and color aberration between SMZ25 and Conventional models.
**Bright, high-contrast fluorescent images**

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 to observe and record images using conventional stereo microscopes.

**Automated digital imaging**

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 together with the microscope.

<table>
<thead>
<tr>
<th>Detected observation condition/available control</th>
<th>Detection and control of observation condition possible</th>
<th>Detection and control of observation condition possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zoom magnification</td>
<td>[SMZ25 + NIS-Elements] Motorized focus unit</td>
<td>SMZ18 + NIS-Elements Manual focus unit</td>
</tr>
<tr>
<td>Focusing</td>
<td>Motorized objective lens</td>
<td>Manual objective lens</td>
</tr>
<tr>
<td>Objective (with nosepiece)</td>
<td>Motorized epi-fluorescence set (control box A)</td>
<td>Manual epi-fluorescence set (relay box and control box B)</td>
</tr>
<tr>
<td>Diascopic LED illumination stand (ON/OFF, light intensity control)</td>
<td>[SMZ25 + NIS-Elements] Diascopic LED illumination set (control box A)</td>
<td>SMZ18 + NIS-Elements Manual epi-fluorescence set (relay box and control box B)</td>
</tr>
</tbody>
</table>

For other combinations, please consult Nikon. With NIS-Elements D/Br/Ar, S and T functions above are not available. Use NIS-Elements D/Br/Ar.

**Improved observation efficiency**

**Easy-to-use OCC illumination**

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**

The 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**

Easily switch between stereo position (stereoscopic view) and mono position (on-axis view) when using the P2-RNI2 Intelligent Nosepiece by simply moving the objective lens.

**Sample images**

- **Perifused mouse egg**
  - Image courtesy of Kazuo Yamagata, Ph.D., Center for Genetic Analysis of Biological Responses, Research Institute for Microbial Diseases, Osaka University.
- **2 days old Therapeutic Zebrafish embryos, Tg isl1-GFP**
  - Image courtesy of Hisaya Kakinuma, Ph.D., Laboratory for Developmental Gene Regulation, Developmental Brain Science Group, RIKEN Brain Science Institute.
- **Fertilized mouse egg**
  - Image courtesy of Kazuo Yamagata, Ph.D., Center for Genetic Analysis of Biological Responses, Research Institute for Microbial Diseases, Osaka University.

**What is OCC illumination?**

OCC stands for oblique coherent contrast, a form of oblique lighting method developed by Nikon. Compared to conventional diascopic 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.
Parallel-optics type

SMZ1270/1270i
SMZ800N

Incredible sharpness throughout a wide magnification range

These versatile stereo microscopes provide both excellent optical performance, such as high-magnification, high-zoom ratio and high-resolution images, and advanced operability. The expandability of parallel optics makes these models suitable for a wide range of applications.

Highest-in-class zoom ratio

- Highest-in-class zoom ratio of 12.7:1 (0.63 – 8x) with SMZ1270/1270i
- New WF series objectives optimized for wide viewfield observation at low magnification

High-quality images

- High-level chromatic aberration correction provides sharp images throughout the viewfield.

Expandable with a wide range of accessories

- A wide range of accessories are available, including eyepiece tubes and stands that are equal to superior specification stereo microscope models

Easy to get results

- Automatically detects magnification data in combination with the digital camera control unit (SMZ1270i only)
- Nosepiece offers both widened magnification range and on-axis imaging
- Eyepiece tubes with various inclination angles and slim-type stands minimize user fatigue during observation

High-quality images

- Apochromat optics have been adopted for the lenses in the SMZ1270/1270i zoom body and semi-apochromat optics in the SMZ800N to achieve high-level chromatic aberration correction. They provide sharp images without blur or color fringe.

Wide field objectives

The WF series objectives offer uniformly bright images even at low magnification and wide viewfield observation with SMZ1270/1270i. In addition, a 0.75x objective is now available, expanding the lineup of low magnification objectives.

Wide zoom range

The SMZ1270/1270i offers the highest-in-class zoom ratio of 12.7x (0.63 – 8x). It offers both low magnification wide viewfield observation of the whole of a 35 mm petri dish* during screening and high-magnification observation of minute cell structures

* with 1x objectives at the lowest magnification.

