Shedding New Light On **MICROSCOPY**

Digital Sight Series

Digital Cameras for Microscopes

The best choice for your application …

The Nikon Digital Sight series enhances the quality of the observation, recording, and analysis.

Monochrome Digital Camera for Microscopes

Digital Sight 50M

▸ P.4

Quickly and efficiently search using large fields of view to capture and analyze high-definition images

This is a monochrome model with an electronic cooler that features 9K high resolution, a large field of view (field number 25), and a maximum frame rate of 225.9 fps.

Nikon FX-format
F-Mount
Monochrome

▸ **60.0** megapixel

Max recordable pixels	9552×6336
Frame rate	6 fps (9552×6336) 225.9 fps (640×480)

Imaging software NIS-Elements Advanced Solutions for your Imaging World Supported by the NIS-Elements series.

Color / Monochrome Digital Camera for Microscopes

Digital Sight 10

▸ P.8

Wider field of view, greater possibilities. The high resolution captures both color and monochrome shades

This model features 6K high resolution, a large field of view (field number 25), and the ability to switch between color and monochrome modes while acquiring with a single camera. This high-performance model also provides a high frame rate for quick focusing on high-definition images.

Nikon FX-format
F-Mount
Color / Monochrome

▸ **23.9** megapixel

Max recordable pixels	6000×3984
Frame rate	9 fps (6000×3984) 55 fps (2000×1328)

Imaging software NIS-Elements Advanced Solutions for your Imaging World Supported by the NIS-Elements series.

NEW

Color Digital Camera for Microscopes

Digital Sight 100

▸ P.12

High versatility for a wide range of applications. A large field color digital camera

The large field color camera (field number 25) with a 17.7 megapixel CMOS sensor means that this model is capable of 4K image capture, high-speed live viewing and PC-free observation via HDMI monitor connection.

1 inch
C-Mount
Color

▸ **17.7** megapixel

Max recordable pixels	4864×3648
Frame rate	17 fps (4864×3648) 19 fps (5376×3024) 60 fps (2688×1512)

Imaging software NIS-Elements Advanced Solutions for your Imaging World Supported by the NIS-Elements series.

Color Digital Camera for Microscopes

Digital Sight 1000

▸ P.14

Simple operation for instantaneous high quality. Compact, lightweight entry-level model

Equipped with a 2 megapixel CMOS image sensor, this model is capable of capturing color images and video at up to 1920 x 1080 pixels. Easy, PC-free acquiring simply by connecting a monitor and mouse.

*An HDMI cable is used to connect to the monitor.

1 / 2.8 inch
C-Mount
Color

▸ **2.0** megapixel

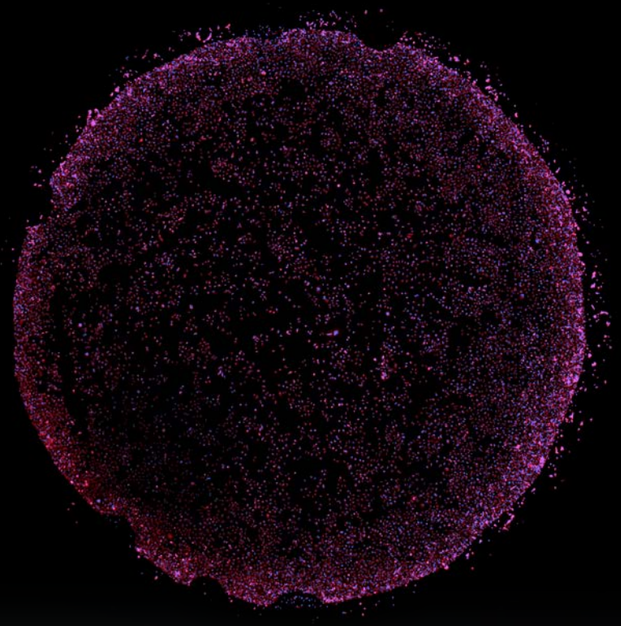
Max recordable pixels	1920×1080
Frame rate	30 fps (1920×1080)

Imaging software NIS-Elements Advanced Solutions for your Imaging World Supported by the NIS-Elements series.

Attention: All the examples in this page are images for research. We do not guarantee clinical use.

Monochrome Digital Camera for Microscopes

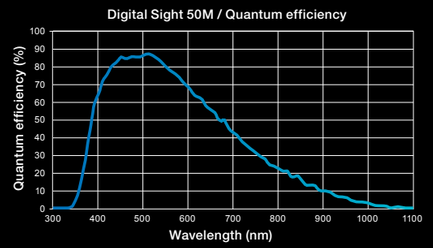
Digital Sight 50M



Hela cells Nucleus(DAPI), Cell cytoplasm(CellMask™DeepRed)
One-shot shooting of 1 well in a 96-well plate: Ti2-E, CFI Plan Apochromat Lambda D 2X

Seamlessly search, capture images of, and analyze samples at high speed

The monochrome digital camera Digital Sight 50M for microscopes is optimized to increase workflow efficiency. In additional to its large number of pixels, number of fields of view, and speed, it comes with dedicated software that makes it effective for screening large volumes of samples. It is perfect for not only academic research but also drug discovery research.

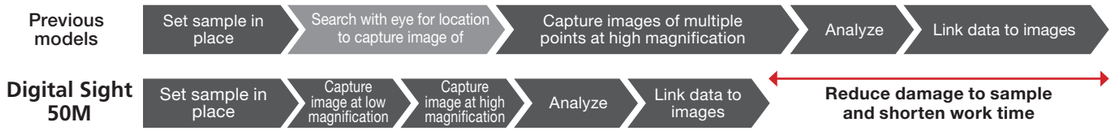


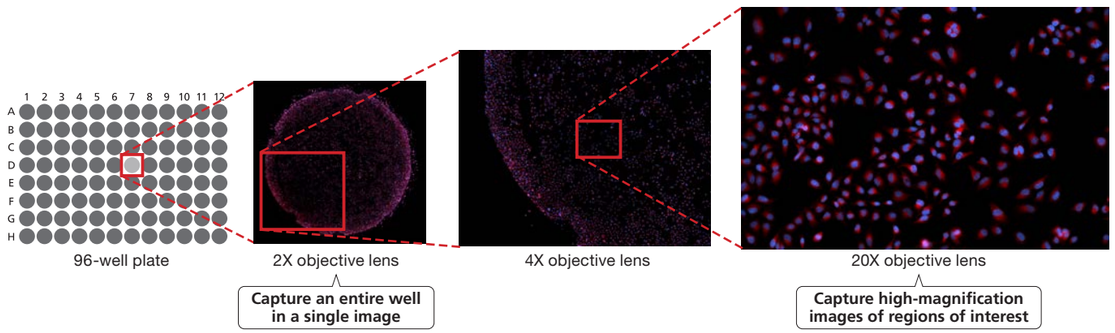
Digital Sight 50M

Increases the efficiency of capturing images of and analyzing large volumes of samples

Large field of view and high resolution for single-shot images of individual wells

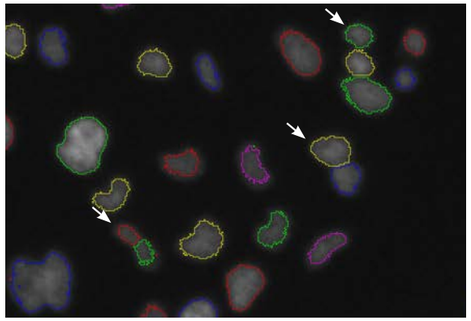
With an actual field of view of 7 mm when using a 2X objective lens, it is possible to capture single-shot images of wide areas. You can also quickly check both the overall image of large volumes of samples, such as in well plates, and regions of interest of a sample, which increases reproducibility of experiments.



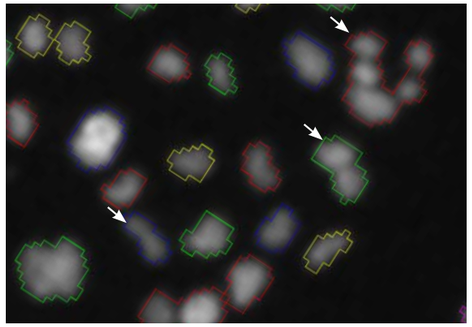


The ultra-high resolution of 9K increases the reliability of quantitative analysis

The improved Digital Sight 50M boasts 3.8 times the number of pixels and 2.5 times the resolution of previous models. Even when using a low-magnification, high-NA objective lens, it fully demonstrates optical capabilities. It is also possible to obtain highly reliable data of small regions when analyzing images.



