Upright Microscope ECLIPSE Ni



Upright Microscope



See the evolution

The Ni series, the ultimate in upright biological microscope evolution, supports bioscience studies with enhanced basic performance and flexible system expandability.

The newly developed CFI Plan Apochromat λ (lambda) series objectives are the key to the series' optical performance. Nano Crystal Coat, with its ultra low refractive index, is employed for the first time in microscope objectives, providing brighter, high-resolution and high-contrast microscopy images. Nikon's proprietary stratum structure, used and highly acclaimed for inverted research microscopes, is now incorporated in an upright microscope, allowing a combination of components to be installed. Applications using laser and fluorescent proteins, such as Kaede and PA-GFP, are possible with the addition of a two-tiered fluorescent unit and a photoactivation unit.

The Ni series transcends the concept of conventional upright microscopes and expands the possibilities of advanced research in fields such as bioscience and medicine.



System expandability

- Nikon's proprietary stratum structure enables efficient system construction.
- The numerous accessories can be custom combined depending upon application.

Optical performance

- CFI Plan Apochromat λ objectives with chromatic aberration correction and high transmission throughout a broad range of wavelengths
- Objectives with improved transmission in near IR wavelength range for multiphoton excitation imaging

Design

• 3D ergo design combines functionality with sophistication.

Operability

- Ni-E: Motorized model with automatic change of observation conditions and adjustment of microscope accessories.
- Ni-U: Manual model with some motorized options.
- Most microscope controls can be operated with easy-to-reach buttons on the front of the Ni-E.



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The Ni series microscopes meet all research demands

These microscopes have three features: expandability of the system due to the stratum structure that enables optical paths in two tiers; superior optical performance, as represented by the Plan Apochromat λ series objectives; and high-speed motorized accessories. The Ni series is designed to meet the needs of all advanced bioscience and medical research.

Cell biology

Neuroscience

Pathology

Developmental biology

Microscopy images courtesy of: (Left) Torsten Wittmann (Center) Michael W. Davidson (Right) Jennifer Waters and Adrian Salic



Genetics

Immunology

Expandable system broadens application possibilities

Multi-color fluorescent imaging (Ni-E)

Demand for multi-color fluorescent imaging that uses newly developed fluorescent proteins and fluorescent reagents is constantly increasing. Nikon meets such needs with diverse functions and optical technologies.





Ni-E

Multi-color

fluorescent

filter wheel

High-speed motorized components

The higher speeds of the motorized excitation and barrier filter wheel and the motorized shutter enable quick wavelength changes, reducing photobleaching of the specimen. It can be operated via easily accessible control buttons, increasing operation efficiency.

CFI Plan Apochromat λ series objectives

Transmission and chromatic aberration correction have been improved throughout the wide range of visible to near IR wavelengths, allowing use of various fluorescent reagents. They provide bright, high-contrast, high S/N (signal-to-noise) ratio multi-color fluorescence images with almost no focus shift when used with any wavelength.



Photoactivation imaging (Ni-E/Ni-U)

Research into the reactions and changes of stimulated cells has become popular in recent years. Nikon has developed a new photoactivation unit for upright microscopes, a first in microscopy.



This structure allows two-layer mounting of a photoactivation unit with an epi-fluorescence attachment.

Objectives for long-wavelength laser

With CFI Plan Apochromat λ objectives, chromatic aberration has been corrected up to 850 nm and transmission improved in the long wavelength range, increasing accuracy and efficiency of laser excitation at target site.





Simultaneous multichannel imaging (Ni-E/Ni-U)

The Ni's back port and the guadrocular tilting tube allow the user to acquire simultaneous, two-channel images on separate cameras. This feature is invaluable for applications such as FRET.



FRET

Ratio imaging

Simultaneous imaging with two cameras

The Ni's flexible stratum structure enables incorporation of a back camera port unit, allowing simultaneous image acquisition of two different wavelengths with two different cameras mounted on the back port unit and the quadrocular tilting tube. This enables the capture of high-resolution images in the entire frame for each wavelength without dividing the CCD chip. The use of individual cameras for acquisition allows the user to tailor acquisition parameters for each channel independently, allowing acquisition of high-sensitivity FRET images.



Multiphoton imaging (Ni-E)

Multiphoton microscopy in which long excitation wavelengths are used to allow less-invasive imaging of ever deeper areas of cells is gaining popularity. The design of the Ni-E model is optimized for multiphoton imaging in both optical and mechanical systems to meet the demands of today.

