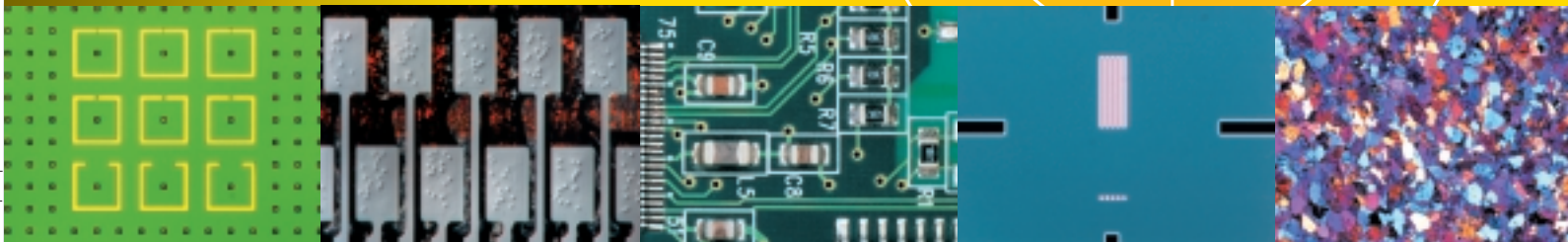




MULTI-PURPOSE ZOOM MICROSCOPE

MULTIZOOM AZ100



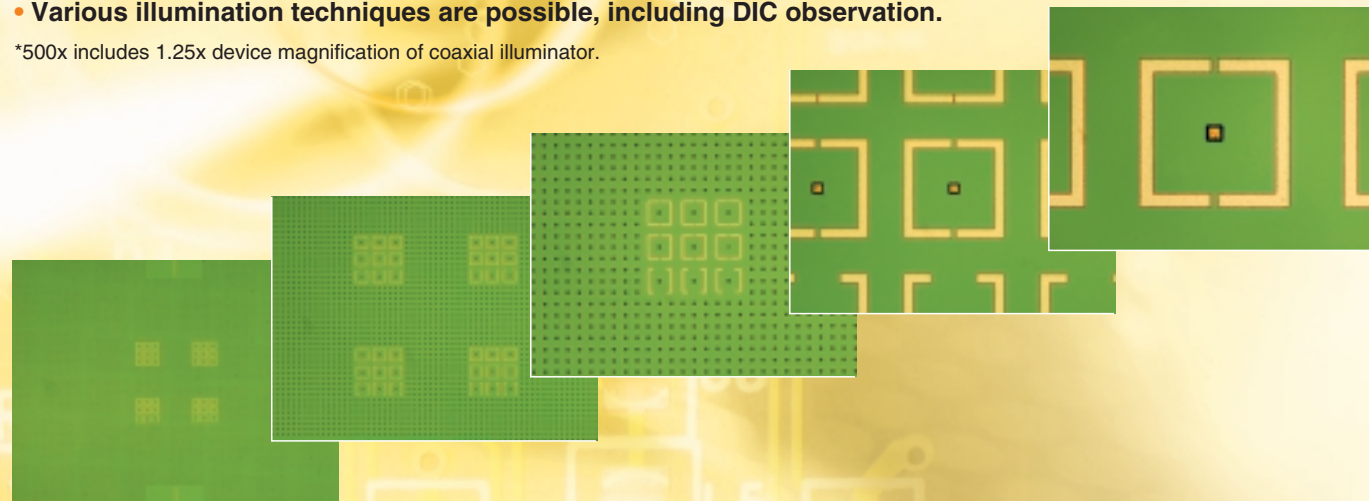
Everything you need for macro observation, all in a single microscope.

MULTI-PURPOSE ZOOM MICROSCOPE MULTIZOOM AZ100

Enjoy the combined advantages of a stereoscopic microscope with a wide field of view and a long working distance, and an industrial microscope boasting high-resolution images — Multi-purpose Zoom Microscope MULTIZOOM AZ100 is Nikon's latest groundbreaking microscope solution.

- The mono-zoom optical system enables on-axis observation and documentation.
- The large magnification range is from 5x to 500x.*
- High-resolution, high-contrast images can be viewed in the macro region.
- Various illumination techniques are possible, including DIC observation.

*500x includes 1.25x device magnification of coaxial illuminator.



System-integration configuration



Vertical monocular tube + LED illuminator + digital camera configuration



Coaxial illumination configuration



ON-AXIS VIEWING

The AZ100 enables on-axis observation with no oblique distortion. Optimal not only for visual observation, the AZ100 is also excellent for capturing macro images with a digital camera or other devices. Telecentric optics, a technology with a strong reputation in the field of industrial microscopes, is employed with this newly designed zoom microscope.

Macro observation by on-axis viewing

True on-axis observation and image capture is possible in the macro region due to the AZ100's elimination of the traditional stereoscope's angular view of the specimen.

