Nikon

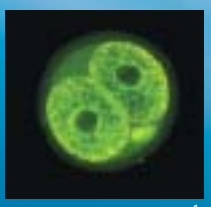
Inverted Research Microscope

ECLIPSE TE2000

CFI60

The most advanced live-cell imaging platform available

The new TE2000 series builds on the success of its predecessors elevating inverted microscopy to extraordinary performance levels. With the introduction of TE2000-PFS (Perfect Focus System), the series provides the ultimate live-cell imaging platform for cutting-edge research. PFS guarantees accurate focus for long term observations, and the Noise Terminator assures high S/N ratio images throughout.



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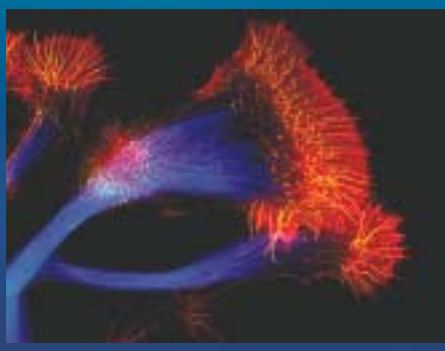

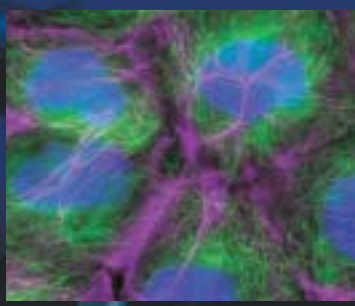

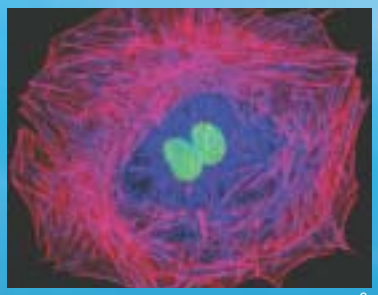

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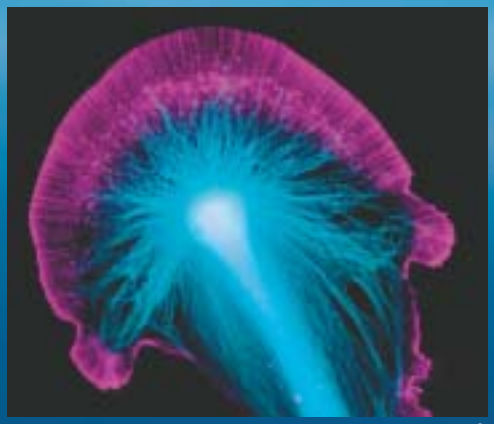

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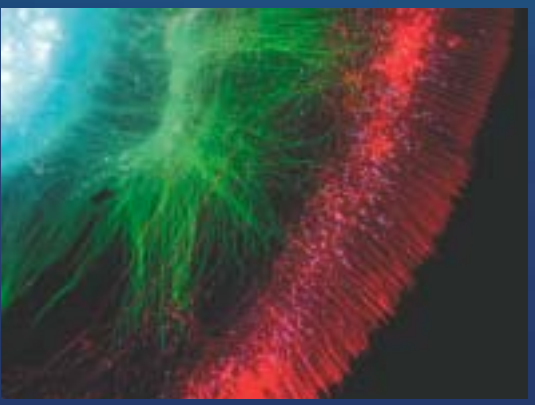


TE2000-S

The TE2000-S, a basic model that can be dedicated to specific tasks, comes with two output ports.

TE2000-U

The TE2000-U is a universal model that comes standard with four output ports.

TE2000-E

The TE2000-E incorporates a high-precision motorized focus and vibration-free motorized optical-path changeover mechanism that facilitates image capture in 3D. The TE2000-E comes with five output ports.

TE2000-PFS

By combining the fully motorized TE2000-E with the Nikon Perfect Focus System (PFS), the TE2000-PFS guarantees constant and accurate focus, making this latest model perfect for live-cell imaging, including TIRF and long term, dynamic time-lapse observations.

Configured with an epi-fluorescence attachment

A powerful motorized microscope with real-time focus correction

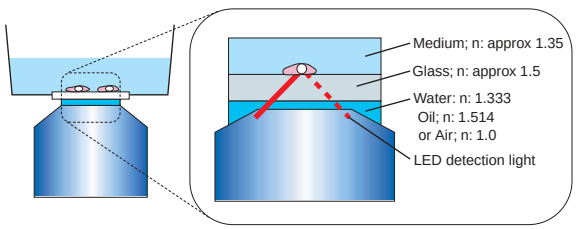
Farewell to focus drift!

Focus drift is one of the biggest obstacles in time-lapse observation.
The new TE2000-PFS (Perfect Focus System) automatically detects the surface of the coverslip optically and continually corrects focus to compensate for even the most infinitesimal changes. Focus is maintained during long term observations and stage movement. Moreover, the TE2000-PFS includes all the functions of the acclaimed TE2000-E inverted research microscope.

- You can continue stable, in-focus observations over an extended period of time—perfect for time-lapse recording.
- You can minimize photobleaching, which keeps cells alive longer in fluorescence observation, through an overall reduction in the number of images captured.
- You will never again miss sudden changes in your specimen as PFS instantaneously corrects focus drift or Z-axis changes resulting from temperature drop when adding reagents.
- You can freely select focus planes throughout the specimen and keep focusing on the selected plane thanks to the Simultaneous Optical Offset feature.

Configured with an epi-fluorescence attachment
PFS can also work in brightfield, phase, and DIC observations.

Principle of focus detection



The coverslip surface* is detected by the LED light emitted through the objective.
*Interface of glass and medium in immersion applications or glass and air in dry applications.

Always in perfect focus

Nikon Original!

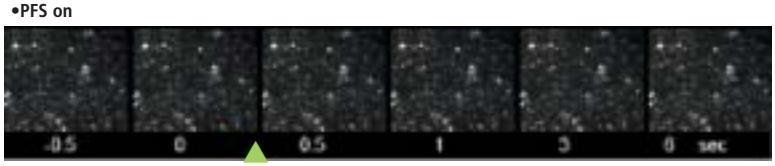
When PFS is turned on, the position of the coverslip surface is always detected during observation. The data is continuously fed back to the extremely accurate Z-axis control focusing mechanism thanks to Nikon's propriety COF (Continuous Optical Feedback) technology*. Focusing precision of less than 1/3 the focal depth of the objective is maintained.

*Patent pending

Correction to focus drift caused by expansion/contraction of the plastic dish when reagents are added

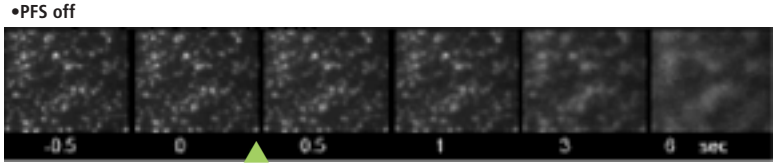
Observation method: Laser TIRF

•PFS on



Adding reagent

•PFS off



Adding reagent

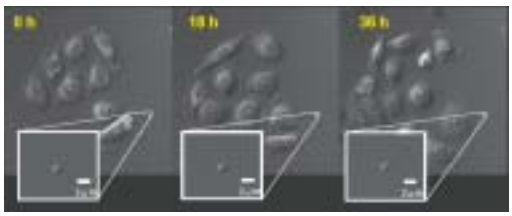
Perfect focus to the plane of interest

Nikon Original!

Focus is continuously corrected at any plane of interest throughout the specimen by the Simultaneous Optical Offset feature*. Unlike other systems that have to repeat focusing on the coverslip surface and then the plane of interest in alternate shifts, PFS can maintain constant focus on the plane of interest at millisecond refresh speed. Consequently, you will never again miss rapid events in your specimen because of focus drift.

*Patent pending

Focus is maintained during time-lapse recording



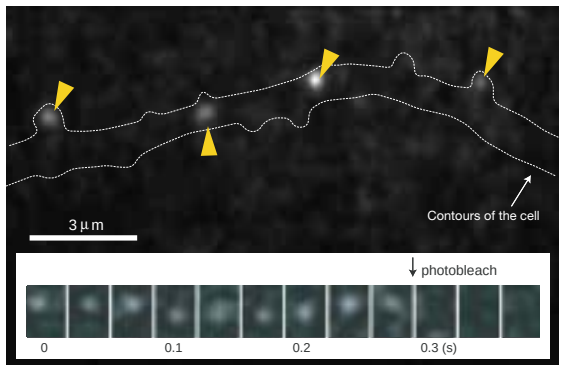
Observation method: DIC

Notes:
- To prevent reduction in transmittance in the near-infrared range (680nm or higher), Nikon recommends removing the PFS optics from the optical path when PFS is not in use.
- During observation of fluorescent dyes with fluorescence spectrum that reaches the near-infrared range (740nm or higher), fluorescence signals may affect PFS performance.

Focus detection with infrared light

PFS uses an LED emitting light in the infrared range and an internal linear CCD detector to detect the precise interface, so it does not intrude on the visible wavelengths used for fluorescence emission. This means you can carry out observation and focus control at the same time, with no influence at all on captured images. Single fluorescent molecules can also be visualized at a high S/N ratio.

Single molecular fluorescence image of YFP label receptor



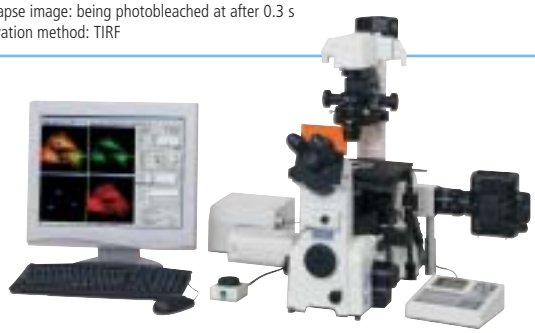
Cell: dendrite (part) of a primary dispersion culture cell of a hippocampus
Time-lapse image: being photobleached at after 0.3 s
Observation method: TIRF

5.

TE2000-E

Motorized microscope for advanced research

The TE2000-E comes standard with linear encoded motorized-focus and motorized 5-way light port changeover—perfect for advanced research that requires high resolution image capture in 3D, including confocal microscopy and deconvolution processing.



TE2000-E configured with confocal system

Streamlined operation from a PC

The microscope can be operated from a PC using Nikon's NIS-Elements acquisition and analysis software or other third-party application software.

Greater Z-axis precision

The E model features an integrated Z-axis linear encoded readout of 0.05µm when controlled through a connected computer.

Objective anti-collision mechanism

The nosepiece automatically drops when the objectives are being changed, preventing them from hitting the stage—particularly useful for live cell observations.

Auto switching between 5 ports

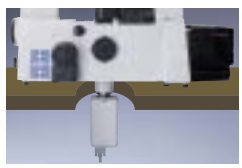
Five output ports, including a bottom port, are standard and can be easily switched via motorized control.

