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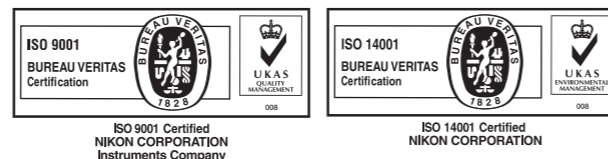
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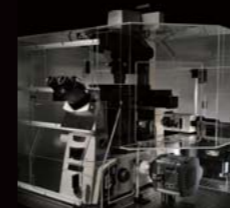
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Biological Microscopes

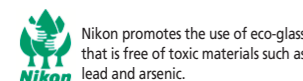


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*1 Nikon Advanced Modulation Contrast
*2 Brighter than 100W

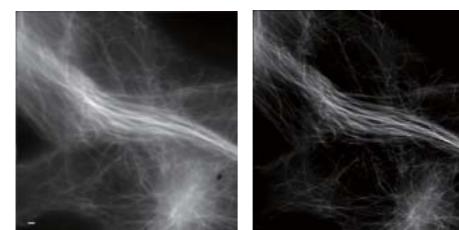
Super Resolution Microscopes

Super Resolution Microscope

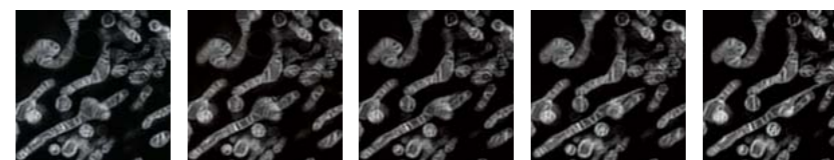
N-SIM

Temporal resolution of 0.6 sec./frame enables super resolution time-lapse imaging of dynamic live cell events with double the resolution of conventional optical microscopes

- Offering nearly twice (up to approx. 85nm*) the resolution of conventional optical microscopes, N-SIM enables detailed visualization of minute intracellular structures and their interactive functions by utilizing “Structured Illumination Microscopy” technology (*excited with 488nm laser, in TIRF-SIM mode)
- Ultra-high temporal resolution of up to 0.6 sec/frame* enables super-resolution time-lapse imaging of dynamic molecular interactions in living cells (*with TIRF-SIM/2D-SIM mode)
- Various observation modes
 - TIRF-SIM/2D-SIM mode allows high-speed super resolution 2D image capture with incredible contrast; TIRF-SIM doubles the resolution of conventional TIRF microscopes, facilitating a greater understanding of molecular interactions at the cell surface
 - 3D-SIM mode allows axial super resolution imaging with optical sectioning at 300nm resolution in specimens of up to 20µm thick and eliminates out-of-focus background fluorescence, resulting in breathtaking contrast
- 5-laser multi-spectral super resolution imaging facilitates the study of dynamic interactions of multiple proteins at the molecular level



Left: with conventional microscope, Right: with N-SIM
Microtubules in B16 melanoma cell



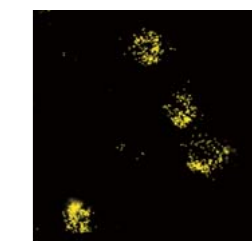
Dynamics of mitochondria (approx. 1 sec. image capturing intervals)

Super Resolution Microscope

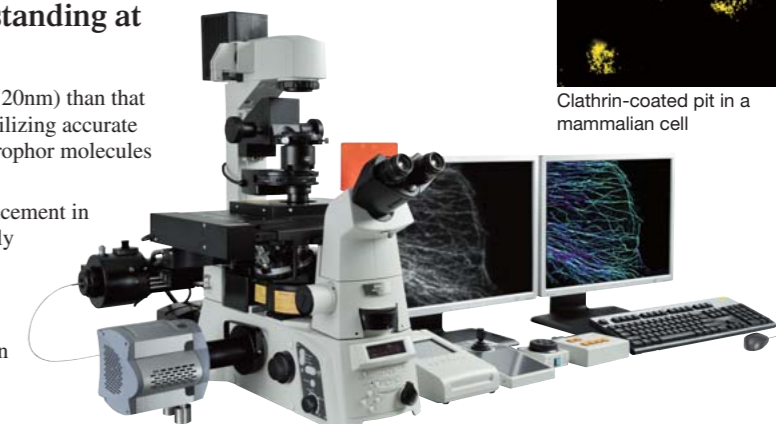
N-STORM

Resolution 10 times that of conventional optical microscopes enables a greater understanding at the molecular level

- Ultra-high spatial resolution 10 times higher (approx. 20nm) than that of conventional optical microscopes is achieved by utilizing accurate localization information of thousands of discrete fluorophore molecules within a specimen
- In addition to lateral super-resolution, a tenfold enhancement in axial resolution (approx. 50nm) is achieved, effectively providing 3D information at the nanoscopic scale
- Multicolor super-resolution imaging utilizing a combination of various “activator” and “reporter” probes affords a critical insight into the co-localization and interaction of multiple proteins at the molecular level



Clathrin-coated pit in a mammalian cell



Inverted Microscopes

Inverted Research Microscopes

ECLIPSE Ti Series

Ultimate solution for advanced imaging methods in live cell research

- Ti-E with motorized focusing and motorized four-port changeover, Ti-U with manual four-port changeover and Ti-S with manual two-port changeover
- High-speed multi-channel screening is possible by fast motorized control (Ti-E)
- Perfect Focus System (PFS) keeps in focus in real-time during long-term observation (Ti-E)
- Imaging software NIS-Elements provides total system control for 6D time-lapse imaging (Ti-E)
- “Full intensity” external phase contrast unit allows use of specialized objectives without a phase ring and acquisition of high-quality images with high NA objectives
- Nikon original stratum structure allows simultaneous mounting of multiple fluorescence turrets and simultaneous acquisition of multiple wavelengths with two cameras including optional back port
- By attaching a HUB controller, desired components such as TIRF and filter turret, in addition to the stage and nosepiece can be motorized



Ti-E configuration with motorized accessories



Ti-U configuration with epi-fluorescence illuminator



Ti-S

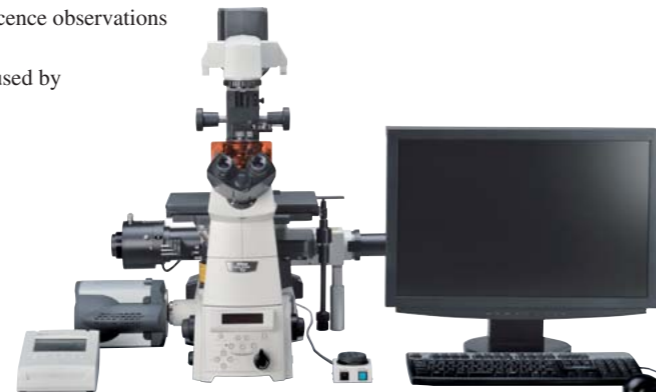
Accessories for Ti Series

Motorized/Manual Laser TIRF Illuminator Unit (for Ti-E/U)

- Enables visualization of a single molecule with extraordinary high S/N ratio
- Imaging within approx. 100nm from the coverslip-specimen interface with an evanescent wave
- The motorized TIRF system enables motorized control of laser incident angle from a PC or remote controller as well as storage and recall of up to four angles
- Laser TIRF, surface reflection interference contrast, and epi-fluorescence observations are switchable
- TIRF objective with correction ring adjusts image deteriorations caused by temperature changes



Motorized laser TIRF illumination unit



Accessories for Ti Series

TIRF Photoactivation Illuminator Unit (for Ti-E/U)



- A laser TIRF illuminator, photoactivation unit and epi-fluorescence illuminator have been combined in a single unit
- Switching between the three functions is easy

Photoactivation Illuminator Unit (for Ti-E/U)



- Photoactivation and photoconversion using proteins such as PA-GFP and Kaede are possible
- Realizes photoactivation of an arbitrary determined spot
- Photoactivation and epi-fluorescence observation are switchable

Epi-fl Illuminator Unit with White Light TIRF (for Ti-E/U/S)



- Handy and cost-effective TIRF observation using white light such as mercury illumination
- White light TIRF, oblique light fluorescence, surface reflection interference contrast, and epi-fluorescence observations are switchable
- The wide wavelength band of white light makes multiple wavelength TIRF observation possible by changing the filter

Inverted Microscopes

ECLIPSE TS100/TS100-F

Apodized Phase Contrast objectives visualize minute details with greater resolution
Also supports fluorescence and NAMC*

- Both high-luminescent LED (Eco-illumination) model and halogen lamp model are available
- Adopts CFI160 infinity optics for this class of microscope
- Apodized Phase Contrast objectives visualize minute details within a specimen
- Both TS100 and TS100-F support fluorescence microscopy
- Nikon Advanced Modulation Contrast (NAMC) observation is possible, enabling colorless and transparent samples in a plastic dish to be observed in high relief, a procedure not possible with DIC observation
- Eyepiece tube inclination and comfortable eye-point height for natural viewing posture when sitting or standing
- Low-profile 195mm-high stage with transparent acrylic stage ring for easy confirmation of objective in use
- Quintuple backward-facing nosepiece offers plenty of clearance for easy rotation



TS100 (Binocular tube model)



TS100-F (Trinocular tube model)