Comparison of macro images



On-axis viewing with AZ100

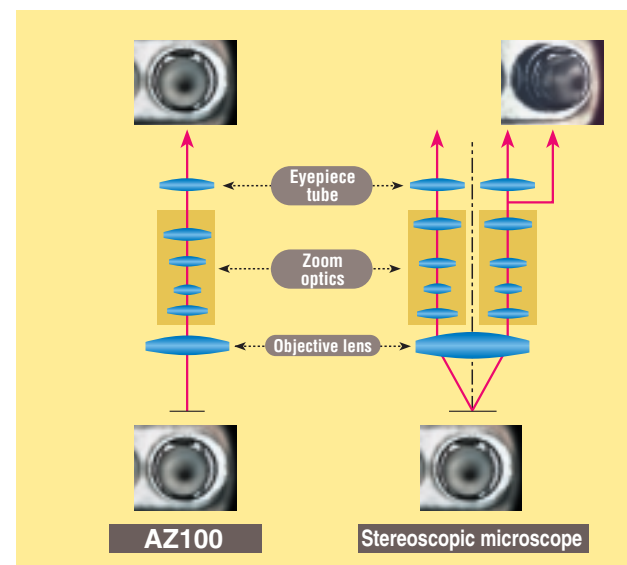


Angular viewing with a stereoscopic microscope



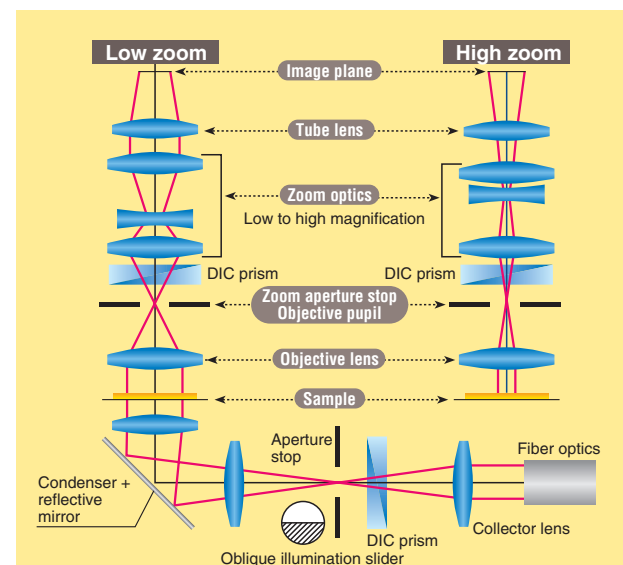
Mono zoom mechanism

Stereoscopic microscopes always capture images in a diagonal direction due to the structure of the device. The AZ100, however, captures high-resolution, high-contrast images with on-axis viewing.



Telecentric optics

The pupil position of the AZ100's zoom optics matches that of the objective lens. This positioning enables a wide array of illumination techniques, including diascopic/episcopic Nomarski DIC, and oblique illumination.



Note: Excludes epi-fluorescence illumination.

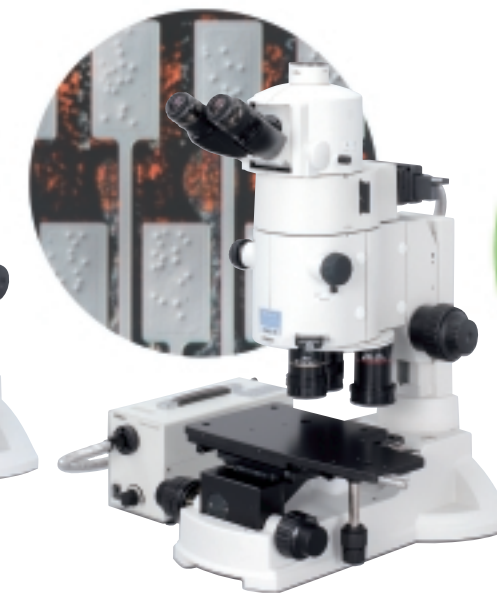
HIGH VERSATILITY

The AZ100 enables a wide array of observation methods suited to specific samples and applications in the macro region. This system offers Nomarski DIC and fluorescence observation with episcopic illumination, oblique illumination, and simple polarizing observation with diascopic illumination. In addition, it also provides for simultaneous mounting of diascopic DIC and epi-fluorescence attachments.

Nikon's AZ100 brings the power of all these capabilities to a wide range of fields, from quality control and inspection, to research analysis.



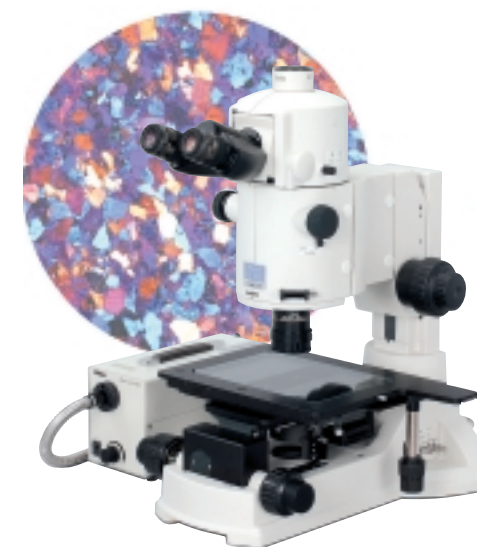
Coaxial illumination configuration



Episcopic DIC configuration



Epi-fluorescence configuration



Diascopic simple polarizing configuration



Diascopic DIC configuration



Epi-fluorescence + diascopic DIC configuration

FUNCTIONAL DESIGN

A wide range of magnifications

By combining built-in 8x zoom optics, which provides from 1x to 8x magnification, with a three-position objective nosepiece, the AZ100 enables observation at the highest magnification ratio of any such device in the world. The objective lens lineup consists of 0.5x, 1x, 2x, 4x, and 5x lenses. When combined with AZ-W 10x eyepiece lenses, the AZ100 covers everything from low, medium, and high magnification, in the range of 5x to 500x (the latter of which includes the 1.25x device magnification of the coaxial illuminator). The zoom knob incorporates an engageable click-stop mechanism, for measuring and reproducible magnification settings.



Zoom click mechanism on knob



Triple Nosepiece

Comes standard with an aperture stop

The AZ100 ships complete with an aperture stop that is effective not only for visual observation, but also for the capture of digital images. This aperture stop allows you to freely change contrast and the depth of field based on your specimen requirements.



Aperture stop

Comparative example



Maximum aperture

Minimum aperture

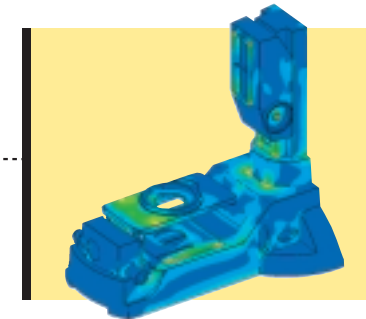
Superior flexibility

Tilting eyepiece tubes



The AZ100 comes standard with eyepiece tubes that tilt from 0° to 30°. This feature enables the optimal eye level for the observer's height and posture as well as the sample height. Two different beamsplit ratios for the binocular and photo port can be selected, 100:0/0:100, which is suitable for photo documentation, or 100:0/20:80, which enables visual observation while displaying an image on a monitor.