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Objective dedicated to multiphoton imaging

High-sensitivity multiphoton detector (NDD)

Newly developed episcopic NDD (non-descanned detector) unit incorporates a detector that efficiently senses weak signals from deep areas of live specimens. In combination with a diascopic NDD unit, transmitted signals can be also detected.

Retrofittable focusing nosepiece mechanism

Microscopes can be modified by switching the focusing stage and focusing nosepiece, enabling fixed-stage configuration to meet demands of experiments such as in vivo imaging.



Versatile microscopes meet all demands

Manual and motorized models

To meet diverse user demands for operability, system expandability and motorized control, Nikon provides two Ni series models. The Ni-U, which has compatibility with some motorized accessories, is the manual model suitable for high-quality image observation and digital imaging. The Ni-E is a fully motorized model that is efficient for experiments requiring comprehensive control of various devices, such as photoactivation units and confocal systems.

Ni-U (manual model)

- Ergonomic tube and stage handle height adjustment mechanism allow comfortable viewing positions.
- Stratum structure and sturdy design improve expandability.
- Motorized nosepiece, motorized epi-fluorescence cube turret, motorized shutter can be utilized.





Ni-E configured with a motorized epi-fluorescence cube turret and motorized universal conde

Ni-E (motorized model)

- High-precision motorized focusing
- Broad range of motorized accessories that can be used in combination.
- Observation conditions can be changed at a simple push of a button.
- Stratum structure and sturdy design improve expandability.
- 3D ergo design buttons with improved operability are located close together for speedy operations.
- Microscope settings in use can be verified on the display.
- Optimized for multiphoton excitation imaging
- Two focusing mechanism options: focusing stage and focusing nosepiece

Ni-E provides fully motorized operations

Automatic adjustment with objective changeover

Condenser, aperture and field diaphragm, and ND filter are automatically set to the optimal position during objective changeover. In addition, stage XYZ travel amount per handle rotation and parfocal distance deviation correction are automatically adjusted. Microscope settings can also be manually adjusted.

Change of observation conditions

Selected observation conditions can be designated to individual buttons, enabling changes to be made at the push of a button. This is particularly convenient when reproducing specific observation conditions.

High-precision motorized focusing

High-precision Z-focus incorporated by the Ni-E provides accurate Z-position information required for use with confocal laser microscopes. Individual coarse and fine focus knobs provide enhanced ease of operation.





Technologies supporting the Ni series

Supreme optical performance

As a light microscope manufacturer, Nikon has cultivated high technical capabilities and confidence. With its advanced technologies extending from optical glass production to lens design, fabrication, coating and processing, Nikon provides unsurpassed optical performance.

High-performance objective lens

• CFI Plan Apochromat λ series

With remarkably high NA, greatly improved transmission in the long wavelength range thanks to Nikon proprietary Nano Crystal Coat, and chromatic aberration correction over 435 to 850 nm, these objectives are ideally suited not only for brightfield and DIC observations but also for fluorescent observations. These lenses allow acquisition of bright and clear images at any wavelength for near-IR imaging and multi-color fluorescence imaging. Because bright images can be captured even with a weak excitation light, damage to a specimen is minimized.



Nano Crystal Coat

This anti-reflective coating that consists of nanometer-size particles is based on semiconductor manufacturing technology and is also used for Nikon camera lenses. The coarse structure with particles arranged in a spongy construction with uniform spaces between them enables extremely low refractive indices.





• Water dipping objective lenses

With a long working distance and high NA, these objectives provide excellent transmission in near IR wavelength range. The axial chromatic aberration of 40x and 60x objectives has been corrected to up to 850 nm, allowing high-resolution images of minute structures in thick specimens during IR-DIC observation. The 25xW MP and 100x objectives feature high NA (1.1) and a long working distance (2.0 mm). With chromatic aberration corrected in the IR region, these objectives are ideal for multiphoton excitation observation. In addition, by employing a mechanism to compensate for the changes in spherical aberration that occur at different temperatures and depths of observation points, clear images of areas deep within a thick specimen can be captured.





Uniformly bright illumination

The "fly-eye" lens is ideally suited to diascopic illumination optical systems. Uniform and bright illumination up to the viewfield periphery is provided at any magnification.



Excellent image acquisition with all observation methods



Epi-fluorescence observation





Phase contrast observation

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Fluorescence noise elimination

Nikon's proprietary noise terminator mechanism is employed in the epifluorescence cube turret and filter cubes. The S/N ratio has been dramatically improved by thoroughly eliminating stray light in the filter cubes, allowing images of weak fluorescent signals to be captured with high contrast and brightness.