Improved resolution of SMZ800N

The SMZ800N comes with a 1 – 8x zoom range, with higher magnification than conventional models and enables high-resolution observation of 640LP/mm (using ED Plan Apo 2x/WF at maximum zoom).
Ergonomic design

Eyepiece tubes with a range of inclination angles are available for comfortable observation. They offer the optimum eyelevel to suit each user. In addition, slim-type plain stands and the LED Diascopic Illumination Stand easily facilitate the presentation and removal of specimens.

In addition to conventional accessories, the level of accessories used with superior models is also available for the SMZ1270/1270i and SMZ800N. These include trinocular tubes and slim-type LED diascopic illumination stands. These allow various microscope configurations to suit numerous routine inspections and a range of research and development applications.

Note: With NIS-Elements L and F, functions above are not available. Use NIS-Elements D/Br/Ar.

With the LED Diascopic Illumination Stand and Fiber Diascopic Illumination Stand under OCC illumination can be easily adjusted.

**OCC illumination**

**Diascopic brightfield illumination**

**Dimensions**

<table>
<thead>
<tr>
<th>Model</th>
<th>Series 1</th>
<th>Series 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMZ1270 set</td>
<td>SMZ1270i + P-TERG100 Trinocular Tube + Plan Apo 1x/WF + C-PSN Plain Stand</td>
<td>SMZ1270i + P-TERG100 Trinocular Tube + Plan Apo 1x/WF + Intelligent Nosepiece P-RNI2 + P-DSL32 LED Diascopic Illumination Stand</td>
</tr>
<tr>
<td>SMZ1270i set</td>
<td>SMZ1270i + P-TERG100 Trinocular Tube + Plan Apo 1x/WF + Intelligent Nosepiece P-RNI2 + P-DSL32 LED Diascopic Illumination Stand</td>
<td>SMZ1200N set</td>
</tr>
<tr>
<td>SMZ800N set</td>
<td>SMZ800N + P-TERG100 Trinocular Tube + Plan Apo 1x/WF + C-PSN Plain Stand</td>
<td>SMZ800N + P-TERG100 Trinocular Tube + C-PSN Plain Stand</td>
</tr>
</tbody>
</table>

Please refer to the system diagram (P. 45-47) for accessory combinations.

Ergonomic design

Intelligent function for status readout

In combination with the imaging software NIS-Elements, the SMZ1270i can detect zoom magnification data. In addition, with the Intelligent Nosepiece P-RNI2 attached, data related to the objective in use is also detected. Calibration data is automatically altered, following changes of magnification, to display the appropriate scale and measurement results on the images.

**Intelligent function for status readout**

10 specimens.

**On-axis imaging**

The double nosepiece offers easy on-axis imaging, enabling observation of the bottom of holes, accurate simple measurement and extended depth of focus (EDF) imaging without distortion.

**Easy to get results**

**Expandable with a wide range of accessories**

**On-axis view**

**Without nosepiece**

**On-axis imaging**

**OCC illumination boosts the contrast of transparent sample structures.**

**Hemicentrotus pulcherrimus in two-cell stage**

OCC illumination boosts the contrast of transparent sample structures.

**SMZ1000**

**Plan Apo 0.5x/WF, Plan Apo 0.75x/WF, Plan Apo 1x/WF, ED Plan 1.5x/WF, ED Plan 2x/WF**

**C-W10xB (F.N. 22), C-W15x (F.N. 16), C-W20x (F.N. 12.5), C-W30x (F.N. 7)**

**Plan Apo 1x/WF + Intelligent Nosepiece P-RNI2 + P-DSL32 LED Diascopic Illumination Stand**

**Plan Apo 1x/WF + P-PS32 Plain Stand**

**Brain of adult Drosophila excited with GFP**

**Science Institute, RIKEN**

**Mechanisms of Sensory Perception, Brain Image courtesy of Hokto Kazama, Ph.D., Circuit Development Applications.**

**DS-Fi3/Digital Sight 10 Microscope Camera**

**NIS-Elements**

**LED Diascopic Illumination Stand**

**Fiber Diascopic Illumination Stand**

**Imaging Software NIS-Elements**

**DIASCOPICT**

**OCC illumination**

**Diascopic brightfield illumination**

**Correct scale is always indicated**

**Easy to get results**

**Intelligent function for status readout**

**Note:** With NIS-Elements L and F, functions above are not available. Use NIS-Elements D/Br/Ar.

**With the LED Diascopic Illumination Stand and Fiber Diascopic Illumination Stand under OCC illumination can be easily adjusted.**

**SMZ1270i + Intelligent Nosepiece**

**Easy to get results Expandable with a wide range of accessories**

**Note:** With NIS-Elements L and F, functions above are not available. Use NIS-Elements D/Br/Ar.
Greenough Type Stereo Microscope

SMZ745/745T

Superior 7.5x zoom and 115 mm working distance
Trinocular optical head type is also available

- The SMZ745/745T incorporates an optical path switching lever that enables easy switchover between eyepiece and camera. A microscope camera can be attached.