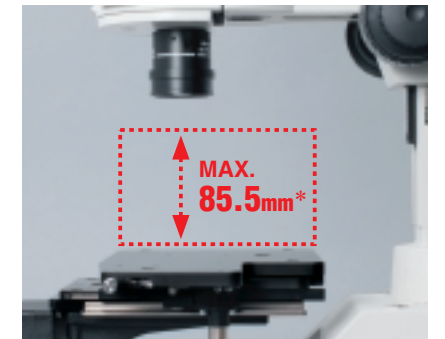
Stands



Nikon has developed two new extremely stable dedicated stands: a reflected-only and a dual-purpose reflected/transmitted illumination stand. Even during observation at high magnifications, these stands enable stable, blur-free observation.

Double-coarse/fine focusing system

Focusing can be done using either the AZ stand or stage controls. Since the stand section offers an 85mm stroke and the stage section a 10mm stroke, even tall samples can easily be observed. Focusing the stage can be performed easily with up-front table-level controls, without having to reach your hands above the sample.

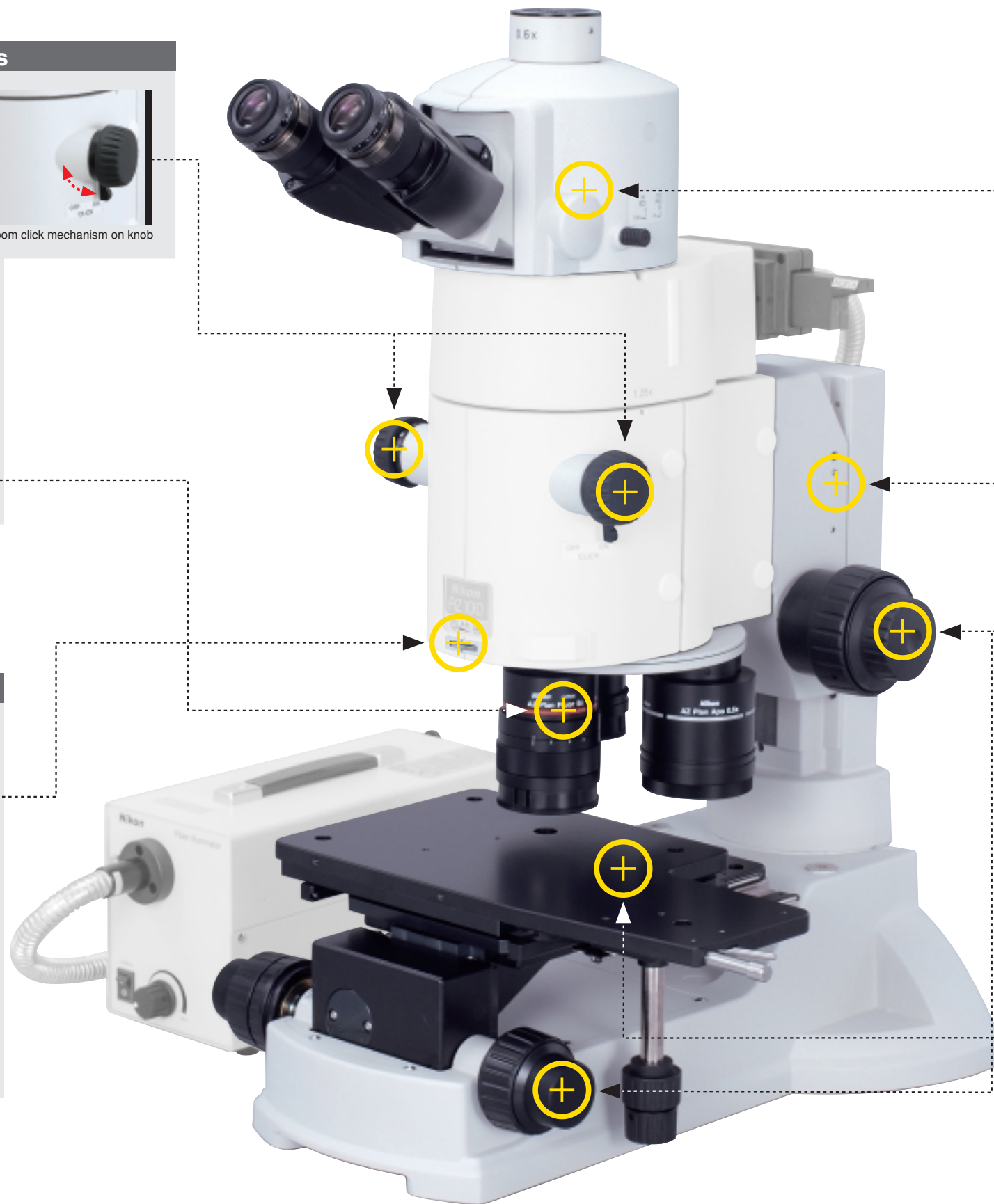


*Differs depending on the objectives and stand combination.

Dedicated stages



The product lineup consists of a reflected-only and a dual-purpose reflected/transmitted illumination stage. The stages' three-plate structure enables stable operation even when observing at high magnification. They provide superior durability even when supporting heavy industrial samples.



DOCUMENTATION SYSTEMS



Digital Camera System for Microscopy DIGITAL SIGHT SERIES

A flexible system that enables various configurations consisting of a camera head and a control unit to suit the needs of each sample or application.