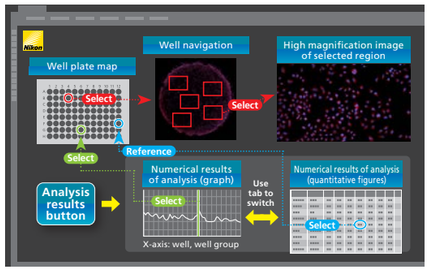
Digital Sight 50M



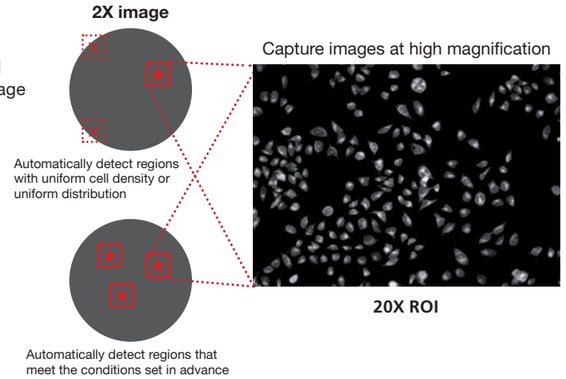
Conventional

Includes software suited to large-volume screening

The Digital Sight 50M comes with NIS-A Bundle JOBS W/RDB optional software so it offers support through post-capture analysis. It is possible to set up a flow from well selection, automatic detection of image ROI, and displaying of analysis results.



- Plate view
- Heat map
- Sample label
- Binarized image
- Graphs
  (histogram, scatter plot, bar graph, etc.)

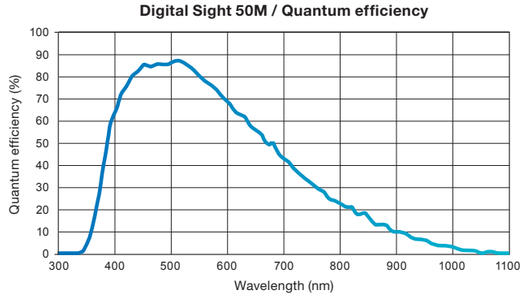


More evolved optical capability that can clearly capture fluorescence samples

High sensitivity

Detects even faint fluorescent signals

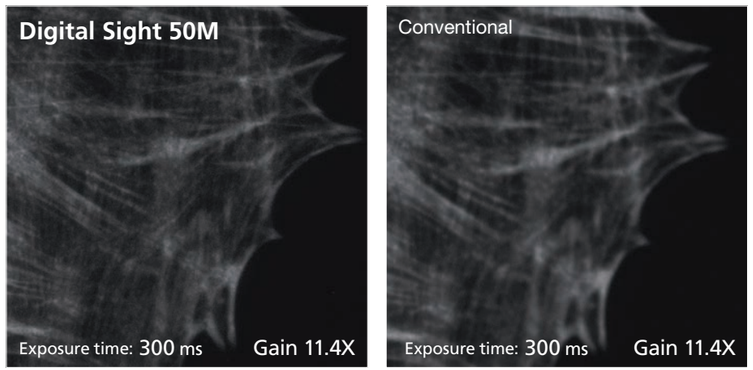
The Digital Sight 50M achieves quantum efficiency of 85%. Even faint fluorescence signals can be captured by the pixels on account of the broad 3.76 µm pixel pitch and high quantum efficiency.



Low noise

Acquires dim fluorescent signals with ultra-low noise

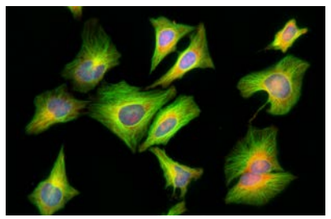
Both 6e⁻ read noise coupled with a large full-well capacity and 1.0e⁻/p/s dark current allow the acquisition of 14bit fluorescence images with very little noise.



Fast live display

Fast focusing, even with fluorescent images

A high-sensitivity CMOS sensor and high-speed data transfer using a general-purpose PC I/F USB 3.2 Gen 1 are combined to achieve 6 fps at the maximum number of pixels (60 megapixels) or a maximum speed of 27 fps (6.7 megapixels). It is also possible to quickly focus on samples.



Hela cells Nucleus (DAPI), Tubulin (FITC), Cell cytoplasm (CellMask™Red)
Objective: CFI Plan Apochromat Lambda D 60XOil

Numerous image acquisition modes

Adjustable balance between quality and speed

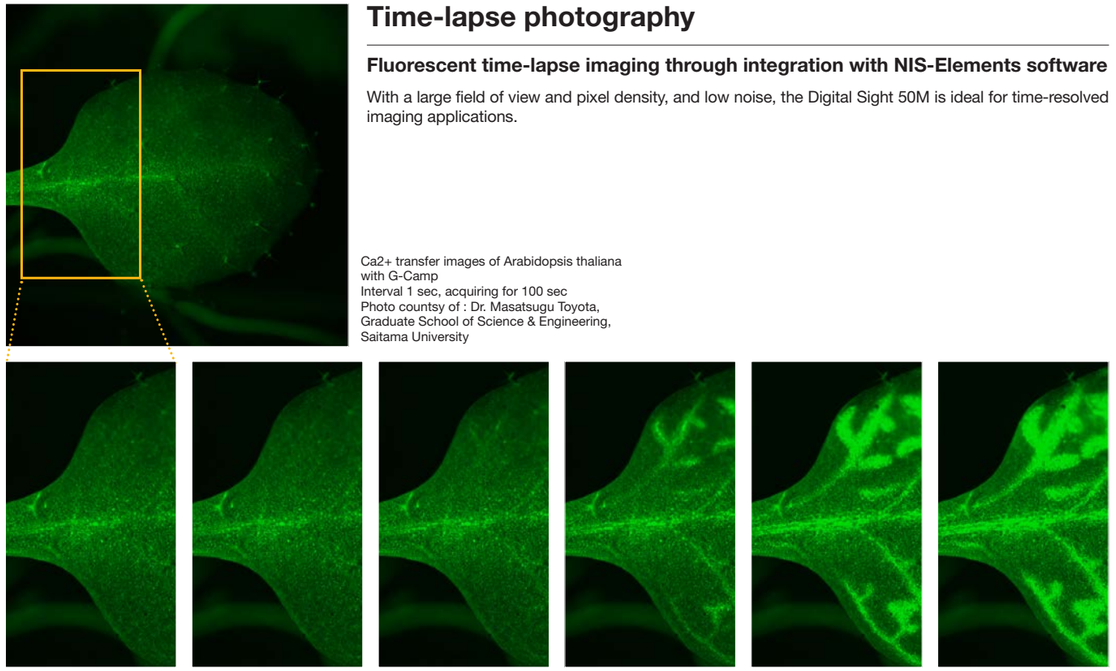
There are three operation modes, making it possible to select the required speed and quality. Maximum frame rate of 225.9 fps for high-speed photography.

Mode	ROI size (pixels)	Frame rate	
		8 bits	16 bits
1×1 mode	640×480	113.0 fps	23.6 fps
2×2 mode	640×480	114.9 fps	57.4 fps
3×3 mode	640×480	225.9 fps	112.9 fps

Time-lapse photography

Fluorescent time-lapse imaging through integration with NIS-Elements software

With a large field of view and pixel density, and low noise, the Digital Sight 50M is ideal for time-resolved imaging applications.