*Nikon Advanced Modulation Contrast

Accessories for Inverted Microscopes

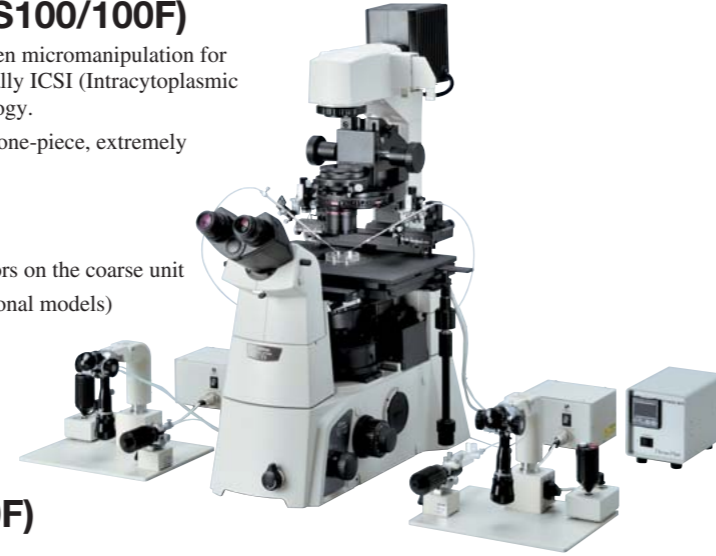
Oil Hydraulic Micromanipulation Systems

NT-88-V3 Series (for Ti-E/U/S, TS100/100F)

The NT-88-V3 series provides microscopic and precise specimen micromanipulation for experiments in the fields of IVF (In Vitro Fertilization), especially ICSI (Intracytoplasmic Sperm Injection), transgenic biotechnology, and electrophysiology.

- Assembly of the micromanipulator is fast and easy due to the one-piece, extremely stable mounting adapter
- Easy-to-use hanging-type joystick
- Smooth operation without needle drift
- Needle top can be easily adjusted thanks to alignment indicators on the coarse unit
- Compact and stable design (less than half the size of conventional models)

(Manufactured by Narishige Co., Ltd.)



Water Hydraulic Micromanipulation System

MHW-3 (for Ti-E/U/S, TS100/100F)

Needle drift caused by changes in room temperature has been decreased to the lowest possible level.

Optimized for long hours of micromanipulation, such as in electrophysiologic patch-clamp experiments.

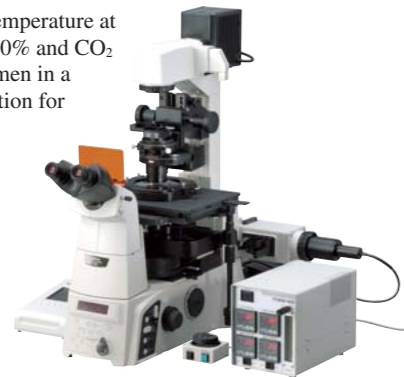
(Manufactured by Narishige Co., Ltd.)



Stage Incubation System INU Series (for Ti-E/U/S, TS100/100F)

It sustains the internal temperature at 37°C with humidity of 90% and CO₂ of 5% to keep the specimen in a stable and precise condition for about three days.

(Manufactured by Tokai Hit Co., Ltd.)



HG Precentered Fiber Illuminator "Intensilight" (for Ti-E/U/S, Ni-E/U, Ci-E/L/S, FN1, AZ100/100M)

Long-life mercury light source, suitable for fluorescence observation

- Precentered lamp—easy lamp replacement, no alignment required
- Average lamp lifetime as long as 2,000 hours
- Fiber connection—less heat and electrical noise conducted to microscope body. Ideal for time lapse and other lengthy observations
- Constant, non-fluctuating light intensity through a direct current (DC) lighting
- Motorized model available—shutter and light intensity controllable from PC or remote controller

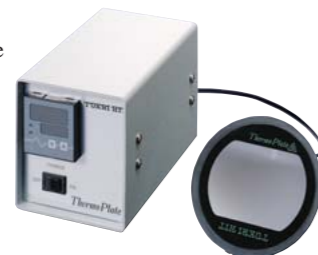


Thermal Plate Warmer

ThermoPlate MATS Series (for Ti-E/U/S, TS100/100F)

A temperature controllable stage ring with a glass heating plate keeps the specimen at a set temperature. Temperature is adjustable from room temperature to 50°C in 0.1°C increments.

(Manufactured by Tokai Hit Co., Ltd.)



Cell Incubator Observation

Cell Culture Observation System

BioStation CT

Automated stem cell screening in culture environment

- Operations from culture to observation of cells run automatically under optimal conditions in the same incubator
- Culture vessels are transferred from the rack to the microscope stage and cell image is captured according to a user-configured schedule
- Remote observation and setting from outside the laboratory via a network is possible
- Captures micro images from 2x to 40x with phase contrast observation using apodized phase contrast (APC) optics and fluorescence observation using three-color LED illumination. A bird's eye macro view allows the entire vessel to be viewed from above
- High resolution whole vessel images can be acquired with Full Well Scan Observation. This mode allows automatic processing and stitching of images to reconstruct the entire image of the culture vessel, and quick and easy discovery of developing iPS colonies. Images are zoomed so that colonies can be seen without loss of resolution
- Optional image analysis software CL-Quant allows automatic cell detection from a phase contrast image, and enables identification and counting of iPS colonies



Time Lapse Imaging System

BioStation IM-Q

The perfect and simple solution for reliable time-lapse imaging

- A totally integrated cell incubation and time-lapse imaging system
- High-sensitivity cooled monochrome CCD camera captures bright, high-contrast images
- Accurate, reliable data acquisition provided by precision XYZ control and by eliminating the focus drift caused by the stage movement and temperature change
- Powerful and intuitive software. Effortless operations with ergo controller and mouse
- Stable, consistent control of temperature, humidity and CO₂ gas concentration maintains cell activity for long periods
- Exceptional phase contrast and fluorescence imaging quality
- Instant set-up. Space-saving design. No need for darkroom
- Convenient accessories include a vessel and chamber for multi-sample observation and built-in perfusion components



Upright Microscopes

Motorized Advanced Research Microscope

ECLIPSE Ni-E (focusing stage model and focusing nosepiece model)

Automated imaging capability for most advanced observations

- High-precision motorized focusing supports automated Z-series acquisition
- Observation method can be changed using buttons on the microscope body. Microscope settings are automatically set to optimal positions according to selected magnification
- Various motorized accessories can be attached
- Stratum structure allows double layer mounting of a photoactivation unit and an epi-fluorescence attachment to enable simultaneous photoactivation and imaging
- High-speed motorized excitation/barrier filter wheel for multicolor imaging
- Exchangeable focusing mechanism from focusing stage to focusing nosepiece
- High optical performance: uniform and bright illumination using fly-eye optics
- Built-in, easy-to-reach image capture button. Angled operation buttons allow touch-type operations during observation



Ni-E (Focusing stage) configured with motorized epi-fluorescence illuminator, motorized condenser and motorized quadocular tilting tube

Ni-E (Focusing nosepiece) configured with motorized stage, motorized epi-fluorescence illuminator, photoactivation unit, motorized quadocular tilting tube and camera

Advanced Research Microscope

ECLIPSE Ni-U

Manual microscope with flexible selection of motorized options

- Motorized nosepiece, motorized epi-fluorescence cube turret and motorized shutter can be utilized
- Stratum structure allows double layer mounting of photoactivation unit and epi-fluorescence attachment to enable simultaneous photoactivation and imaging
- High optical performance: uniform and bright illumination using fly-eye optics
- Built-in, easy-to-reach image capture button



Ni-U configured with an ergonomic binocular tube

Upright Microscopes

Clinical and Laboratory Microscopes

ECLIPSE Ci-E/Ci-L/Ci-S

Exceptional comfort for clinical and laboratory observation

- High-luminescent eco-friendly LED (Eco-illumination) for Ci-E/Ci-L and halogen illumination for Ci-S
- Ci-E offers motorized magnification switching and automatic light intensity reproduction, enabling use of motorized condenser
- Angle and extension adjustable ergonomic binocular tube ensures observation with natural posture. Eye-point height can be lifted using an eyelevel riser
- Stage height can be lowered by adding a nosepiece spacer, and locked for easy refocusing. Height-adjustable stage handle. Durable, scratch-resistant ceramic-coated stage
- Built-in capture button allows easy imaging with the DS series camera



Ci-E configured with ergonomic binocular tube

Ci-L configured with ergonomic binocular tube and DS series camera

Ci-S configured with ergonomic binocular tube

Clinical & Educational Microscope

ECLIPSE E200

Outstanding cost performance—striking image sharpness, operability and durability

- Both high-luminescent LED (Eco-illumination) model and halogen lamp model are available
- Adopts CFI60 infinity optics for this class of microscope. Plan objectives that excel in image flatness come standard
- One-touch refocusing stage for easier specimen handling
- Focusing knob and stage handle are low-positioned and equidistant from operator, permitting one-handed operation in natural posture
- Ergonomic binocular tube and eye-level risers are available for adjusting the eyepoint
- Anti-mold treated
- E200-F (model with field diaphragm) is also available
- Various accessories are available, such as dedicated epi-fluorescence attachment
- Halogen lamp model is compliant with 100V-240V (multi-voltage)



