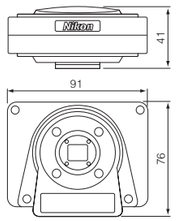
Camera Head	DS-Fi1	DS-5Mc
CCD	2/3 in. high-density CCD: Total number of pixels: 5.24 million (effective 5.07 million)	
Recordable pixels	2560 x 1920 pixels, 1280 x 960 pixels, 640 x 480 pixels	
CCD cooling device	—	Peltier Device: Ambient temperature -20˚C
Sensitivity	Equivalent to ISO64 (Can be varied between ISO 32-1250 equivalent)	
A/D conversion	12-bit	
Live display mode (DS-L2)	2560 x 1920 (max. 5.9 fps), 1280 x 960 (max. 12 fps), ROI mode (max. 23 fps) * Display reduced or enlarged to SXGA/XGA	2560 x 1920 (max. 3.8 fps), 1280 x 960 (max. 7.5 fps), Center Scan (max. 15 fps) * Display reduced or enlarged to SXGA/XGA
Live display mode (DS-U2)	1280 x 960 (max. 7.2 fps), 640 x 480 (max. 11.5 fps), ROI mode (max. 22 fps)	1280 x 960 (max. 5.6 fps), 640 x 480 (max. 7.6 fps), Center Scan (max. 15 fps)
Lens mount	C-mount	
Exposure time	1/1000 to 60 sec	1/1000 to 600 sec
Dimensions	77.0 (W) x 76.0 (D) x 44.0 (H) mm	91.0 (W) x 76.0 (D) x 41.0 (H) mm
Weight	Approx. 260g	Approx. 290g
System composition	Camera Cable (3m)	
Optional accessories	For wide field of view observations 0.7x Relay lens (C-mount)	

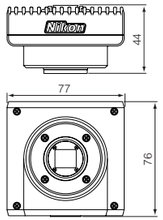
Camera Head	DS-2Mv	DS-2MBWc	DS-2MBW
CCD	1/1.8 in. high-density CCD: Total number of pixels: 2.11 million (effective 1.98 million)		
Recordable pixels	1600 x 1200 pixels, 800 x 600 pixels, 400 x 300 pixels		
CCD cooling device	—	Peltier Device: Ambient temperature -20˚C	—
Sensitivity	Equivalent to ISO100 (Can be varied between ISO 50-2000 equivalent)	Equivalent to ISO350 (Can be varied between ISO 160-6400 equivalent)	
A/D conversion	12-bit		
Live display mode (DS-L2)	1600 x 1200 (max. 15 fps), 800 x 600 (max. 20 fps), 800 x 560 (max. 30 fps), Center Scan (max. 30 fps) * Display reduced or enlarged to SXGA/XGA		
Live display mode (DS-U2)	1600 x 1200 (max. 4.6 fps), 800 x 600 (max. 17 fps), Center Scan (max. 20 fps)	1600 x 1200 (max. 10 fps), 800 x 600 (max. 20 fps), Center Scan (max. 28 fps)	
Lens mount	C-mount		
Exposure time	1/1000 to 60 sec	1/1000 to 600 sec	1/1000 to 60 sec
Dimensions	91.0 (W) x 76.0 (D) x 41.0 (H) mm		
Weight	Approx. 260g	Approx. 290g	Approx. 260g
System composition	Camera Cable (3m)		
Optional accessories	For wide field of view observations 0.55x Relay lens (C-mount)		

Control Unit	DS-L2	DS-U2
Exposure control	Program AE, Shutter-priority AE, Focus AE, Manual with AE lock function	
Exposure correction	Correction range: ±2.0, Step: 1/3	13 steps
Digital zoom	Up to 16x (8 steps)	5 to 2400%
Interval shooting	10 sec. - 6 hr. intervals	5 sec. - 12 hr. intervals
Exposure metering	Average metering, Peak hold metering	
Exposure metering range	Position/size adjustable	
White balance	Set method, Color balance adjustable	
Image adjustments	Gamma correction, shading adjustment, black level adjustment, hue wheel variation, color saturation adjustment	
Storage format	BMP, JPEG (4-step compression)	BMP, TIFF, JPEG, JPEG2000
Interface	USB device port x 1 (Mass Storage Class support), USB host port x 2 (USB mouse, USB memory stick, USB keyboard, microscope connection)	USB device port x 1 (computer control connector), USB host port x 1 (microscope connector)
Power supply	AC100-240V 50/60Hz	
Power consumption	70VA	35VA
Dimensions	230 (W) x 64.5 (D) x 200 (H) mm	193 (W) x 195 (D) x35 (H) mm
Weight	CCU: approx. 1400g / AC Adapter: approx. 350g	CCU: approx. 1200g / AC Adapter: approx. 350g
Operating environment	0-40˚C, 85% RH max. (without condensation)	
System composition	AC adapter, Power cord, USB memory stick 128MB, Mouse	AC Adapter, Power cord, NIS-Elements F package
Networking	Ethernet (10/100Base-TX), DHCP compatible, HTTP, TELNET or FTP server, FTP client	—
LCD monitor	8.4-in. TFT color LCD XGA (1024 x 768, 60Hz)	—
External monitor output	DVI-I (Digital: Conforms to DVI 1.0/Analog: 0.7 Vpp (75Ω) SXGA/XGA	—
Storage media	CompactFlash™ card (Type I, Type II), USB memory stick, Microdrive	—
Direct printing	PictBridge printer (sold separately)	—
Optional accessories	DS remote controller, microscope control license	—

