DIGITAL CAMERAS FOR MICROSCOPES
DIGITAL SIGHT
SERIES

Introducing two new high resolution 16.25 megapixel CMOS cameras to Nikon's lineup of cameras for microscopy

Two Nikon FX-format CMOS sensor cameras join the Digital Sight series of microscope digital cameras: the DS-Ri2 color digital camera and the DS-Qi2 monochrome digital camera.
High pixel density and large field of view coupled with USB3.0 high speed data transfer offer fast frame rates and high resolution images with these new CMOS sensors.
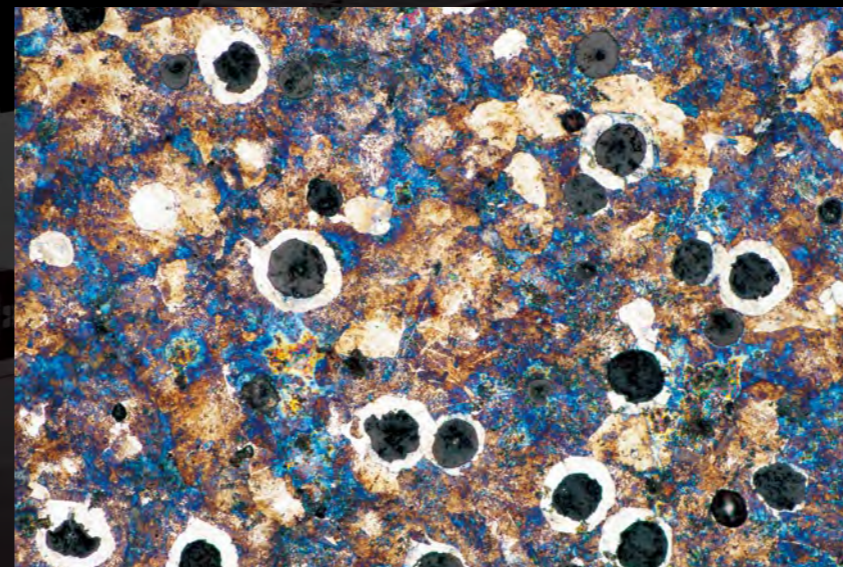
100% Nikon

Large Format CMOS Sensors

Nikon manufactures CMOS sensors and imaging technologies for professional DSLR cameras, and now has optimized our sensors for microsopy

← 36.0mm →

23.9mm

DS-Qi2

High pixel density, high sensitivity and low noise are key features of the DS-Qi2 monochrome camera

Pig kidney epithelial cells expressing GFP-EB3 tubulin
Sample courtesy of: Michael Davidson, National High Magnetic Field Laboratory, Florida State University
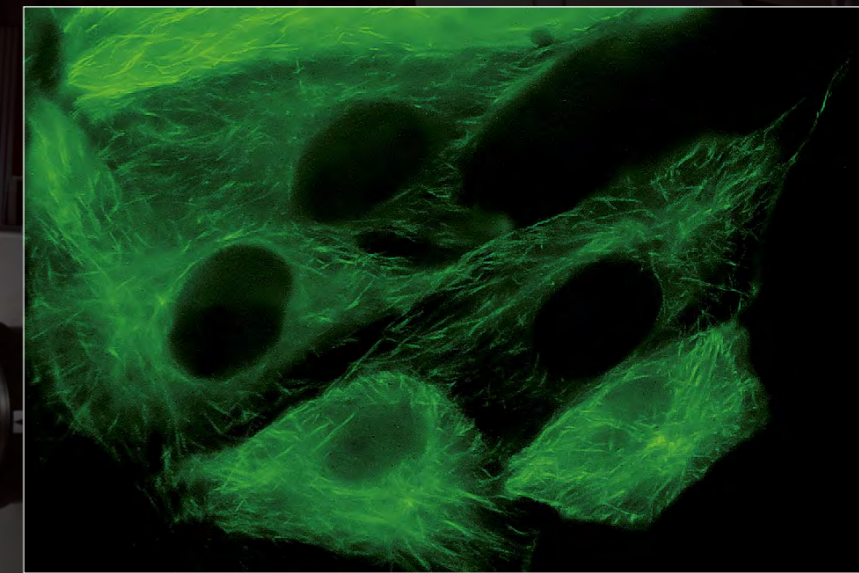
DS-Ri2