Camera Heads



High-definition color camera head
DS-Fi1  
5-megapixel high-definition color. The DS-Fi1 offers advanced performance, including a high dynamic range and superior red sensitivity, and is optimal for brightfield, darkfield, phase contrast, and DIC image capture.



High-speed color camera head
DS-2Mv  
The DS-2Mv features a 2-megapixel color CCD with a high frame rate. This camera head enables the smooth display of live images and high quality still images.

*See the Digital Sight series catalog for more information.

Stand-alone Control Unit

DS-L2

The DS-L2 features a large high-definition LCD and a host of features. There is no need for a PC and monitor, which allows the system to be used with a flick of a switch.



Large, high-definition monitor

The unit has a built-in 8.4-inch TFT LCD monitor with 1,024 x 786 pixels.

On-screen display (OSD) for easy control

The unit employs an OSD for camera control, state confirmation, and various settings, which allows use of mouse and keyboard to manipulate buttons and menus displayed on the monitor.

Handy save/print features

The unit enables data to be saved on USB memory sticks, as well as on CF cards and microdrives, transferred through a network path. In addition, it comes standard with direct printing to PictBridge printers. It also features "Real 10" modes that make it possible to set and adjust print scaling.

Easy-to-use toolbar

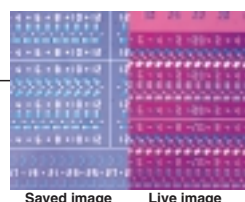
Frequently used features are displayed as toolbar buttons. This enables control without hampering the display of the image to be captured. It is also possible to customize the buttons.



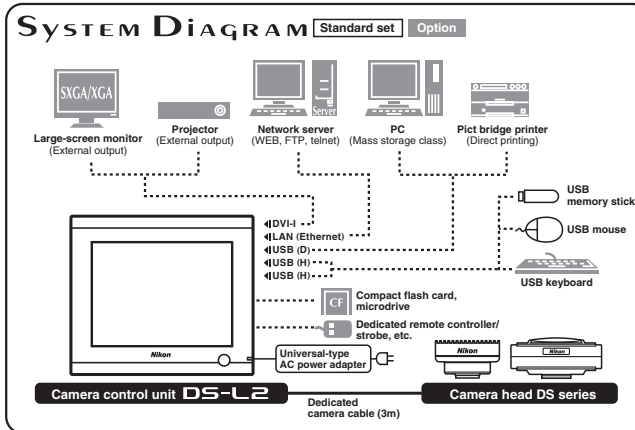
Example of toolbar buttons (Left: Short/Right: Large)

Split-screen display perfect for comparative observation

The unit includes a split-screen feature for the simultaneous display of a saved image and a live image, which is handy for comparative observation.



Saved image Live image



Scene mode: optimal image capture with a single button

The unit features three scene modes for industrial samples. These modes all offer capture conditions optimized for the particular sample type. Users can also register up to seven freely configurable custom modes.



An extensive array of tool functions

Users can measure captured images and enter line contrast and other settings using the overlay. Users can also save data in image files and output measurement data.

Measurement and alignment function

Measurement and alignment is possible by standard-length calibration (up to seven types can be registered).

Scale display/alignment functions



Measurement functions



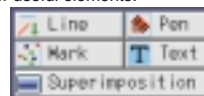
Drawing functions

Users can input and display lines, comments, and other useful elements.

• Straight lines (Arrows can be set.) • Curves

• Count markers • Text entry

• Superimposition (semitransparent image overlay for comparative purposes)



PC-based Control Unit

DS-U2

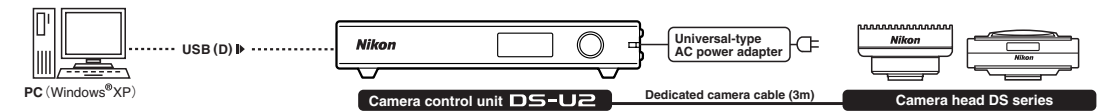
The DS-U2 controls everything from live image display and capture to advanced image processing and analysis on a computer. It supports a wide range of applications.

Simple connection via high-speed USB 2.0

The unit employs a USB 2.0 interface for easy connection with a PC.



SYSTEM DIAGRAM



NIS-Elements series of newly developed imaging software

The NIS-Elements series is used for the control software. This software allows the user to perform everything from basic image capture to the measurement, analysis, and management of captured images. Users can add a wide array of the plug-ins to basic packages according to their intended use.

F NIS-Elements F Package

This package enables display of a scale over a live image, switching to full-screen display, and other functions. It allows the user to easily capture images with a simple intuitive control screen.

D NIS-Elements Documentation

This package provides functions for performing measurements and creating reports. Use it for general microimage capture in the industrial field. Expandability is also possible by adding plug-ins, such as EDF and databases.

Br NIS-Elements Basic Research

In addition to the measurement function and report-generating function of NIS-Elements Documentation, this package enables automatic object measurement by creating a binary image. Expandability is also possible by adding plug-ins, such as EDF and databases.

Operating environment

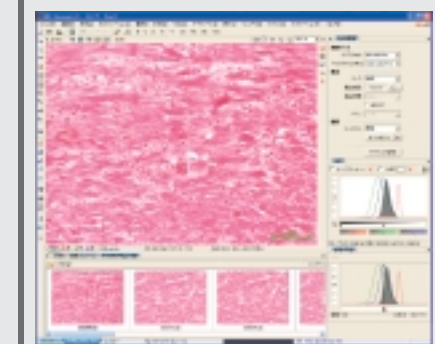
The following PC environment is recommended for maximizing the performance of NIS-Elements.

CPU	3.2GHz Intel® Pentium® IV processor or better
RAM	1GB or more
OS	Microsoft® Windows® XP SP2 (English version)
Hard disk space	600MB or more required for installation
Display	1280 x 1024 dots or better (TrueColor mode)

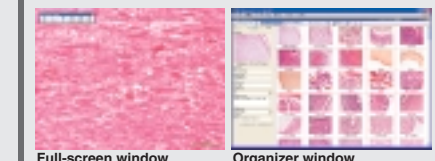
Application window

(There is no organizer window.)

