DIGITAL CAMERAS FOR MICROSCOPES

DIGITAL SIGHT SERIES

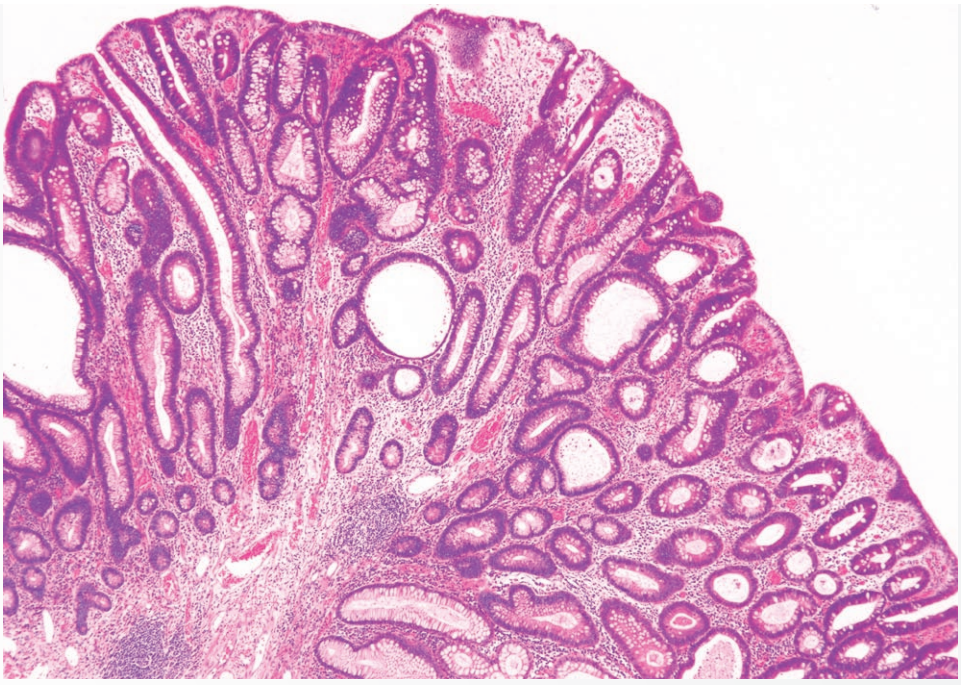
Nikon Digital Sight Series New Lineup

A new system for imaging: the DS-Fi3, a high resolution and sensitivity general purpose color camera has been added to the Nikon Digital Sight series. The DS-Fi3 can be connected to a PC, or the new compact tablet-style DS-L4.