16.25 million pixels (not interpolated) and accurate color rendition are features that make the DS-Ri2 an excellent choice for recreating color images as they eyes see them
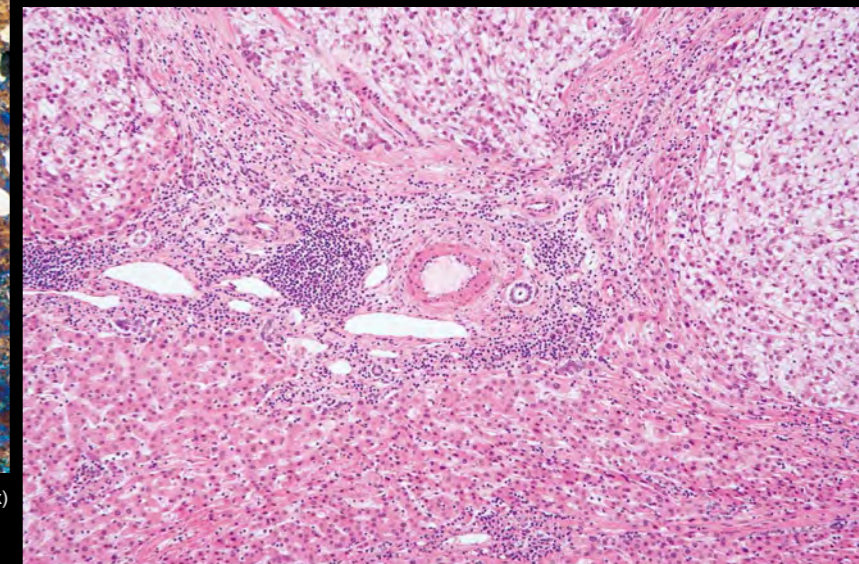

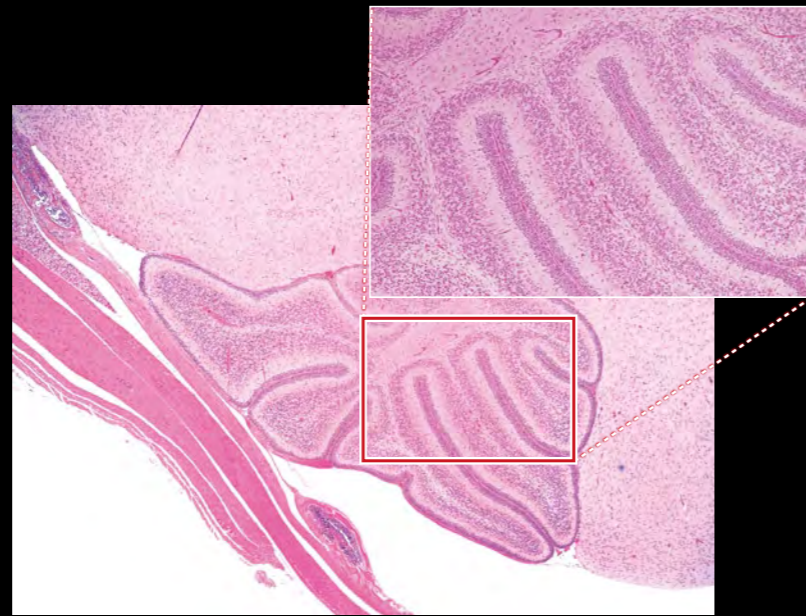Malleablecastiron (Objective: TU Plan Fluor 20x)

The tissues of the liver, HE staining (Objective: CFI Plan Apochromat λ 10x)
Photos courtesy of: Kazuhiro Muraoka, Photography Division, Tokyo Women's Medical University

Fast, one-shot capture of ultra-high resolution color images.

Microscope Camera

DS-Ri2

16.25-megapixel

Color

High-resolution

Mouse cerebellum sagittal section, hematoxylin and eosin stained
(Objective: CFI Plan Apochromat λ 4x)

Conventional camera

DS-Ri2

Semiconductors (IC wafers)
(Objective: TU Plan Fluor 20x)

Resolution chart
(Objective: TU Plan Fluor 20x)

High-resolution images

### 16.25-megapixel CMOS sensors for astonishing image quality

The DS series enables one-shot instantaneous capture and fast storage of images with resolution as high as 4908 x 3264 pixels, without pixel shifting or pixel stepping.

This pixel density is ideally suited for photomicrography of ultra-fine structures or patterns in biological or industrial samples, at low or high magnifications.