Freely select the window layout according to the purpose at hand.



Docked controls window

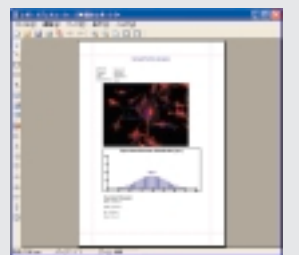


Full-screen window

Organizer window

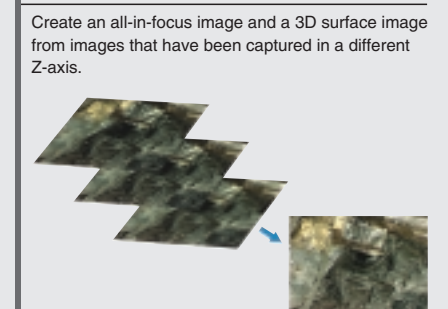
Report generator

Create reports containing images, database descriptions, and measured data. PDF files can be created directly from NIS-Elements.



EDF (Extended Depth of Focus):

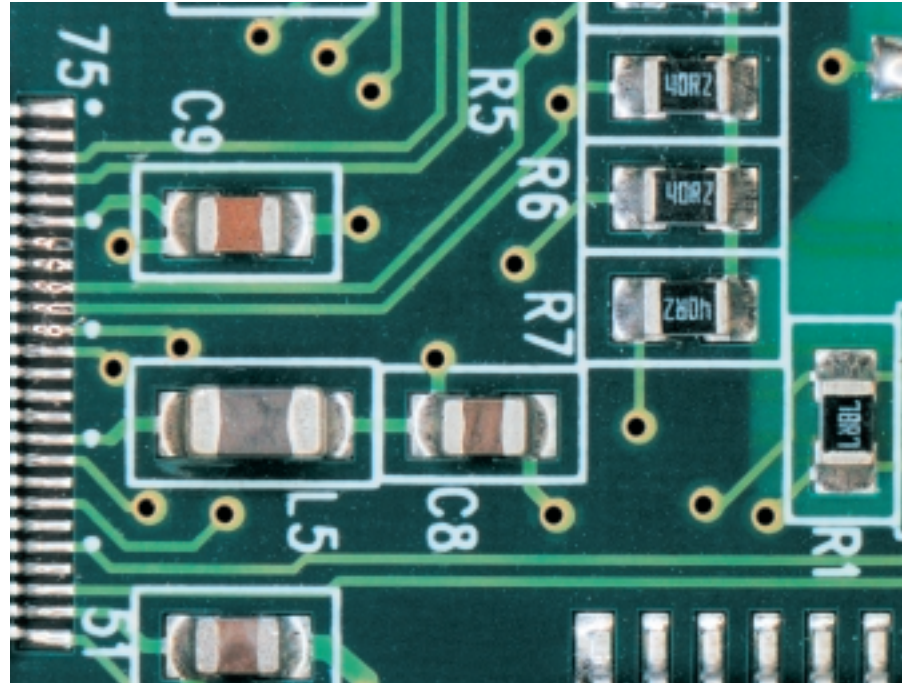
Create an all-in-focus image and a 3D surface image from images that have been captured in a different Z-axis.



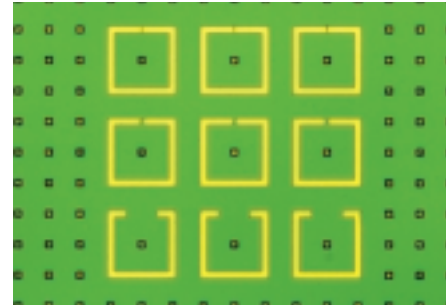
Measurement

Measure quantity, length, radius, angle, area, and pixel intensity profile.

IMAGE GALLERY



Mounted circuit board (LED illumination)



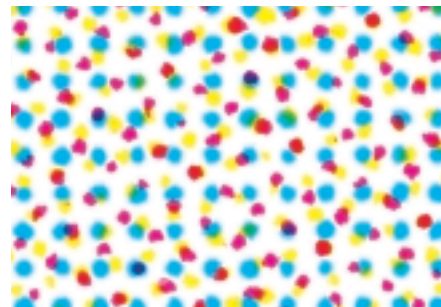
Microbumps (coaxial illumination)



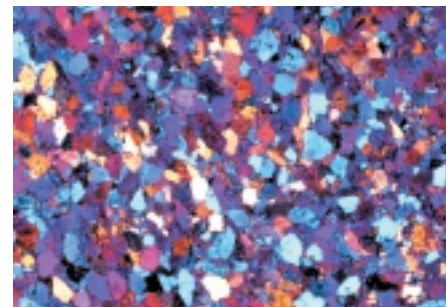
Color filter (coaxial illumination)



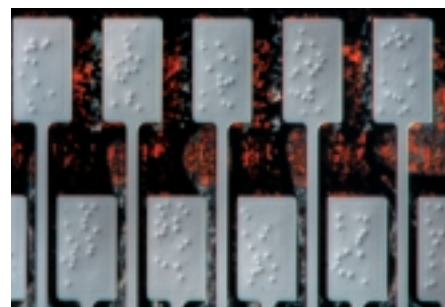
IC chip (LED illumination)



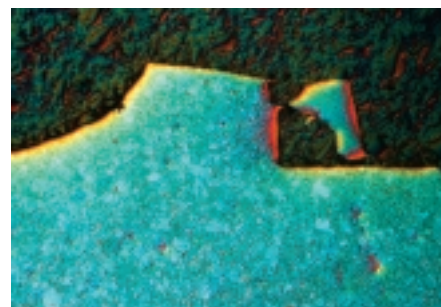
Printed material (LED illumination)