- As well as high zoom ratio and magnification, the SMZ745/745T offers an unrivaled 115 mm working distance.
- The SMZ745T incorporates an optical path switching lever that enables easy switchover between eyepiece and camera. A microscope camera can be attached.

Three “A” design
- Air-tight (SMZ445)
- By making joints air-tight, contamination from dust, oil, water and other contaminants is prevented.
- Anti-fungal 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. Anti-static function: 1000–10V, discharge within 0.2 sec.

Specifications

- Optical system: Greenough type (zooming type)
- Eyepiece diopter adjustable for both eyes
- Eyepiece inclination: 45°
- Interpupillary distance adjustment: 52–75 mm
- Total magnification: 3.35–300x (depending on eyepiece and auxiliary objective used)
- Zoom range: 7.5x
- Zoom ratio: 4.4:1
- Optical system: Greenough type (zooming type), trinocular tube

Dimensions

- Working distance: 115 mm (standard)
- Auxillary objectives: SM E10xA (F.N. 23, standard), SM 15xB (F.N. 14), SM 20xB (F.N. 12), SM 30x (F.N. 7)
- Eyepieces (with diopter adjustment): C-W 10xB (F.N. 22), C-W 15x (F.N. 16), C-W 20x (F.N. 12.5), C-W 30x (F.N. 7)
- Tubes: Fixed type, Eyepiece inclination: 45°, Interpupillary distance adjustment: 52–75 mm
- Eyepiece diopter adjustable for both eyes
- Eyepiece inclination: 45°
- Interpupillary distance adjustment: 52–75 mm
- Working distance: 115 mm (standard)
- Weight: 1.6 kg (body), 1.9 kg (stand)
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.

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.

Focus Unit

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

Stand/Focus Mount

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

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 bayonet mount design allows lenses to be safely and easily removed.

<table>
<thead>
<tr>
<th>Serial#</th>
<th>NA</th>
<th>Working distance</th>
<th>Correction ring</th>
<th>Wavelength</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHR Plan Apo 0.5x</td>
<td>0.15</td>
<td>71 mm</td>
<td>-</td>
<td>380-700 nm</td>
</tr>
<tr>
<td>SHR Plan Apo 1x</td>
<td>0.25</td>
<td>60 mm</td>
<td>-</td>
<td>390-700 nm</td>
</tr>
<tr>
<td>SHR Plan Apo 1.6x</td>
<td>0.38</td>
<td>30 mm</td>
<td>3 mm water</td>
<td>380-700 nm</td>
</tr>
<tr>
<td>SHR Plan Apo 2x</td>
<td>0.3</td>
<td>20 mm</td>
<td>-</td>
<td>380-700 nm</td>
</tr>
</tbody>
</table>

Tubes

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

Nosepiece/Focus Mount Adapter

Both single and double nosepieces are available.

Stage

The stage features an X’Y’ 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.
Nikon offers a remote control unit that can be used to operate the microscope and capture images by hand. A footswitch is also available, allowing the user to operate the microscope and capture images by foot, freeing the hands for sample manipulation.

**Remote Control**

Flexible Double Arm Fiber Illumination Set

The direction and angle of illumination can be changed to suit the sample by making adjustments with these double arms. The fiber holder position can also be changed to obtain the optimal position for illuminating samples.

- C-FDF Flexible Double Arm Fiber Illumination Unit
- C-FIDH Fiber Holder
- C-FLED2 LED Light Source for Fiber Illuminator

**Ring Fiber Illumination Set**

This ring fiber illumination set features an episcopic illumination unit that effectively captures images (can be used with 1x and 0.5x objective lenses).

- P2-FIRL2 LED Ring Illumination Unit
- C-FLED2 LED Light Source for Fiber Illuminator

**Darkfield Observation Accessory**

Darkfield viewing is possible simply by attaching the darkfield unit to the base.

- P2-DF2 LED Darkfield Unit
- Shading cover

**Polarizing Observation Accessory**

The analyzer is attached to the objective and the polarizer to the base or stand to enable polarized viewing.