Photography with the natural colors seen through the microscope

Nikon is a leader in development of algorithms for reproducing color just as the eyes see it

The DS models' new image processing engine is based on extensive data accumulated over many years of developing microscope color digital cameras, resulting in perfect reproduction of the colors your eyes see in the microscope.
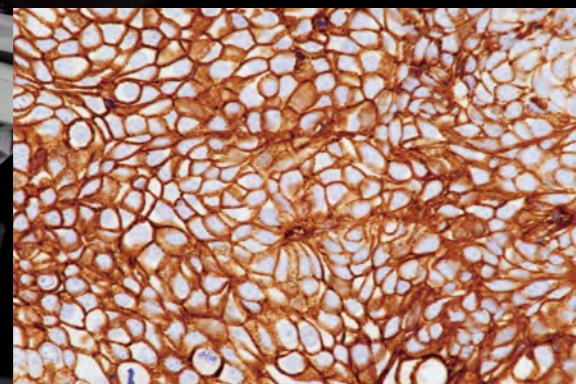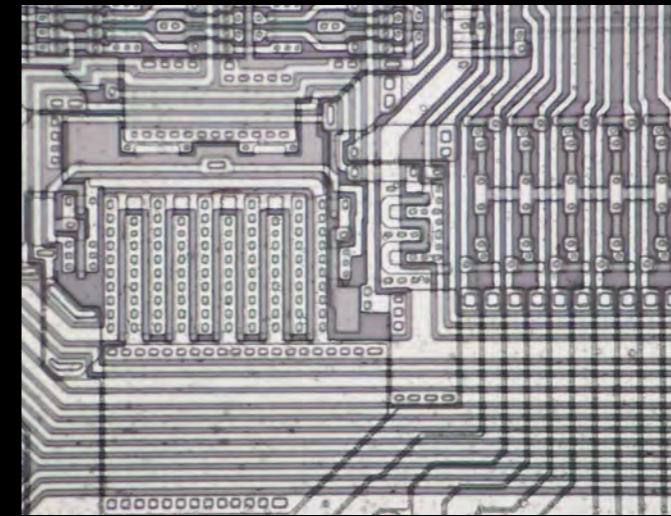

Pancreatic cancer cell, NGFR immunostaining[1]
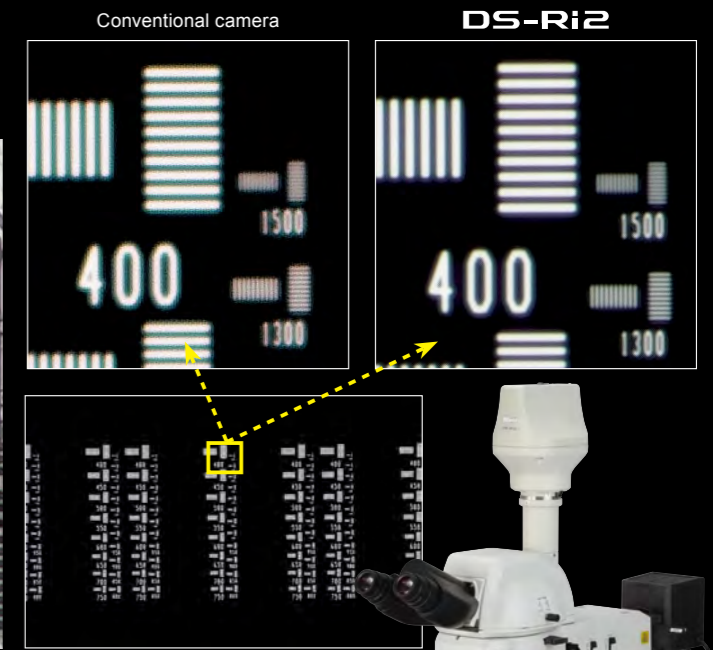(Objective: CFI Plan Apochromat λ 40x)
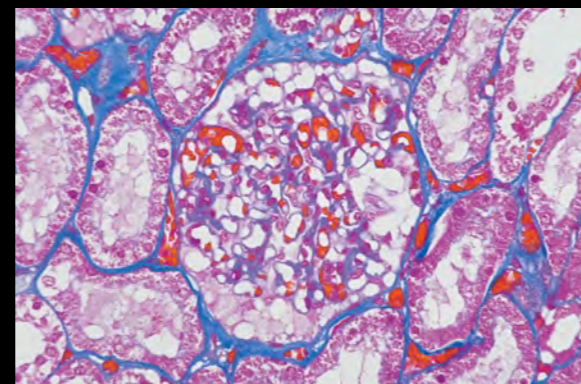
Human glomerulus of kidney, Azan stain[2]
(Objective: CFI Plan Apochromat λ 40x)