DIC (Differential Interference Contrast) observation





Brightfield observation

Ultimate ease, speed and clarity in imaging

Digital imaging

The Ni series can be controlled in conjunction with a Digital Sight series digital camera, facilitating effortless digital imaging. Images can be captured with a dedicated button on the microscope body, the touch panel on the camera control unit, or the software GUI on a PC, depending on your preference.

• Image capture button

Images can be acquired by simply pressing the image capture button located on the microscope base.



• Stand-alone control unit DS-L3

Stand-alone control unit DS-L3 allows the Digital Sight series digital camera to be set up and operated without a PC connection. It also enables image acquisition from a PC through a network. The DS-L3 is firmware based, and therefore will not compromise your facility's network.

- Optimal imaging parameters for each observation method can be selected using icons and simple measurements can be taken.
- Camera, motorized microscope functions and peripheral devices can be comprehensively controlled.
- Microscope status data, such as objective lens, fluorescent filter cube and condenser information, is automatically saved along with the captured image when a motorized or intelligent unit is attached.
- Operations can be controlled with a mouse or a touch panel operated by touch or stylus pen.
- Required icons can be selected and laid out as desired.





Camera/microscope control

Scene mode icons

Combination of Ni-E and motorized stage enables large-image acquisition.



L3 ASSIGN MODE GUI for scan area setting



Microscope control



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Digital Sight series digital cameras

A wide array of models with high sensitivity, high resolution, high speeds and faithful color reproduction are available to meet all research needs and purposes.

High-sensitivity cooled monochrome camera head DS-Qi1

The new CCD drive circuit reduces readout noise. The cooling mechanism reduces heat-induced noise, allowing the capture of weak fluorescence signals. Furthermore, there is a high frame rate of up to 48 fps and a high quantitative linearity within 2%.



Ultrahigh-resolution cooled color camera head DS-Ri1

Provides the 12.7-megapixel equivalent, 2200 TV line high definition. Smooth live image display at max. 32 fps makes focusing easy. Superior color reproduction capabilities allow recording of accurate specimen colors. The cooling mechanism reduces heat-induced noise in fluorescent images.



Imaging Software NIS-Elements

NIS-Elements seamlessly integrates cameras, peripheral devices, and the Ni, serving as a powerful yet easy-to-use interface for complex imaging experiments. Powerful tools for quick processing, measurement and acquired data management provide a one-step solution for acquisition and analysis.





Histogram

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High-definition cooled color camera head DS-Fi1c

Equipped with a 5-magapixel CCD. The cooling mechanism reduces heat-induced noise, making it ideal for fluorescent image acquisition.



High-definition color camera head DS-Fi2

Equipped with a 5-magapixel CCD. Displays live images at max. 21 fps. Minute structures can be captured in brightfield, phase contrast and DIC observations.









Merge channels



High-resolution confocal imaging systems

Combining the Ni-E's high-precision Z-focus mechanism with a confocal scanner allows high-resolution, high-S/N-ratio imaging of 3D structures of organs and cells. The Ni-E can be configured with either a focusing stage or a focusing nosepiece, catering to specific imaging requirements. Nikon offers a wide range of confocal systems that can accommodate various needs.

• Multiphoton confocal microscope A1 MP⁺/A1R MP⁺

A1 MP+ enables high-resolution multiphoton imaging (up to 4096 x 4096 pixels). In addition, A1R MP+ is capable of high-speed multiphoton imaging of up to 420 fps. The high-performance detectors enable deep imaging of living specimens with high sensitivity. The NDD also enables high-speed, accurate unmixing of GFP and YFP.

Confocal microscope C2⁺

C2+ features a compact design and high functionality. The C2+ allows users to acquire simultaneous 3-channel and diascopic DIC images and provides powerful imaging modalities, such as large-image stitching.

Confocal microscope A1⁺/A1R⁺

A1+ incorporates a high-definition (up to 4096 x 4096 pixels) non-resonant scanner. A1R+ also incorporates a high-speed (up to 420 fps) resonant scanner, in addition to the non-resonant scanner, enabling true simultaneous photoactivation and imaging.

• Spectral imaging confocal microscope A1si⁺/A1Rsi⁺/C2si⁺

By incorporating a spectral detector, a wide wavelength spectrum of 320 nm can be acquired with a single scan. Closely overlapping spectra can be unmixed cleanly with minimal crosstalk.