External fine focusing unit

Fine focusing can be easily controlled anywhere on the desktop with this compact unit.

Remote control unit

All motorized units can be operated easily in a darkroom thanks to the phosphorescent display tags.

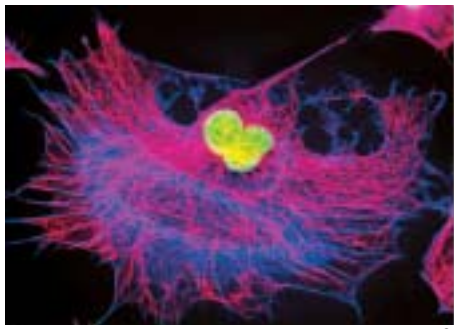


Flexible extendibility facilitates the most sophisticated research

Nikon's "stratum structure" enables flexible extendibility

Taking advantage of infinity optics, the TE2000's stratum structure enables the extension of the distance between the microscope body and objectives by up to 80mm (max.).

This design allows the introduction of equipment such as laser tweezers or extra illumination into the optical path without modifying the microscope body as well as a variety of Nikon's fluorescence illumination accessories.
Nikon's "stratum structure" can efficiently provide a perfect system for your desired application. Multimode imaging capability is realized with a single microscope.



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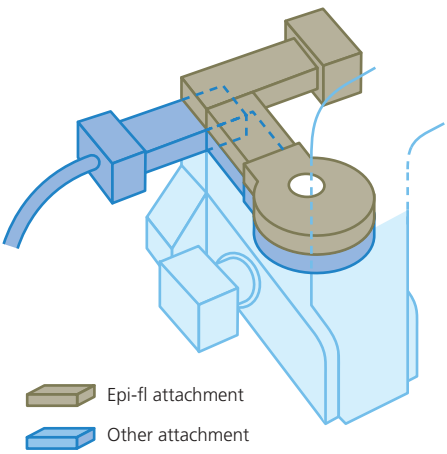
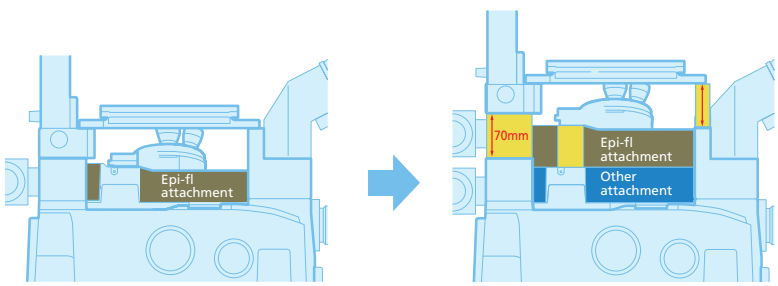
Optional stage risers (70mm) allow the mounting of other equipment such as laser tweezers or a laser unit in addition to an epi-fluorescent attachment without modifying the microscope body.





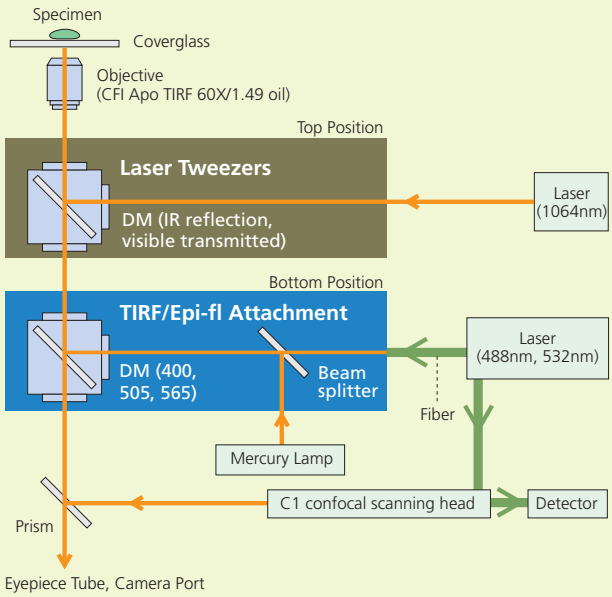
Standard position

Stage risers

Multimode imaging as shown below is possible.

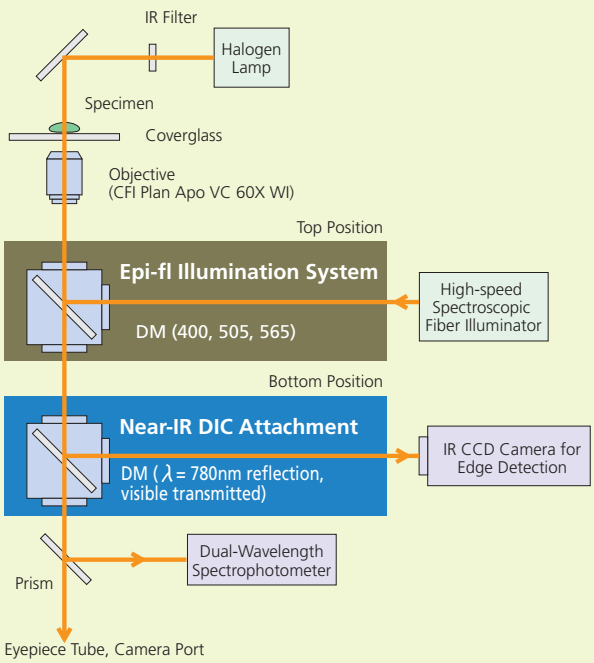
C1plus or C1si confocal laser scanning microscope system
+
TIRF (Total Internal Reflection Fluorescence)/epi-fluorescence system
+
Laser tweezers

The C1confocal microscope system can be paired with a combination of epi-fluorescence and TIRF units. The confocal microscope system and TIRF unit share one laser light source, and allow you to observe TIRF and confocal images of the same specimen with one microscope. Utilizing the stratum structure, it is possible to add laser tweezers in another stratum or level and provide simultaneous observation with either TIRF, confocal or epi-fluorescence excitation.



Epi-fl illumination
+
Near-IR-DIC attachment/FRET system
+
CCTV camera

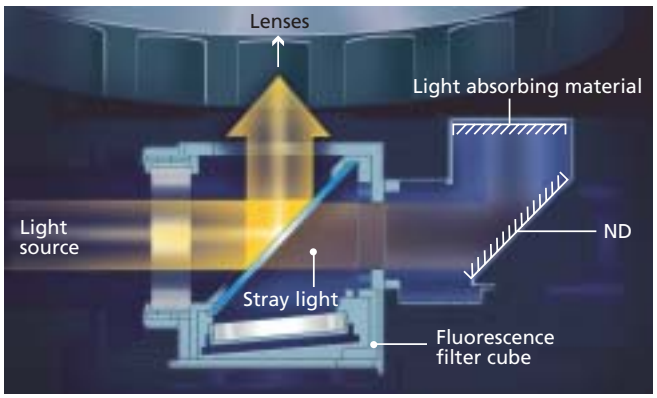
Utilizing the stratum structure, it is possible to mount an epi-fl illumination system and a near-infrared DIC attachment. The image can be observed under epi-fl illumination simultaneously with viewing of dynamics of living cells with near-IR DIC illumination as the image can be divided into two wavelengths by a dichroic mirror inside the filter turret of the near-IR DIC attachment.
In addition, FRET images can be captured with a spectrophotometer attachment.
Furthermore, simultaneous photometry of multiple fluorescence wavelengths with multi-photon excitation is possible.



Epi-fluorescence images with high contrast

Noise Terminator mechanism

Responding to an increasing demand for fluorescence observation of higher S/N ratio images, Nikon created a new mechanism, Noise Terminator. The TE2000 incorporates this mechanism in the fluorescence illuminator and filter cubes to totally absorb stray light in the optical path. This significantly reduces noise and dramatically increases fluorescence image contrast.

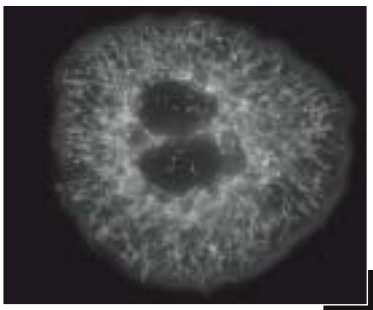


Nikon's two process mechanism first removes stray light from the filter cube completely, then absorbs it through the light absorbing material. Therefore stray light is eliminated thoroughly.

High Quality Fluorescence Filters

Each filter/mirror incorporated in these filters has a very sharp rising edge at the corresponding wavelength. By minimizing the crossover of each signal, Nikon succeeded in significantly reducing the loss of excitation wavelength. As a result these filters can provide high quality epi-fluorescence images. There are three types of filters: CFP, GFP, and YFP.

Viewed with a high quality filter



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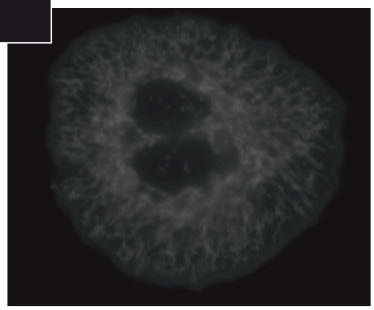
Viewed with a conventional filter

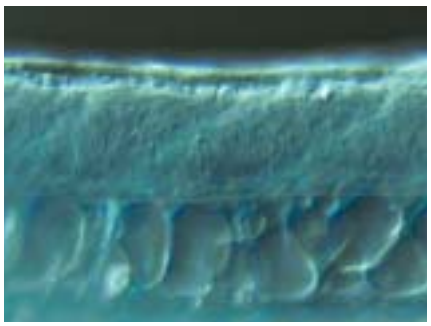


7.

High performance DIC prisms

The best balance of high contrast and high resolution

By changing the material structure, Nikon succeeded in significantly improving the functionality of the standard combination of DIC modules and sliders.
The excellent balance of contrast and resolution produces high quality DIC images with no color blur at any magnification.
Depending upon the type of specimen, either a high-contrast or high-resolution combination is selectable.



Clear, aberration-free images at any magnification

The TE2000 utilizes Nikon's world renowned CFI60 infinity optics, known for crisp and clear images at any magnification, while providing higher NAs and longer working distances. The focal length of the tube lens is ideal at 200mm, which avoids induced aberration even when you introduce phase rings, DIC prisms or dichroic mirrors into the optical path.