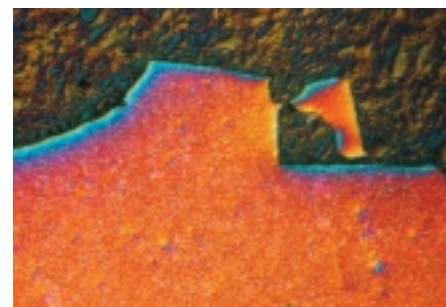
Minerals (diascopic polarizing observation)



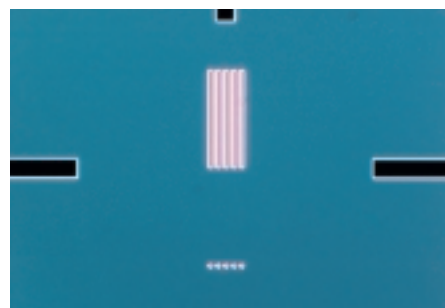
LCD (conductive particles)
(episcopic DIC observation)



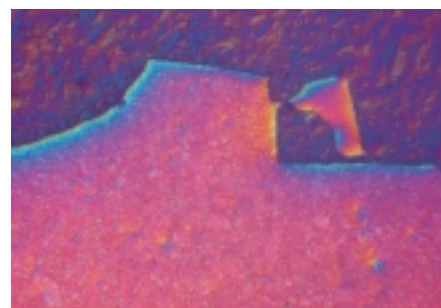
Polished surface of metal structure
(episcopic DIC observation)



Polished surface of metal structure
(episcopic DIC observation)



Glass etching pattern (diascopic DIC observation)



Polished surface of metal structure
(episcopic DIC observation)



Polished surface of metal structure
(episcopic DIC observation)

ACCESSORIES

Common accessories for episcopic and diascopic observation

Eyepiece tubes

AZ-TE100 Ergonomic Trinocular Tube 100,
AZ-TE80 Ergonomic Trinocular Tube 80, AZ-TP DSC Tube 0.6x

The lineup includes the ergonomic tilting trinocular eyepiece tube AZ-TE100 (beamsplit ratio 100:0:100) and AZ-TE80 (beamsplit ratio 100:0:20:80), as well as the direct tube AZ-TP 0.6x Vertical Monocular Tube, which is suited to system integration. The 0.6x reduction optics* built into the photo port enable capturing of images with a wider field of view.

*Accepts ISO type C-mount Direct CCTV Adapters.



Objective lens mounts

AZ-NPS Single Nosepiece, AZ-NP3 Triple Nosepiece

Users can select either the AZ-NP3 Triple Nosepiece or the AZ-NPS Single Nosepiece, according to their requirements.

*Simultaneous mounting of epi-fluorescence and diascopic DIC attachments requires the AZ-FLDIC FL-DIC Prism Holder.



Focus mount adapters

AZ-FM AZ Focusing Mount Adapter, AZ-SMZ SMZ Focusing Mount Adapter,
AZ-LV LV Focusing Mount Adapter

There are three types of focus mount adapters to suit various needs: AZ-FM AZ Focusing Mount Adapter for AZ-dedicated stands, AZ-SMZ SMZ Focusing Mount Adapter* for stereoscopic microscope stands, and AZ-LV LV Focusing Mount Adapter.

*When using a 4x or 5x objective lens, Nikon recommends combining the AZ-FM AZ Focusing Mount Adapter with the AZ-STE Episcopic Stand and AZ-STD Diascopic Stand.



Objective lenses

AZ-Plan Apo 0.5x, AZ-Plan Apo 1x, AZ-Plan Fluor 2x, AZ-Plan Apo 4x, AZ-Plan Fluor 5x

Nikon has developed new dedicated objective lenses with a high NA and low distortion. There are five lens types, each of which suit different illumination techniques.

List of objectives specs

	Plan Apo 0.5x	Plan Apo 1x	Plan Fluor 2x	Plan Apo 4x	Plan Fluor 5x (include correction ring)
	Parfocal				
NA	0.05	0.1	0.2	0.4	0.5
WD	54mm	35mm	45mm	20mm	15mm
Coaxial illumination	○ (with lambda plate)	○ (with lambda plate)	—	○ (with lambda plate)	○ (with lambda plate)
Diascopic illumination	○	○	○	○	○
DIC	—	○ EPI/DIA	—	○ EPI/DIA	○ EPI/DIA
Epi-fluorescence	○	○	○ (UV excitation possible)	○	○ (UV excitation possible)
LED illumination	○	○	—	—	—



ACCESSORIES

Accessories for episcopic observation

Coaxial illumination, Nomarski DIC, fluorescence, and LED ring illumination observation methods are possible with episcopic illumination.

EPI stand/EPI stage

AZ-STE Episcopic Stand, AZ-STGE EPI Stage



Coaxial illuminator

AZ-ICI Coaxial Episcopic Illuminator, AZ-NCB NCB Filter for Coaxial Epi Illuminator, AZ-QLL ICI 1/4 Lambda Plate 0.5x, AZ-QLM ICI 1/4 Lambda Plate 1x, AZ-QLH ICI 1/4 Lambda Plate 4-5x, C-FI115/230 Fiber Illuminator, YM-ND25 ND4/ND16

*See "Objective lenses" on page 11 regarding compatible objective lenses.



Episcopic DIC attachments

AZ-ICI Coaxial Episcopic Illuminator, AZ-NCB NCB Filter for Coaxial Epi Illuminator, AZ-EL EPI DIC Lambda Plate, AZ-EPS1 EPI DIC Prism Slider 1-4x, AZ-EPI5 EPI DIC Prism Slider 5x, AZ-PH EPI DIC Prism Holder, C-FI115/230 Fiber Illuminator, YM-ND25 ND4/ND16

*See "Objective lenses" on page 11 regarding compatible objective lenses.