Microscope Camera

DS-Fi3

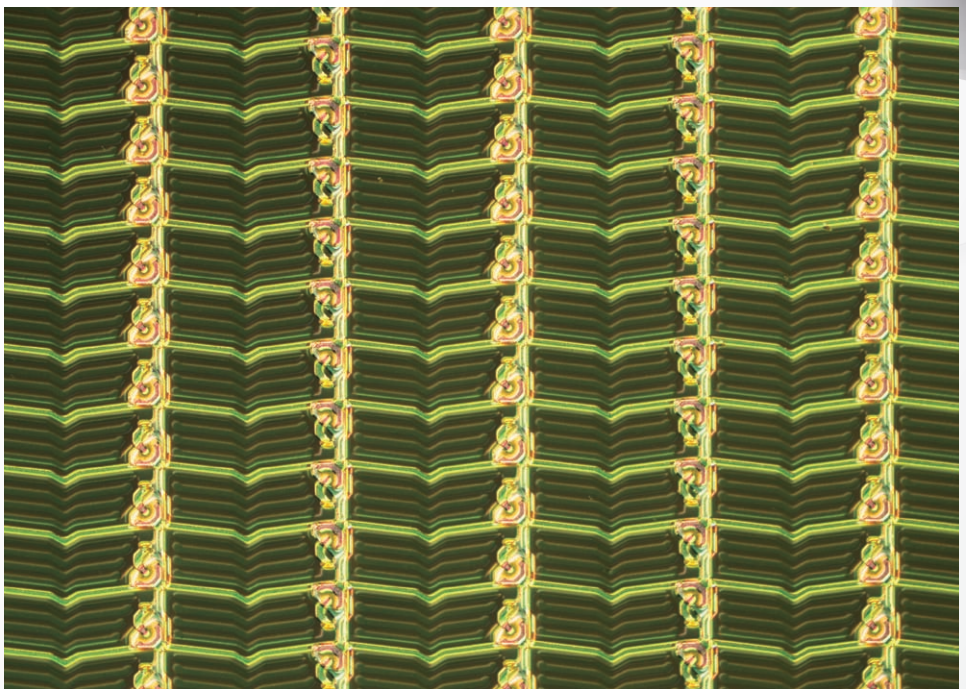
5.9 megapixel | Color | High-resolution



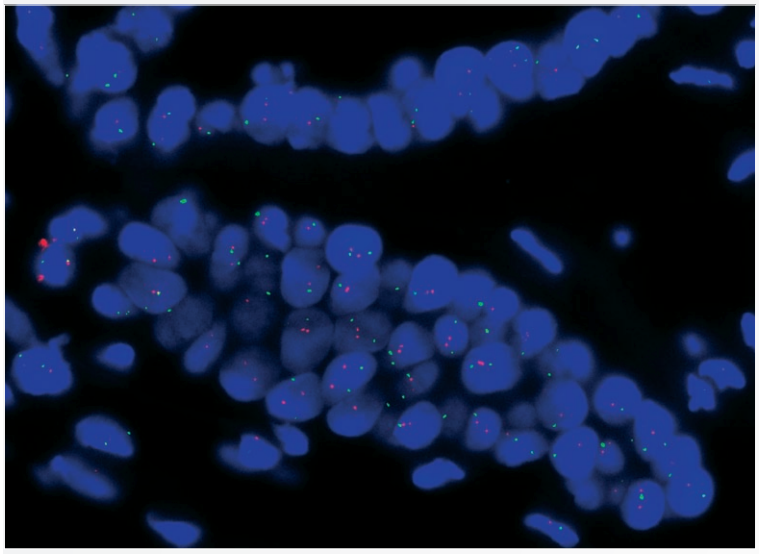
Tubular adenoma, HE staining (Objective: CFI Plan Apochromat λ 4x)
Photos courtesy of:Dr. Yasunori Ohta, Department of Pathology, IMSUT Hospital, Institute of Medical Science, The University of Tokyo

High-resolution images

A CMOS high density 5.9 megapixel sensor produces high resolution images. USB3.0 date transfer allows fast focusing at high resolution, and easy capture images in all types of observation methods such as brightfield, differential interference contrast, and phase contrast.



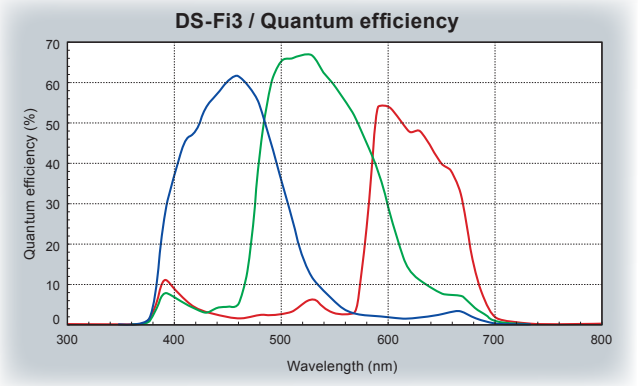
Liquid crystal panel
(Objective: TU Plan Fluor 10x)



Breast cancer, FISH method (Objective: CFI Plan Apochromat 100x Oil)
Photos courtesy of: Hironao Kusakari, Diagnostic Pathology, St. Marianna University Hospital