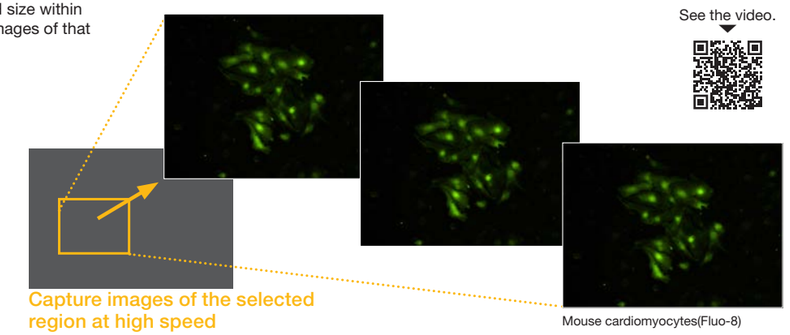


Ca2+ transfer images of Arabidopsis thaliana
with G-Camp
Interval 1 sec, acquiring for 100 sec
Photo countsy of : Dr. Masatsugu Toyota,
Graduate School of Science & Engineering,
Saitama University

ROI mode

Capture images of regions of the field of view at high speed and in real time

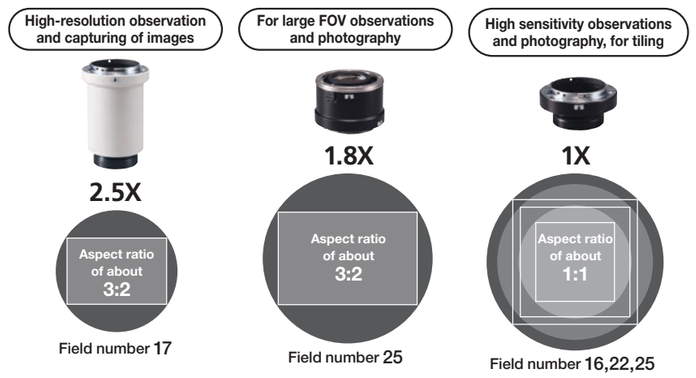
It is possible to freely designate a region and size within the effective pixel scope and then capture images of that desired region at high speed.



3 types of camera adapters

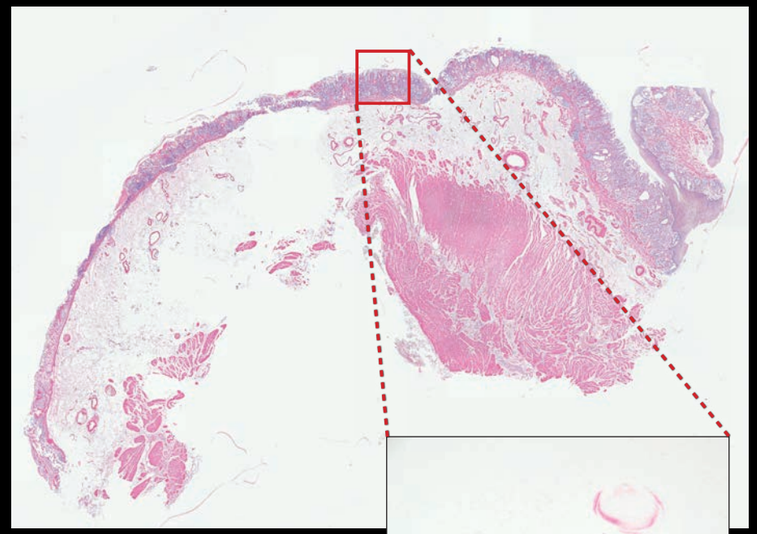
Includes 2.5X, 1.8X, and 1X adapters, each for different uses

The Digital Sight 50M offers the large CIS (Nikon FX format) that makes large field-of-view (FOV25) observations possible.
There are three adapters for different uses: a 2.5X adapter for high-resolution single shots of 60 megapixels, a 1.8X adapter for wide-field capturing, and a 1X adapter for samples that require high sensitivity and low noise, such as for image tiling.

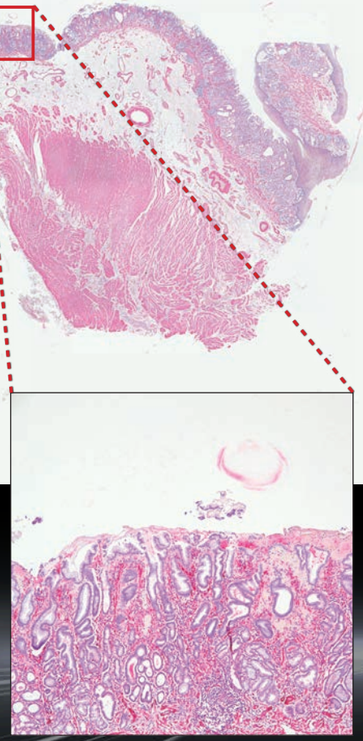


Color/Monochrome Digital Camera for Microscopes

Digital Sight 10



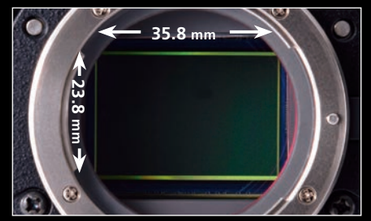
Stomach, SMA staining,17x12 Tiled images
(Objective: CFI Plan Apochromat 40XC)
Photo courtesy of :Nichirei Biosciences Inc.



Covers a large field of view with 6K ultra-high definition. Achieves efficient, one-shot image capture.

By employing technology cultivated with DSLR cameras, the full-frame CMOS image sensor instantly captures a large area in a single shot, achieving a field number of 25. This enables efficient creation of tiled images and saves time.

*Upright microscopes are supported only by the Ni series (brightfield).



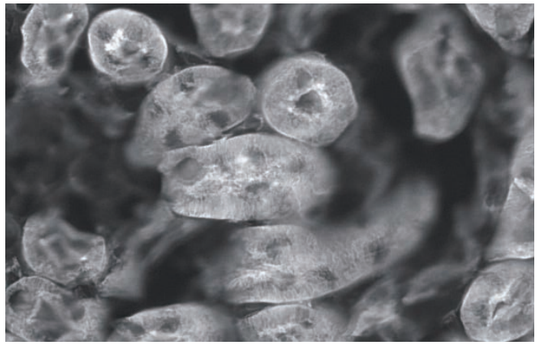
Large Format CMOS image sensors

High-definition observation

Easily capture fine details with 6K pixel resolution and high image quality

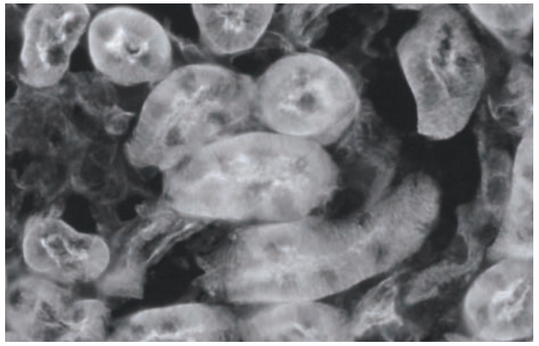
Microscopic images can be captured at up to 6000 x 3984 pixels (23.9 megapixels), ideal for image analysis and observation of fine structures.

Digital Sight 10



Kidney tissue (WGA: 488) (Objective: CFI Plan Apochromat VC 20X)

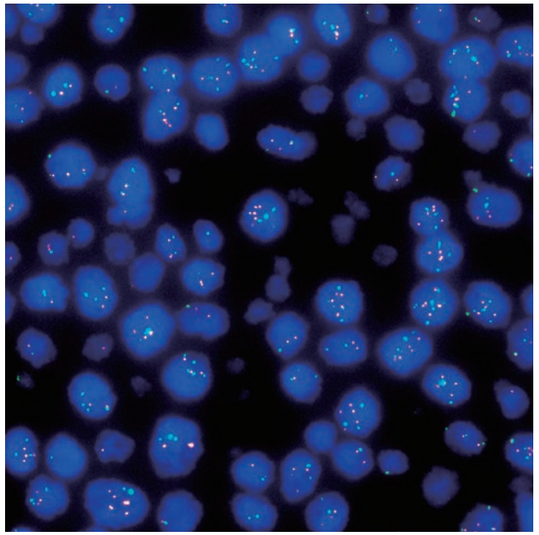
Previous model (DS-Ri2)



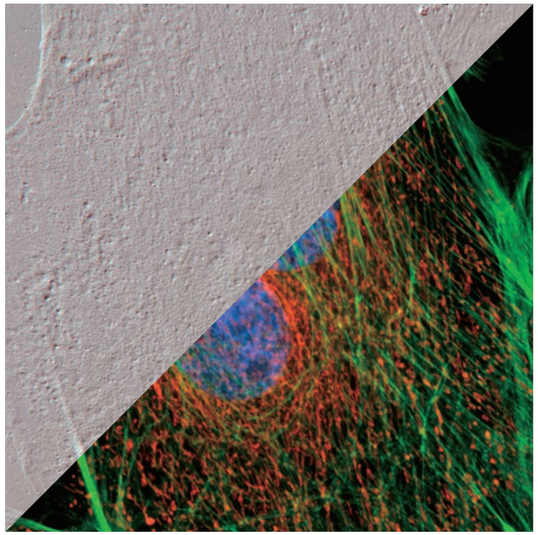
High sensitivity and low noise

Ideal for fluorescence observation requiring a large field of view and high definition

The Digital Sight 10 enables clear fluorescence observation with high sensitivity and a signal-to-noise ratio.