- P2-POL Simple Polarizing Attachment

**Epi-fluorescence Set**

Motorized Epi-fluorescence Set

The fluorescent turret can be operated using the remote control or imaging software NIS-Elements.

- P2-EFLM Motorized Epi Fluorescence Attachment
- Light shading Plate (comes with Fluorescence Attachment)
- P2-EFL Filter Cube (QFP-B/GFP-L/RFP)
- P2-EFLFDF Filter Cube (Brightfield)
- P2-CTLA Control Box
- P2-RC Remote Controller
- P2-CIA QL1x/0.5x 1/4 A Plate

Manual Epi-fluorescence Set

An easy-to-use manual model for Nikon’s high-performance epi-fluorescence attachment.

- P2-EFLU Epi Fluorescence Attachment
- Light shading Plate (comes with Fluorescence Attachment)
- P2-EFL Filter Cube (QFP-B/GFP-L/RFP)
- P2-EFLFDF Filter Cube (Brightfield)
- P2-CTLA Control Box
- P2-CIA QL1x/0.5x 1/4 A Plate

**Coaxial Illuminator**

The coaxial light illuminator makes it possible to view light reflected from the surface of a sample. It is ideal for shooting shadow-less images of thick samples.

- P2-DI Coaxial Epi Illuminator
- C-FLED2 LED Light Source for Fiber Illuminator
- P2-CIA QL1x/0.5x 1/4 A Plate

**Ring LED Illuminator**

Ring LED illuminator is equipped with high-intensity, long-life (20,000 hours) LEDs. The illuminator’s dial adjusts the intensity of the white LED.

- P2-FIRL2 LED Ring Illumination Unit

**Fiber Illuminator Set**

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The direction and angle of illumination can be changed to suit the sample by making adjustments with these double arms. The fiber holder position can also be changed to obtain the optimal position for illuminating samples.

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**Polarizing Observation Accessory**

The analyzer is attached to the objective and the polarizer to the base or stand to enable polarized viewing.

- P2-POL Simple Polarizing Attachment

**Accessory**

SMZ25

SMZ18

Fiber Illuminator Set

Flexible Double Arm Fiber Illumination Set

The direction and angle of illumination can be changed to suit the sample by making adjustments with these double arms. The fiber holder position can also be changed to obtain the optimal position for illuminating samples.

- C-FDF Flexible Double Arm Fiber Illumination Unit
- C-FIDH Fiber Holder
- C-FLED2 LED Light Source for Fiber Illuminator

**Ring Fiber Illumination Set**

This ring fiber illumination set features an episcopic illumination unit that effectively captures images (can be used with 1x and 0.5x objective lenses).

- P2-FIRL2 LED Ring Illumination Unit
- C-FLED2 LED Light Source for Fiber Illuminator
A variety of accessories are available for stereoscopic observations

**Objectives**

A wide selection with various magnifications and working distances is available, including high-NA, high-resolution and wide-viewfield Plan Apo WF series objectives with superior image flatness and chromatic aberration correction.

### Objectives

<table>
<thead>
<tr>
<th>Plan Apo</th>
<th>Working distance (mm)</th>
<th>Zoom magnification</th>
<th>NA</th>
<th>Actual FOV*1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5x/WF</td>
<td>82</td>
<td>0.0145</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.75x/WF</td>
<td>70</td>
<td>0.0253</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>1x/WF</td>
<td>60</td>
<td>0.0350</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>1.5x/WF</td>
<td>44</td>
<td>0.0515</td>
<td>17.5</td>
<td></td>
</tr>
<tr>
<td>2x/WF</td>
<td>35</td>
<td>0.0715</td>
<td>11.25</td>
<td></td>
</tr>
</tbody>
</table>

*1 With O-I014B eyepiece

### P-B Binocular Tube

20° inclination angle allows observation without having to lean forward and reduces fatigue during long-time operations.

### P-TERG100/P-TERG50 Trinocular Tilting Tube

Enables easy switchover between two objectives. In combination with the Digital Sight series digital camera, it automatically detects the data of objective in use.

### P-T100 Trinocular Tube

The eyepoint height can be raised 106 mm by tilting the eyepieces 180° up. Optical path switching ratio of eyepiece:camera port is 100:0/0:100.

### P-IDT Drawing Tube

Various ergonomic tubes with different inclination angles enable suitable eye levels to be selected for observation, even when an intermediate tube or illuminator is attached. Trinocular tubes are also equipped with camera ports.