RK13 rabbit kidney epithelial cell stably transfected with the calcium biosensor Yellow Cameleon 3.6. The cell was exposed to ionomycin to raise intracellular calcium and induce FRET. The color change indicates changes in the level of FRET. Time-lapse images were taken with the A1R (resonant scanner)

Sample courtesy of: Dr. Mike Davidson, National High Magnetic Field Laboratory, Florida State University



Ni-E configured with C2⁺



Privet leaf section (fluorescence from Fast Green, Safranin, Crystal Violet, and Orange G) (captured with A1)



Adult mouse islet stained with anti-proinsulin, anti-beta catenin and anti-KDELR (ER marker). Photos courtesy of: Drs. Diva Jonatan, Matt Kofron and James Wells, Cincinnati Children's Hospital Medical Center



Cryosection of a mouse kidney labeled with phalloidin (actin; red), wheat germ agglutinin (green), and DAPI (DNA; blue) (captured with A1)



Mouse fibroblast labeled with tubulin antibodies (blue) and DAPI (DNA: magenta) (captured with A1)



Bovine brain microvascular endothelial cells labeled with MitoTracker (mitochondria, yellow), phalloidin (actin, blue) and Hoechst (DNA, magenta). (captured with A1)



E10.5 mouse embryo wholemount stained with anti-Pdx1 (green), anti-Nkx2.1 antibodies (blue) and anti E-cadherin to reveal the developing pancreatic and lung primordia. Photos courtesy of: Drs. Diva Jonatan, Matt Kofron and James Wells, Cincinnati Children's Hospital Medical Center



Privet leaf section (fluorescence from Fast Green, Safranin, Crystal Violet, and Orange G) (captured with A1)



Wide array of accessories finely segmented by function



Motorized quadrocular tilting tube (Ni-E) Motorized changeover of optical paths is possible. Eyepiece inclination can be adjusted from 15° to 35°.



A digital camera can be mounted on the camera port. A motorized 0.6x - 2.0x zoom optical system is incorporated.





Motorized ND filter (Ni-E) Brightness is automatically optimized with the changeover of the motorized nosepiece. Motorized adjustment of desired brightness is also possible.



Ergo controller (Ni-E) In addition to motorized microscope operation, XYZ control of stage is possible with similar operational ease as that of an actual microscope



Effective for applications that require highly accurate

positioning, such as photoactivation imaging and FISH.

Motorized XY stage (Ni-E)

Motorized universal condenser Dry (Ni-E) High-speed motorized changeover of condenser modules for brightfield, phase contrast, DIC and simple darkfield observations is possible.

Photoactivation unit (Ni-E, Ni-U)

Motorized epi-fluorescence cube turret (Ni-E,

Noise terminator provides high S/N ratio. Six filter cubes can be installed. Either an epi-fluorescence attachment or

a photoactivation unit can be attached.

Ni-U)



Joystick for motorized stage (Ni-E)

Makes control of motorized XY stage possible.

Motorized barrier filter wheel (Ni-E) Barrier filter positions (7 positions—using 25 mm filters) can be changed at a high speed of 0.2 sec. between adjacent positions



Back port unit (Ni-E, Ni-U) Laser light photoactivation and episcopic illumination are Enables simultaneous acquisition of images with two possible. Both the photoactivation unit and the confocal system can be used with a single laser source. different wavelengths using two cameras. Dedicated cubes are optional.



Motorized shutter (Ni-E, Ni-U) High-speed shutter control is possible. The shutter can be attached to diascopic and episcopic illumination systems.

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Excitation filter positions (8 positions—using 25mm filters) can be changed at a high speed of 0.15 sec. between adjacent positions



Motorized sextuple DIC nosepiece (Ni-E, Ni-U) Objective magnification is automatically saved along with the captured image. Built-in prism/analyzer plate slot.



Simple remote control pad (Ni-U) Motorized operation of nosepiece, epi-fluorescence cube turret and shutter is possible.