Upright Microscope

Educational Microscope

ECLIPSE E100

High optical quality, simple operation and rigid design

- Both high-luminescent LED (Eco-illumination) model and halogen lamp model are available
- CFI optical system and dedicated objectives for flat images
- Siedentopf-type eyepiece tube and eye level adjustments; digital camera attachable to trinocular eyepiece tube
- Phase contrast observation for high-contrast viewing of transparent and colorless specimens
- Anti-mold treatment for objectives, eyepieces, and eyepiece tube



Microscope for Asbestos Identification

Polarizing/Dispersion Microscope

ECLIPSE LV100-UDM-POL/DS

Dispersion staining microscopy that aids in the identification of asbestos

- Characteristic dispersion colors of each asbestos type corresponding to the refraction index of the immersion liquid can be observed using the phase contrast condenser and objective lens (40x) for dispersion staining microscopy
- Qualitative asbestos analysis is possible by determination of birefringence and elongation (positive/negative); measurement of extinction angle, refractive index, and birefringence magnitude (retardation); observation of pleochroism



Polarizing Microscopes

ECLIPSE LV100POL/50iPOL/E200POL

- CFI60 optics deliver world-class optical performance
- Excellent basic performance, operability, durability and, above all, outstanding image sharpness
- LV100POL is a research polarizing microscope that boasts twice the rigidity of conventional models and a brightness exceeding 100W (12V-50W model with centering quintuple nosepiece). The built-in Fly-Eye optics ensures uniform illumination, making it ideal for digital imaging
- ECLIPSE 50iPOL is compact yet possesses high functionality, such as a nosepiece with DIN standard compensator slot (6V-30W model with centering quintuple nosepiece)
- E200POL is a cost-efficient and extremely compact model (6V-20W/30W multi-voltage model with quadruple nosepiece)



LV100POL



50iPOL



E200POL

Microscope for Patch Clamp Experiments

ECLIPSE FN1

Dedicated patch-clamp microscope with I-shaped body design—more room for smooth electrode manipulation

- Corrects axial chromatic aberration up to IR light (to 850nm). New 40x and 60x objectives for crisp high resolution IR-DIC imaging
- 100x objective with NA 1.1 and working distance 2.5mm comes with a correction function for depth- and thermally-induced aberrations
- Vertical motion nosepieces enables magnification changes without moving Petri dish (15mm or less in height)
- Easy switching between IR light and reflected illumination
- With an optional variable magnification double port (0.35x, 2x, 4x), both wide field and high magnification observations can be carried out with a 16x objective alone
- Deep imaging of living specimens is possible in configuration with multiphoton confocal system A1 MP+/A1R MP+



All objectives have wide approach angles and long working distances (45° and 3.5mm with 40x objective).



Configuration with Narishige micromanipulators and epi-fluorescence attachment

Stereoscopic Microscopes

Stereoscopic Zoom Microscopes

SMZ1500

- Total magnification 3.75-540x
- Zoom ratio 15:1
- Compatible with a camera
- Exchangeable eyepiece tube
- Exchangeable objective
- Compatible with various accessories
- Built-in aperture diaphragm



Configured with C-DSD diascopic stand

SMZ1000

- Total magnification 4-480x
- Zoom ratio 10:1
- Compatible with a camera
- Exchangeable eyepiece tube
- Exchangeable objective
- Compatible with various accessories



Configured with C-PS160 plain stand

SMZ800

- Total magnification 5-378x
- Zoom ratio 6.3:1
- Compatible with a camera
- Exchangeable eyepiece tube
- Exchangeable objective
- Compatible with various accessories



Configured with C-PS plain stand

SMZ745

- Total magnification 3.35-300x
- Zoom ratio 7.5:1
- Eyepiece inclination 45°



SMZ745 configured with C-PS plain stand

SMZ745T

- Total magnification 3.35-300x
- Zoom ratio 7.5:1
- Compatible with a camera
- Eyepiece inclination 45°



SMZ745T configured with C-PS plain stand

SMZ660

- Total magnification 4-300x
- Zoom ratio 6.3:1
- Eyepiece inclination 60°



SMZ660 configured with C-PS plain stand

Stereoscopic Microscopes

Stereoscopic Zoom Microscopes

SMZ445

- Total magnification 4-70x
- Zoom ratio 4.4:1
- Eyepiece inclination 45°



SMZ445 configured with hybrid LED stand

SMZ460

- Total magnification 3.5-60x
- Zoom ratio 4.3:1
- Eyepiece inclination 60°



SMZ460 configured with hybrid LED stand

Stereoscopic Microscope

SM-5

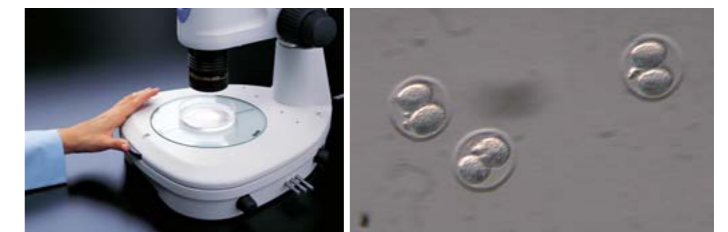
- Total magnification 10-60x
- Eyepiece inclination 45°



Accessories for Stereoscopic Microscopes

Diascopic Stand

Nikon's unique high-contrast OCC illumination (Oblique Coherent Contrast) is available with a C-DSD diascopic stand, allowing colorless, transparent samples to be observed in high relief. A fine-focus knob is provided, making critical focus adjustments much easier.



C-DSD diascopic stand

Fertilized mouse eggs

Thermal Plate Specimen Warmer (Tokai Hit Co., Ltd.)

The ThermoPlate MATS series accurately controls the temperature of live specimens. The specimen warmers combine flat surface heating plates with durable glass to provide superior operability.

- Preset temperature ambient to 50°C
- Accuracy of temperature indication $\pm 0.3^\circ\text{C}$



MATS-USMZSL for C-DSS/DSD/BD diascopic stands



MATS-USMZR ring type $\phi 180\text{mm}$

Beam Splitters

A camera can be attached to the microscope with the use of a beam splitter. The P-IBSD2 beam splitter D2 has two ports. (Compatible with SMZ1500/1000/800)



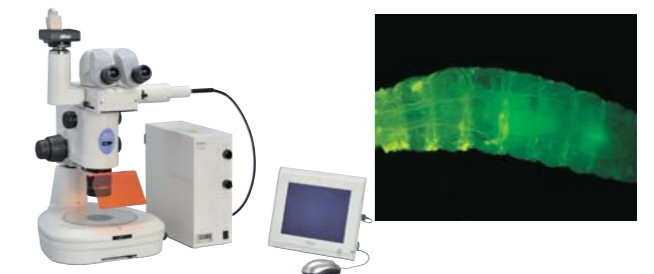
SMZ800 configured with P-IBSS2 beam splitter S2, DS-V11-L3 camera

Drawing Tube

The drawing tube, mounted between microscope body and eyepiece tube, allows images to be drawn during observation. (Compatible with SMZ1500/1000/800)

Epi-fluorescence Attachment

Switching between fluorescence and brightfield illumination is quick and easy, as is switching from one of four filter blocks to another. A camera can be mounted to this attachment via the optional photo port, with 100% of the light being delivered to the camera. (Compatible with SMZ1500/1000/800)



SMZ1500 configured with P-FLA2 epi-fluorescence attachment and DS-Fi1c-L3 camera

Teaching Head

The teaching head enables simultaneous observation of a single sample by two persons, making it ideal for educational purposes. (Compatible with SMZ1500/1000/800)



SMZ1500 configured with P-THSS teaching head

Multi-purpose Zoom Microscope

Multizoom AZ100/AZ100M/AZ-C2+

Continuously switchable magnifications, extending from macro to micro observation of the same specimen

- Covers a magnification range of 5x to 400x, thanks to 8x zooming optics and a unique triple nosepiece
- True on-axis observation and image capture are possible in the macro region
- Comes standard with an aperture stop
- Tilting trinocular eyepiece tubes can accommodate a digital camera
- The dedicated stands combine two focuses, one with an 85-mm stroke on the column side and one with a 10-mm stroke on the front stage, enabling observation of tall samples
- AZ100M with motorized focusing and motorized zooming makes it easy to capture Extended Depth of Focus (EDF) images
- AZ-C2+ offers high-definition macro confocal image capture in a single shot. Deep imaging of in-vivo whole specimens is also possible



AZ100M configured with Epi-Fl attachment

AZ100 configured with Epi-Fl attachment



AZ-C2+

Confocal Microscope System

Multiphoton Confocal Microscope

A1 MP+/A1R MP+

High-speed and high-resolution imaging of deep area in a living specimens

- A1 MP+ is equipped with a galvano (non-resonant) scanner that enables high-resolution imaging of up to 4096 x 4096 pixels
- A1R MP+ is equipped with both a galvano scanner and a resonant scanner, allowing ultrafast imaging of up to 420 fps (512 x 32 pixels)
- Deep imaging with high-sensitivity NDD (non-descanned detector); diascope NDD is also available for Ni-E
- Ultrasensitive GaAsP (gallium arsenide phosphide) NDD allows clear imaging in deeper areas than ever before
- Sharper, brighter imaging with high NA objectives deposited with Nano Crystal Coat
- High-speed, high-precision unmixing with NDD
- Multiphoton laser beam can be automatically aligned with a single click