New Series of Objectives Created with Nikon's Accumulated Optical Technologies

CFI Plan Apochromat VC Series

CFI Plan Apochromat VC 60X Oil, NA 1.40
CFI Plan Apochromat VC 60X WI, NA 1.20
CFI Plan Apochromat VC 100X Oil, NA 1.40

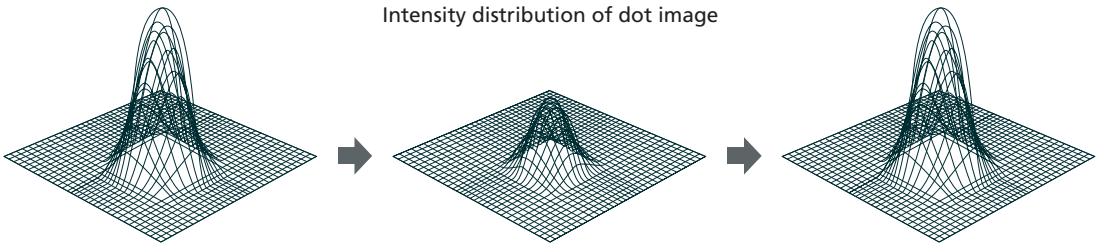
- Chromatic aberrations have been thoroughly correct throughout the view field. Suitable for digital imaging.
- Perfect choice for multi-stained, fluorescence specimens and when using brightfield and DIC techniques.
- Axial chromatic aberration has been corrected up to the violet range (405nm), making these objectives highly effective for confocal applications.
- Excellent brightness throughout the view field.
- The 60X water-immersion type, in particular, features high spectral transmittance, even in the 360nm wavelength range.

CFI Apochromat TIRF Series

CFI Apochromat TIRF 60X Oil, NA 1.49 w/correction collar
CFI Apochromat TIRF 100X Oil, NA 1.49 w/correction collar

- The unprecedentedly high NA of 1.49 enables excitation on an even thinner field to produce high S/N ratio TIRF images.
- The world's-first temperature-change spherical aberration correction ring is provided for in the objective design. Users can easily counteract the influences to the image quality from temperature-induced changes—from 23°C (room temperature) to 37°C (physical temperature)—in the refractive index of the immersion oil.
- The correction ring works perfectly in both DIC and epi-fluorescence microscopy of minute structures. It is also suitable for the laser tweezer method.
- To be used with a regular coverglass and immersion oil.

Intensity distribution of dot image



23°C

37°C before correction
When the temperature changes, aberration occurs.

37°C after correction
Aberration can be corrected using the correction ring.

Multiport design

Multiport design broadens the range of observation and measurement

The TE2000-PFS and TE2000-E have 5 ports. The TE2000-U has 4 ports. The TE2000-S has 2 ports. These ports distribute light in the ratios given below. The TE2000 can capture or analyze images with multiple cameras.

Main body	Port select address				
	1	2	3	4	5
TE2000-PFS TE2000-E	Eye 100%	Right 80% Eye 20%	**Bottom 100%*1**	Front 80% Eye 20%	Left 100%
TE2000-U	Eye 100%	Right 80% Eye 20%	**(Optional) *2**	Front 80% Eye 20%	Left 100%
TE2000-S	Eye 100%	**Left 80% Eye 20%*3**	–	–	–

By changing the optional prism, the light distribution ratio of the shaded portions can be changed as below.
*1 Right: 100 Front: 100 Left: 80 (Eye: 20)
*2 Right: 100 Front: 100 Left: 80 (Eye: 20)
*3 Left: 100
The following portions can also be changed by altering the microscope body.
(Optional at the time of purchase)
*2 Bottom: 100
*3 Right: 100

TE2000-U/E/PFS

Intermediate magnification module 1x-1.5x

Magnifications of all ports of the TE2000-PFS, TE2000-E and TE2000-U, including the observation port, can be easily changed without the troublesome adjustment accompanying the change of objectives.

Enhanced overall rigidity

Sturdy design and thermal stability improve precision, minimize focus deviations

Stability for greater precision

To achieve stability that supports focusing precision, Nikon implemented Computer Assisted Engineering (CAE) and adopted a new high-strength alloy material in the microscope body. This doubled the rigidity compared with previous models.

Improved thermal stability

To minimize focus deviation due to temperature change, Nikon has reinforced the thermal stability of the microscope body, thus improving image quality during long hours of observation or photography.

Glass stage ring
This glass stage ring ensures minimum deformation caused by temperature change, minimizing blurred focus; so it is suitable for time lapse imaging.

Design innovations ensure hours of comfortable, strain-free use

Nikon has instituted numerous innovations to provide comfortable operation and reduce strain, even over a prolonged period of operation.

Main controls are concentrated in the front, close to the operator.

Knobs and buttons

Frequently used buttons and controls are all located at the front and within easy reach.

Fine focusing unit

The TE2000-PFS and TE2000-E come with a compact external fine focusing unit that can be placed anywhere on the desktop.

External fine focusing unit

Nosepiece is inclined to the left for easy handling.

Nosepiece

The nosepiece is inclined to the left, making it easy to read the magnification and adjust the correction ring.

Stage height

The low-profile stage facilitates handling of specimens.

Eyepiece tube

The 25° -inclination eyepiece tube minimizes fatigue during long hours of observation, while its Y-shaped design permits easy viewing of the specimen area on the stage.

Ergonomic tube

Ergonomic tube

An ergonomic tilting eyepiece tube is optionally available. Furnished with a built-in Bertrand lens, the inclination angle is adjustable from 15° to 45° for viewing in a relaxed and comfortable posture.

Eye-level riser (as indicated by arrow)

Eye-level riser

Optimal eyepiece height can be achieved by using optional eye-level risers. Each riser has a thickness of 25mm and up to two risers can be installed at a time. (The eye-level riser cannot be used with a stage riser)

Large stage-handle knob

Attaching the optional large stage-handle knob enables precise operation for the fine movement of the stage during high magnification observations.

Large stage-handle knob

Motorized operation with greater precision and operability facilitates top-notch research

All four models accept retrofittable motorized accessories, allowing researchers to not only choose the desired combinations, but also to control the microscope from external PCs.

Flexible motorized operation for a variety of uses

- A wide variety of motorized accessories are available and can be controlled by an external computer when a HUB controller is attached.
- Motorized switching of objectives and observation methods between epi-fluorescence, Nomarski DIC, phase contrast, Hoffman Modulation Contrast is possible*.

*There are some restrictions depending on the combination of model and observation method.

Motorized barrier filter wheel

This motorized barrier filter wheel with a turret rotary system can mount up to 8 ø25mm barrier filters.

Motorized system condenser turret

This motorized turret for system condensers enables easier switching between brightfield, phase contrast, Nomarski DIC, and Hoffman modulation contrast observations.

Motorized sextuple DIC nosepiece

This nosepiece can be used for all observations including DIC. When the magnifications are being changed, the nosepiece automatically descends for easy, safe rotation of the objectives and then returns to the original height after rotation (only in combination with the TE2000-PFS or TE2000-E model).

Motorized epi-fl filter rotating turret

A maximum of 6 epi-fl filter cubes can be mounted and easily changed with a remote control unit, even in dark rooms.

Communication HUB controller

The HUB controller manages all the cables of each motorized unit at the back of the microscope. By connecting to the RS-232C interface of a PC, motorized units can be controlled from the PC.

Epi-fl attachment with motorized shutter

This epi-fluorescence attachment has a built-in motorized illumination shutter.

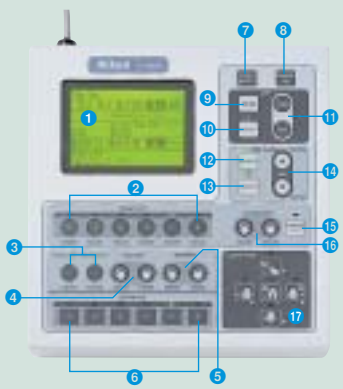
Motorized excitation filter wheel

This motorized excitation filter wheel with a turret rotary system can mount up to 8 ø25mm excitation filters.

Motorized analyzer

This motorized analyzer is used to remove and insert an analyzer for Nomarski DIC.

Remote control unit



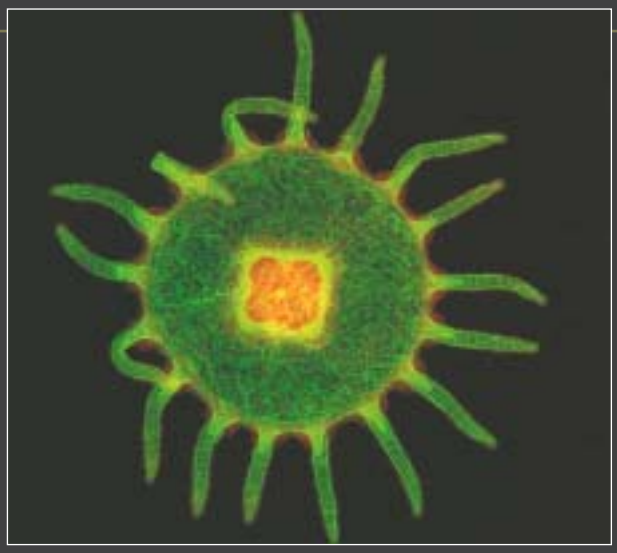
All motorized units attached to the microscope can be operated from this control pad with an LCD screen. Filter position labels glow in the dark for easy identification.

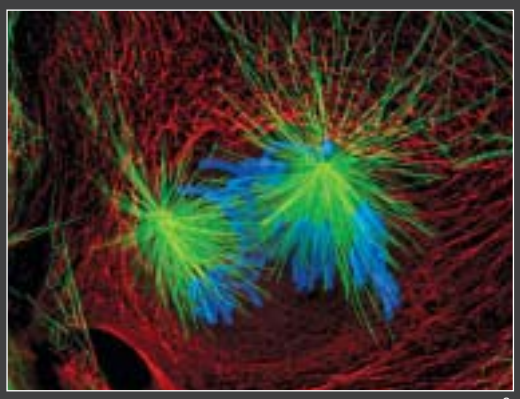
1. LCD Display
2. Objectives Changeover
3. Shutter Open/Close
4. Excitation Filter Changeover
5. Barrier Filter Changeover
6. Fluorescence Filter Block Changeover
7. Z-axis Reset
8. External Signal Output
9. LCD Operation Mode Changeover
10. LCD Backlight On/Off
11. LCD Brightness Control
12. Diascopic Lamp Control by Remote Pad
13. Diascopic Lamp On/Off
14. Diascopic Lamp Brightness Control
15. Condenser Cassette Changeover
16. Analyzer In/Out
17. Light Path Changing Prism Changeover

Epi-fluorescence

Flawless, high-contrast fluorescence images

Thanks to a noise terminator mechanism and zoom illumination, the TE2000 achieves an unparalleled S/N ratio and brightness. It performs well even for weak, single-molecular-level fluorescence observations at leading-edge research.





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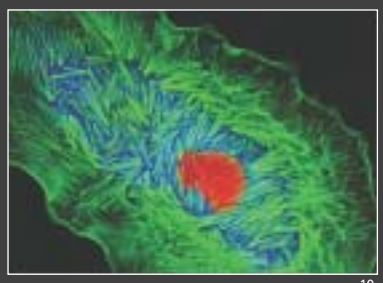

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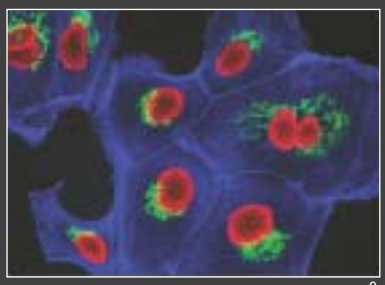


9.