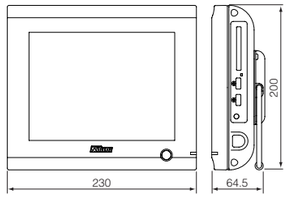
DS-5M/2M Series



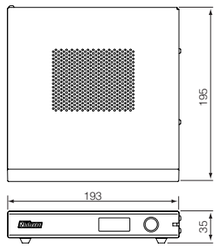
DS-Fi1



DS-L2



DS-U2



(mm)

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

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En

Digital Camera System for Microscopy

DIGITAL SIGHT

The first fully interchangeable digital camera system in the microscope industry. Flexible configurations offer the versatility required for a rich variety of sample types and applications.

CAMERA HEADS

NEW

High-definition color camera head

DS-Fi1

color High Resolution

The DS-Fi1 features a 5-megapixel CCD that can faithfully capture microstructures at a high resolution of 2560 x 1920 pixels. It accelerates frame rates beyond the past model and even improves resolution, expands dynamic range, and reduces noise using Nikon's proprietary imaging technology.

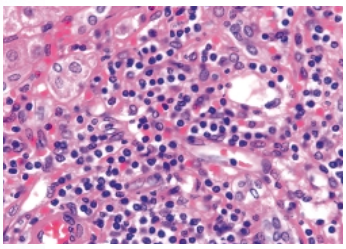
The DS-Fi1 also improves red sensitivity by using a new IR cut filter and enhances image quality, including increased brightness through 4x binning. The camera itself is more compact. This is a highly functional, high performance-to-value camera head for a wide range of observational applications, including brightfield, phase contrast, and differential interference contrast (DIC).

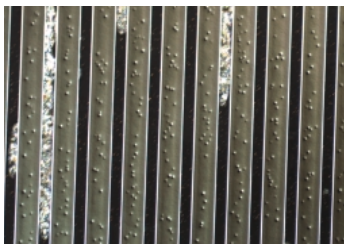
Cooled camera head for high-definition color images

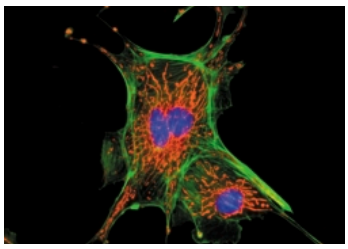
DS-5Mc

color cooled High Resolution

The DS-5Mc uses a Peltier cooling mechanism to cool the area around the imaging section to 20°C below room temperature (compared to its un-cooled state). This enables it to suppress thermal background noise and obtain high-contrast images when capturing fluorescence images that require long exposure times. The DS-5Mc also features a 5-megapixel CCD that can faithfully capture microstructures at a high resolution of 2560 x 1920 pixels.







CONTROL UNITS

NEW

Stand-alone control unit

DS-L2

The DS-L2 features a large built-in 8.4-inch LCD monitor. This standalone control unit can observe samples and capture images without being connected to a PC.

Nikon has developed a comprehensive range of digital camera systems that are optimized for capturing microscopic images of superb quality. The five types of camera heads and two types of control units all function seamlessly together, providing the ultimate in flexibility to configure the perfect digital system for many different applications. The Digital Sight series provides the solution for a variety of applications, from industrial to biological use, and from high-level research to simple capture of inspection results. It can be expanded as a system by combining various camera heads and control units.

Based on your intended use, choose from five different models, which offer flexible combinations of the following features: 5-megapixel high-definition/high-resolution; cooled with low thermal noise, even during long exposures; highly sensitive monochrome, and 2-megapixel high-speed display.