Configured with Ni-E

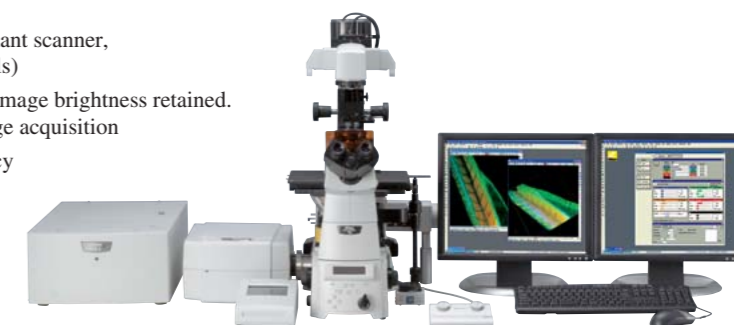
Confocal Microscope Systems

Confocal Microscope

A1+/A1R+

A1+ for high-resolution imaging, A1R+ for ultrafast and high-resolution imaging

- A1+ is equipped with a galvano scanner that enables high-resolution imaging of up to 4096 x 4096 pixels, and high-speed imaging of 10 fps (512 x 512 pixels)
- A1R+ is equipped with both a galvano scanner and a resonant scanner, allowing ultrafast imaging of up to 420 fps (512 x 32 pixels)
- With the VAAS pinhole unit, flare can be eliminated and image brightness retained. Moreover, different sectioning can be simulated after image acquisition
- Dichroic mirror with 30% increased fluorescence efficiency provides high image quality



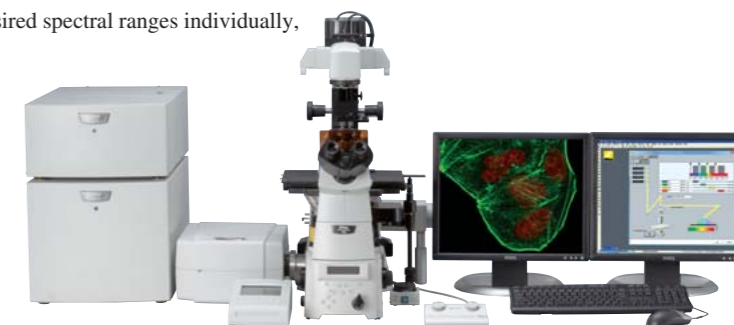
Configured with Ti-E

True Spectral Imaging Confocal Microscope

A1si+/A1Rsi+

High-performance spectral detector supports simultaneous excitation of multiple wavelengths

- Acquisition of 32 channels (512 x 32 pixels) at 24 fps in a single scan
- Accurate, real-time spectral unmixing
- Simultaneous excitation of four lasers
- V-filtering function adjusts total intensity of up to four desired spectral ranges individually, providing flexibility to handle new fluorescence probes



Configured with Ti-E

Confocal Microscope

C2+/C2si+

Powerful personal confocal microscope, essential for laboratories

- Highly efficient scanning head and detector provide noiseless, high contrast images
- High-speed imaging of 8 fps (512 x 512 pixels) and 100 fps (512 x 32 pixels) is possible
- With a host of functions, such as image stitching (large images) and broad analytical capabilities
- 4-channel simultaneous acquisition, such as 3-channel confocal plus DIC
- Spectral detector for C2si+ acquires 32-channels of spectra with a single scan, enabling unmixing of overlapped spectra



C2+ configured with Ni-E

CCD Cameras

Digital Camera System for Microscopes

Digital Sight Series

The Digital Sight series offers a choice of five camera heads and two control units, enabling an image capturing system to be assembled to suit each use.

Ultrahigh-resolution Cooled Color Camera Head DS-Ri1



- 12.7-megapixel, 2200TV line high-definition images
- Faithful reproduction of specimen color
- Smooth display of live images
- Reduces heat noise; captures fluorescence and darkfield images clearly

High-definition Color Camera Head DS-Fi2



- High-definition 5.0-megapixel CCD
- High resolution and high frame rate
- High dynamic range and accurate color reproduction

High-definition Cooled Color Camera Head DS-Fi1c



- Cooling mechanism enables it to capture fluorescence and darkfield images clearly
- High-definition 5.0-megapixel CCD

High-speed Color Camera Head DS-Vi1



- High-frame-rate, 2.0-megapixel CCD
- Suitable for monitoring of microscopy images

High-sensitivity Cooled Monochrome Camera Head DS-Qi1



- High sensitivity equivalent to ISO 800
- Cooling mechanism reduces dark current to 0.7e-/pixel/s and readout noise to 8e- rms, realizing a wide dynamic range
- Superior quantitivity with linearity of >98%

PC-use Control Unit DS-U3



Configured with ECLIPSE Ni-U

- Versatile image capture, processing, measurement and analysis when coupled with imaging software NIS-Elements
- High-speed image transfer for PC via IEEE 1394b connection
- Compact, space-saving design
- Allows control of Nikon motorized microscopes

Standalone Control Unit DS-L3



Configured with ECLIPSE Ci-L

- Built-in high-definition 8.4-in. large LCD monitor
- Camera can be controlled with mouse operation or touch panel operation, eliminating the necessity of a PC connection
- Various digital interfaces including USB 2.0 connection
- Pre-programmed imaging modes for different observation methods
- Allows control of motorized devices on Ni-E and Ni-U

Software

Imaging Software

NIS-Elements

NIS-Elements is an integrated platform of imaging software developed by Nikon to achieve comprehensive control of microscope image capture and document data management.

NIS-Elements handles multidimensional imaging tasks flawlessly with support for capture, display, peripheral device control, and data management & analysis of images (up to six-dimensional images).



Available in three distinct packages scaled to meet user needs and applications:

Ar NIS-Elements *Advanced Research*

NIS-Elements AR is optimized for advanced research applications. It features fully automated acquisition and device control through full 6D (X, Y, Z, Lambda (Wavelength), Time, Multipoint) image acquisition and analysis.

Br NIS-Elements *Basic Research*

NIS-Elements BR is suited for standard research applications. It features acquisition and device control through 4D (up to four dimensions can be selected from X, Y, Z, Lambda (Wavelength), Time, Multipoint) acquisition.

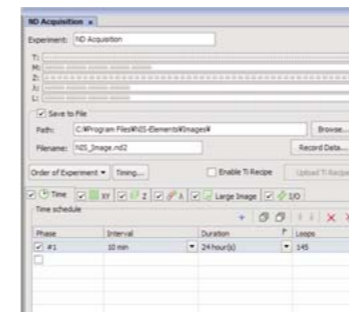
D NIS-Elements *Documentation*

NIS-Elements D supports color documentation requirements in bio-research, clinical and industrial applications, with basic measuring and reporting capabilities.

Various convenient plug-ins are available for advanced imaging and analysis capabilities.

Multidimensional Capturing

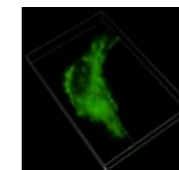
Up to 6D image acquisition combining dimensions such as X, Y, Z, time, wavelength and multipoint is easily set using the intuitive GUI.



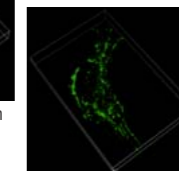
3D/2D Deconvolution

Haze and blur of the fluorescence image can be eliminated from the captured 3D image or from the 2D live preview image. (Separate plug-in for 3D and 2D)

3D deconvolution

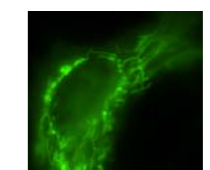


Before deconvolution

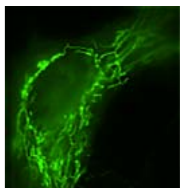


After deconvolution

2D deconvolution



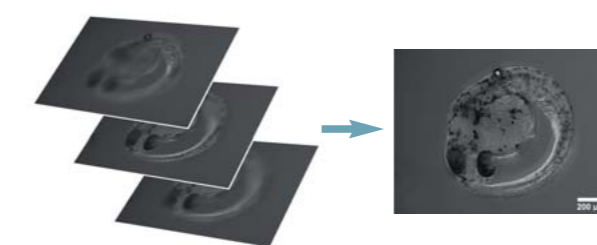
Before deconvolution



After deconvolution

Extended Depth of Focus

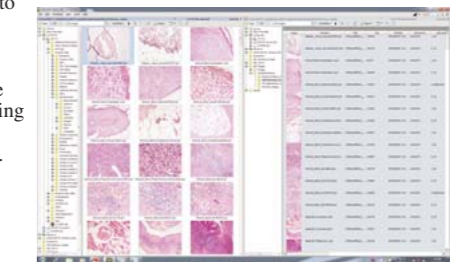
With the Extended Depth of Focus (EDF) plug-in, images that have been captured in a different Z-axis can be used to create an all-in-focus image. Also, it is possible to create stereovision images & 3D surface images to achieve virtual 3D imaging.



All-in-focus image created from a sequence of Z-stack images

Database

NIS-Elements has a powerful image database module that supports image and meta data. Various databases & tables can easily be created and images can be saved to the database via one simple mouse-click. Filtering, sorting and multiple grouping are also available according to the database field given for each image.