The Noise Terminator mechanism directs deviated stray light out of the optical path. This results in images of high contrast and unparalleled S/N ratio.

High quality fluorescence filters

Each filter/mirror incorporated in these filters has a very sharp rising edge at the corresponding wavelength that minimizes the crossover of signals.

Zoom-type lamphouse adapter allows the operator to increase light intensity.

Remote control unit and filter turret use phosphorescent display tags to enhance visibility during operation in dark rooms.

Nomarski DIC

With the new DIC system, it is possible to obtain the best image appropriate to the needs

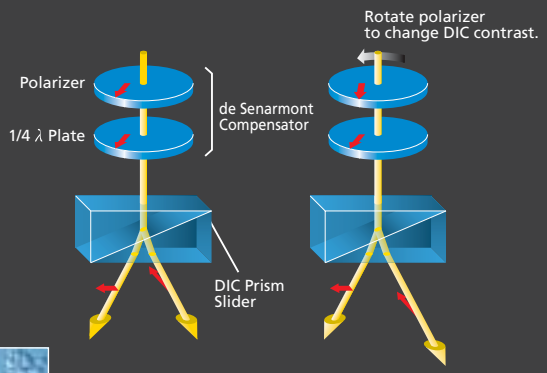
Uniform coloration

Excellent images with uniform coloration are now possible, at any magnifications, by changing the material composition of the DIC prisms.

The perfect balance of high contrast and high resolution

The standard DIC prisms for the system condenser can cover observation at 10X-100X with only two modules that are greatly balanced in contrast and resolution at any magnification. To further closely fit your specific observation needs and specimens, the high contrast DIC prisms and high resolution DIC prisms are also selectable.

Using Rotating Senarmont Compensation method



High resolution DIC

Observe ultra-minute structures at full optical performance

High NA condensers (Dry, Oil) are available to specifically address the needs for further detailed DIC images of high magnification observations. These configurations are optimized for a high resolution video enhanced contrast DIC system. Ultra-high resolution DIC prisms consisting of a high transmission polarizer and analyzer for each dry and oil type condenser are selectable in addition to standard DIC prisms.

11.

Epi-fluorescence and Nomarski DIC

By combining epi-fluorescence and DIC it is easy to accurately locate fluorescent tagged structures or artifacts within a specimen.

12.

Phase contrast

Enables high-contrast imagery of minute living cells

Phase contrast is the most popular observation method for inverted microscopes. This method does not require the staining of the specimen, therefore you can observe and research precise structures of living cells without influencing the live organism.

CFI Plan Fluor ELWD ADL objectives

Nikon developed Apodized phase contrast objectives to effectively reduce halos, which was considered troublesome with the conventional phase contrast method. The internal structures of cells ongoing cell division or thick phase objects used to submerge in halos, making observation difficult, but they are now visible with excellent contrast and a much wider tonal range.

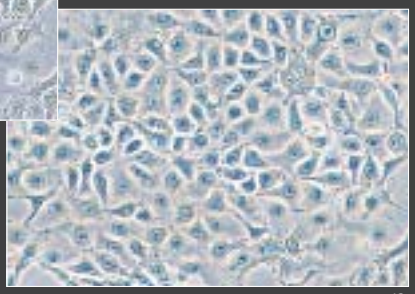
CFI Plan Fluor ADH 100x (Oil) objective

This newly developed high-sensitivity Apodized phase contrast objective dramatically reduces the effect of halo and doubles the contrast of minute objects compared to conventional phase contrast objectives, enabling visualization of minute structures in living tissue and low contrast structures.

Viewed with an ADL objective

13.

Viewed with a conventional phase contrast objective



13.

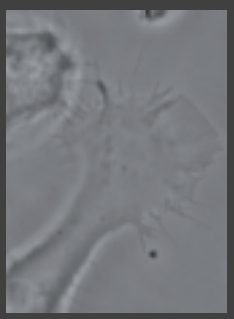
ADL objective series

ADH 100x (Oil) objective

Viewed with an ADH objective

14.

Viewed with a conventional phase contrast objective



14.

Hoffman Modulation Contrast®

3D-like images made easy

This technique permits observation of living specimens using plastic petri dishes, which is not possible with DIC. The combination of dedicated HMC objectives and HMC condenser components creates high contrast 3D-like images of living transparent specimens without the halos seen under phase contrast.

15.

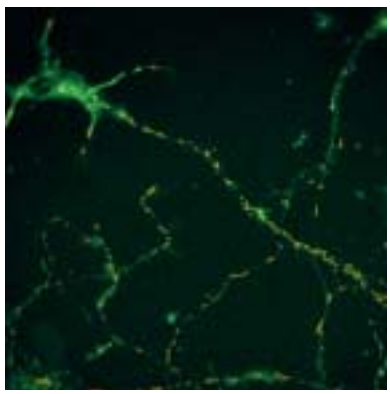
Note: Hoffman Modulation Contrast and HMC are registered trademarks of Modulation Optics, Inc.

DIGITAL ECLIPSE C1si

A true spectral imaging confocal laser scanning microscope system that can capture spectra across a wide 320nm range with a single scan

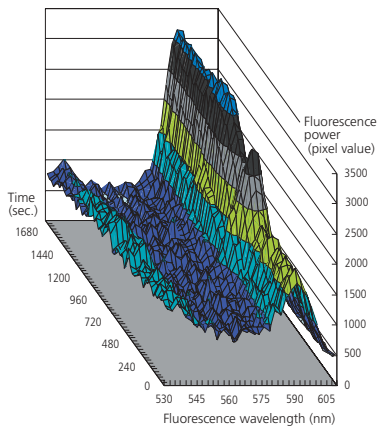
- 32-channel simultaneous acquisition suppresses damage to specimens.
- Selectable wavelength resolution from 2.5, 5 or 10nm, independent of pin-hole diameter.
- Acquisition of accurate fluorescence spectra enables color rendering of fluorescence images with greater realism.
- Polarization-enhanced optical sensitivity with DEES improves brightness.
- DISP (Dual Integration Signal Processing) eliminates digitization dead time.
- Spectral imaging via simple switchover from a 3-channel PMT detector.

Overlay of 32-channel images acquired with one shot



16.

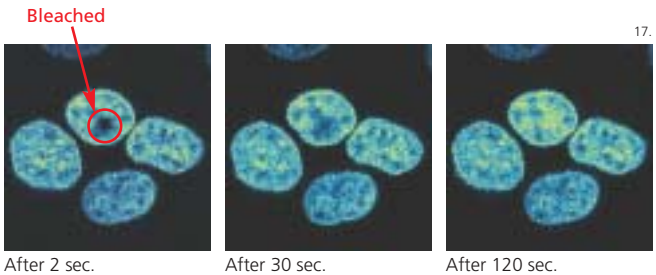
Time-lapse recording of 320nm wide spectra



DIGITAL ECLIPSE C1 plus

The C1 compact, high performance personal type confocal microscope system now supports FRAP

- Simultaneous 3-channel fluorescence, 3-channel plus DIC, time-lapse recording and spatial analysis are possible.
- Filters can be easily exchanged by users to match the latest fluorescent dyes.
- ROI scanning is possible with an optional AOM (Acousto Optical Modulator)—perfect for FRAP (Fluorescence Recovery After Photobleaching).
- Bi-Directional Scan improves frame rates. Scan Rotation is also possible.
- A greater variety of lasers can be mounted.



17.

After 2 sec. After 30 sec. After 120 sec.

Laser TIRF-2 system

High signal to noise (S/N) optimizes observation of single molecule activity in fluorescence observation

- A unification of a laser TIRF unit and epi-fluorescence illumination system. Switching the systems is elementary.
- Responds to various levels of research such as from epi-fluorescence observation of living organisms to observation of living cells at the molecular level.
- Captures single molecule activity in living cells with an extraordinary high S/N ratio where they contact the coverglass.
- The TE2000's unique "stratum structure" allows the simultaneous mounting of laser tweezers.

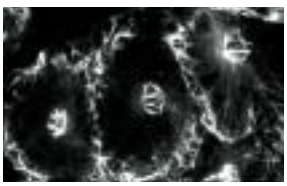
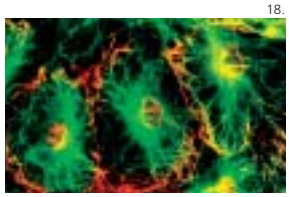


Image under TIRF observation

Image under epi-fluorescence observation

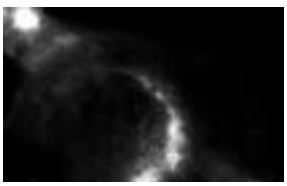


TIRF/epi-fluorescence image overlay (pseudo-color)

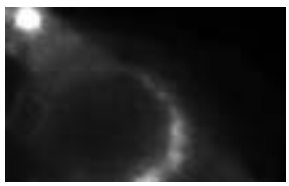
White light TIRF system

Easily realizes TIRF observation without using laser illumination

- A TIRF function has been provided with the epi-fluorescence attachment. TIRF observation using mercury illumination is available. Xenon and high-intensity halogen can also be used.
- Simply inserting an exclusive aperture (60X, 100X) enables switching to TIRF.
- The wide wavelength band of mercury illumination makes multiple wavelength observation possible by changing the filter. No worries for interference patterns.



Mercury TIRF image

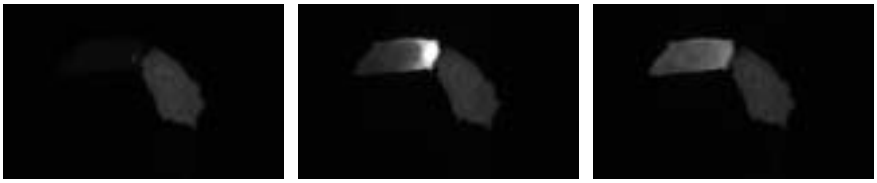


Epi-fluorescence image

Photic stimulation unit

Easily realizes photic stimulation without a confocal microscope system

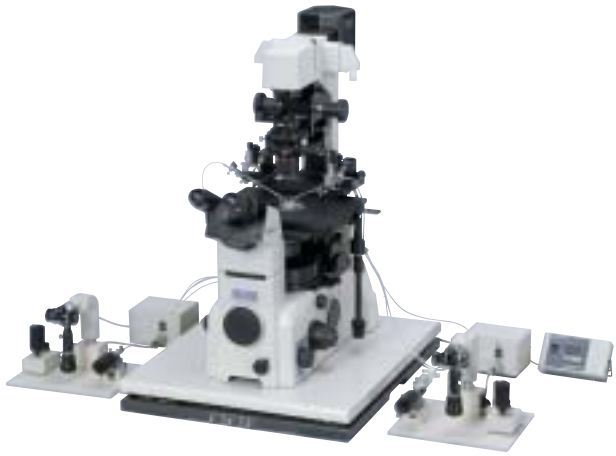
- Compact and easy to attach, easy to operate.
- Observation of molecule movement by photic stimulation in a cell is possible, using fluorescence protein such as Kaede (photo conversion) and PA-GFP (photo activation).
- Achieves short wavelength correction up to 405nm (h-line). Combined with VC series objectives, in which aberration is corrected to 405nm, it illuminates the targeted area with high precision.