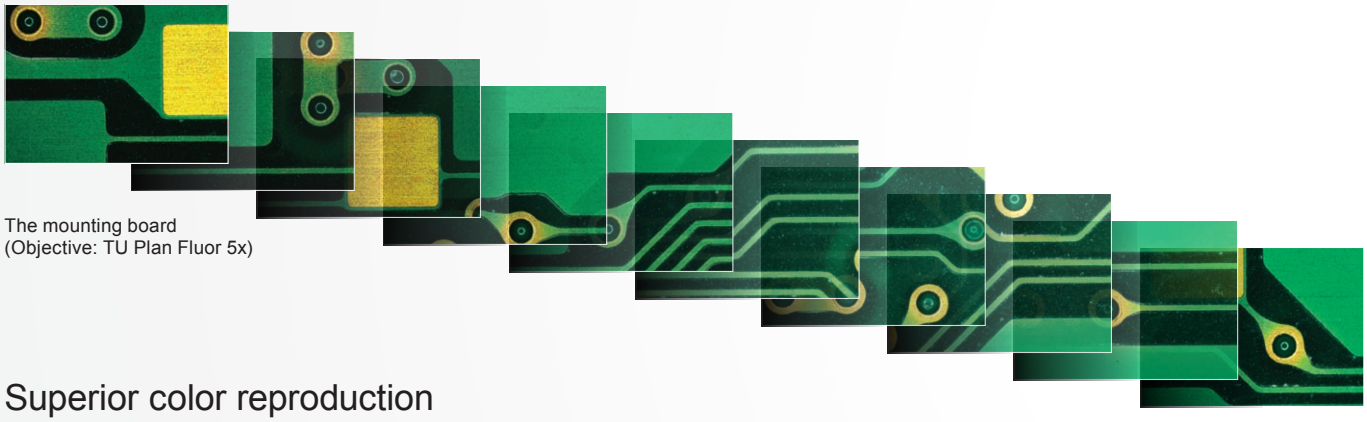
High sensitivity, low noise

Quantum efficiency and read noise have been greatly improved, providing better capability for acquisition of fluorescent images with better signal-to-noise ratios than before.



High-speed live display

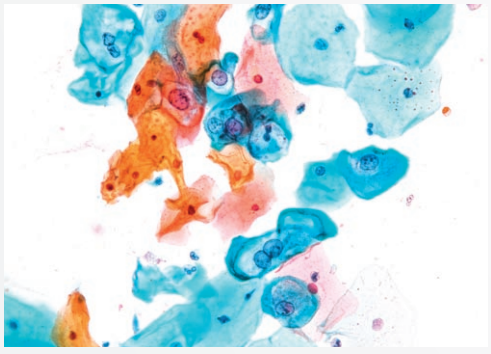
Fast USB3.0 data transfer means fast, smooth live updating of images for finding samples or focusing, even at full resolution.

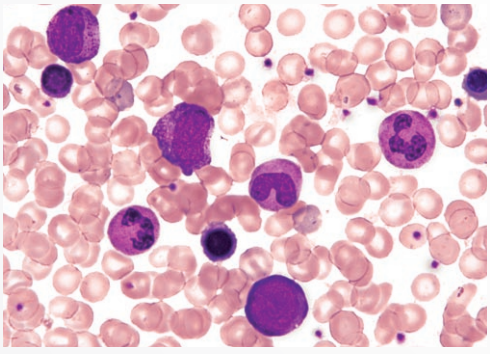


The mounting board
(Objective: TU Plan Fluor 5x)

Superior color reproduction

Nikon is well-known for outstanding and lifelike color reproduction, and developing superior algorithms for creating results that look like the actual samples. These algorithms are used in all of the color cameras in the digital sight lineup.





Left image: Uterine cervix Pap. Staining
(Objective: CFI Plan Apochromat λ 40x)
Photos courtesy of: Kazuhiro Mita, Department of Pathology, Yokohama City University Hospital

Right image: Bone marrow
(Objective: CFI Plan Achromat NCG 40x)
Photos courtesy of: Clinical Laboratory Department, Yokohama City University Hospital

Camera Control

The DS-Fi3 interfaces with PC computers via a USB3.0 interface directly to the camera head, and uses NIS-Elements series software for image acquisition.

Imaging software
NIS-Elements
Advanced Solutions for your Imaging World

Integration with the comprehensive imaging software series

Nikon uses the NIS-Elements series as control software. NIS-Elements allows functions from basic imaging to control of the microscope and peripheral devices to be performed, as well as the measurement, analysis, and management of acquired images. Four basic packages and a variety of optional modules are available to suit every application and objective.

* See the NIS-Elements Catalog for details.