Visit www.nis-elements.com for more detailed information

CFI60 Objectives

Type	Use	Model	Immersion	NA	W.D. (mm)	Cover glass thickness	Correction ring	Spring loaded	Brightfield	Darkfield	DIC ⁴	Phase contrast	Polarizing	Fluorescence		Ti-E PFS	
														Visible light	UV		
Achromat	Brightfield (CFI)	4x		0.10	30.00	—			○				△	○			
		10x		0.25	7.00	—			○	△				△	○		
		LWD 20x		0.40	3.90	0.17			○	○●				△	○		
		40x		0.65	0.65	0.17		✓	○	○●				△	○		
		LWD 40xC		0.55	2.7-1.7	0.2-0	✓		○	○●				△	○		
		60x		0.80	0.30	0.17		✓	○	●				△	○		
		100x Oil	Oil	1.25	0.23	0.17		✓	○	○●				△	○		
	100xSH (with iris)	Oil	0.5-1.25	0.23	0.17		✓	○	○●				△	○			
	Polarizing (CFI)	P 4x		0.10	30.00	—			○					○	○		
		P 10x		0.25	7.00	—			○	△				○	○		
		LWD P 20x		0.40	3.90	0.17			○	○●				○	○		
		P 40x		0.65	0.65	0.17		✓	○	○●				○	○		
		P 100x Oil	Oil	1.25	0.23	0.17		✓	○	○●				○	○		
	Phase contrast (CFI)	DL 10x		0.25	7.00	—			○	△		○ PH1	△	△	○	○	
		LWD DL 20x		0.40	3.90	0.17			○	○●		○ PH1	△	△	○	○	
		LWD DL 20xF		0.40	3.10	1.2			○	○●		○ PH1	△	△	○	○	
		DL 40x		0.65	0.65	0.17		✓	○	○●		○ PH2	△	△	○	○	
		LWD DL 40x		0.55	2.7-1.7	0.2-0	✓		○	○●		○ PH2	△	△	○	○	
		DL 100x Oil	Oil	1.25	0.23	0.17		✓	○	○●		○ PH3	△	△	○	○	
		BM 10x		0.25	7.00	—			○	△		○ PH1	△	△	○	○	
	Apodized phase contrast (CFI)	ADL 10x		0.25	6.20	1.2			○	○●		○ PH1	△	△	○	○	
LWD ADL 20xF			0.40	3.10	1.2			○	○●		○ PH1	△	△	○	○		
LWD ADL 40xF			0.55	2.10	1.2			○	○●		○ PH1	△	△	○	○		
LWD ADL 40xC			0.55	2.7-1.7	0.2-0	✓		○	○●		○ PH2	△	△	○	○		
Advanced modulation contrast (CFI)	NAMC 10x		0.25	6.20	1.2			○	○●				△	○	○		
	LWD NAMC 20xF		0.40	3.10	1.2			○	○●				△	○	○		
	LWD NAMC 40xC		0.55	2.7-1.7	0.2-0	✓		○	○●				△	○	○		
Plan Achromat	Brightfield (CFI Plan)	UW 1x		0.04	3.20	—			○				△	△			
		UW 2x		0.06	7.50	—			○					△	△		
		4x		0.10	30.00	—			○					△	○		
		10x		0.25	10.50	—			○	△				△	○		
		20x		0.40	1.20	0.17			○	○●				△	○		
		40x		0.65	0.56	0.17		✓	○	○●				△	○		
		50x Oil	Oil	0.90	NCG0.35	—		✓	○	●				△	○		
	100x Oil	Oil	1.25	0.20	0.17		✓	○	○●				△	○			
	Phase contrast (CFI Plan)	DL 10x		0.25	10.50	—			○	△		○ PH1	△	△	○	○	
		DL 20x		0.40	1.20	0.17			○	○●		○ PH1	△	△	○	○	
		DL 40x		0.65	0.56	0.17		✓	○	○●		○ PH2	△	△	○	○	
		DL 100x Oil	Oil	1.25	0.20	0.17		✓	○	○●		○ PH3	△	△	○	○	
	No cover glass (CFI Plan)	NCG 40x		0.65	0.48	0		✓	○	○●				△	○	○	
		NCG 60x (CF objective)*1		0.85	0.35	0		✓	○	●				△	○	○	
		NCG 100x		0.90	0.26	0		✓	○	●				△	○	○	
Super long WD (CFI L Plan EPI)	SLWD 20x		0.35	24.00	0			○	○●				△	○	○		
	SLWD 50x		0.45	17.00	0			○	○●				△	○	○		
	SLWD 100x		0.70	6.50	0			○	○●				△	○	○		
S Plan Fluor ²	Brightfield (CFI S Plan Fluor)	ELWD 20xC		0.45	8.2-6.9	0.2-0	✓		○	○●	○		○	○	○	●	
		ELWD 40xC		0.60	3.6-2.8	0.2-0	✓		○	○●	○		○	○	○	●	
		ELWD 60xC		0.70	2.6-1.8	0.1-1.3	✓		○	○●	○		○	○	○	●	
	Apodized phase contrast (CFI S Plan Fluor)	ELWD ADM 20xC		0.45	8.2-6.9	0.2-0	✓		○	○●		○ PH1	○	○	○	●	
		ELWD ADM 40xC		0.60	3.6-2.8	0.2-0	✓		○	○●		○ PH2	○	○	○	●	
		ELWD ADL 60xC		0.70	2.6-1.8	0.1-1.3	✓		○	○●		○ PH2	○	○	○	●	
Advanced modulation contrast (CFI S Plan Fluor)	ELWD NAMC 20xC		0.45	7.40	0.2-0	✓		○	○●				○	○	○		
	ELWD NAMC 40xC		0.60	3.10	0.2-0	✓		○	○●				○	○	○		
S Fluor ³	Brightfield (CFI S Fluor)	4x		0.20	15.50	—			○				△	○	○ Wide	●	
		10x		0.50	1.20	0.17		✓	○	○●	○			△	○	○ Wide	●
		20x		0.75	1.00	0.17		✓	○	○●	○			△	○	○ Wide	●
		40x		0.90	0.30	0.11-0.23	✓	✓	○	○●	○			△	○	○ Wide	●
		40x Oil	Oil	1.30	0.22	0.17		✓/w/stopper	○	○●	○			△	○	○ Wide	●
Universal Plan Fluor	No cover glass polarizing (CFI LU Plan Fluor EPI)	P 5x		0.15	23.50	—			○				○	○	○		
		P 10x		0.30	17.50	0			○	△				○	○	○	
		P 20x		0.45	4.50	0			○	○●				○	○	○	
		P 50x		0.80	1.00	0		✓	○	○●				○	○	○	
		P 100x		0.90	1.00	0		✓	○	○●				○	○	○	

*1 To use with the CFI60 optics microscope (not possible in E400), an objective conversion adapter is necessary.
 *2 Axial chromatic aberration is corrected in shorter wavelength ranges than the Plan Fluor series to improve image clarity.
 *3 Transmits an ultraviolet light up to a 340nm wavelength
 *4 See page 20 for compatible prisms *5 Dedicated for FN1 (CFI75 objective)

Note 1. Model numbers
 The below letters, when attached to the end of model numbers, indicate the respective features.
 F: for use with 1.2mm-thick cover glass W: water immersion type
 C: with correction ring W: water dipping type
 NCG: for use without cover glass Mi: multi immersion (oil, water, glycerin) type
 SH: with iris

Note 2. Cover glass thickness
 —: can be used without cover glass
 ○: use without cover glass

Note 3. Darkfield microscopy
 Possible with the following
 △: universal condenser (dry) and darkfield ring
 ○: above and darkfield condenser (dry)
 ●: darkfield condenser (oil)