Dimensional diagram

Ni-E (for use with focusing nosepiece)

Configured with an Ni photoactivation unit, two-tiered motorized epi-fluorescence cube turret and motorized guadrocular tilting tube



Ni-U

Configured with a motorized epi-fluorescence cube turret and quadrocular tilting tube



Ni-U

Configured with an ergonomic binocular tube and DSC port



System diagram: Ni-E focusing stage type



System diagram: Ni-E focusing nosepiece type



System diagram: Ni-U



Specifications

		Ν	NI: 11		
		Focusing stage type	Focusing nosepiece type	NI-U	
Main body	Optical system	CFI60 infinity optical system	CFI60 and CFI75 infinity optical systems	CFI60 infinity optical system	
	Focusing (stroke from focus point)	Via motorized stage Up/Down movement (Up 2 mm/Down 13 mm)	Via motorized nosepiece Up/Down movement (Up 13 mm/Down 2 mm)	Via manual stage Up/Down movement	
		Built-in linear encoder, Resolution: 0.025 µm Motorized escape and refocus mechanism		(Up 3 mm/Down 26 mm)	
		Coaxial Coarse/Fine focusing			
	Illumination	Halogen lamp (12V100W) • NI-ND-E Motorized ND Filter (option)		Halogen lamp (12V100W)	
		Built-in fly-eye lens Built-in NCB11, ND8, ND32 filters (detachable, one additional filter mountable) and diffuser (non-detachable) ND2 filter (option)			
	Controls	Transmitted light On/Off switch, Intensity control dial with preset function Image capture button			
		Built-in motorized control switches		_	
		Stand-alone control unit DS-L3 NI-ERG NI Ergo Controller (option)		Stand-alone control unit DS-L3 (option NI-SRCP Simple Remote Control Pad (option)	
	Power supply unit	External power supply NI-CTLA Control Box A for all configurations		Built-in for halogen lamp NI-CTLB Control Box B is necessary when Motorized/Intelligent options are combined.	
Eyepieces (F.O.V. mm)		· CFI 10x (22) · CFI 10xM Photomask (22) · CFI 12.5x (16) · CFI 15x (14.5) · CFI UW10x (25) · CFI UW10xM Photomask (25)			
Tubes	F.O.V. 22 mm (Eyepiece/Port)				
	F.O.V. 25 mm ^{*1} (Eyepiece/Port)	 C-TF Trinocular Tube F (100/0, 0/100) C-TT Trinocular Tube T (100/0, 20/80, 0/100) C-TT-C Trinocular Tube (100/0, 0/100, for confocal)² NI-TT Quadrocular Tilting Tube (Eyepiece/Upper port/Rear port: 100/0/0, 0/100/0, 0/0/100) Inclination angle: 15-35 degree 			
		• NI-TT-E Motorized Quadrocular Tilting Tube (Eyepiece/Upper port/Rear port: 100/0/0, 0/100/0, 0/0/100) Inclination angle: 15-35 degree		_	
Ports (F.O.V. 11 mm)		 C-TEP2 DSC Port for Ergonomic Binocular (with C-mount adapter, 0.7x) NI-BPU Back Port Unit (with C-mount adapter, 1.0x) NI-RPZ DSC Zooming Port for Quadrocular Tube (with C-mount adapter, manual zoom, 0.6x - 2.0x) 			
		• NI-RPZ-E Motorized DSC Zooming Port for Quadrocular Tube (with C-mount adapter, motorized zoom, 0.6x - 2.0x)		_	
Arms		NI-SAM Standard Arm			
		NIE-CAM Contact Arm (for Motorized/Intelligent options)		• NIU-CAM Contact Arm (for Motorized/Intelligent options)	
Nosepieces	Motorized	· NI-N7-E Motorized Septuple Nosepiece · NI-ND6-E Motorized Sextuple DIC Nosepiece	_	NI-N7-E Motorized Septuple Nosepiece NI-ND6-E Motorized Sextuple DIC Nosepiece	
	Intelligent	· NI-N7-I Intelligent Septuple Nosepiece · NI-ND6-I Intelligent Sextuple DIC Nosepiece	_	· NI-N7-I Intelligent Septuple Nosepiece · NI-ND6-I Intelligent Sextuple DIC Nosepiece	
	Manual	D-ND6 Sextuple DIC Nosepiece C-N Sextuple Nosepiece C-NA Sextuple Nosepiece with Analyzer Slot L-NU5 Universal Quintuple Nosepiece ESD L-NBD5 BD Quintuple Nosepiece ESD	 FN-S2N Sliding Nosepiece (for CFI60 objectives) Changeover 2 objectives, DIC slider insertable FN-MN-H Single Objective Holder (for CFI75 objective) DIC slider insertable 	D-ND6 Sextuple DIC Nosepiece C-N Sextuple Nosepiece C-NA Sextuple Nosepiece with Analyzer Slot L-NU5 Universal Quintuple Nosepiece ESD L-NBD5 BD Quintuple Nosepiece ESD	