High-speed color camera head
DS-2Mv

The DS-2Mv features a 2-megapixel CCD that can smoothly display SXGA live motion images at 15 fps (max.30fps). This well-balanced camera head enables the smooth display of live images at high speeds and the capture of crystal-clear still images with a high sensitivity and a high dynamic range. It is so versatile, in fact, that it can even be used for monitoring.

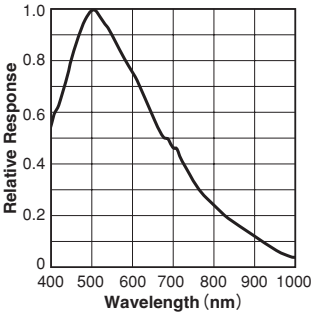
Cooled camera head for high-speed monochrome images
DS-2MBWc

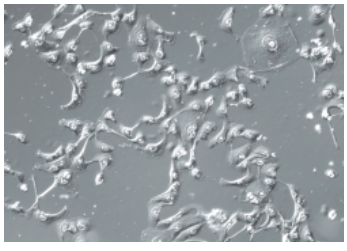
The DS-2MBWc features a cooling mechanism on a monochrome CCD that boasts five times the sensitivity of the past model. Its high frame rate and 2-megapixel CCD quickly capture images of fluorescence samples in which color quickly fades, enabling clear image capture with less noise.

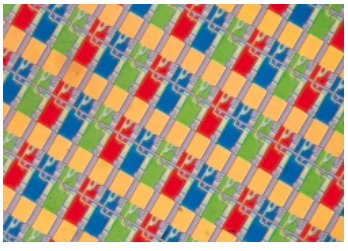
High-speed camera head for monochrome images
DS-2MBW

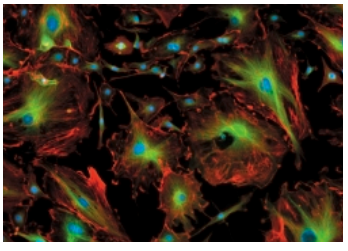
The DS-2MBW is a reasonably priced non-cooled camera head that features a monochrome CCD that boasts five times the sensitivity of the past model. Its high frame rate and 2-megapixel CCD capture images in a short time.

Wavelength characteristic of DS-2MBWc/DS-2MBW









Two control units, the DS-L2 and the DS-U2, are available, to match your intended use.

NEW

PC-based control unit
DS-U2

The DS-U2 controls steps from advanced image capture to image processing and analysis from a connected PC.

Stand-alone control unit

DS-L2

No PC required. Simple operation with a mouse.
Live observation and camera control are possible on the large

Exceptional color representation

Nikon has managed to minimize the difference between the human eye's receptors and the CCD sensitivity by using newly developed image processing technology, thereby enabling true natural color representation. The controller has seven default gamma (TONE) correction presets and another seven that can be registered by the user. It also allows the user to create an original look-up table (LUT).

Built-in LCD display

A large 8.4-inch high-definition LCD monitor (XGA) is built into the controller. Image capture can begin simply by turning on power. No PC required!

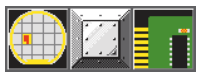
On-screen GUI

All operations can be performed by clicking on-screen menus. Users can concentrate on observing live images thanks to simple image capture while viewing the monitor.

Scene mode enabling optimal image capture with a single click

Anyone can easily configure optimal image capture settings simply by selecting the observation method, such as brightfield or darkfield, and the type of sample. In the Biological Scene Mode, there is even a mode optimized for HE and ELIZA (enzyme antibodies) stained specimens for use with medical specimens that require subtle color reproduction. There are also seven user-customizable modes.

Biological Scene Mode



Industrial Scene Mode

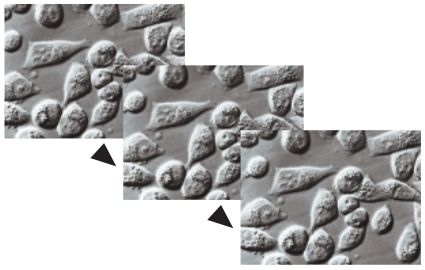
Configuration of DS-Fi1-L2 with stereoscopic microscope

Configuration of DS-5Mc-L2 with biological upright microscope

built-in LCD monitor.

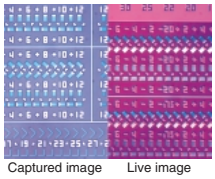
Time-lapse recording

Continuous image capture is possible in time intervals.



Two-screen split display

The screen can be split in half to display a still image alongside a live image.
This is handy when you want to compare and contrast a sample image that serves as a reference with a live image.



Captured image Live image

Two USB ports

A mouse, keyboard, USB memory stick, or other USB device can be simultaneously connected without the need for a USB hub.