Breast cancer, FISH method (Objective: CFI Plan Apochromat Lambda D 100XOil)
Photo courtesy of: St. Marianna University Hospital



BPAE Fluorescent Stain Specimen Nikon Standard Sample DIC (left) and fluorescence (right)
Nucleus (DAPI), Actine (FITC),
Mitochondria (MitoTracker® RedFM)
Objective: CFI Plan Apochromat Lambda D 100XOil

Fast live display

A frame rate that captures moving samples at the perfect instant

Digital Sight 10 is capable of live display of 6000 x 3984 pixel (23.9-megapixel) images at 9 frames/second or 2000 x 1328 pixel (2.7-megapixel) images at 55 frames/second. Fine focusing is easy and stress-free. It is possible to capture custom, smaller areas of interest at a higher speed.

High-definition capture in both color and monochrome.

Color and monochrome image acquisition are possible with a single unit

During manual operation

Color mode

When inserting the color filter
Can acquire 400 to 680 nm in color

Monochrome mode

When detaching the color filter
Capable of acquiring 400 to 850 nm in Monochrome
*Replace with monochrome IR filter

Electric switching function

During electronic operation (using the 1x electronic adapter)

Easy color mode switching, either manually or electronically

Digital Sight 10 makes it possible to easily switch the color mode either electronically or manually by using specialized imaging software for electronic switching or attaching/detaching filters to the slot at the bottom of the microscope camera for manual switching.

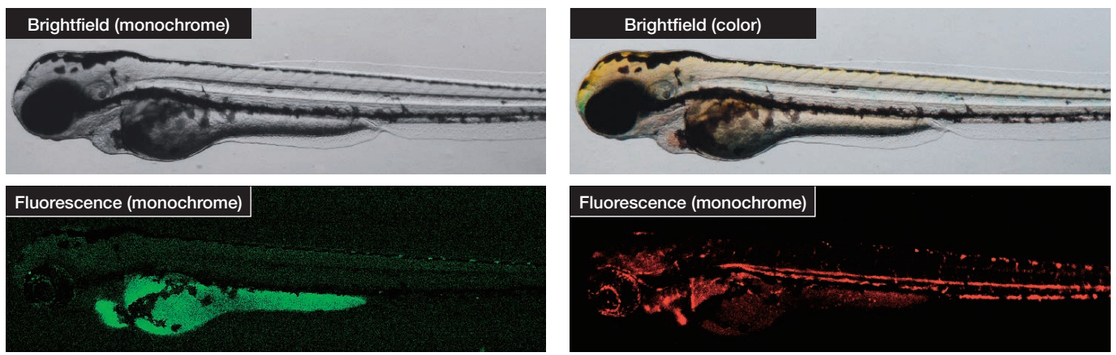
1x electronic adapter

*A 1x electronic adapter and a separate PC equipped with specialized imaging software, NIS-Elements, are required for electronic operation.

Achieves consistent acquiring with a single sensor

A convenient all-in-one camera for multiple observation applications

A single sensor captures both color and monochrome images, for consistent appearance even when switching color mode. Easy image acquisition is possible without the hassle of using different cameras.



Zebrafish (Objective: SHR Plan Apo 1X)

A monochrome mode that acquires even near infrared images

Fluorescence observation with little damage to biological samples

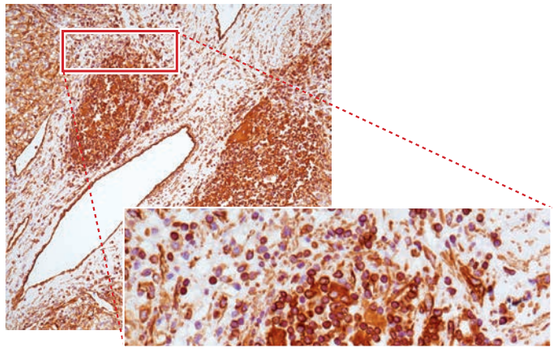
Digital Sight 10's monochrome mode supports near-infrared (700 nm–) fluorescence image capture, normally difficult to achieve with conventional color cameras. As fluorescence sensitivity extends to the NIR region, this camera is suited to fluorescence image capture of thick samples and samples with weak phototoxicity.

For discriminating fine structures

▶ Upright microscope system ECLIPSE Ni
Objective lens for biological microscopes Lambda D

Even at the periphery of the field of view, blurring and color bleeding are minimal, so images remain sharp and clear even when enlarged. ECLIPSE Ni supports everyday observation and inspection of samples with high resolution and high color fidelity.

Kidney cancer, Vimentin staining
(Objective: CFI Plan Apochromat Lambda D 20X)
Photo courtesy of:
Nichirei Biosciences Inc.

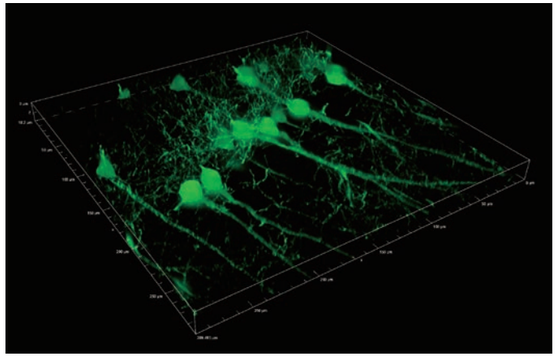


For 3D imaging

▶ Inverted microscope system ECLIPSE Ti2
Objective lens for biological microscopes Lambda D

ECLIPSE Ti2 takes advantage of a large field of view (field number 25) to achieve high throughput even when capturing 3D or other large-size data. It enables the capture of clear, high-resolution images with a higher signal-to-noise ratio, even deep into subjects.

Mouse neuron
(Objective: CFI Plan Apochromat Lambda D 40XC)
From captured images of 18 µm thickness every 0.2 µm.
Image processed with Clarify.ai



For model organisms

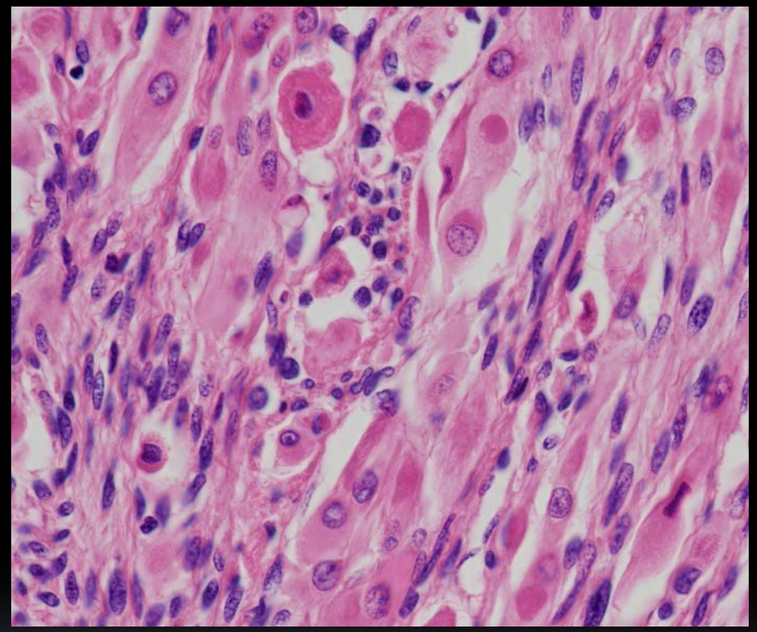
▶ Stereoscopic microscope system SMZ25/18

Discover outstanding versatility and precision with the SMZ25 and SMZ18 stereo microscopes. The SMZ25 offers a motorized 25:1 zoom ratio, while the SMZ18 features an 18:1 manual zoom. Both deliver superb image clarity with high NA optics (up to 0.156) and an innovative fly-eye lens for uniform brightness across a large field of view, even at low magnifications. The SMZ25's motorized focus and zoom, plus intuitive remote control, ensure user-friendly operation. Broad magnification ranges and accessory compatibility make these microscopes ideal for advanced imaging.