Epi-fluorescence attachments

AZ-FL Epi-Fluorescence Attachment, AZ-HGFA Fiber Adapter, C-HGFIF15/C-HGFIF30 HG Fiber, C-HGF1/HGFIE HG Precentered Fiber Illuminator, Fluorescence Filter Cubes

*In the case of UV excitation, use a Hg lamphouse. See the system diagram for more information.



LED illuminator

AZ-LED LED Ring Illuminator

*See "Objective lenses" on page 11 regarding compatible objective lenses.

Accessories for diascopic observation

Brightfield, simple polarizing, Nomarski DIC, and oblique illumination observation methods are possible with diascopic illumination. Epi-fluorescence and diascopic DIC attachments are simultaneously mountable.

DIA stand/DIA stage

AZ-STD Diascopic Stand, AZ-STGD DIA Stage, AZ-SG Stage Glass



Diascopic simple polarizing attachments

AZ-RP Rotatable Polarizer, AZ-AN DIA DIC Prism Holder with Analyzer, AZ-DL DIA DIC Lambda Plate



Diascopic DIC attachments

AZ-RP Rotatable Polarizer, AZ-AN DIA DIC Prism Holder with Analyzer, AZ-DL DIA DIC Lambda Plate, AZ-DP1 DIA DIC Prism 1x, AZ-DP4 DIA DIC Prism 4x, AZ-DP5 DIA DIC Prism 5x, AZ-DPS1 DIA DIC Prism Slider 1-4x, AZ-DPS5 DIA DIC Prism Slider 5x

*See "Objective lenses" on page 11 regarding compatible objective lenses.



Epi-fluorescence + diascopic DIC attachments

AZ-FL Epi-Fluorescence Attachment, AZ-HGFA Fiber Adapter, C-HGFIF15/C-HGFIF30 HG Fiber, C-HGF1/HGFIE HG Precentered Fiber Illuminator, Fluorescence Filter Cubes, AZ-RP Rotatable Polarizer, AZ-AN DIA DIC Prism Holder with Analyzer, AZ-DL DIA DIC Lambda Plate, AZ-DP1 DIA DIC Prism 1x, AZ-DP4 DIA DIC Prism 4x, AZ-DP5 DIA DIC Prism 5x, AZ-DPS1 DIA DIC Prism Slider 1-4x, AZ-DPS5 DIA DIC Prism Slider 5x, AZ-FLDIC FL-DIC Prism Holder, AZ-ND128 ND128 Filter for FLDIC

*In the case of UV excitation, use a Hg lamphouse. See the system diagram for more information.

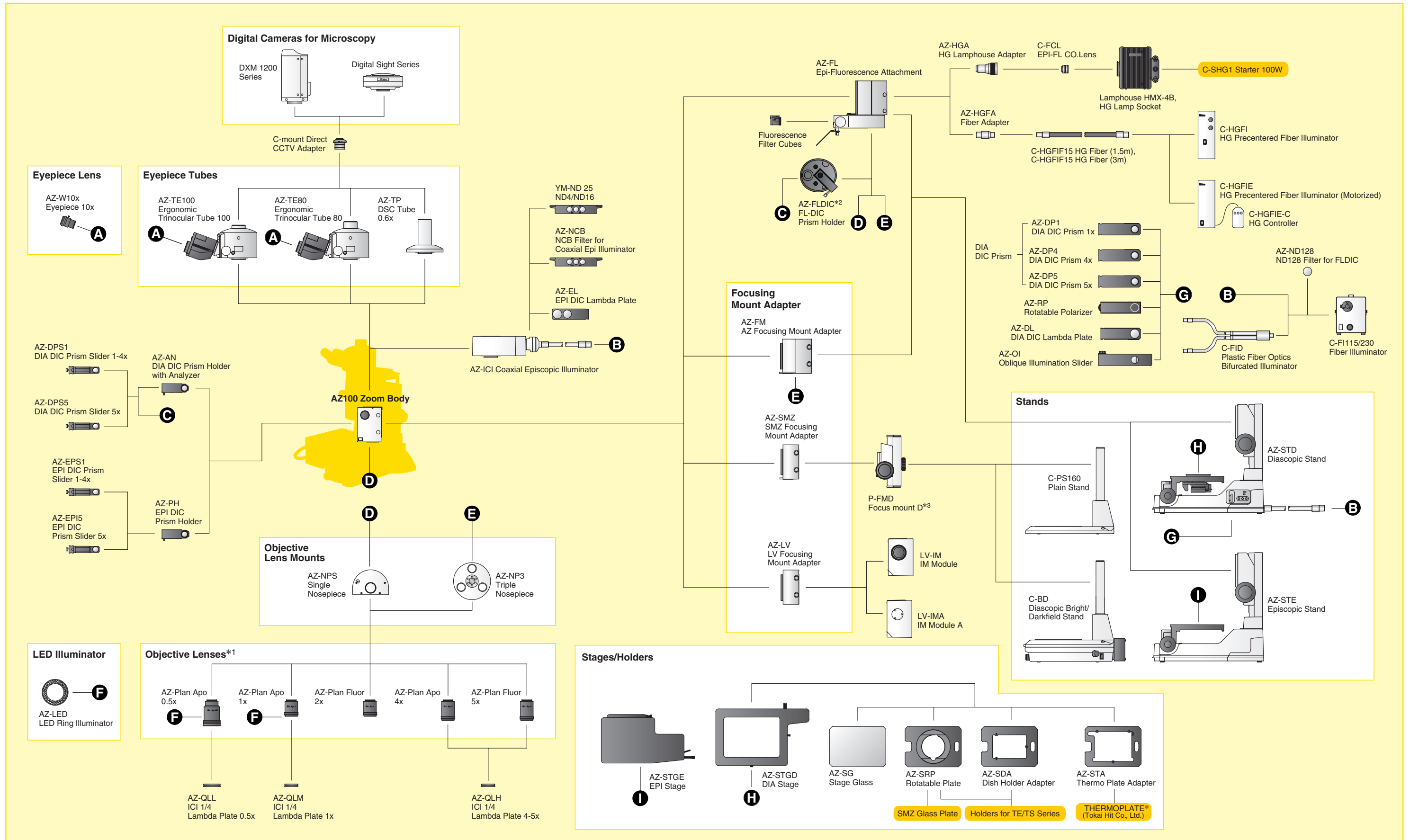


Oblique illumination slider

AZ-OI Oblique Illumination Slider

*The center of the light beam is shielded by the sliding diaphragm placed at a conjugated position with the objective pupil, allowing coherent light to be projected obliquely onto the sample to produce high contrast.