### Nosepieces

Double nosepiece with two-objective switchover. Easy changeover from stereo position (stereoscopic view) to mono position (on-axis view) is possible by simply moving the objective lens to the right.

### Tubes/Eye-level Riser

Various ergonomic tubes with different inclination angles enable suitable eye levels to be selected for observation, even when an intermediate tube or illuminator is attached. Trinocular tubes are also equipped with camera ports.

### Auxiliary Objectives

<table>
<thead>
<tr>
<th>Microscopes</th>
<th>Auxiliary objectives</th>
<th>Working distance (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMZ1270/1270i</td>
<td></td>
<td>61.3</td>
</tr>
<tr>
<td>SMZ800N</td>
<td></td>
<td>51</td>
</tr>
<tr>
<td>SMZ800N</td>
<td></td>
<td>43.5</td>
</tr>
</tbody>
</table>

### Intermediate Tubes

Various intermediate accessories are available that can be inserted between the microscope zooming body and tube.

### P-IBSS2 Beam Splitter S2

Using a beam splitter and camera adapter, a digital camera can be attached to the binocular eyepiece tube for imaging. Optical path switching ratio of left eyepiece:right eyepiece:camera port is 100:100:0/100:50:50.

### P-TNSS Teaching Head

Simultaneous observation of the same viewfield is possible between the eyepiece lenses of both teaching head and microscope, making it ideal for educational purposes. The pointer can indicate target points in the viewfield during observation.

### P-IDT Drawing Tube

Drawing sample images is possible by simply tracing observed images that are overlaid on top of drawings within the viewfield. The drawings can be removed from view by using the knob to block the light path.

**SMZ-1270/1270i**

**SMZ-800N**

**P-INB2**

**P-RN2**

**P-RI2**

**P-THSS**

**P-IDT**

**P-RN2**

**P-RI2**

**P-THSS**

**P-IDT**

**P-RN2**

**P-RI2**

**P-THSS**

**P-IDT**

**P-RN2**

**P-RI2**

**P-THSS**

**P-IDT**

**P-RN2**

**P-RI2**

**P-THSS**

**P-IDT**
**Accessories**

**Stages**

Stages allow smooth sample movement in order to change viewfield during observation.

**C-SSL Dia-sliding Stage**

Used for diascopic observation, this sliding stage can be easily moved in the desired direction simply with a light push. Travel range is within ø38mm.

SMZ1270/1270i  SMZ800N  SMZ745/745T  SMZ445/460

Can be used with the SMZ25 and SMZ18

---

**Circular Floating Stage 2**

Used for episcopic observation. 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 ø40mm.

SMZ1270/1270i  SMZ800N  SMZ745/745T  SMZ445/460

Can be used with the SMZ25 and SMZ18

---

**C-TRS Tiling Stage**

This stage has a nonslip sheet and can be tilted 30° from its horizontal position.

SMZ1270/1270i  SMZ800N  SMZ745/745T  SMZ445/460

Can be used with the SMZ25 and SMZ18

---

**P-SXY64 XY Stage**

The stage features an XY stroke of 150 mm x 65 mm. By attaching AZ100 stage adapters, it can be used for various applications. It can be used with both diascopic and episcopic illuminations.

SMZ1270/1270i  SMZ800N  SMZ745/745T  SMZ445/460

---

**P-DF2 LED Darkfield Unit**

Equipped with the white LED as the light source. Simply placing the unit on the stage enables darkfield observation.

SMZ1270/1270i  SMZ800N  SMZ745/745T  SMZ445/460

---

**C-POL Polarizing Attachment**

Simple polarizing observation is possible by placing the polarizer on the stage while the analyzer is attached to the tip of the objective lens.

SMZ1270/1270i  SMZ800N

---

**Illumination Systems**

**Ring Illuminator**

Provides a cone of light from above the sample to the center, minimizing unwanted shadow. Suitable for observation of electronic substrates.

**C-FIR Plastic Fiber-optics Ring Illuminator**

Illuminator is located away from microscope. It enables bright observation with high-intensity light without damaging sample with its heat.

SMZ1270/1270i  SMZ800N  SMZ745/745T  SMZ445/460

※ G-OBA60 Adapter is required.

**Arm Illuminator/Episcopic Illuminator**

The direction and angle of the illumination can be changed with simple adjustments of the flexible arm.