[1,2] Photos courtesy of: Dr. Atsushi Furuhata and Noriyoshi Sueyoshi, Assistant General Manager, Laboratory of morphology and image analysis, BioMedical Research Center, Juntendo University Graduate School of Medicine

High-speed live display

High-speed display, even of supra-HDTV-class live images

The DS-Ri2 can display 4908×3264 pixel (full-pixel) images at 6 fps, or 1636×1088 pixel (3×3 pixel averaging) images at 45 fps.
This fastlive frame rate makes fine focusing easy to perform.

Example of combination with the LV100ND industrial microscope

Semiconductors (IC wafers)
(Objective: TU Plan Fluor 5x)
1636×1088 pixel / Exposure time: 100μsec

High sensitivity, low noise

Fluorescent color image capture with high signal to-noise ratio

Sensitivity settings that span the range from ISO200 to ISO12800 allow the capture of vivid fluorescent color images.
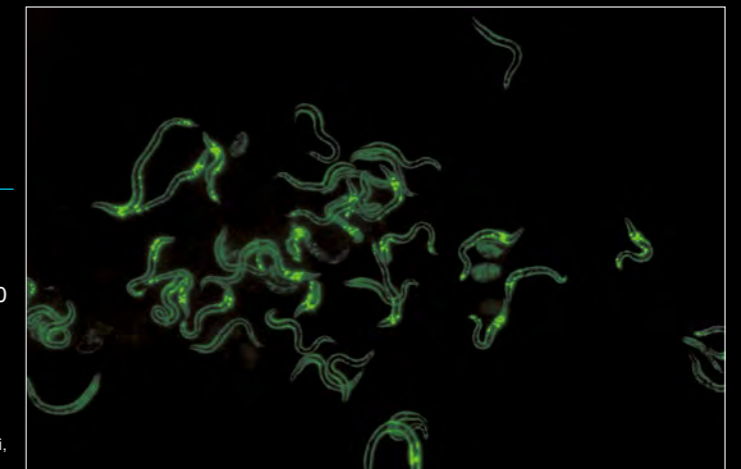
Transgenic *C. elegans* expressing venus in the head neurons and EGFP in the body wall muscles.
Photos courtesy of: Drs. Keiko Gengyo-Ando and Junichi Nakai, Saitama University Brain Science Institute

Capture Low light fluorescence and Large Fields of View

Monochrome Microscope Camera

DS-Qi2

- 16.25-megapixel
- Monochrome
- Cooled
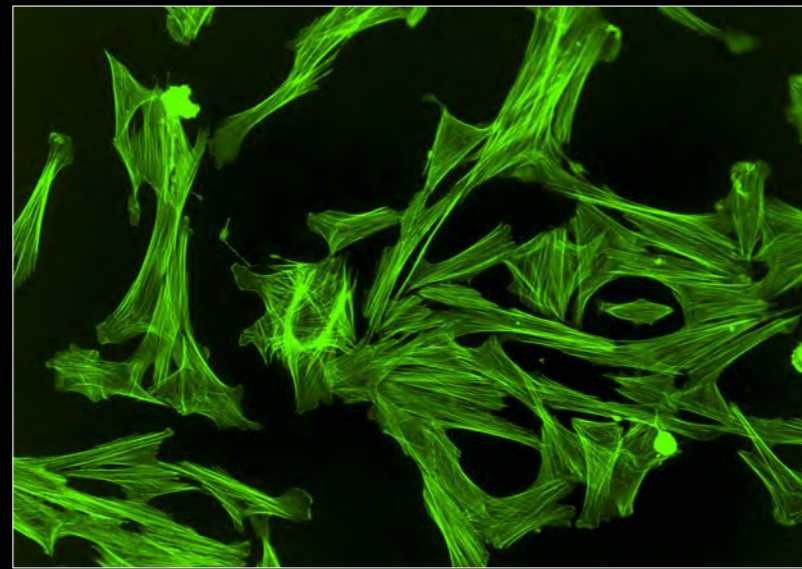
Indian Muntjac Deer Skin Fibroblast Cells, Cytoskeletal F-actin labeled with Alexa Fluor 488
Sample courtesy of: Michael Davidson and Florida State University