Time-lapse images after stimulation can be recorded in series.

NT-88-V3 micromanipulator system

A packaged set of instrumentation required for cellular micromanipulation, the NT-88-V3 is ideal for IVF (in-vitro fertilization), ICSI (intracytoplasmic sperm injection), electrophysiology, or biotechnology applications.

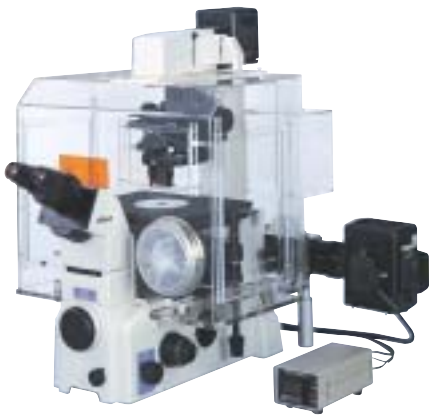


Stage incubation system INU-NI-F1

This all-in-one compact CO_2 incubator sustains the internal temperature at 37°C with humidity of 90% and CO_2 of 5% to keep the specimen in a stable and precise condition. A special technique that minimizes focus blur facilitates long hours of time-lapse imaging.

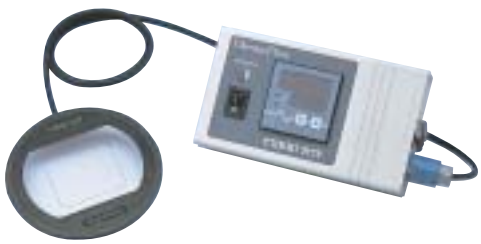
Incubator

With an acrylic plastic enclosure providing easy access to the specimen area, this accessory utilizes warm air circulation and maintains the temperature of the interior at 37°C. The temperature is also adjustable from room temperature to 40°C.



Thermal plate warmer

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.



DXM 1200C

The high-definition cooled color digital camera with a Peltier cooling mechanism captures weak fluorescing images clearly by minimizing background noise.

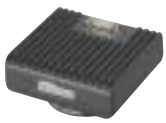
- Super high resolution images with 12.6-mega output pixels.
- High sensitivity reduces shooting time and avoids photobleaching.
- High 15-fps (maximum) transfer rate ensures smooth live images.
- Easy-to-use control software facilitates large-volume shooting.

Digital Sight Series

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

Configured with DS-5Mc-U2

High-sensitivity cooled monochrome camera head **DS-Qi1**



- Superior quantitivity with linearity of >98%.
- High sensitivity equivalent to ISO 800.
- Low noise design with average dark current of 0.7e-/pixel/s.
- High frame rate, 1.5-megapixel cooled monochrome CCD.

High-definition cooled color camera head **DS-5Mc**

- Cooling mechanism retains CCD at room temperature minus 20°C.
- Reduces heat noise.
- High-definition 5.0-megapixel color CCD.

High-speed cooled monochrome camera head **DS-2MBWc**

- Cooling mechanism retains CCD at room temperature minus 20°C.
- Reduces heat noise.
- High-frame-rate and high-sensitivity 2.0-megapixel monochrome CCD.

High-definition/high-speed color camera head **DS-Fi1**

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

High-speed color camera head **DS-2Mv**

- High frame rate, 2.0-megapixel color CCD.

High-speed monochrome camera head **DS-2MBW**

- High-frame-rate and high-sensitivity 2.0-megapixel monochrome CCD.

PC-use control unit **DS-U2**

- Compact, space-saving design.
- High-speed image transfer to PC via USB 2.0 connection.
- Versatile image capture, processing, measurement and analysis when coupled with imaging software NIS-Elements.
- Allows control of Nikon motorized microscopes.

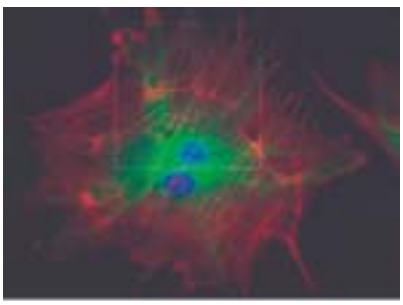
Standalone control unit **DS-L2**

- Large 8.4-in. LCD monitor (XGA).
- Pre-programmed imaging modes for different observation methods.
- Various digital interfaces including USB 2.0 connection.
- Direct print possible.
- Allows control of Nikon motorized microscopes.

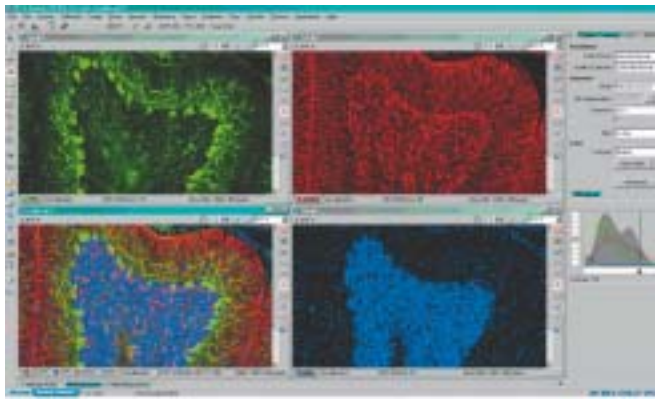
NIS-Elements

Advanced solutions for your imaging world

Nikon's NIS-Elements software provides an integrated solution by delivering automated intelligence to microscopes, cameras, components and peripherals.
It handles multi-dimensional imaging tasks with support for capture, display, peripheral device control, and data management & analysis of images.
The database building feature for handling large numbers of multi-dimensional image files enables efficient and fully documented experiments. The intuitive interface simplifies workflow, and fast image acquisition speeds via direct streaming to RAM allow the recording of rapid biological events. The software also supports numerous image processing capabilities including binary and morphological tools for measurement and analysis routines.
The unified control of the entire imaging system offers significant benefits for cutting-edge research applications such as live cell imaging.



Real time 2D deconvolution



Three distinct packages for specific application requirements are available.

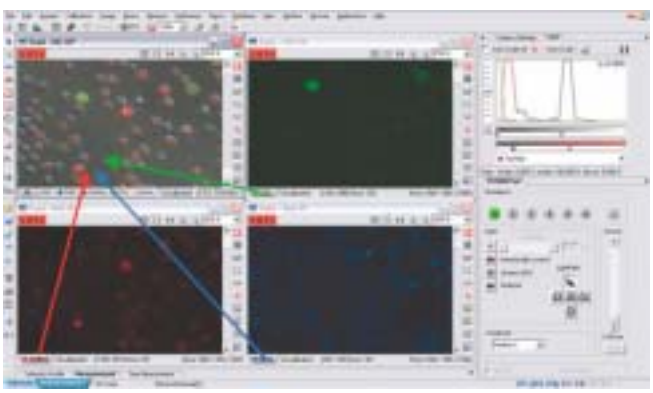
- Ar NIS-Elements AR (Advanced Research)—for fully automated acquisition and device control through full 6D (X, Y, Z, Lambda (wavelength), Time, multipoint) image acquisition and analysis.
- Br NIS-Elements BR (Basic Research)—for acquisition and device control through 4D (such as X, Y, Z, Time and X, Y, Z, Lambda (wavelength)) acquisition.
- D NIS-Elements D (Documentation)—for supporting color documentation requirements in bioresearch, clinical and industrial applications, with basic measuring and reporting capabilities.

Data management (Built-in image database)

Allows one-click image acquisition and transfer from a camera to a user defined database.

Report generation

The database supports image and meta-data export to a report generator, enabling users to create report templates and printed or PDF-based reports.



Merge channels

Large image stitching

Ultra-high resolution images can be captured with a motorized stage using sophisticated auto focus.

EDF (Extended Depth of Focus): plug-in

Allows the creation of an all-in-focus image from a series of Z-axis image stacks providing 3D modeling capability and a multi-dimensional image viewer.

Real time 2D deconvolution: plug-in

Supports live on-the-fly or captured deconvolution of an entire image, or specific regions of interest.