Zebrafish larva
(brightfield/myocardium GFP)
(Objective: SHR Plan Apo 2X)
Photo courtesy of:
Dr. Hiroyuki Nakajima,
National Cerebral and Cardiovascular Center

Color Digital Camera for Microscopes

Digital Sight 100



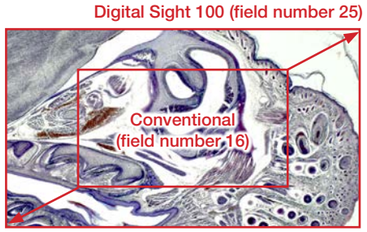
Soft tissue tumor.(Hematoxylin and Eosin stain) Courtesy of Dr. Akinobu Araki,
Director of the Department of Clinical Pathology, Chiba Cancer Center, Japan.

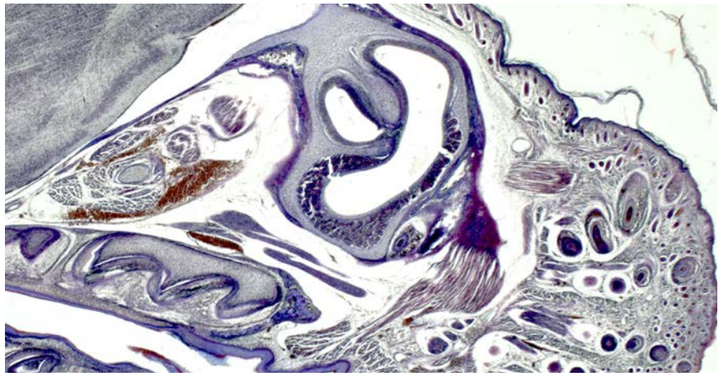
A wide field of view and high image quality support high-precision imaging.

This is a color digital camera for microscopes that enables capturing a large field of view (field number 25) with exceptional clarity in a single shot. Furthermore, the high resolution and superior color reproduction in 4K reduce the risk of errors and oversights. Remote acquiring via Wi-Fi and seamless data sharing are also supported to meet the diverse needs from pathological observation to education and research.

Large field capturing (field number 25)

Large field photography with a field of view of 25 is available, which enables the observation and capture of a large area in a single shot. Live sharing during monitor observation and capturing images provide a field of view equivalent to binocular vision to enhance the work efficiency.

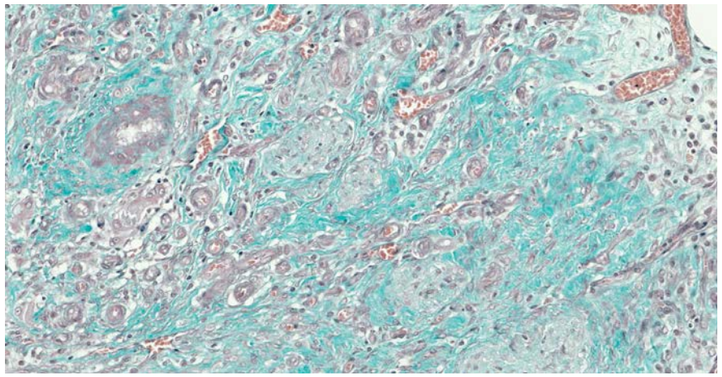




Mouse Head, using a 2X Plan Apo objective.

High-level color reproduction

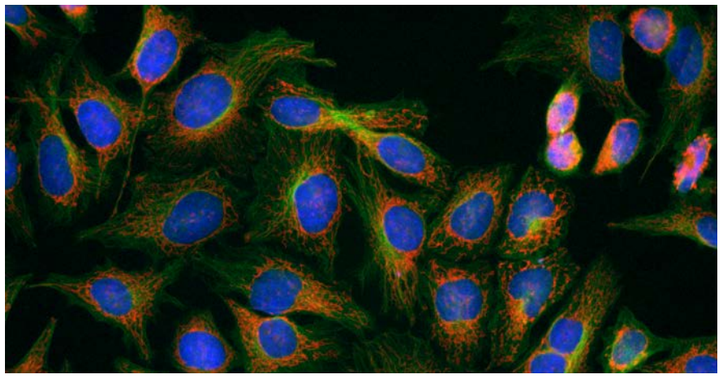
In addition to the conventional sRGB, the adoption of AdobeRGB with its wider color gamut has extended the color reproduction capabilities.The expanded color gamut effectively enhances color reproduction.



Fibrotic stroma, Trichrome stain

High-resolution fluorescence capturing

The adoption of a large 1-inch CMOS sensor allows for highly sensitive capturing of images, which enhances convenience during fluorescence observation.



HeLa cells Nucleus (DAPI) , Tubulin (FITC), Mitochondria(Mito Tracker RedFM), Acquired using a Nikon standard sample.

Remote capturing via Wi-Fi

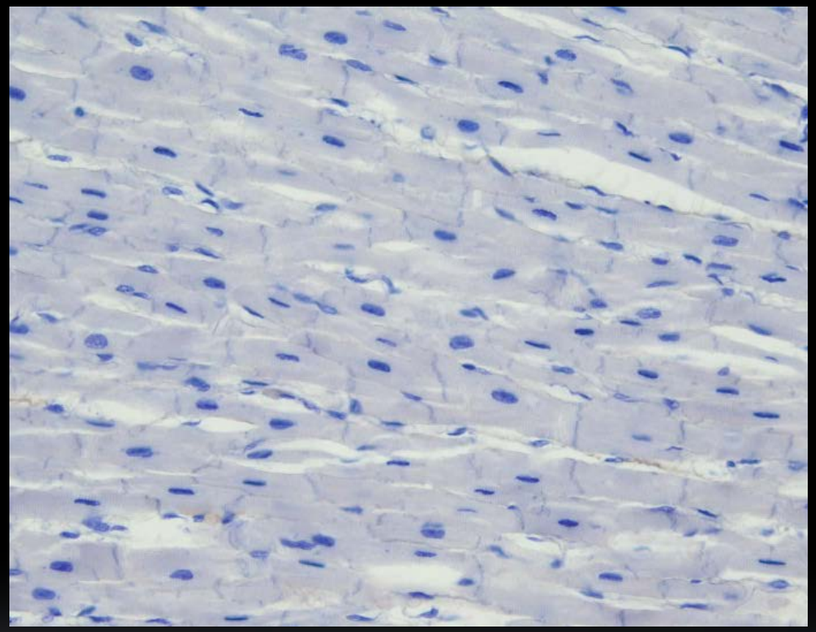
A PC with free NIS-Elements LE software installed can be connected via Wi-Fi to capture microscope images.

HDMI output supported

An HDMI terminal is provided to allow users to connect directly to a display and view 4K image without a personal computer.

Color Digital Camera for Microscopes

Digital Sight 1000

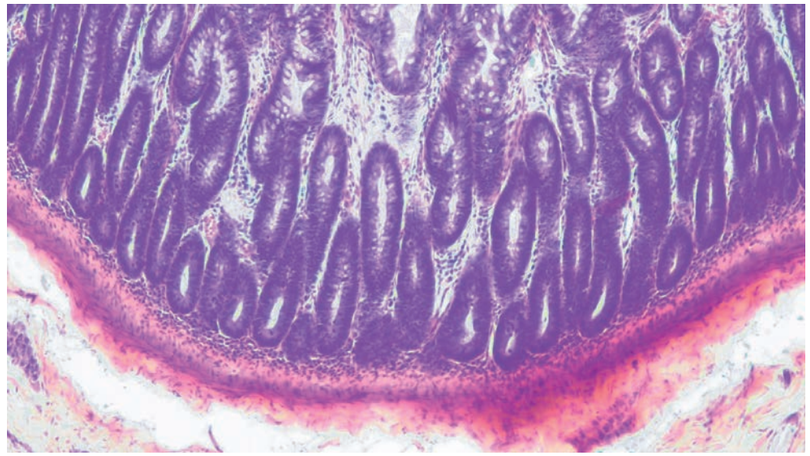


Full HD compatible
Entry-level model usable without a PC

High-definition images made more accessible and more user-friendly.
A 2-megapixel CMOS image sensor enables the capturing and recording of full HD images at up to 1920 x 1080 pixels.
Connecting directly to a full HD display allows you to view live images, capture photos, and perform simple measurements without a PC.