Save data without a PC

- **USB memory stick**
- **CompactFlash card**
- **Mass storage class:** Data on a CF card inserted into the DS-L2 can be read or written at high speed using a PC connected via the USB 2.0 interface.
- **Network:** Image files can be transferred (stored) at high speed to any connected server using the FTP client function. This enables you to capture images without worrying about storage space.

High expandability

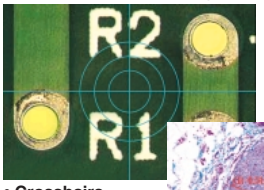
Supports large screen output

A digital output port conforming to DVI 1.0 is provided. This enables the display of high-definition images on a large external display with no loss of image quality, as only digital imaging can do. Applications include observation by large numbers of people at conferences. conferences.

Supports direct printing (PictBridge)

No computer is required to print out images with a single click. Simply connect the unit's USB port to a printer supporting the PictBridge standard.

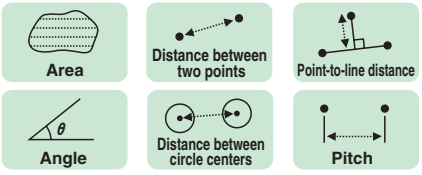
A wide variety of tools



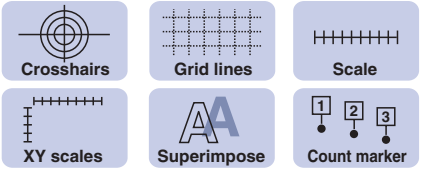
• Crosshairs

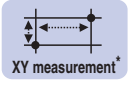
• Distance between two points

• Measurement



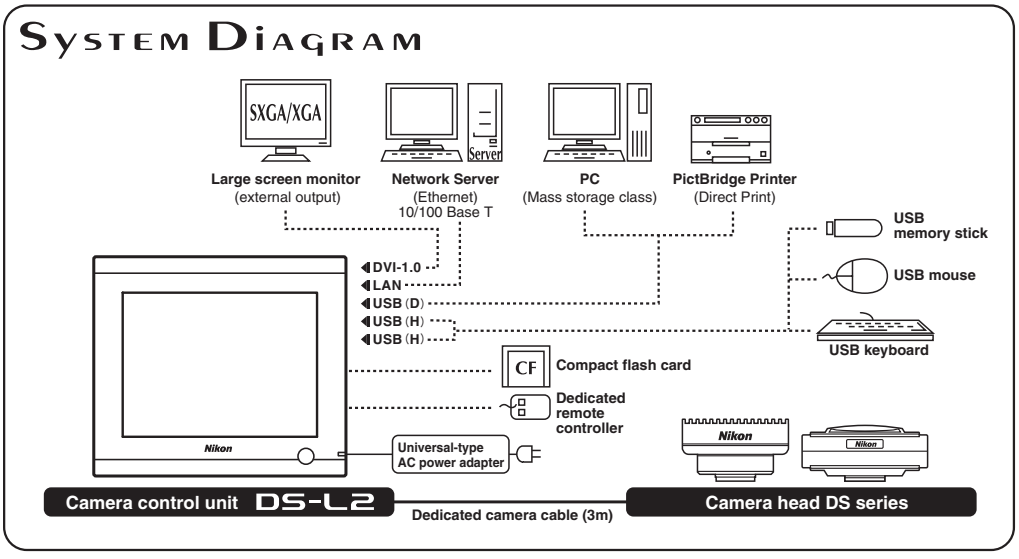
• Scale display





* Measurement of the distance between two points in the x and y axis directions.

System Diagram

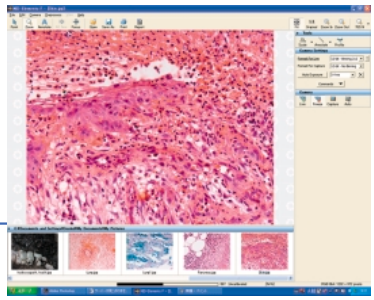


PC control-based control unit

DS-U2

Live images can be viewed, recorded, measured, processed, by connecting the unit via the USB port to a PC running the

- **Features a USB 2.0 device port that can be easily connected with a PC. The USB 2.0 device port enables the transfer of image files to a PC at twice the speed of the previous model.**
- **Sophisticated and thin, compact design.**
- **Includes the newly developed NIS-elements "F" package software. The new software enables total control of basic image capturing.**