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

CFI60 Objectives

Description		NA	W.D. (mm)	Remarks	
Brightfield					
Achromat flat field	CFI Achromat 4X	0.10	30.0		
	CFI Achromat 10X	0.25	7.0		
	CFI75 LWD 16XW	0.8 (at 16X)	3.0	Water dipping	
	CFI Achromat LWD 20X	0.40	3.8		
	CFI Achromat 40X	0.65	0.65	Spring loaded	
	CFI Achromat LWD 40XC	0.55	2.7-1.7		C.C.0-2
	CFI Achromat 60X	0.80	0.3	Spring loaded	
	CFI Achromat 100X oil	1.25	0.23	Spring loaded	
	CFI Achromat 100X oil, iris	0.5-1.25	0.23	Spring loaded	with iris
Plan Achromat	CFI Plan Achromat UW 1X	0.04	3.2		
	CFI Plan Achromat UW 2X	0.06	7.5		
	CFI Plan Achromat 4X	0.10	30.0		
	CFI Plan Achromat 10X	0.25	10.5		
	CFI Plan Achromat 20X	0.40	1.3		
	CFI Plan Achromat 40X	0.65	0.57	Spring loaded	
	CFI Plan Achromat 40X NCG	0.65	0.48	Spring loaded	No cover glass
	CFI Plan Achromat 50X oil	0.90	0.35	Spring loaded	
	CFI Plan Achromat 100X oil	1.25	0.17	Spring loaded	
	CFI Plan Achromat 100X WI	1.10	2.5	Spring loaded	with temperature correction ring
	CFI Plan Achromat 100X NCG	0.90	0.26	Spring loaded	No cover glass
Fluor	CFI Fluor 10X W	0.30	2.0	Water dipping	
	CFI Fluor 20X W	0.50	2.0	Water dipping	
	CFI Fluor 40X W	0.80	2.0	Water dipping	
	CFI Fluor 60X W	1.00	2.0	Water dipping	
Plan Fluor	CFI Plan Fluor 4X	0.13	17.1		
	CFI Plan Fluor 10X	0.30	16.0		
	CFI Plan Fluor 10XW	0.3	3.5	Water dipping	
	CFI Plan Fluor 20X	0.50	2.1		
	CFI Plan Fluor ELWD 20XC	0.45	8.1-7.0		C.C.0-2
	CFI Plan Fluor 20X MI	0.75	Oil 0.35; Glycerin 0.34; Water 0.33	Spring loaded	Multi-immersion; Oil-glycerin-water
	CFI Plan Fluor 40X	0.75	0.66	Spring loaded	
	CFI Plan Fluor 40X oil	1.30	0.2	Spring loaded	Stopper
	CFI Plan Fluor ELWD 40XC	0.60	3.7-2.7		C.C.0-2
	CFI Plan Fluor 60XC	0.85	0.3	Spring loaded	C.C.0.11-0.23
	CFI Plan Fluor 60X oil, iris	0.5-1.25	0.22	Spring loaded	with iris
	CFI Plan Fluor ELWD 60XC	0.70	2.1-1.5	C.C.0.5-1.5	
	CFI Plan Fluor 100X dry	0.90	0.3	Spring loaded	C.C.0.14-0.2
	CFI Plan Fluor 100X oil	1.30	0.16	Spring loaded	Stopper
	CFI Plan Fluor 100X oil, iris	0.5-1.3	0.16	Spring loaded	with iris
Apochromat	CFI Apo 40XW NIR	0.8	3.5	Water dipping	
	CFI Apo 60XW NIR	1.00	2.8	Water dipping	
	CFI Apo TIRF 60X oil	1.49	0.13		C.C. 0.13-0.22
	CFI Apo TIRF 100X oil	1.49	0.12		C.C. 0.13-0.20
Plan Apochromat	CFI Plan Apochromat 2X	0.10	8.5		
	CFI Plan Apochromat 4X	0.20	20.0		
	CFI Plan Apochromat 10X	0.45	4.0		
	CFI Plan Apochromat 20X	0.75	1.0	Spring loaded	
	CFI Plan Apochromat 40XC	0.95	0.14	Spring loaded	C.C.0.11-0.23
	CFI Plan Apochromat 40X oil	1.00	0.16	Spring loaded	Stopper
	CFI Plan Apochromat 60XC	0.95	0.15	Spring loaded	C.C.0.11-0.23
	CFI Plan Apochromat 100X NCG oil	1.40	0.17		
Plan Apochromat VC	CFI Plan Apochromat VC 60X oil	1.40	0.13	Spring loaded	Stopper
	CFI Plan Apochromat VC 60X WI	1.20	0.27	Spring loaded	CC.0.15-0.18; Water-immersion
	CFI Plan Apochromat VC 100X oil	1.40	0.13	Spring loaded	Stopper
S Fluor	CFI S Fluor 4X	0.20	15.5		
	CFI S Fluor 10X	0.50	1.2	Spring loaded	
	CFI S Fluor 20X	0.75	1.0	Spring loaded	
	CFI S Fluor 40XC	0.90	0.3	Spring loaded	C.C.0.11-0.23
	CFI S Fluor 40X oil	1.30	0.22	Spring loaded	Stopper
	CFI S Fluor 100X oil, iris	0.5-1.30	0.2	Spring loaded	

Description		NA	W.D. (mm)	Remarks	
Phase Contrast					
Achromat flat field					Phase ring
	CFI Achromat DL 10X	0.25	7.0		Ph1
	CFI Achromat ADL 10X	0.25	6.2	CG 1.2	Ph1
	CFI Achromat LWD DL 20X	0.40	3.8		Ph1
	CFI Achromat LWD DL 20XF	0.40	3.0	CG 1.2	Ph1
	CFI Achromat LWD ADL 20XF	0.40	3.0	CG 1.2	Ph1
	CFI Achromat DL 40X	0.65	0.65	Spring loaded	Ph2
	CFI Achromat LWD DL 40XC	0.55	2.7-1.7	C.C.0-2	Ph2
	CFI Achromat LWD ADL 40XF	0.55	2.1	CG 1.2	Ph1
	CFI Achromat LWD ADL 40XC	0.55	2.7-1.7	C.C.0-2	Ph2
	CFI Achromat DL 100X oil	1.25	0.23	Spring loaded	Ph3
	CFI Achromat BM 10x	0.25	6.10		Ph1
Plan Achromat	CFI Plan Achromat DL 10X	0.25	10.5		Ph1
	CFI Plan Achromat DL 20X	0.40	1.3		Ph1
	CFI Plan Achromat DL 40X	0.65	0.57	Spring loaded	Ph2
	CFI Plan Achromat DL 100X oil	1.25	0.17	Spring loaded	Ph3
Fluor	CFI Fluor DLL 40XW	0.80	2.0	Water dipping	Ph2
Plan Fluor	CFI Plan Fluor DL 4X	0.13	16.4	CG 1.2	PhL
	CFI Plan Fluor DLL 10X	0.30	16.0		Ph1
	CFI Plan Fluor DL 10X	0.30	15.2	CG 1.2	Ph1
	CFI Plan Fluor DLL 20X	0.50	2.1		Ph1
	CFI Plan Fluor ELWD DM 20XC	0.45	8.1-7.0	C.C.0-2	Ph1
	CFI Plan Fluor ELWD ADL 20XC	0.45	8.1-7.0	C.C.0-2	Ph1
	CFI Plan Fluor DLL 40X	0.75	0.66	Spring loaded	Ph2
	CFI Plan Fluor ELWD DM 40XC	0.60	3.7-2.7	C.C.0-2	Ph2
	CFI Plan Fluor ELWD ADL 40XC	0.60	3.7-2.7	Spring loaded C.C.0-2	Ph2
	CFI Plan Fluor ELWD DLL 60XC	0.70	2.1-1.5	C.C.0.5-1.5	Ph2
	CFI Plan Fluor DLL 100X oil	1.30	0.16	Spring loaded Stopper	Ph3
	CFI Plan Fluor ADH 100X oil	1.30	0.2	Spring loaded Stopper	Ph3
Plan Apochromat	CFI Plan Apochromat DM20X	0.75	1.0	Spring loaded	Ph2
	CFI Plan Apochromat DM40XC	0.95	0.14	Spring loaded C.C.0.11-0.23	Ph2
	CFI Plan Apochromat DM40X oil	1.0	0.16	Spring loaded Stopper	Ph3
	CFI Plan Apochromat DM60XC	0.95	0.15	Spring loaded C.C.0.11-0.23	Ph2
	CFI Plan Apochromat DM60X oil	1.40	0.21	Spring loaded Stopper	Ph3
	CFI Plan Apochromat DM100X oil	1.40	0.13	Spring loaded Stopper	Ph3
S Fluor	CFI S Fluor DL 20X	0.75	1.00		Ph2
	CFI S Fluor DL 40X	0.90	0.30	C.C.0.11-0.23	Ph2
Hoffman Modulation Contrast®					
	CFI HMC 10X	0.25	6.1	CG 1.2	
	CFI HMC LWD 20XF	0.40	3.0	CG 1.2	
	CFI HMC LWD 40XC	0.55	2.7-1.7	C.C.0-2	
Polarizing					
	CFI Achromat P 4X	0.10	30.00		
	CFI Achromat P 10X	0.25	7.00		
	CFI Achromat LWD P 20X	0.40	3.80		
	CFI Achromat P 40X	0.65	0.65		
	CFI Achromat P 100X Oil	1.25	0.23		

CG : Cover Glass thickness (mm)
CC : Correction Collar (mm)

Condensers

Type		NA	W.D. (mm)	Ph module	HMC module	DIC module	Magnifications
T-CT-E Motorized System Condenser/System Condenser	ELWD condenser lens	0.3	75	L.1.2			2-60X
	LWD condenser lens	0.52	30	L.1.2.3	MC1.MC2.MC3	LWD N1, LWD N2, LWD NR	4-100X
	HMC condenser lens	0.4	44		MC1.MC2.MC3		10-40X
High NA Condenser	Dry top lens	0.85	5			HNA N2, HNA NR	10-100X
	Water immersion top lens	0.9	4				10-100X
	Oil immersion top lens	1.4	1.92			HNA N2, HNA NR	10-100X
TE-C ELWD Condenser		0.3	75	L.1.2.3			2-20X
TE-C SLWD Condenser		0.12	190	L.1			4-40X
TE-C HMC Condenser		0.4	44				10-40X

Epi-fluorescence Filters

Filter Characteristics

	Filters	Wavelengths	Characteristics	Applications
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	•DAPI •Hoechst 33258/33342 •AMCA •Cascade Blue® •Autofluorescence
	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	•Catecholamine •Serotonin •Tetracycline
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	•Quinacrine •Quinacrine Mustard (QM) •Thioflavine S •Acriflavine
	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)	•FITC •Acridine Orange •Auramine O •Coriphosphine O •Bodipy® •Fluo-3 •DIO
	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/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	•TRITC •Rhodamine B200 •Propidium iodide •R-Phycoerythrin •B-Phycoerythrin •DiI •Ethidium Bromide
	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	
	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	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	•Texas Red®

Multi-Band Filters

Filters	Abbreviations	Applications
Dual	F-R	FITC Rhodamine
	F-T	FITC Texas Red
	D-F	DAPI FITC

Filters	Abbreviations	Applications
Triple	D-F-R	DAPI FITC Rhodamine
	D-F-T	DAPI FITC Texas Red

Filters for Fluorescent Protein

Models	Wavelengths	Characteristics	Applications
GFP-L	EX480/40, DM505, BA510	GFP long-pass type	GFP
GFP-B	EX480/40, DM505, BA535/50	GFP band-pass type	GFP