---

**C-FID2 Double Arm Fiber Illuminator**

It enables bright observation with high-intensity light without damaging sample with its heat. The direction and angle of illumination can be changed using the fiber holder.

SMZ1270/1270i  SMZ800N  SMZ745/745T  SMZ445/460

※1/4 λ plate is required

---

**C-FDF Flexible Double Arm Fiber Illumination Unit**

In combination with C-PSN Plain Stand/CN and C-PSCN Compact Stand/CN, illumination angle flexibility is possible from the back of the microscope. By attaching arms, flexible change of direction and angle of illumination is possible.

SMZ1270/1270i  SMZ800N  SMZ745/745T  SMZ445/460

---

**C-LSL2 LED Episcopic Illuminator**

Suitable for brightfield observation for high-reflectance flat surface samples such as polished metals and wafers.

---

**P-Cl Coaxial Episcopic Illuminator**

Coaxial illuminator for parallel optics-type stereo microscopes. Provides high-intensity illumination for the entire view field.

SMZ1270/1270i  SMZ800N
**Conditions of use vary depending on objective in use.**

* The illumination area is limited by conditions of use.

## Accessories

### Stands

- **C-PSN Plain Stand/CN**
  - Offers a comfortable work area and allows easy handling of samples. C-PSN has a small base that saves desk space.

- **P-PS32 Plain Stand**
  - Features a slim design with a 0.180 mm stage plate and 160 mm width between the pillar and optical axis to boost working efficiency.

- **C-LEDs Hybrid LED Stand**
  - Both episcopic and diascopic observations are possible and can be conducted simultaneously. The space-saving built-in illuminator can be switched and adjusted with ease.

### Microscopes
- **SMZ800N**
  - Included
- **SMZ745/745T**
  - Included
- **SMZ445/460**
  - Not required

### Imaging Stands

#### C-DS Diascopic Stand S
- Features a hand rest for comfortable operation. Used in conjunction with C-DSL22 LED Unit for Dia Illumination Stand.

#### P-DSL32 LED Diascopic Illumination Stand
- The OCC illumination system allows colorless and transparent samples to be observed in high relief. Compact slim-type base enhances operation efficiency.

#### P-DSF32 Fiber Diascopic Illumination Stand
- Light source is located away from the microscope, enabling bright observation with high-intensity light without damaging sample with its heat.

### Universal Table Stands/Focusing Mounts

#### Universal Table Stands G-US1A/G-US2
- These stands are handy in microscopy with large samples not loaded onto the standard stand. The microscope zooming body is mounted to the stand arm via a focusing mount. The G-US1A is a table clamp type (table top thickness: 3 to 53 mm).
  - Used in conjunction with the C-FMAN Focusing Mount BN on the SMZ1270/1270i/800N when intermediate tube is mounted to the stand arm via a focusing mount.
  - Used in conjunction with the C-FMAN Focusing Mount BN and the G-USA SM US Adapter on the SMZ-2.
  - Cannot be used with the SMZ1270/1270i/800N when intermediate tube is mounted on these models.

#### Universal Table Stand US-3
- Not only can it be used for a large sample, but this extremely stable stand also easily accommodates intermediate tubes.
  - Used in conjunction with the C-FMAN Focusing Mount AN on the SMZ1270/1270i/800N.
  - Used in conjunction with the C-FMAN Focusing Mount BN on the SMZ1270/1270i/800N/SMZ745/745T/445/460.
  - Used in conjunction with the C-FMAN Focusing Mount BN on the SMZ-2.

#### Universal Table Stand US-3
- Can be installed on the top or bottom edge.

#### Specifications

<table>
<thead>
<tr>
<th>Universal Table Stand</th>
<th>G-US1A Universal Table Stand</th>
<th>G-US2 Universal Table Stand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>Universal Table Stand G-US1A</td>
<td>Universal Table Stand G-US2</td>
</tr>
<tr>
<td><strong>Vertical cross travel</strong></td>
<td>400mm</td>
<td>300mm</td>
</tr>
<tr>
<td><strong>Horizontal cross travel</strong></td>
<td>260mm</td>
<td>270mm</td>
</tr>
<tr>
<td><strong>Weight (approx.)</strong></td>
<td>4.4kg</td>
<td>23.0kg</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>492mm x 492mm x 282mm</td>
<td>492mm x 492mm x 282mm</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td>C-PSN</td>
<td>C-PSN</td>
</tr>
</tbody>
</table>