Full HD images

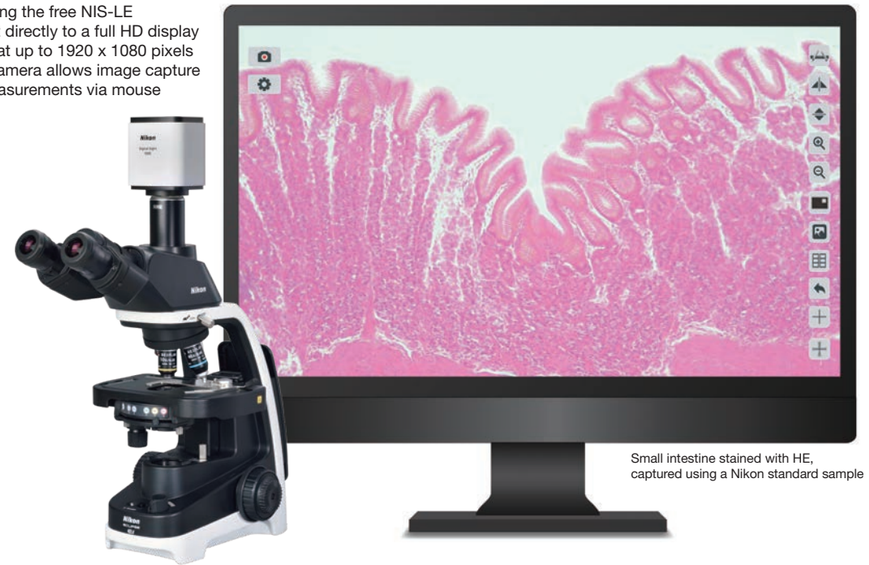
Equipped with a 2 megapixel CMOS image sensor, the Digital Sight 1000 can display, capture and save full HD, 1920 x 1080 pixel images at 30 frames / second.



Gastric wall stained with HE, captured using a Nikon standard sample

Stand-alone mode

In addition to PC connectivity using the free NIS-LE software, this model can connect directly to a full HD display for high-definition image display at up to 1920 x 1080 pixels without a PC. Furthermore, the camera allows image capture and saving, as well as simple measurements via mouse operation.



Small intestine stained with HE, captured using a Nikon standard sample

SD Cards for Storage

An SD card slot is provided on the top surface so that users can save captured images to an SD memory card.

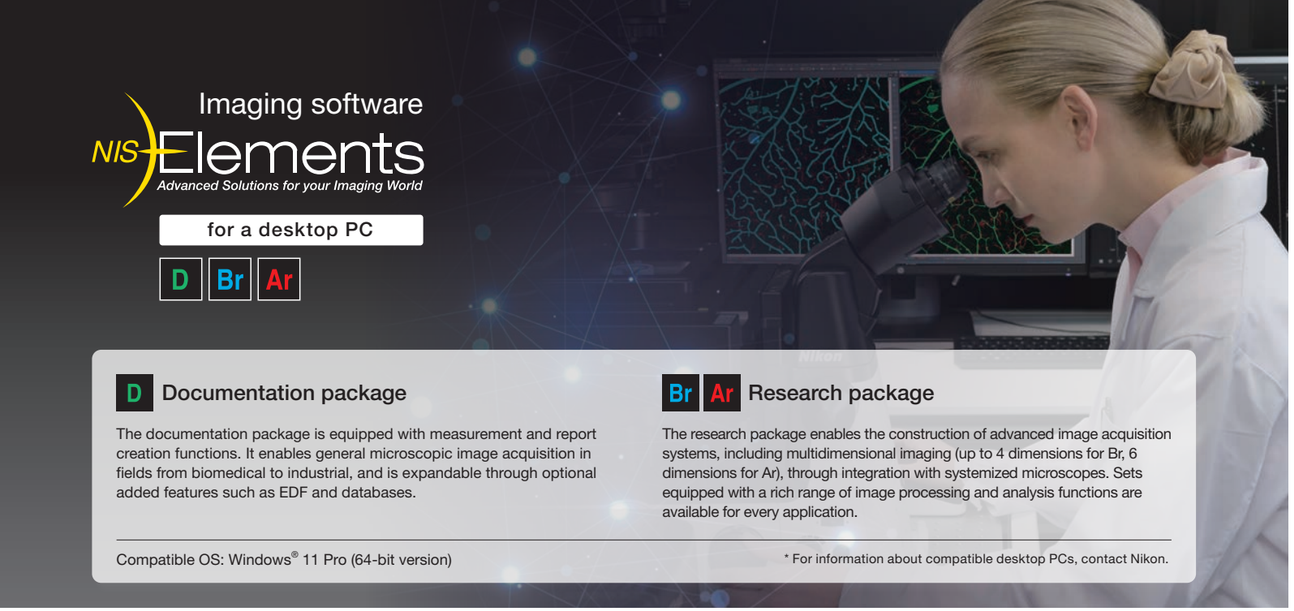
Imaging software

NIS-Elements

Advanced Solutions for your Imaging World

for a desktop PC

D Br Ar



D Documentation package

The documentation package is equipped with measurement and report creation functions. It enables general microscopic image acquisition in fields from biomedical to industrial, and is expandable through optional added features such as EDF and databases.

Br Ar Research package

The research package enables the construction of advanced image acquisition systems, including multidimensional imaging (up to 4 dimensions for Br, 6 dimensions for Ar), through integration with systemized microscopes. Sets equipped with a rich range of image processing and analysis functions are available for every application.

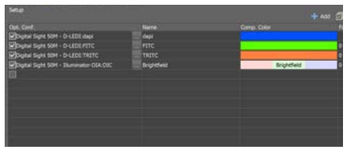
Compatible OS: Windows® 11 Pro (64-bit version)

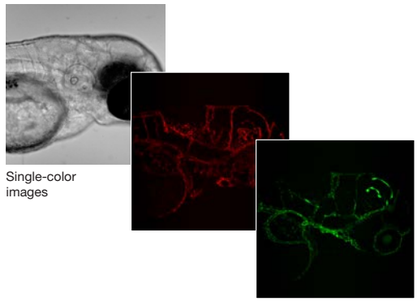
* For information about compatible desktop PCs, contact Nikon.

Multichannel (Multi Color)

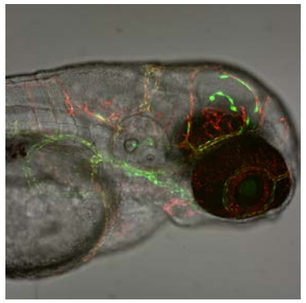
Ar Br

NIS-Elements can acquire full bit depth multi-color images, combining multiple fluorescence wavelengths and different illumination methods (DIC, phase contrast etc.), while offering independently scalable channels.





Single-color images

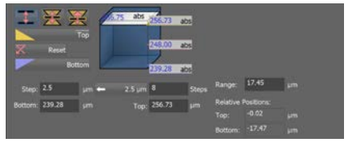


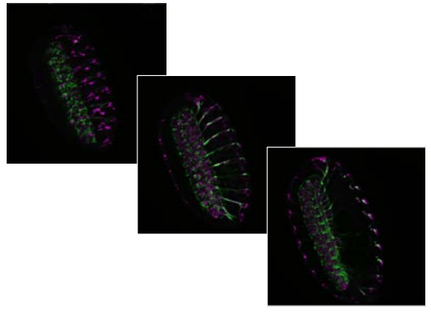
All-color merged image

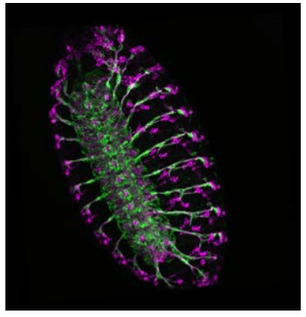
Z-series

Ar Br D

Through motorized focus control, NIS-Elements reconstructs and renders 3D images from multiple Z-axis planes.