Type	Use	Model	Immersion	NA	W.D. (mm)	Cover glass thickness	Correction ring	Spring loaded	Brightfield	Darkfield	DIC ⁴	Phase contrast	Polarizing	Fluorescence			Ti-E PFS
														Visible light	UV	NIR	
Plan Fluor	Brightfield (CFI Plan Fluor)	4x		0.13	17.10	—			○				△	○	○		
		10x		0.30	16.00	0.17			○	△	○			○	○	○	●
		20x		0.50	2.10	0.17			○	○●	○			○	○	○	
		20xA MI	Oil, water glycerin,	0.75	0.51-0.35 0.51-0.34 0.49-0.33	0-0.17	✓	✓	○	○●	○			○	○	○	
		40x		0.75	0.66	0.17		✓	○	○●	○			○	○	○	●
		40x Oil	Oil	1.30	0.20	0.17		✓/w/stopper	○		○	EXT PH3-40x	○	○	○	○	●
		60x		0.85	0.40-0.31	0.11-0.23	✓	✓	○	○●	○			○	○	○	
		60xSH (with iris)	Oil	0.50-1.25	0.22	0.17		✓	○	○●	○			○	○	○	
		100x		0.90	0.32-0.28	0.14-0.20	✓	✓	○	○●	○			○	○	○	
		100x Oil	Oil	1.30	0.16	0.17		✓/w/stopper	○	○●	○			○	○	○	●
	100xSH (with iris)	Oil	0.50-1.30	0.20	0.17		✓	○	○●	○			○	○	○		
	Phase contrast (CFI Plan Fluor)	DL 4x		0.13	16.40	1.2			○			○ PHL		○	○		
		DL 10x		0.30	16.00	0.17			○	△		○ PH1		○	○	●	
		DL 10x		0.30	15.20	1.2			○	△		○ PH1		○	○		
		DLL 20x		0.50	2.10	0.17			○	○●		○ PH1		○	○		
DLL 40x			0.75	0.66	0.17		✓	○	○●		○ PH2		○	○	●		
DM 40xDS			0.75	0.66	0.17		✓	○	○●		○ PH2		○	○	○	●	
Apodized phase contrast (CFI Plan Fluor)	ADH 100x Oil	Oil	1.30	0.16	0.17		✓/w/stopper	○			○ PH3		○	○	○	●	
Plan Apochromat	Brightfield (CFI Plan Apo)	λ 2x		0.10	8.50	—			○				○	○	△	○	
		λ 4x		0.20	20.00	—			○				○	○	△	○	
		λ 10x		0.45	4.00	0.17			○				○	○	△	○	
		λ 20x		0.75	1.00	0.17		✓	○	○●	○			○	○	△	○
		VC 20x		0.75	1.00	0.17		✓	○	○●	○			○	○	△	○
		λ 40x		0.95	0.21 (0.25-0.16)	0.11-0.23	✓	✓	○	○●	○			○	○	△	○
		λ 60x		0.95	0.15 (0.21-0.11)	0.11-0.23	✓	✓	○	○●	○			○	○	△	○
		λ 60x Oil	Oil	1.40	0.13	0.17		✓	○		○	EXT PH3-60x	○	○	△	○	●
		VC 60x Oil	Oil	1.40	0.13	0.17		✓	○		○	EXT PH3-60x	○	○	△	○	●
		VC 60xA WI	Water	1.20	0.31-0.28	0.15-0.18	✓</										

Combinations of DIC Prisms and Objectives

For Ti series inverted microscopes

		System Condenser LWD Dry, Motorized System Condenser LWD Dry						HNA Condenser Lens Dry				HNA Condenser Lens Oil			
		Standard		High Contrast		High Resolution		Standard		High Resolution		Standard		High Resolution	
		Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider
10x	Plan Fluor 10x S Fluor 10x Plan Apo λ 10x	LWD N1 Dry	10x	—		—		—		—		—		—	
20x	Plan Fluor 20x S Fluor 20x Plan Fluor 20xA MI Plan Apo λ 20x Plan Apo VC 20x	LWD N2 Dry	20x	LWD N1 Dry	20x-C	—		HNA N2 Dry	20x	—		HNA N2 Oil	20x	—	
	S Plan Fluor ELWD 20xC	LWD N1 Dry	20x II	—		—		—		—		—		—	
40x	Plan Fluor 40x S Fluor 40x Plan Apo λ 40x Apo LWD 40xWI λS	LWD N2 Dry	40x I	LWD N1 Dry	40x I-C	—		HNA N2 Dry	40x I	—		HNA N2 Oil	40x I	—	
	Plan Fluor 40x Oil S Fluor 40x Oil Apo 40xWI λS		40x II	—		40x II	—		40x II	—					
	S Plan Fluor ELWD 40xC	LWD N1 Dry	40x IV	—		—		—		—		—		—	
60x	Plan Apo λ 60x Plan Apo VC 60x Oil Apo TIRF 60x Oil	LWD N2 Dry	60x I	—		LWD NR Dry	60x I-R	HNA N2 Dry	60x I	HNA NR Dry	60x I-R	HNA N2 Oil	60x I	HNA NR Oil	60x I-R
	Plan Fluor 60x Oil Plan Fluor 60x Plan Apo λ 60x Oil Apo 60xH λS		60x II	60x II-R	60x II		60x II-R		60x II		60x II-R				
	Plan Apo VC 60xA WI Plan Apo IR 60xWI		60x IV	60x IV-R	60x IV		60x IV-R		60x IV		60x IV-R				
	S Plan Fluor ELWD 60xC	LWD N1 Dry	60x III	—		—		—		—		—		—	
100x	Plan Fluor 100x Plan Apo λ 100x Oil Plan Apo VC 100x Oil Apo TIRF 100x Oil	LWD N2 Dry	100x I	—		LWD NR Dry	100x I-R	HNA N2 Dry	100x I	HNA NR Dry	100x I-R	HNA N2 Oil	100x I	HNA NR Oil	100x I-R
	Plan Fluor 100x Oil Plan Fluor 100x Oil Iris		100x II	100x II-R	100x II		100x II-R		100x II		100x II-R				
	S Plan Fluor ELWD 100xC	LWD N1 Dry	100x III	—		—		—		—		—		—	

For Ni-E (focusing stage)/Ni-U upright microscopes

		Universal Condenser Dry/Motorized Universal Condenser Dry						DIC Condenser Oil			
		Standard		High Contrast		High Resolution		Standard		High Resolution	
		Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider	Condenser Module	DIC Slider
10x	Plan Fluor 10x S Fluor 10x Plan Apo λ 10x	N1 Dry	10x	—		—		—		—	
20x	Plan Fluor 20x Plan Fluor 20xA MI S Fluor 20x Plan Apo λ 20x Plan Apo VC 20x	N2 Dry	20x	N1 Dry	20x-C	—		N2 Oil	20x	—	
	S Plan Fluor ELWD 20xC	N1 Dry	20x II	—		—		—		—	
40x	Plan Fluor 40x S Fluor 40x Plan Apo λ 40x Apo LWD 40xWI λS	N2 Dry	40x I	N1 Dry	40x I-C	—		N2 Oil	40x I	—	
	Plan Fluor 40x Oil S Fluor 40x Oil Apo 40xWI λS		40x II	—		40x II	—				
	S Plan Fluor ELWD 40xC	N1 Dry	40x IV	—		—		—		—	
60x	Plan Apo λ 60x Plan Apo VC 60x Oil Apo TIRF 60x Oil	N2 Dry	60x I	—		NR Dry	60x I-R	N2 Oil	60x I	NR Oil	60x I-R
	Plan Fluor 60x Oil Plan Fluor 60x Plan Apo λ 60x Oil Apo 60xH λS		60x II	60x II-R	60x II		60x II-R				
	S Plan Fluor ELWD 60xC	N1 Dry	60x III	—		—		—		—	
100x	Plan Fluor 100x Plan Apo λ 100x Oil Plan Apo VC 100x Oil Plan Apo 100x NCG Oil Apo TIRF 100x Oil	N2 Dry	100x I	—		NR Dry	100x I-R	N2 Oil	100x I	NR Oil	100x I-R
	Plan Fluor 100x Oil Plan Fluor 100x Oil Iris		100x II	100x II-R	100x II		100x II-R				

For Ni-E (focusing nosepiece)/FN1 fixed stage microscopes

		FN-C LWD Condenser	
		Condenser Module	DIC Slider
10x	Plan Fluor 10xW	N1 Dry	10x
16x	LWD 16xW (CF175)	N2 Dry	16xl
20x	Fluor 20xW		20x
25x	Apo 25xW MP		25xl
40x	Apo 40xW NIR Fluor 40xW		40xIII
60x	Apo 60xW NIR Fluor 60xW		60xl
100x	Plan 100xW		100x-III

Epi-fluorescence Filters

Filter Characteristics

	Filters	Wavelengths	Characteristics	i series, Ti series	E series, TS100
U V	UV-1A	EX 365/10 DM 400 BA 400	•Narrow band pass—only 365nm (i line) of Mercury spectrum used •Narrow band pass minimizes auto-fluorescence and photo-bleaching	✓	✓
	UV-2A	EX 330-380 DM 400 BA 420	•Standard filter block for UV	✓	✓
	UV-2B	EX 330-380 DM 400 BA 435	•Darker background than UV-2A	✓	✓
	UV-2E/C (DAPI)	EX 340-380 DM 400 BA 435-485	•For DAPI, cutting off FITC (green) and TRITC (red) •Soft-coated type for high signal/noise •Band-Pass Barrier Filter used to cut off green and red	✓	✓
V	V-2A	EX 380-420 DM 430 BA 450	•Standard filter block for V	✓	✓
B V	BV-1A	EX 435/10 EM 455 BA 470	•Narrow band pass—only 435nm (g line) of Mercury spectrum used •Narrow band pass minimizes auto-fluorescence and photo-bleaching	✓	
	BV-2A	EX 400-440 DM 455 BA 470	•Standard filter block for BV	✓	✓
B	B-1A	EX 470-490 DM 505 BA 520	•Narrower excitation range than B-2A •FITC+Counter-stain (TRITC, PI)	✓	
	B-1E	EX 470-490 DM 505 BA 520-560	•For FITC (green), cutting off Rhodamine red •Band-Pass Barrier Filter used to cut off red	✓	
	B-2A	EX 450-490 DM 505 BA 520	•Standard filter block for B •For FITC + Counter-stain (TRITC, PI)	✓	✓
	B-2E	EX 450-490 DM 505 BA 520-560	•Similar to FITC •For FITC (green), cutting off Rhodamine red •Band-Pass Barrier Filter used to cut off red		✓
	B-2E/C (FITC)	EX 465-495 DM 505 BA 515-555	•Soft coated type for high signal/noise •For FITC (green), cutting off Rhodamine red •Band-pass Barrier Filter used to cut off red	✓	✓
	B-3A	EX 420-490 DM 505 BA 520	•Wide band pass—recommended for halogen illumination only	✓	✓
G	G-1B	EX 546/10 DM 575 BA 590	•Narrow band pass—only 546nm (e line) of Mercury spectrum used •Narrow band pass minimizes auto-fluorescence and photo-bleaching	✓	✓
	G-2A	EX 510-560 DM 575 BA 590	•Standard filter block for G	✓	✓
	G-2B	EX 510-560 DM 575 BA 610	•610nm barrier provides darker background and deep red emission	✓	
Y	G-2E/C (TRITC)	EX 540/25 DM 565 BA 605/55	•For TRITC (Rhodamine) •Soft coated type for high signal/noise •Band-Pass Barrier Filter used to cut off reds above 643nm	✓	✓
	Y-2E/C (Texas Red)	EX 540-580 DM 595 BA 600-660	•For Texas Red® •Soft coated type for high signal/noise •Band-Pass Barrier Filter used to cut off reds above 660nm	✓	✓