High Quality Filters

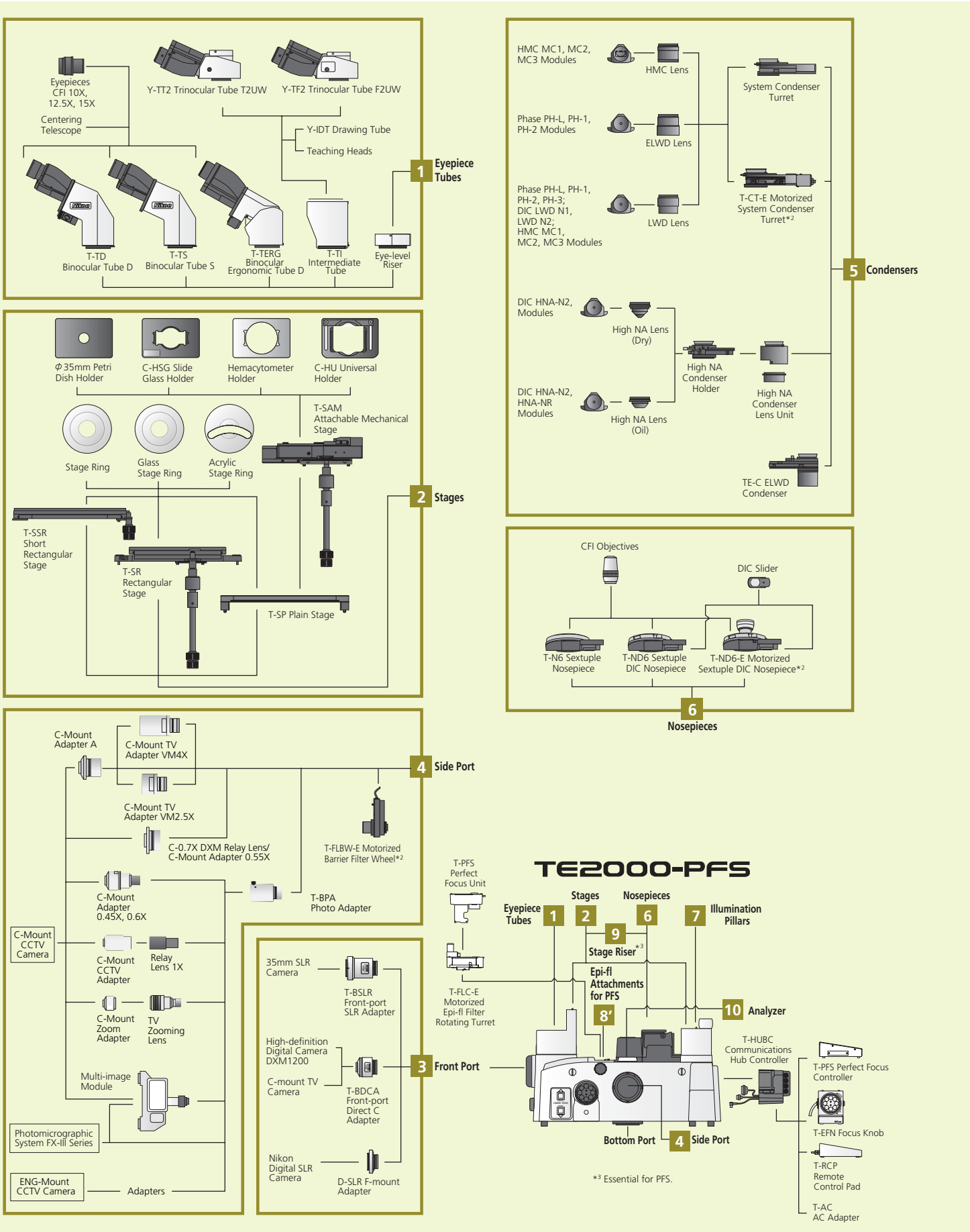
Each filter/mirror has a very sharp rising edge at the corresponding wavelength, minimizing signal crossover.

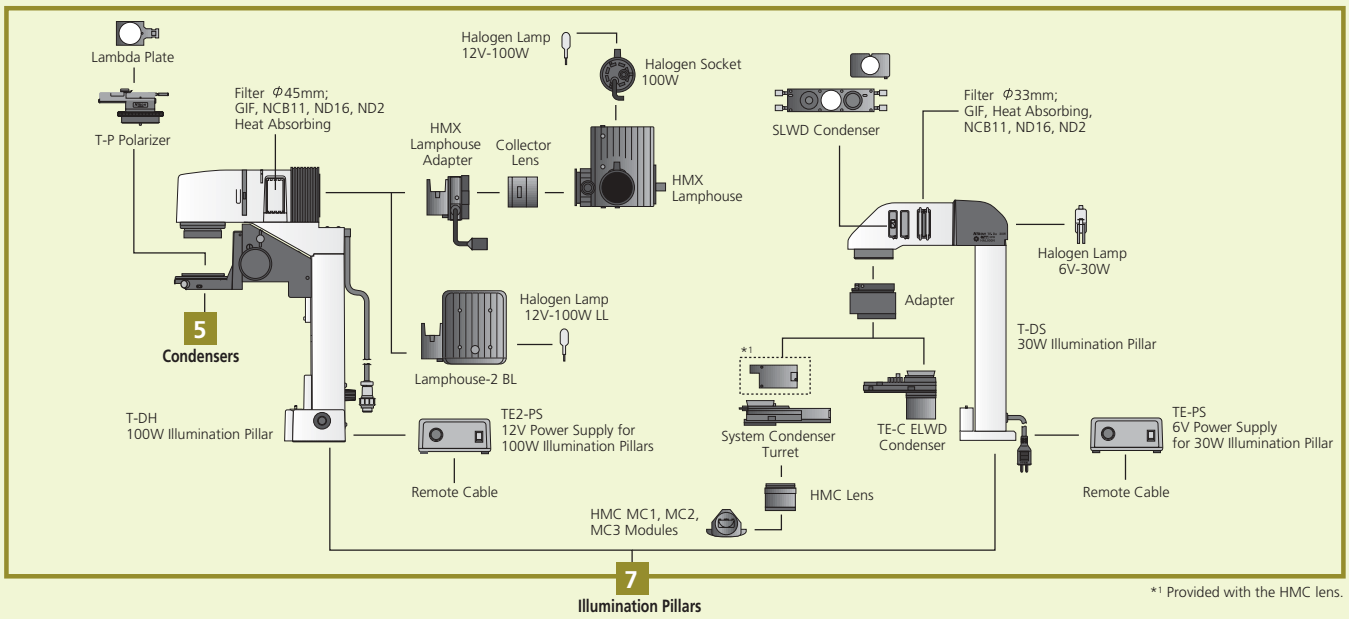
Filters	Wavelengths
CFP HQ	EX420-445, DM450, BA460-510
GFP HQ	EX455-485, DM495, BA500-545
YFP HQ	EX490-500, DM510, BA520-560

Specifications

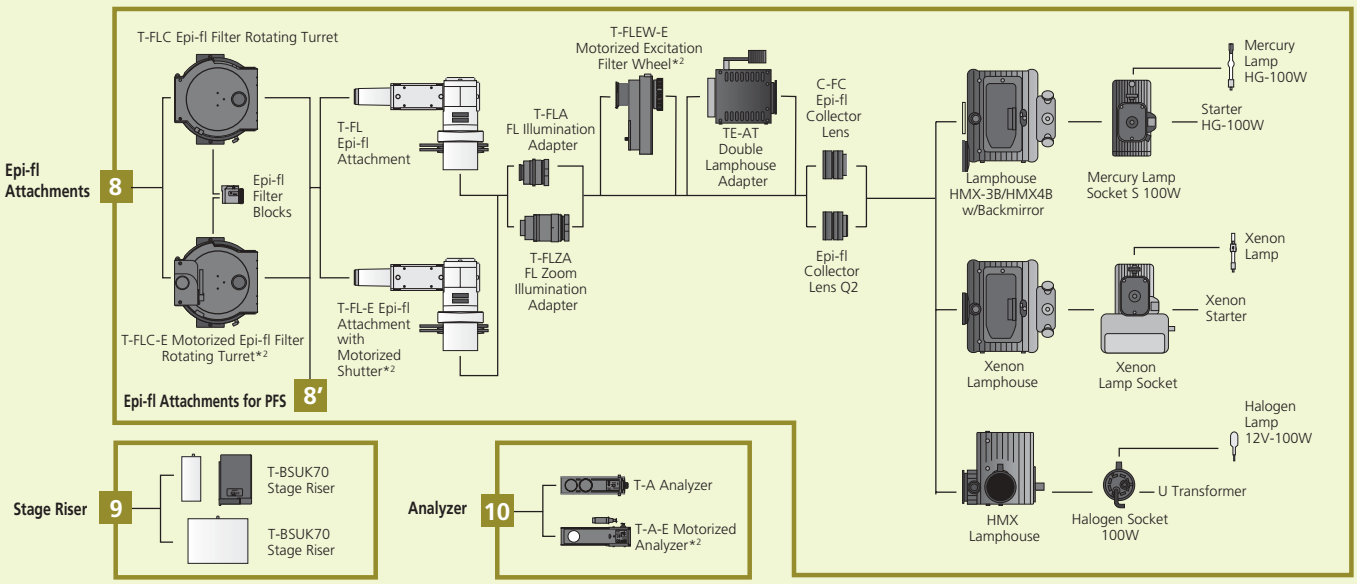
	TE2000-PFS	TE2000-E	TE2000-U	TE2000-S
Main body				
Optical system	CFI60 infinity optical system, parfocal distance 60mm			
Light distribution	5 positions, motorized light-distribution changer Observation 100, Left port 100, Right port 80, Front port 80, Bottom port 100 * 3 other models are available as options: 1) left 80/100 switchable instead of bottom 100 2) right 80/100 switchable instead of bottom 100 3) front 80/100 switchable instead of bottom 100		4 positions Observation 100, Left port 100, Right port 80, Front port 80 * 4 other models are available as options for 5-position light distribution: 1) with bottom port (must be added, 100% light) 2) left 80/100 switchable 3) right 80/100 switchable 4) front 80/100 switchable	2 positions Observation 100, Left port 80 * 2 other models are available as options: 1) left 100 instead of 80 2) right port (must be added) 100 instead of left 80
PFS		——		
Compatible specimen	Specimens in aqueous solutions (cultured specimens, in-vitro assays, etc.)			
Compatible dish	Glass-bottom dishes (thickness: 150-180µm, No. 1S recommended)			
Detect boundary	Immersion lens: between glass and medium; between dry lens: glass and air			
Offset distance	Adjustable with the controller dial			
Memory function	Offset distance, store/recall of nosepiece up/down distance (up to 6 points per nosepiece)			
Focusing	Via motorized/manual nosepiece up/down movement Stroke—manual: up 7mm, down 3mm; motorized: up 6mm, down 2.5mm Coarse stroke: 4.9mm/rotation; Fine stroke: 0.1mm/rotation (motorized) Minimum fine reading: 0.05µm by optical linear encoder External fine focusing unit		Via nosepiece up/down movement Stroke—manual: up 7mm, down 3mm Coarse stroke: 4.9mm/rotation; Fine stroke: 0.1mm/rotation Minimum fine reading: 1µm Refocusing stopper: Adjustable coarse torque stopper	Via nosepiece up/down movement Stroke—manual: up 7mm, down 3mm Coarse stroke: 4.9mm/rotation; Fine stroke: 0.1mm/rotation Minimum fine reading: 1µm Adjustable coarse torque stopper
Intermediate magnification	1.5X			——
Extendible structure	Available			
Other	Light intensity control; Light on/off switch			
Eyepiece tube	(1) T-TD Binocular Tube D (2) T-TS Binocular Tube S (3) T-TERG Binocular Ergonomic Tube D (4) T-TI Intermediate Tube for Eclipse E600/400 trinocular tubes and teaching heads			
Eyepiece lens (F.O.V.)	CFI 10X (22mm), CFI 12.5X (16mm), CFI 15X (14.5mm)			
Illumination	(1) T-DH 100W Illumination Pillar (2) T-DS 30W Illumination Pillar			
Condenser	SLWD condenser for phase contrast*, ELWD condenser for phase contrast*, System condenser LWD**, ELWD** Motorized system condenser LWD**, ELWD**, Hoffman Modulation condenser® (HMC), High NA condensers *Only for 30W pillar **Only for 100W pillar			
Nosepiece	T-N6 Sextuple Nosepiece, T-ND6 Sextuple DIC Nosepiece, T-ND6-E Motorized Sextuple DIC Nosepiece			
Objectives	CFI60 objectives (PFS function does not work with some objectives.)	CFI60 objectives		
Stage	(1) T-SR Rectangular Stage—Cross travel: 70 x 50mm; Size: 300 x 276mm (2) T-SP Plain Stage—Size: 300 x 210mm; Mechanical stage mountable (3) T-SAM Attachable Mechanical Stage (must be used with T-SP Plain Stage)—Cross travel: 126 x 84mm; Specimen holders attachable			
Motorized functions	Fine focusing (minimum reading: 0.05µm), Objective anti-collision mechanism (when the nosepiece is rotated), Light distribution changer		——	——
	(Motorized options): DIC nosepiece, Analyzer, Epi-fl filter rotating turret, Epi-fl shutter, Excitation filter wheel, Barrier filter wheel, System condenser turret			
Epi-fluorescence attachment	Six fluorescence filter blocks in rotating turret with shutter, Noise Terminator mechanism incorporated, Aperture diaphragm centerable, Field diaphragm centerable, 33mm ND4/ND8 filters, 25mm heat absorbing filter, Lamphouse adapter, Zoom lamphouse adapter (option)			
Nomarski DIC system	Contrast control: Senarmont method (by rotating polarizer) Objective side prism: for individual objectives (installed in nosepiece) Condenser side prism: LWD N1/N2, HNA N2/NR types *Nomarski DIC system can be attached only to 100W pillar.			
Optional accessories	Nikon digital SLR cameras, Digital cameras DXM1200C/Digital Sight series/DQC-FS, Photomicrographic equipment H-III, Teaching head, Drawing tube, CCTV adapters, Micromanipulators, etc.			
Power consumption (max.)	(TE2-PS 100W Power Supply) 100-230V, 2.4A/160W (TE-PS 30W Power Supply) 100/120V, 0.6A/80W; 230V, 0.4A/80W			
Weight (approx.)	Phase contrast set: 45kg; Epi-fl set: 50kg	Phase contrast set: 40kg; Epi-fl set: 45kg (w/100W pillar)	Phase contrast set: 36kg; Epi-fl set: 41kg (w/100W pillar)	Phase contrast set: 32kg (w/30W pillar)