F Free package

The bundled free package offers functions for the display of scale on live images, full-screen display, and more. The simple operation screen makes shooting easy.

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

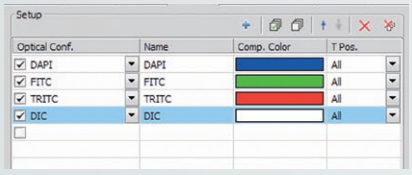
The research package enables the construction of advanced image acquisition systems, including multidimensional imaging (up to 4 dimensions for Br, 6 dimensions for Ar), through integration with systemized microscopes. Sets equipped with a rich range of image processing and analysis functions are available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

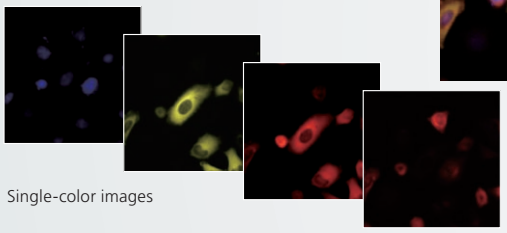
Compatible OS: Windows® 7 Pro 32/64bit

* Nikon provides confirmed compatible PCs with up-to-date specifications. Contact Nikon for details.

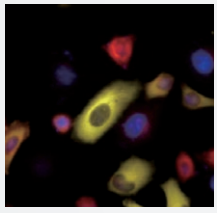
Multichannel (multi color) Ar Br

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.

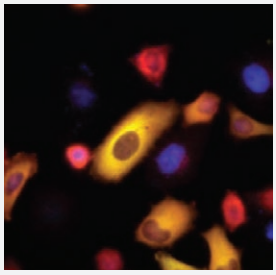




Single-color images



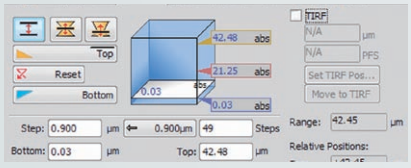
Specified-color merged image

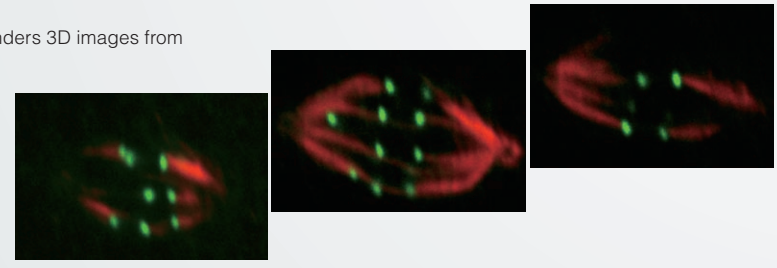


All-color merged image

Z-series Ar Br D

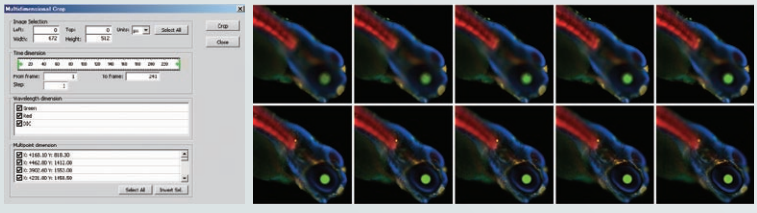
Through motorized focus control, NIS-Elements reconstructs and renders 3D images from multiple Z-axis planes.