Filters for Fluorescent Protein

Filters	Wavelengths	i series, Ti series	E series, TS100
BFP	EX380/30, DM420, BA460/50	✓	
CFP	EX436/20, DM455, BA480/40	✓	
CFP HQ*	EX420-445, DM450, BA460-510	✓	
GFP-L	EX480/40, DM505, BA510	✓	✓
GFP-B	EX480/40, DM505, BA535/50	✓	✓
GFP HQ*	EX455-485, DM495, BA500-545	✓	
YFP	EX500/20, DM515, BA535/30	✓	
YFP HQ*	EX490-500, DM510, BA520-560	✓	

*Each filter/mirror has a very sharp rising edge at the corresponding wavelength, minimizing signal crossover.

Other Filters

Filters	Wavelengths	i series, Ti series	E series, TS100
Cy3	EX535/50, DM565, BA610/75	✓	
Cy5	EX620/60, DM660, BA700/75	✓	
Cy7	EX710/75, DM750, BA810/90	✓	

Multi-Band Filters

Filters	Abbreviations	Applications	i series, Ti series	E series, TS100
Dual	F-R	FITC, Rhodamine	✓	✓
	F-T	FITC, Texas Red	✓	✓
Triple	D-F	DAPI, FITC	✓	✓
	D-F-R	DAPI, FITC, Rhodamine	✓	✓
	D-F-T	DAPI, FITC, Texas Red	✓	✓