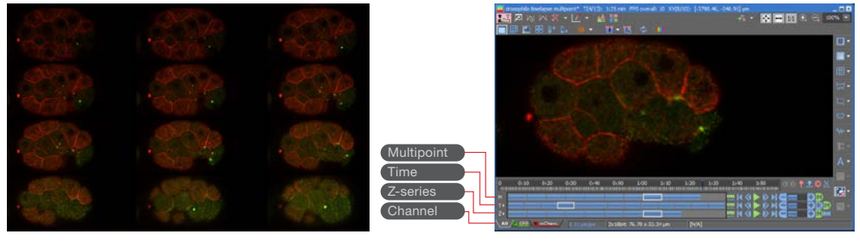




Multi-dimensional Image Display

Ar Br

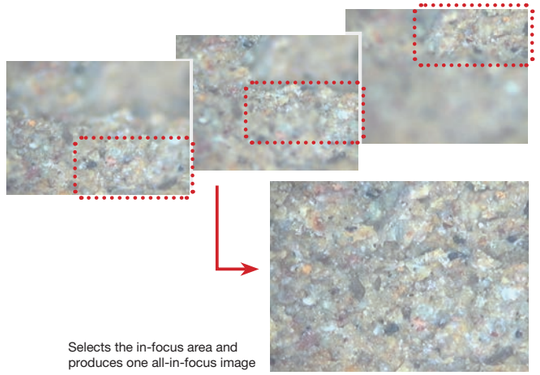
NIS-Elements displays time lapse, multi-channel, multiple X, Y, Z positions in an intuitive layout, which allows for automatic playback and the ability to select subsections of the data to be saved as a new file.



EDF (Extended Depth of Focus)

Option Ar Br D

Creates a single, all-in-focus image from images of differing focus. Such images can now be created by simply turning the focus knob.



Selects the in-focus area and produces one all-in-focus image

Manual measurement and image annotation

Ar Br D

Manual Measurement allows easy measurement of length and area by drawing lines or an object directly on the image. The results can be attached to the image, and also exported as text or to an Excel spreadsheet.

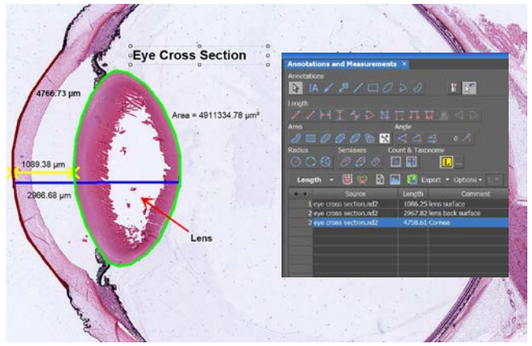
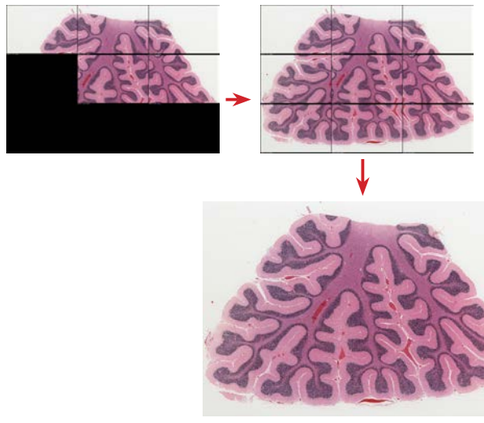


Image stitching (Large Image)

Ar Br D

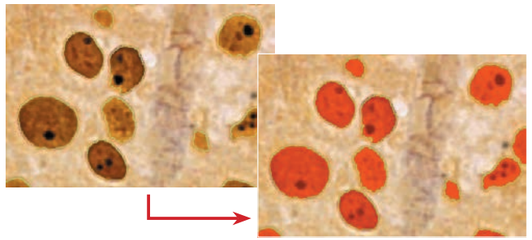
Stitches together images from multiple fields of view during acquiring to create an image with large field of view. Images already acquired can also be stitched together.

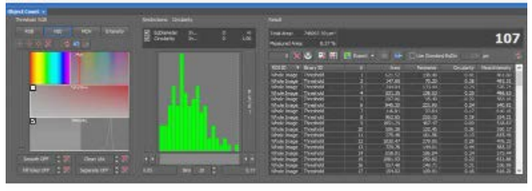


Auto measurement (Object Measurement)

Ar Br Option D

Performs binarization on images using previously set thresholds to measure the number, area, brightness, etc. of identified objects.

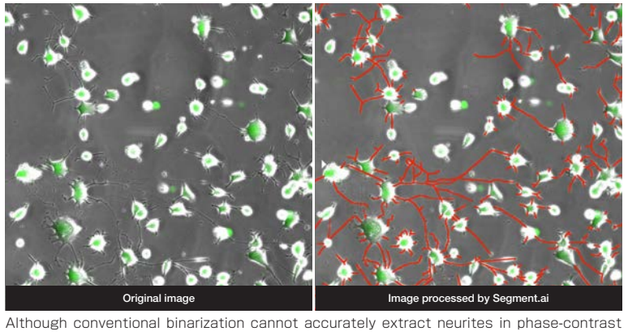




Segment.ai

Option Ar

Conventional brightness-based binarization makes segmentation nearly impossible for certain images. Segment.ai can train neural networks to classify targets that have been difficult to extract using conventional binarization or image processing. By applying trained recipes to actual images, targets that previously could only be identified manually can be recognized and segmented.



Although conventional binarization cannot accurately extract neurites in phase-contrast images, Segment.ai can learn manually traced neurites and recognize the targets.

Imaging software
NIS-Elements
Advanced Solutions for your Imaging World

For a desktop/tablet PC

LE

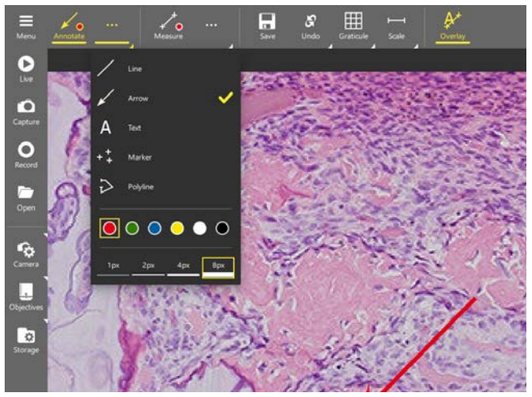
Allows intuitive control of microscope cameras from PCs

This free software package simplifies the setting and control of microscope cameras, live image display, and image acquisition.
TIFF, JPEG, and ND2 are available formats for saving the acquired images.
Supported cameras: Digital Sight 50M, Digital Sight 10, Digital Sight 100, Digital Sight 1000

(Compatible OS: Windows® 11 Pro 64bit) * For information about compatible tablet PCs, contact Nikon.

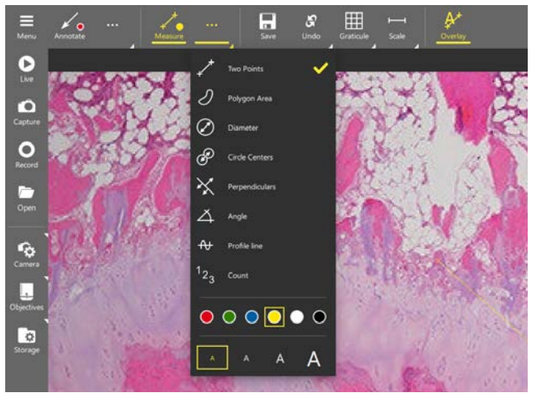
Annotation

Lines and comments can be added directly onto the captured images and can then be written onto and saved with the image.



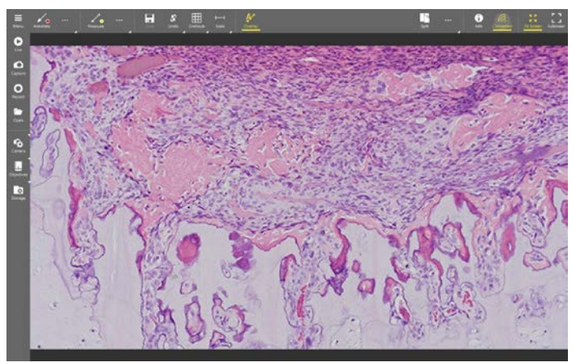
Measurements

A wide range of functions for simple measurements on images are available. Measured data can also be output.