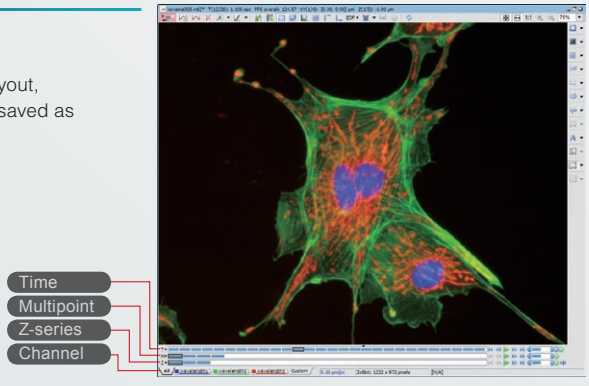




Multi-dimensional Image Display Ar Br

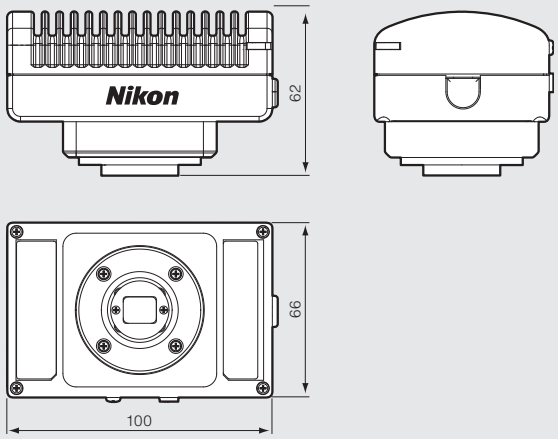
NIS-Elements displays time lapse, multi-channel, multiple X, Y, Z positions in an intuitive layout, which allows for automatic playback and the ability to select subsections of the data to be saved as a new file.