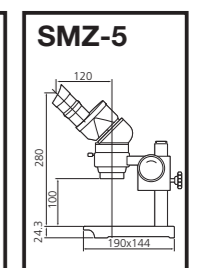
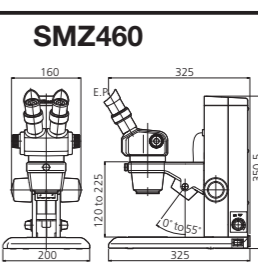
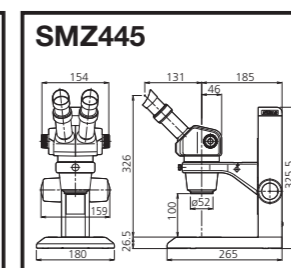
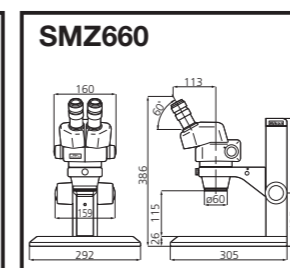
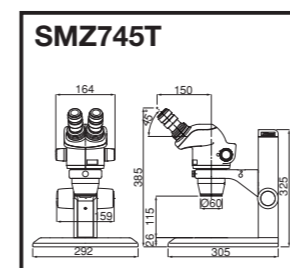
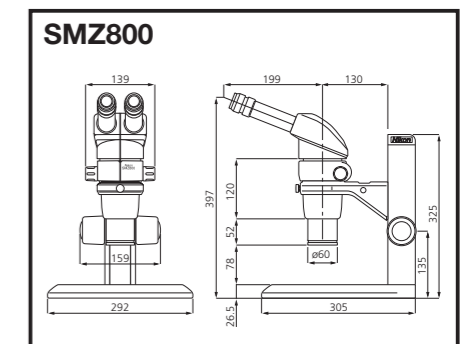
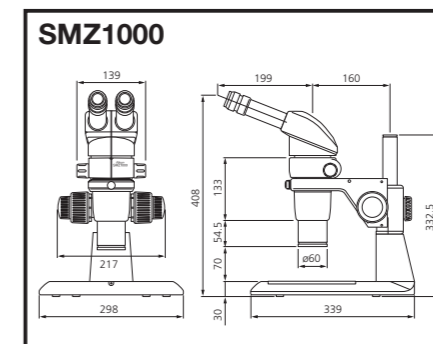
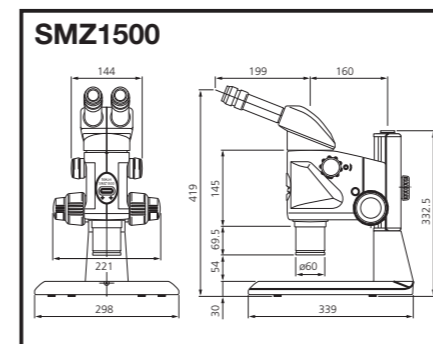
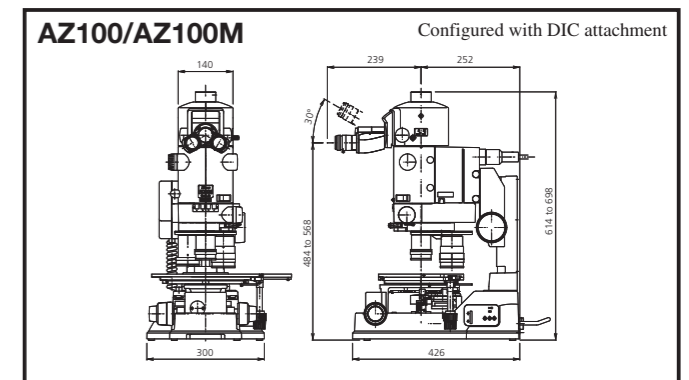
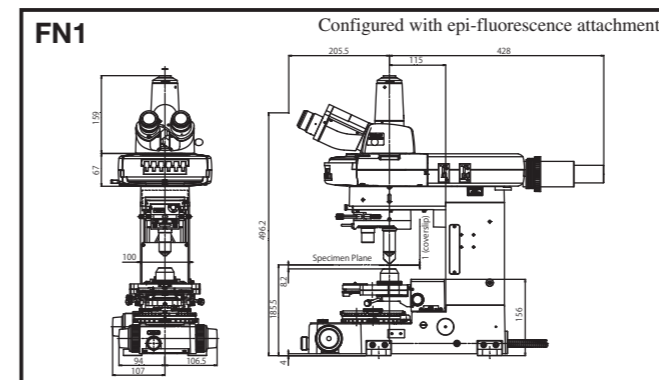
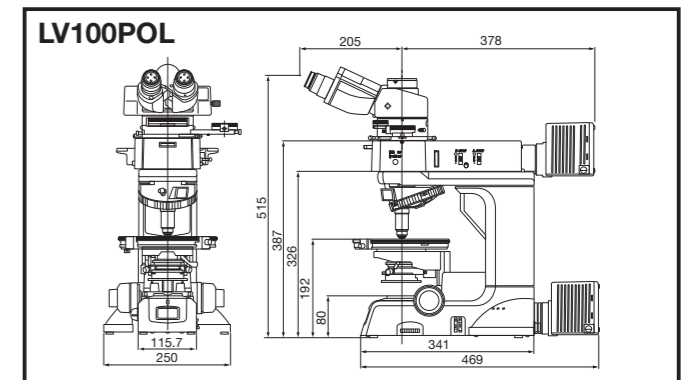
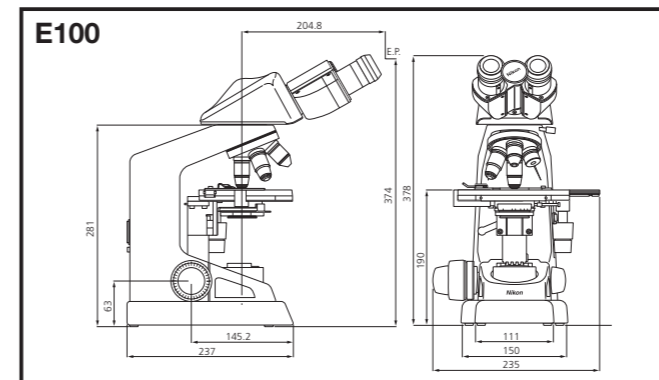
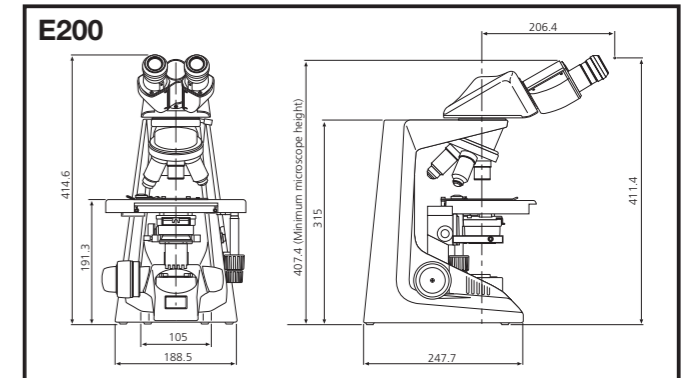
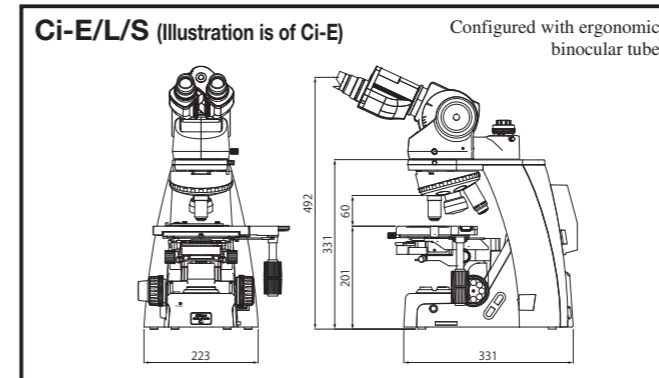
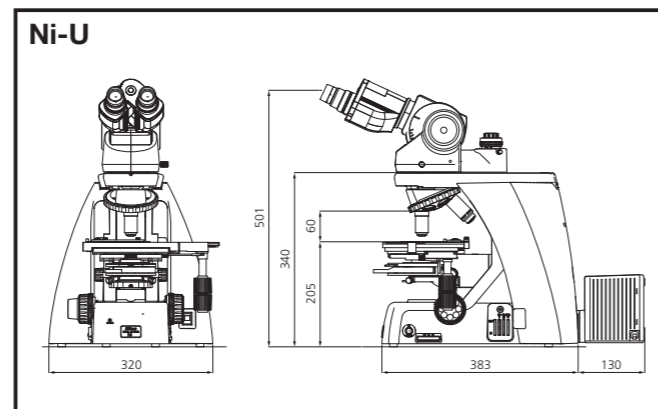
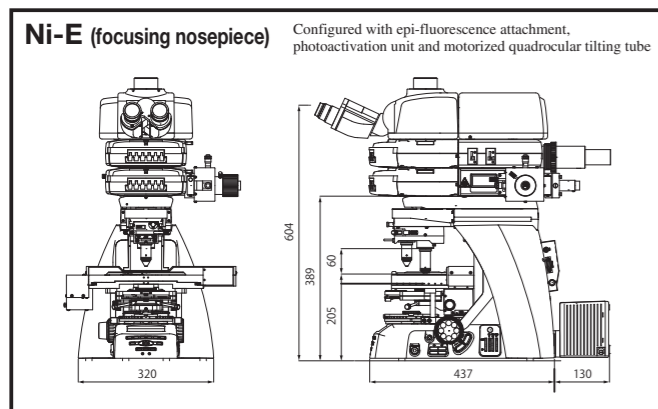
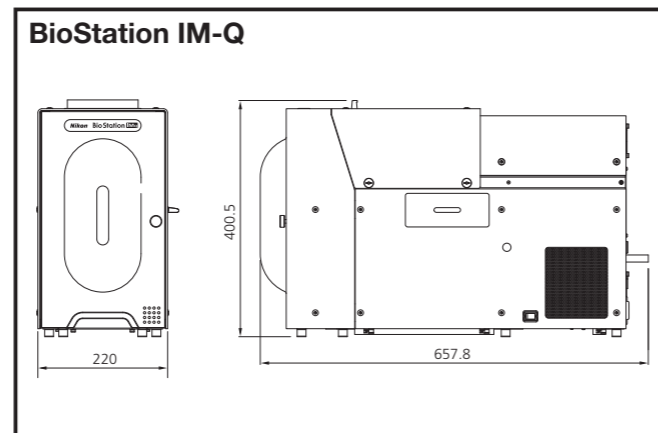
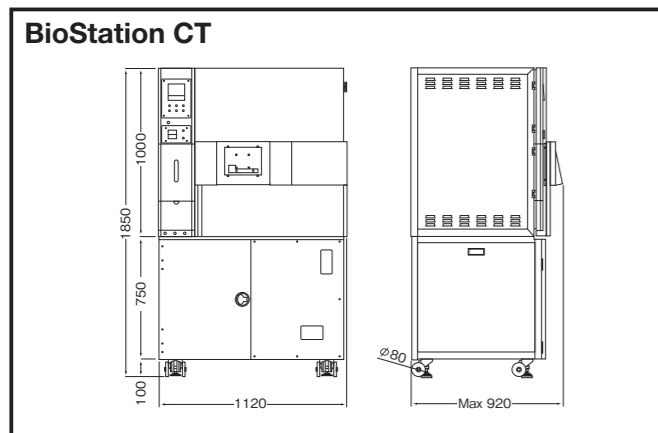
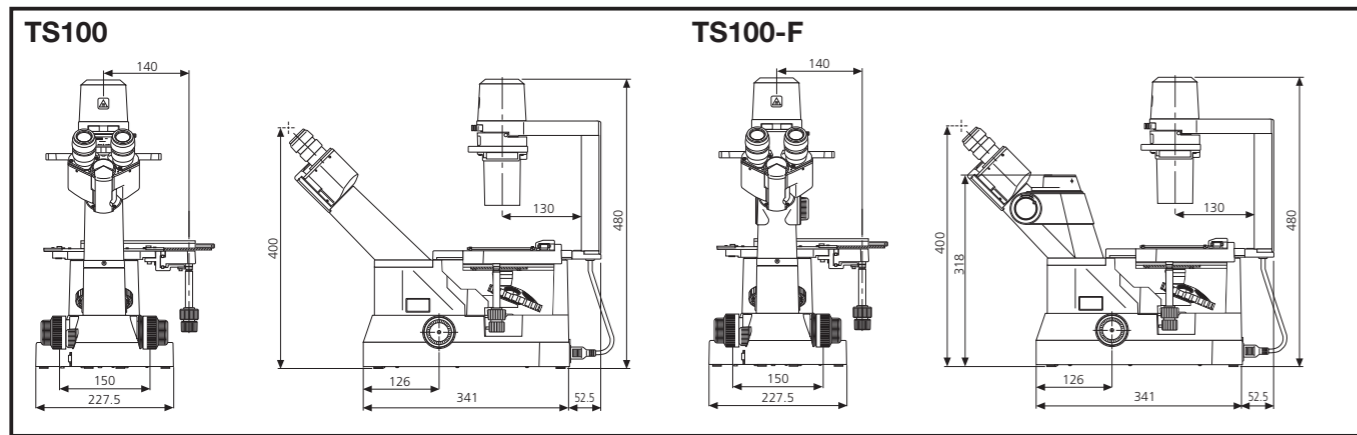
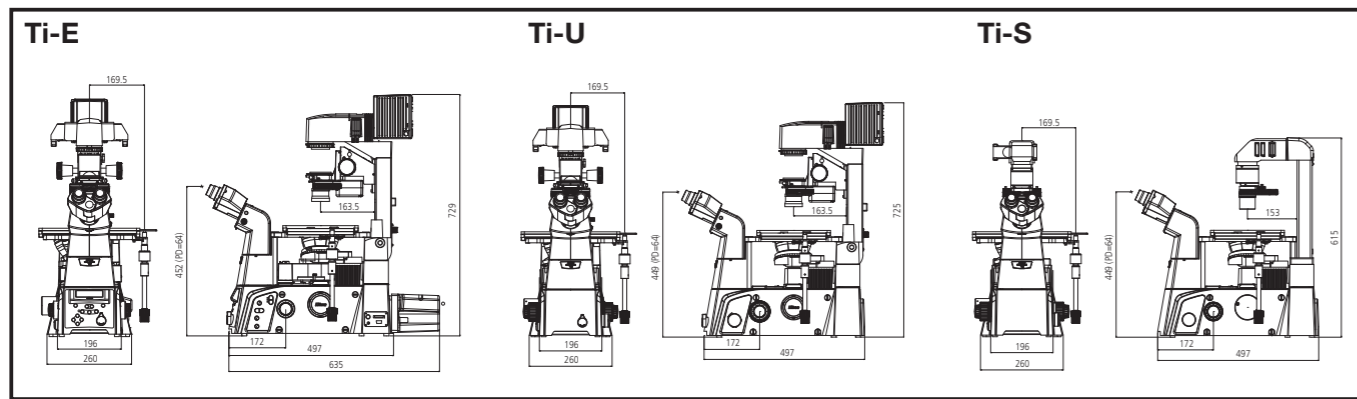
Filters for SMZ1500/1000/800

Filters	Wavelengths
GFP-L	EX460-500, DM505, BA510
GFP-B	EX460-500, DM505, BA510-560

Note:

The lineup is constantly updated. For the latest information, please contact your local Nikon representative. The excitation filters or barrier filters in each filter cube are interchangeable. For custom setup, blank cubes without filters are also available. Please consult with your local Nikon distributor for a complete list of filters locally available or inquire about special custom filter combinations.

Dimensional Diagrams



Eyepoint height: when PD is 64mm Unit: mm

Unit: mm