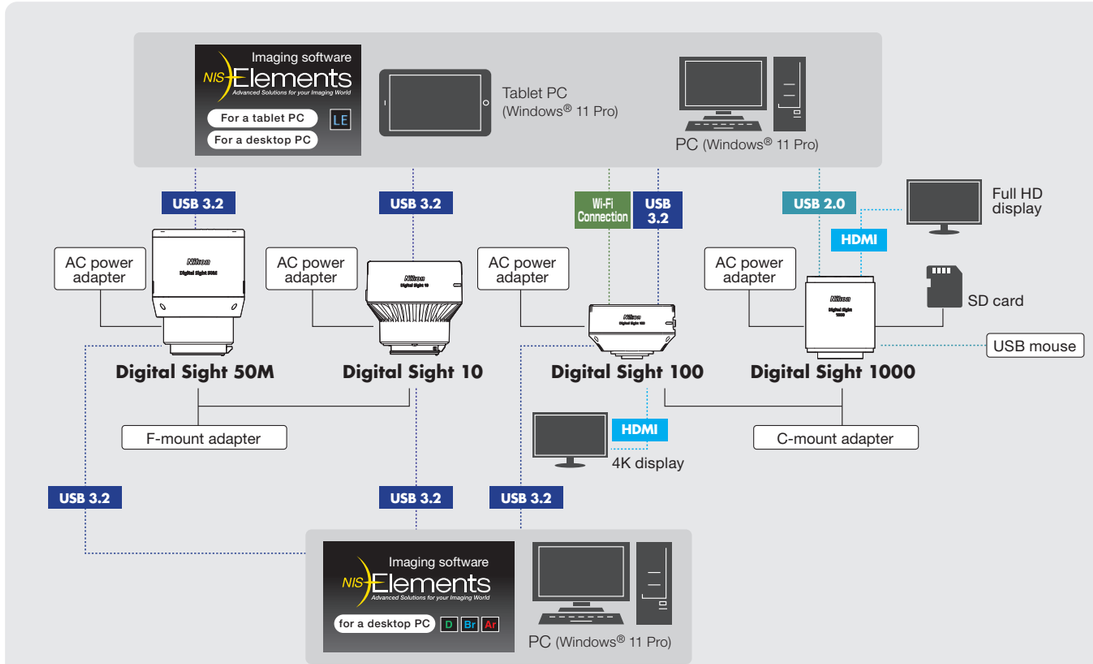


Wi-Fi Connection *Supported only by Digital Sight 100.

When used in combination with the Digital Sight 100 color digital camera for microscopes, a Wi-Fi connection is available. This allows for easy live viewing and data sharing via Wi-Fi.



System Diagram



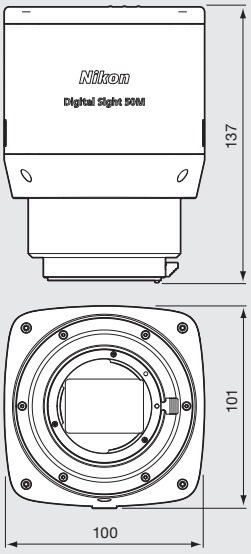
Specifications

Model name	Digital Sight 50M	Digital Sight 10	Digital Sight 100	Digital Sight 1000
Image sensor	Nikon FX-format Monochrome CMOS image sensor Size: 35.8 × 23.8 mm	Nikon FX-format Color CMOS image sensor Size: 35.8 × 23.8 mm	1 inch Color CMOS image sensor Size: 12.9 × 8.76 mm	1/2.8 inch Color CMOS image sensor Size: 5.57 × 3.13 mm
Recordable pixels	9552 × 6336	6000 × 3984 pixels	4864 × 3648 pixels	1920 × 1080 pixels
Lens mount	F-mount		C-mount	
Cooling method	Electronic cooling	—		
Quantum efficiency	85 %	—		
Full well Capacity	45000e⁻ (typ.)	—		
Readout noise	6e⁻	—		
Dark current	1.0e⁻/p/s (Ta=25°C)(typ.)	—		
Live display mode* (maximum fps)	All pixels (9552 × 6336): 6 fps@8 bit, 1.9 fps@16 bit 3 × 3 pixels average @ 8 bit (ROI 640 × 480): 225.9 fps***	All pixels (6000 × 3984): 9 fps FullHD 3 x 3 pixels average (2000 × 1328): 55 fps	All Pixels 4:3 (4864 x 3648 pixels): 17 fps, All Pixels 16:9 (5376 x 3024 pixels): 19 fps, 2 and 2 Pixels Average 16:9 (2688 x 1512 pixels): 60 fps *When using USB 3.2 GEN 2	All pixels (1920 x 1080): 30 fps
Exposure time	150 µsec–120 sec	100 µsec–120 sec	100 µsec–10 sec	1 m sec–10 sec
Photometry mode	Average photometry: Average intensity within the photometry area Peak photometry: Maximum intensity within the photometry area			Average photometry 1920 × 1080 pixels (all area)
Exposure control	One-time automatic exposure: Exposure time is adjusted automatically for one-time within the optimum range for the camera Continuous automatic exposure: Automatic exposure adjustment is performed continuously to keep the exposure within the camera Manual exposure: Exposure time and gain settings are made manually			Automatic exposure, Manual exposure
Exposure correction	Average metering: -1 EV ~ +1/2 EV Peak hold metering: -1 EV ~ ±0 EV	Average metering: ±1EV Step:1/6EV (some restrictions according to tone) Peak hold metering: -1 EV ~ ±0 EV		Available
Interface	USB 3.2 GEN 1 (connect with PC) × 1, External trigger × 1	USB 3.2 GEN 2 (connect with PC) × 1, External trigger × 1	USB Port 1: USB 3.2 GEN 2 (USB 2.0 not supported), USB Port 2: USB 3.2 GEN 1 HDMI 1.4b, For External Sync I/O (MSC communication) x 1	USB 2.0 (connect with PC or USB mouse)× 1, HDMI × 1, SD card slot x 1**
Power supply	AC 100-240 V 50 Hz/60 Hz			
Power consumption	27 W	18 W	7 W	3 W
Operating environment	0-40°C, 60% RH max. (without condensation)			

*Maximum frame rate depends on exposure time. **Both SD and SDHC memory cards are available.
***When using NIS-Elements, 16-bit mode can be selected for 1x1 and 2x2 digital binning, and 12-bit mode can be selected for 2x2, 3x3, 4x4 and 6x6. 8bit mode can be selected in all image size modes.

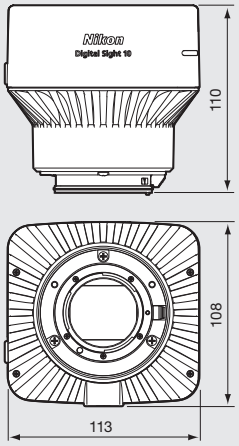
Dimensions

Digital Sight 50M



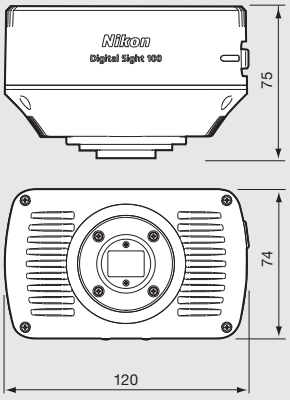
Weight: approx. 1,300 g

Digital Sight 10



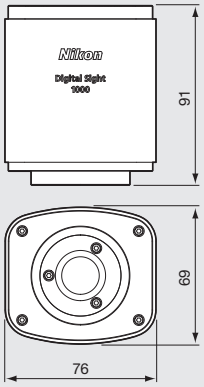
Weight: approx. 1,100 g

Digital Sight 100



Weight: approx. 600 g

Digital Sight 1000



Weight: approx. 450 g

▶ **Digital Sight 10**
Maintenance movie

The digital sight series is not for clinical diagnostic use.

The Wi-Fi functionality of Digital Sight 100 is provided by external Wi-Fi dongles (sold separately) available in each country and region.

In principle, Wi-Fi dongles should be purchased from local distributors or in-country representative, ensuring compliance with local laws and regulations in your region.
We do not bundle them with the product nor export/import them across borders.

Using dongles certified for other countries may violate local laws and regulations. Always use products that are legally sold in your local market.

Warranty and support for Wi-Fi dongles are subject to the terms and conditions of your local distributors or in-country representative.

N.B. Export of the products* in this catalog is controlled under the Japanese Foreign Exchange and Foreign Trade Law.
Appropriate export procedures shall be required in case of export from Japan.
*Products: Hardware and its technical information (including software)

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

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