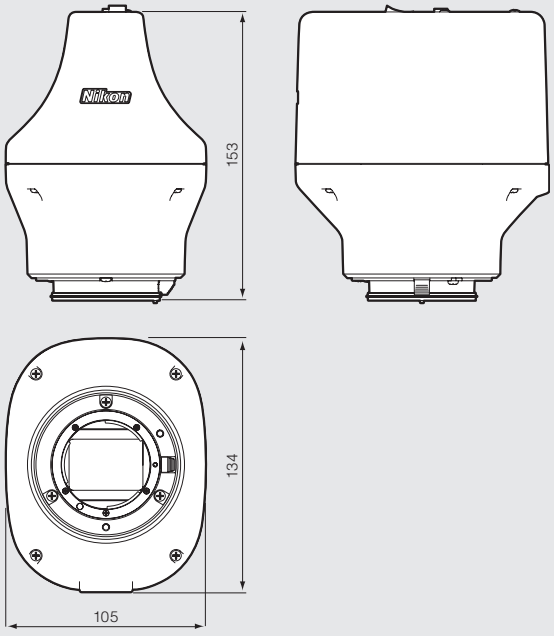


Dimensions

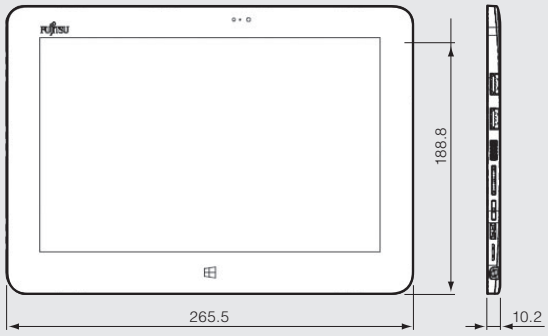
DS-Fi3



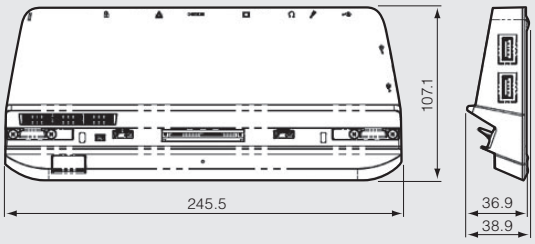
DS-Ri2 / DS-Qi2



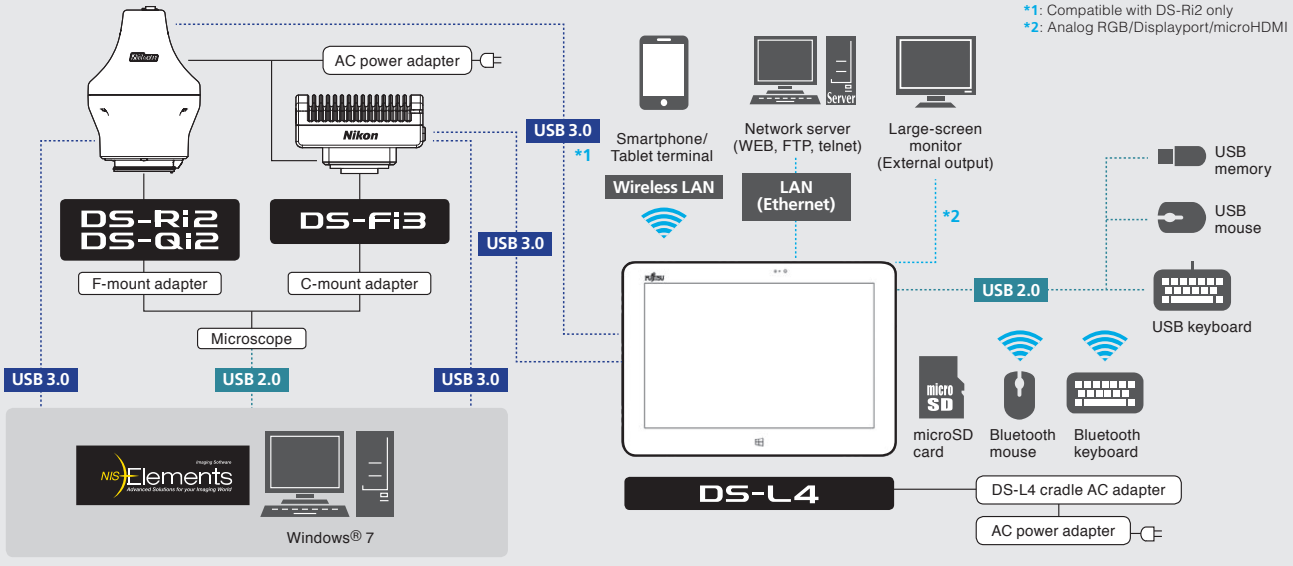
DS-L4



DS-L4 cradle AC adapter



System Diagram



Specifications

Microscope Digital Camera

Model name	DS-Fi3	DS-Ri2	DS-Qi2
Image sensor	1/1.8 inch Color CMOS image sensor Size: 6.91 × 4.92 mm	Nikon FX-format Color CMOS image sensor Size: 36.0 × 23.9 mm	Nikon FX-format Monochrome CMOS image sensor Size: 36.0 × 23.9 mm
Recordable pixels	All pixels: 2880 × 2048 2 Vertical and 2 horizontal pixels average: 1440 × 1024	All pixels: 4908 × 3264 3 × 3 pixels average: 1636 × 1088	
Lens mount	C-mount	F-mount	
Cooling method	—		Electronic cooling
ISO sensitivity (recommended exposure index)	Standard: equivalent to ISO 50 (Selectable from ISO 50 to ISO 3200 equivalent)	Standard: equivalent to ISO 200 (Selectable from ISO 200 to ISO 12800 equivalent)	Standard: equivalent to ISO 800 (Selectable from ISO 800 to ISO 51200 equivalent)
Quantum efficiency	—		77%
Full well Capacity	—		60000e (- typ.)
Readout noise	—		2.2e (- typ.)
Dark current	—		0.6e-/p/s (Ta=25°C)(typ.)
Live display mode*1 (maximum fps)	All pixels (2880 × 2048): 15 fps 2 Vertical and 2 horizontal pixels average (1440 × 1024): 30 fps	All pixels (4908 × 3264): 6 fps 3 × 3 pixels average (1636 × 1088): 45 fps	
Exposure time	100 µsec ~ 30 sec	100 µsec ~ 120 sec	
Photometry mode	Average photometry: Average intensity within the photometry area Peak photometry: Maximum intensity within the photometry 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		
Exposure correction	±1EV Step:1/6EV		Average metering: -1 EV ~ +1/2 EV Peak hold metering: -1 EV ~ ±0 EV
Interface	USB3.0 (connect with PC, DS-L4) × 1, External trigger × 1		USB3.0 (connect with PC) × 1, External trigger × 1
Power supply	AC100-240V 50Hz/60Hz		
Power consumption	4.8 W	13W	24W
Dimensions	100(W) × 66(D) × 65(H)mm	105(W) × 134(D) × 153(H)mm	
Weight	400g (approx.)	1200g (approx.)	
Operating environment	0-40°C, 60% RH max. (without condensation)		0-30 °C, 80% RH max. 30-40°C, 60% RH max. (without condensation)