### Focusing Mounts

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

<table>
<thead>
<tr>
<th>Focusing Mounts</th>
<th>C-FMAN Focusing Mount AN</th>
<th>C-FMAN Focusing Mount BN</th>
<th>C-FMCN Focusing Mount CN</th>
<th>SM Focusing Mount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>Universal Table Stand G-US1A</td>
<td>Universal Table Stand G-US2</td>
<td>Universal Table Stand US-3</td>
<td>Universal Table Stand US-3</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>492mm x 492mm x 282mm</td>
<td>492mm x 492mm x 282mm</td>
<td>492mm x 492mm x 282mm</td>
<td>492mm x 492mm x 282mm</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td>C-PSN</td>
<td>C-PSN</td>
<td>C-PSN</td>
<td>Universal Table Stand US-3</td>
</tr>
</tbody>
</table>

---

* **SMZ1270/1270i**
  - With all objectives, at all zoom ranges 0.5x objective is compatible with zoom magnifications higher than 1.5x.

---

* **SMZ800N**
  - P-PS32 can be used with the SMZ18.
  - P-DSL32 and P-DSF32 can be used with the SMZ18.

---

* **C-DS Diascopic Stand S**
  - Features a hand rest for comfortable operation. Used in conjunction with C-DSL22 LED Unit for Dia Illumination Stand.

---

* **C-LEDs Hybrid LED Stand**
  - Both episcopic and diascopic observations are possible and can be conducted simultaneously. The space-saving built-in illuminator can be switched and adjusted with ease.

---

* **P-PS32 Plain Stand**
  - Features a slim design with a 0.180 mm stage plate and 160 mm width between the pillar and optical axis to boost working efficiency. With all objectives, at all zoom ranges 0.5x objective is compatible with zoom magnifications higher than 1.5x.

---

* **P-DSL32 LED Diascopic Illumination Stand**
  - The OCC illumination system allows colorless and transparent samples to be observed in high relief. Compact slim-type base enhances operation efficiency.

---

* **P-DSF32 Fiber Diascopic Illumination Stand**
  - Light source is located away from the microscope, enabling bright observation with high-intensity light without damaging sample with its heat.

---

* **Universal Table Stands/Focusing Mounts**
  - Not only can it be used for a large sample, but this extremely stable stand also easily accommodates intermediate tubes.
  - Used in conjunction with the C-FMAN Focusing Mount AN on the SMZ1270/1270i/800N when intermediate tube is mounted to the stand arm via a focusing mount.
  - Used in conjunction with the C-FMAN Focusing Mount BN and the G-USA SM US Adapter on the SMZ-2.
  - Cannot be used with the SMZ1270/1270i/800N when intermediate tube is mounted on these models.

---

* **SMZ1270/1270i/800N/SMZ745/745T/445/460**
  - Used in conjunction with the C-FMAN Focusing Mount AN on the SMZ-2.

---

* **SM Focusing Mount**
  - Used in conjunction with the SM Focusing Mount on the SMZ-2.
  - Used in conjunction with the G-USA SM US Adapter on the SMZ-2.
Specifications

### Parallel-optics type

<table>
<thead>
<tr>
<th>Model</th>
<th>SMZ225</th>
<th>SMZ18</th>
<th>SMZ1270</th>
<th>SMZ1270i</th>
<th>SMZ800N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Optical system</strong></td>
<td>Parallel-optics type (zooming type)</td>
<td>Parallel-optics type (zooming type)</td>
<td>Parallel-optics type</td>
<td>Parallel-optics type</td>
<td>Parallel-optics type</td>
</tr>
<tr>
<td><strong>Zoom ratio</strong></td>
<td>25:1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Zoom range</strong></td>
<td>0.63–15.75x</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total magnification</strong></td>
<td>3.15–540x (depending on eyepiece and objectives)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tubes</strong></td>
<td>P-TERG 100 Trinocular Tilting Tube, P-TERG-50 Binocular Tilting Tube, P-TL 100 Monocular Tube</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eyepiece inclination</strong></td>
<td>P-TERG 100/50: 0°–30°, P-TERG 50: 15°</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interpupillary distance adjustment</strong></td>
<td>P-B: 20°</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eyepieces</strong></td>
<td>C-W10xB (F.N. 22), C-W15x (F.N. 16), C-W20x (F.N. 12.5), C-W30x (F.N. 7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Objectives</strong></td>
<td>P2-SHR Plan Apo 0.5x, P2-SHR Plan Apo 1x, P2-SHR Plan Apo 1.6x, P2-SHR Plan Apo 2x Plan Apo 0.5x/WF, Plan Apo 0.75x/WF, Plan Apo 1x/WF, Plan Apo 1.5x/WF, Plan Apo 2x/WF</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Working distance (with standard configuration or 1x objective)</strong></td>
<td>60 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight (approx.)</strong></td>
<td>32 kg (with motorized Epi Fluorescence Attachment configuration)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Depending on eyepiece and objective used