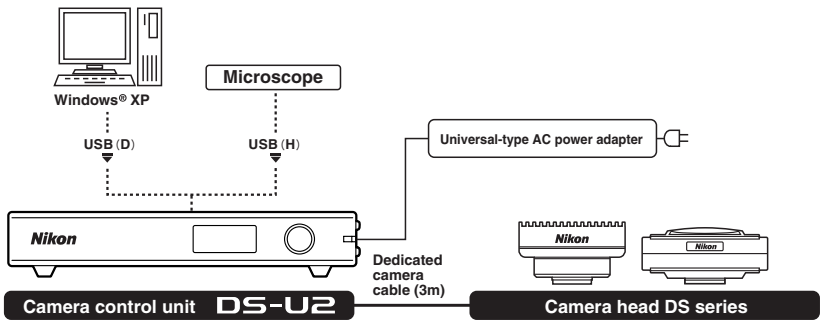


Screen shot of "F" package software

Configuration of DS-Fi1-U2
with industrial microscope

Configuration of DS-5Mc-U2
with biological inverted microscope

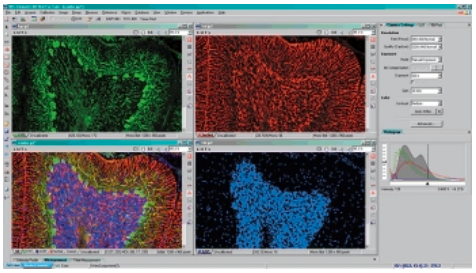
System Diagram



and analyzed on a PC monitor
special NIS-Elements control software.

Optional imaging software with rich functionality

The NIS-Elements line-up of imaging software products comes in a broad selection of three distinct packages that you can match to your desired use or application. When combined with the DS-U2, NIS-Elements software enables functionality ranging from advanced image analysis to simple image capture.



NIS-Elements is an integrated platform of imaging software developed by Nikon to achieve comprehensive control of microscope image capture and document data management. NIS-Elements handles multidimensional imaging tasks flawlessly with support for capture, display, peripheral device control, and data management & analysis of images (up to six-dimensional images).

Ar *NIS-Elements Advanced Research*

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

Br *NIS-Elements Basic Research*

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

D *NIS-Elements Documentation*

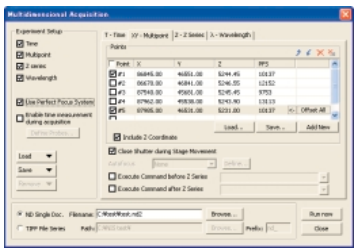
NIS-Elements D supports color documentation requirements in bio-research, clinical and industrial applications, with basic measuring and reporting capabilities.

* The DS-U2 includes NIS-Elements F package, making basic image capture a snap.

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

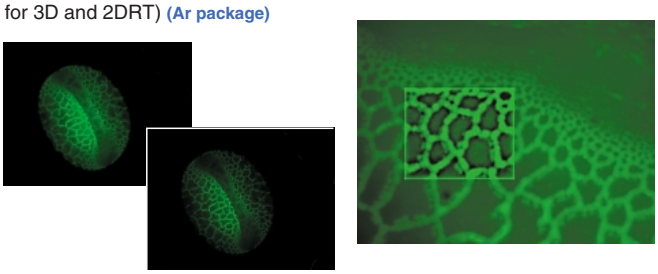
Multidimensional Capturing

NIS-Elements can combine X, Y, Z, Lambda (wavelength), Time and Multi points within one integrated platform for multidimensional imaging (depends on the capability of the software). All combinations of multidimensional images can be linked together in one ND2 file sequence using an efficient workflow and intuitive GUI.



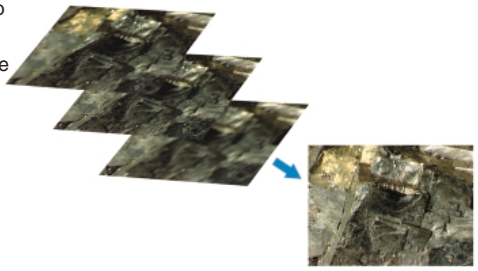
3D/2D Real Time Deconvolution

Haze and blur of the fluorescence image can be eliminated from the captured 3D image or from the 2D live preview image. (Separate plugin for 3D and 2DRT) **(Ar package)**



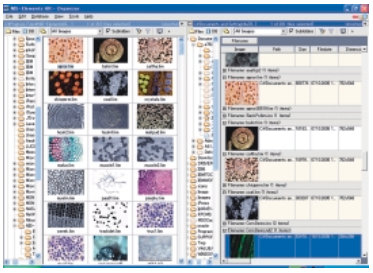
Extended Depth of Focus

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



Database

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



Visit www.nis-elements.com <http://www.nis-elements.com> for more detailed information