System diagram

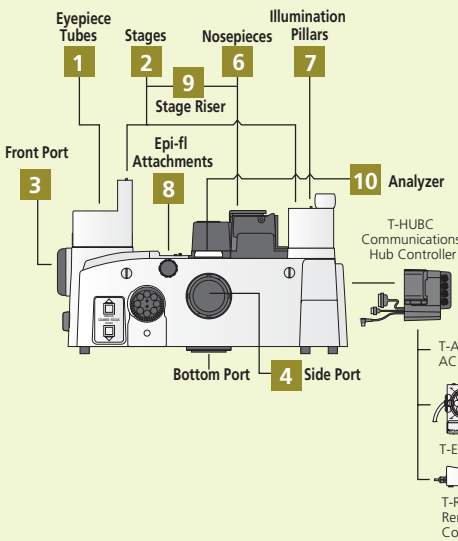




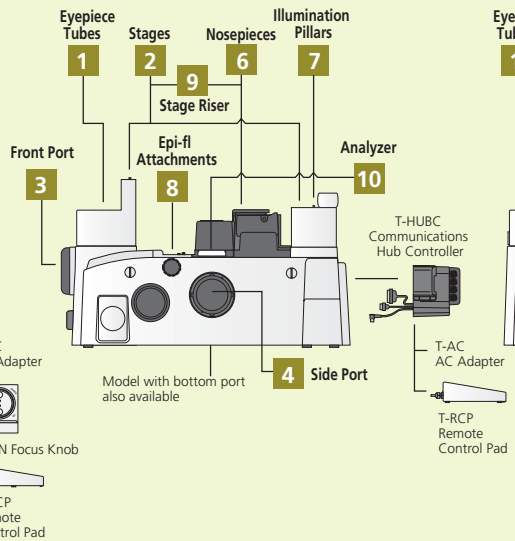
*1 Provided with the HMC lens.



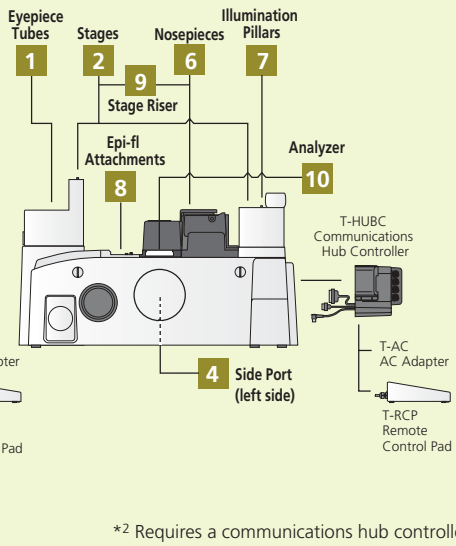
TE2000-E



TE2000-U



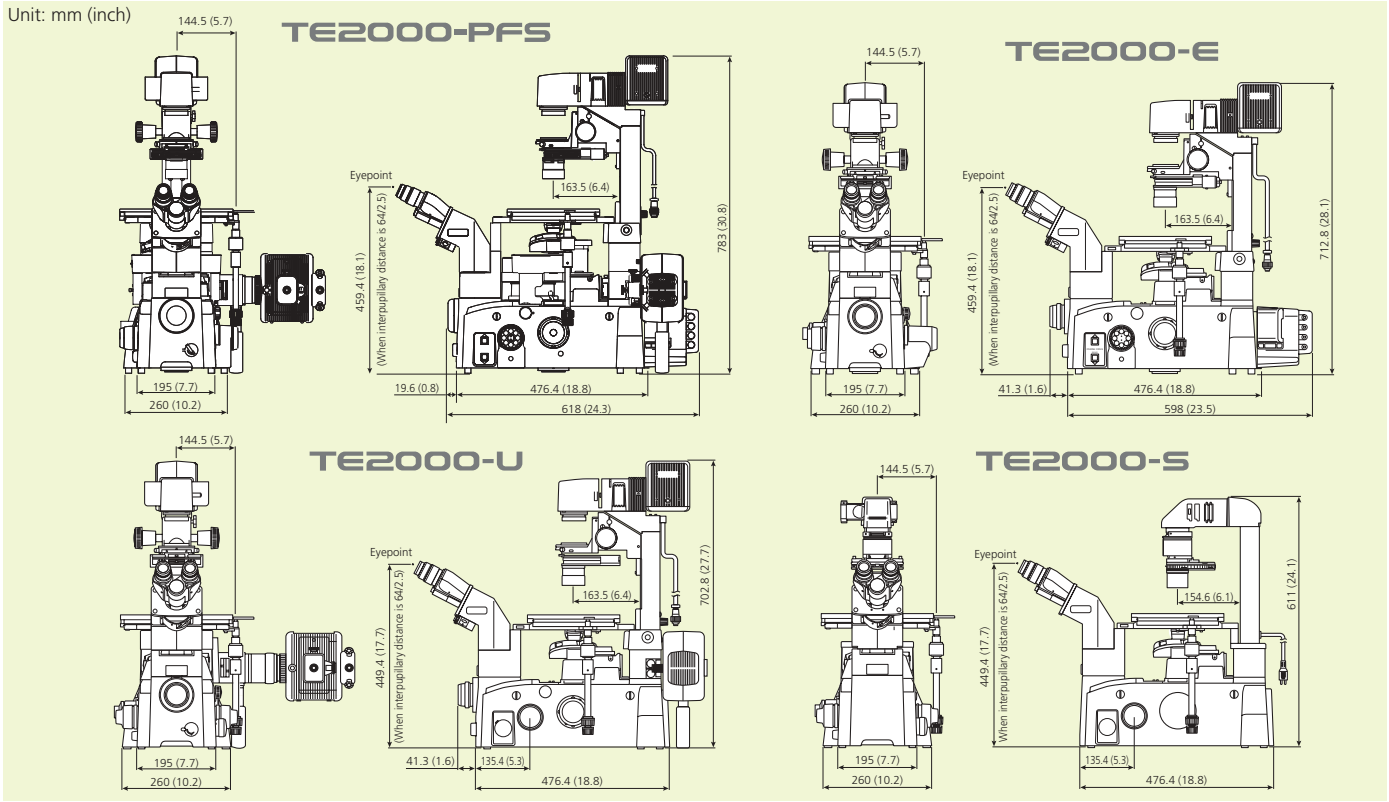
TE2000-S



*2 Requires a communications hub controller.

Dimensional diagram

Unit: mm (inch)



Photos courtesy of:

1	JC1 stained (Mitochondrial membrane potential) Murine 2 cell embryo, In-vivo derived—David Froiland Bsc., Deidre Zander Bsc. Hons., Michelle Lane PhD., Research Centre for Reproductive Health, University of Adelaide, Australia
2 6, 9, 10, 16, 17	Albino Swiss mouse embryo fibroblast cell Michael W. Davidson, National High Magnetic Field Laboratory, USA
3	Aplysia bag cell neuronal growth cone—Dylan Burnette, Paul Forscher Laboratory, Yale University, USA
4	Profs. Akihiro Kusumi and Dr. Chieko Nakada, Kusumi Laboratory, Institute for Frontier Medical Sciences, Kyoto University
5	Dr. Chieko Nakada, Kusumi Office, Institute for Frontier Medical Sciences, Kyoto University Co-researcher: Professor Shigeo Okabe, Tokyo Medical and Dental University.
7	CoxIV-Venus expressed in mitochondria—Takeharu Nagai, Ph.D., Professor, Laboratory for Nanosystems Physiology, Research Institute for Electronic Science, Hokkaido University
8	Neut lung cells in culture—Alexey Khodjakov, PhD., Wadsworth Center, NY Dept. of Health, USA
11	Sea urchin egg—Yukihisa Hamaguchi, PhD, Tokyo Institute of Technology, Japan
12	Rat embryo in cell division (EGFP transgenic rat)—Masumi Hirabayashi, PhD, YS New Technology Inst. Inc., Japan
13	Monkey kidney cells—Satoko Takaoka, Utsunomiya East Hospital, Japan
14	NG108-15 cell—Dr. Kaoru Kato, Neuroscience Research Institute, The National Institute of Advanced Industrial Science and Technology (AIST)
15	Bovine ovum—YS New Technology Inst. Inc., Japan
16	JC-1 loaded nerve cells—Dr. Yasushi Okada, Cell Biology, Medical Dept of Graduate School, Tokyo University
17	Hela cell nucleus expressing H1 Histon-GFP—Dr. Hiroshi Kimura, Horizontal Medical Research Organization, Kyoto University Faculty of Medicine
18	Fixed 3T3 fibroblasts—Dr. Gregg G. Gundersen, Columbia University, USA

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

* Monitor images are simulated.

Please contact Nikon for a handy pamphlet listing compatible accessories, including objectives and epi-fluorescence filters.Some models are not available in certain areas. Please check with your local Nikon representative for details.

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