### Greenough type

<table>
<thead>
<tr>
<th>Model</th>
<th>SMZ245/745T</th>
<th>SMZ245</th>
<th>SMZ240</th>
<th>SMZ2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td>SMZ245/745T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Optical system</strong></td>
<td>Greenough type (zooming type)</td>
<td>Greenough type (zooming type)</td>
<td>Greenough type (zooming type)</td>
<td>Greenough type (zooming type)</td>
</tr>
<tr>
<td><strong>Zoom ratio</strong></td>
<td>7.5:1</td>
<td>4.4:1</td>
<td>4.3:1</td>
<td>5:1</td>
</tr>
<tr>
<td><strong>Zoom range</strong></td>
<td>0.67–5x</td>
<td>0.8–3.5x</td>
<td>0.7–3x</td>
<td>0.8–4x</td>
</tr>
<tr>
<td><strong>Total magnification</strong></td>
<td>3.35–300x</td>
<td>4–70x</td>
<td>3.5–60x</td>
<td>4.8–120x</td>
</tr>
<tr>
<td><strong>Tubes</strong></td>
<td>Fixed (binocular tube: SMZ245, trinocular tube: SMZ245T)</td>
<td>Fixed</td>
<td></td>
<td>Fixed</td>
</tr>
<tr>
<td><strong>Eyepiece inclination</strong></td>
<td>45°</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Interpupillary distance adjustment</strong></td>
<td>52–75mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eyepieces</strong></td>
<td>C-W10xB (F.N. 22), C-W15x (F.N. 16), C-W20x (F.N. 12.5), C-W30x (F.N. 7)</td>
<td>SM 10xB (F.N. 21), SM 15xB (F.N. 14), SM 20xB (F.N. 12)</td>
<td>SM 10xB (F.N. 21), SM 15xB (F.N. 14), SM 20xB (F.N. 12)</td>
<td>SM 10xB (F.N. 21), SM 15xB (F.N. 14), SM 20xB (F.N. 12), C-TERG (F.N. 7.5)</td>
</tr>
<tr>
<td><strong>Objectives</strong></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>C-0.6 (W.D. 195mm), C-0.8x (W.D. 175mm), C-1.5x, C-2x (W.D. 105mm)</td>
</tr>
<tr>
<td><strong>Auxiliary objectives</strong></td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>C-Teramin, C-W10x (W.D. 101mm), C-W15x (W.D. 101mm), C-W20x (W.D. 101mm)</td>
</tr>
<tr>
<td><strong>Working distance (with standard configuration or 1x objective)</strong></td>
<td>110 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Weight (approx.)</strong></td>
<td>3 kg (SMZ245/745T); 1 kg (SMZ245)</td>
<td>1 kg (body)</td>
<td>1 kg (body)</td>
<td>1 kg (body)</td>
</tr>
</tbody>
</table>

1. Depending on eyepiece and objective used
Enables a wide range of advanced digital imaging capabilities using a desktop PC and tablet PC.

**EDF (Extended Depth of Focus)**
Captures multiple high-resolution images at different focal depths to create a single extended depth of focus image or quasi-3D image.

**Multichannel (multicolor)**
Multiple fluorescent channels can be captured in conjunction with other imaging methods, such as DIC or brightfield.

Simple installing NIS-Elements L on a tablet PC enables setting and control of microscope cameras, live image display, and image acquisition.

**Note:** NIS-Elements L is available only for Digital Sight 1000, DS-Fi3, and Digital Sight 10.

NIS-Elements L enables the conducting of simple measurements on images, with input of lines and comments. These can also be written onto and saved with the image, and measurement data can be output.

**Optical Systems**

**Parallel-optics type (zooming type)**
This system has a parallel optical path into which various intermediate tubes, including a beam splitter, coaxial episcopic illuminator, epi-fluorescence attachment, 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.