SYSTEM DIAGRAM



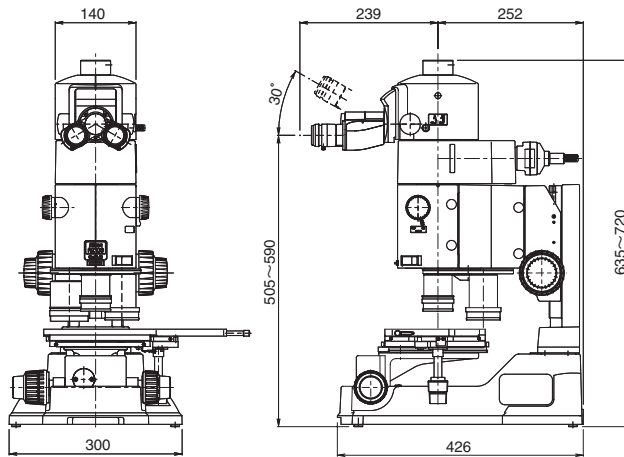
*1 See page 11 regarding combinations with illuminators. *2 Use when simultaneously mounting epi-fluorescence and diascope DIC attachments. *3 Combination with coaxial illuminator is not possible.

SPECIFICATIONS

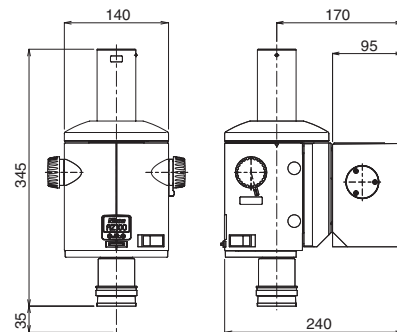
Total magnification	5x to 400x (6.25x to 500x when coaxial illuminator is mounted) Depends on the combination of eyepiece lenses and objective lenses
Zoom range	1 to 8 (zoom ratio: 8:1)
Eyepiece tubes	AZ-TE100 Ergonomic Trinocular Tube 100 (beamsplit ratio 100:0/0:100, 0.6x reduction optics built into photo port) AZ-TE80 Ergonomic Trinocular Tube 80 (beamsplit ratio 100:0/20:80, 0.6x reduction optics built into photo port) AZ-TP DSC Tube 0.6x (direct tube type, 0.6x reduction optics built in)
Inclination angle	0° to 30° (eyepiece tube AZ-TE100/AZ-TE80)
Interpupillary adjustment range	50 to 75mm (eyepiece tube AZ-TE100/AZ-TE80)
Eyepiece lens	AZ-W10x eyepiece 10x (FOV: 22mm)
Focus mount adapters	AZ-FM AZ Focusing Mount Adapter (for AZ stand), AZ-SMZ SMZ Focusing Mount Adapter (for SMZ stand) AZ-LV LV Focusing Mount Adapter (for LV-IMA/LV-IM)
Stands	AZ-STE Episcopic Stand/AZ-STD Diascopic Stand: (focus mount section: focusing stroke, 85mm; coarse, 18.5mm/rotation; fine, 3.27mm/rotation) Stage focus section: focusing stroke, 10mm; coarse, 37.7mm/rotation; fine, 0.27mm/rotation) C-PS160 Plain Stand, C-BD Diascopic Bright/Darkfield Stand
Stages	AZ-STGE EPI Stage (150 x 150mm stroke), AZ-STGD DIA Stage (150 x 100mm stroke)
Objective lens mounts	AZ-NP3 Triple Nosepiece, AZ-NPS Single Nosepiece
Objective lenses	AZ-FLDIC FL-DIC Prism Holder (when simultaneously mounting epi-fluorescence and diascope DIC attachments) AZ-Plan Apo 0.5x (NA: 0.05/Wd: 54mm), AZ-Plan Apo 1x (NA: 0.1/Wd: 35mm), AZ-Plan Fluor 2x (NA: 0.2/Wd: 45mm) AZ-Plan Apo 4x (NA: 0.4/Wd: 20mm), AZ-Plan Fluor 5x (NA: 0.5/Wd: 15mm)
Illuminators	AZ-ICI Coaxial Episcopic Illuminator (C-F1115/230 Fiber Illuminator: 12V 100W halogen lamp); device magnification: 1.25x AZ-LED LED Ring Illuminator, C-FID Plastic Fiber Optics Bifurcated Illuminator (C-F1115/230 Fiber Illuminator: 12V 100W halogen lamp)
Light source for epi-fluorescence observation	C-HGFI HG Precentered Fiber Illuminator (130W mercury lamp), C-HGFE HG Precentered Fiber Illuminator (motorized; 130W mercury lamp) Lamphouse HMX-4B (100W mercury lamp)
Observation methods	Reflected light: coaxial illumination, Nomarski DIC, fluorescence (up to four filter cubes are mountable), and LED illumination observation Transmitted light: brightfield, Nomarski DIC, simple polarizing, and oblique illumination observation
Weight	Coaxial illumination configuration: 26kg, epi-fluorescence + diascope DIC configuration: 28kg

DIMENSIONS

Coaxial illumination configuration



System integration configuration



Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. October 2006 ©2006 NIKON CORPORATION

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WARNING

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



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