		N	i-E	N; 11	
		Focusing stage type	Focusing nosepiece type	NI-U	
Stages		 NIE-CSRR2 Right Handle Rotatable Ceramic- coated Stage with 2S Holder Cross travel 78(X) x 54(Y) mm Handle height and torque adjustable NI-S-E Motorized XY Stage Resolution: 0.1 µm NI-SH-D Dish Holder (option) 	• FN-3PS2 FN1 Standard Stage Cross travel 30(X) x 30(Y) mm	 C-SR2S Right Handle Stage with 2S Holder C-CSR1S Right Handle Ceramic-coated Stage with 1S Holder C-CSR Right Handle Ceramic-coated Stage NIU-CSR22 Right Handle Rotatable Ceramic-coated Stage with 2S Holder Cross travel 78(X) x 54(Y) mm Handle height and torque adjustable 	
Substages		• NI-SSR Substage (for Motorized Universal Condenser and Rotatable/Motorized stages)	NI-SSF Substage for Focusing Nosepiece (for LWD condenser and FN1 Standard/ Motorized stages)	 • NI-SSR Substage (for Rotatable stage) • NI-SS Substage (for Non-rotatable stages) 	
Condensers	Motorized	· NI-CUD-E Motorized Universal Condenser Dry For DIC, phase contrast, darkfield observations Attached on NI-SSR Substage	_	_	
	Manual	NI-CUD Universal Condenser Dry C-C Abbe Condenser NA 0.9 C-C Achromat Condenser NA 0.9 Darkfield Condenser (Oil) Darkfield Condenser (Dry) C-C Achromat/Aplanat Condenser NA 1.4 C-C Slide Achromat Condenser 2-100x C-C Achromat Swing-out Condenser 1-100x Achromat Swing-out Condenser 2-100x X LWD Condenser D-CUO DIC Condenser Oil	• FN-C LWD Condenser NA 0.78 (for DIC and oblique light illumination)	 NI-CUD Universal Condenser Dry C-C Abbe Condenser NA 0.9 C-C Achromat Condenser NA 0.9 Darkfield Condenser (Oil) Darkfield Condenser (Dry) C-C Achromat/Aplanat Condenser NA 1.4 C-C Slide Achromat Condenser 2-100x C-C Achromat Swing-out Condenser 1-100x C-C Phase Contrast Turret Condenser³ Achromat Swing-out Condenser 2-100x X LWD Condenser D-CUO DIC Condenser Oil 	
Epi- fluorescence illuminator	Filter cube turret	6 filter cubes mountable, High S/N noise terminator mechanism for all turrets • NI-FLT6-E Motorized Epi-fluorescence Cube Turret Motorized shutter, Status check function ⁻⁴ • NI-FLT6-I Intelligent Epi-fluorescence Cube Turret Manual shutter, Status check function ⁻⁴ • NI-FLT6 Epi-fluorescence Cube Turret Manual shutter			
	Light distribution device	NI-FLEI Epi-fluorescence Attachment Aperture diaphragm and field diaphragm (Centerable/Detachable), ND filters (ND4, ND8, ND16) NI-PAU Ni Photoactivation Unit (405 nm to 650 nm lasers)			
	Option	NI-BAW-E Motorized Barrier Filter Wheel Tilters mountable, 0.2 sec between adjacent positions NI-EXW-E Motorized Excitation Filter Wheel Bilters mountable, 0.15 sec between adjacent positions NI-SH-E Motorized Shutter 0.012 sec between open and close state		• NI-SH-E Motorized Shutter 0.012 sec between open and close state	
Epi-illumination light source		C-HGFI/HGFIE HG Precentered Fiber Illuminator Intensilight (130W) Hg Lamphouse and Power Supply (100W) ² Xe Lamphouse and Power Supply (75W) ² Halogen Lamphouse and Transformer (100W) ²			
Power consumption		211W (with max. halogen lamp intensity and full motorized options)	96W (with max. halogen lamp intensity and full motorized options)	Main body: 133W (with max. halogen lamp intensity) Control Box B: 29W (with full motorized options)	
Weight (approx.)		29 kg (Epi-fluorescent configuration with motorized quadrocular tilting tube)	42 kg (Photoactivation configuration with motorized quadrocular tilting tube)	20 kg (Brightfield configuration with ergonomic binocular tube)	

*1 When used with a double layer, such as with layered epi-fluorescence cube turrets, F.O.V. is 22. *2 Cannot be used with the focusing nosepiece type. *3 Can only be mounted on the NI-SS Substage. *4 Status check function: Status of Filter/Nosepiece etc. can be recorded with captured images and/or displayed on the controller monitor.

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