Time-lapse images (every 1 second) of LLC-PK1 cells with GFP-EB3 tubulin. Each image represents the maximum intensity projection of the timelapse, allowing visualization of the end-binding protein located on the microtubule plus-ends, and allowing tracing of the microtubule path.
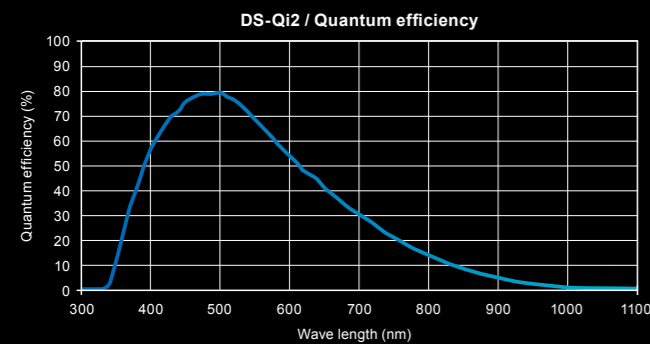DS-Qi2 captures an extremely large field of view, but still represents very fine details as demonstrated in this cropped timelapse sequence from a large FOV image.
Objective: CFI Plan Apochromat λ 60x oil / NA: 1.4)

Sample courtesy of: Michael Davidson, National High Magnetic Field Laboratory, Florida State University

High sensitivity

Detects even faint fluorescent signals

7.3µm pixels, high quantum efficiency, and very low read noise allow the DS-Qi2 to read in even faint fluorescent signals.
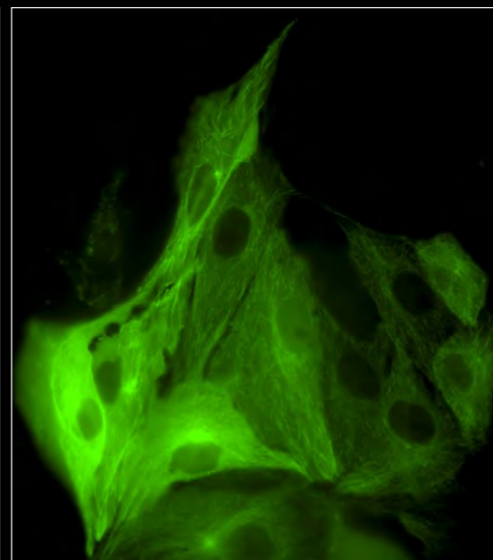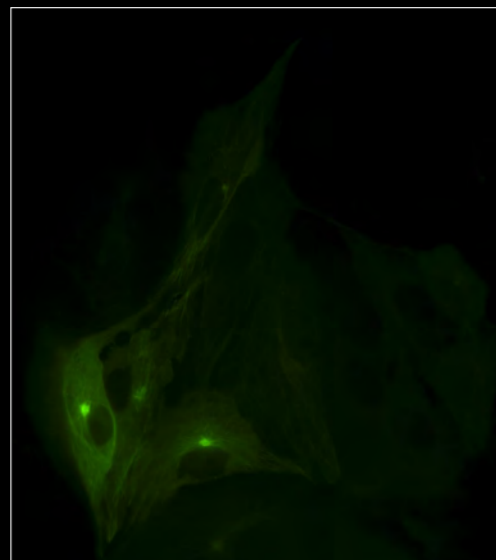

DS-Qi2 / Quantum efficiency
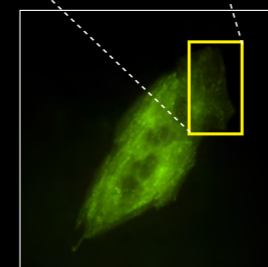
Excellent linearity

Reliable quantitative analysis made possible

With a linearity error of ±1%, the DS-Qi2 is a superb tool for measuring intensities in fluorescence samples, including time-based intensity measurement and ratiometric meassurement.

High frame rate

Fast focusing, even with fluorescent images

With a high-sensitivity CMOS sensor and USB 3.0-based data transfer, the DS-Qi2 enables high-speed live imaging and image capture at up to 45 fps (1636×1088 pixels).

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 DS-Qi2 is ideal for time-resolved imaging applications.

Low noise

Acquires dim fluorescent signals with ultra-low noise

Both 2.2 electrons read noise coupled with a large full-well capacity and 0.6 electrons dark current allow the acquisition of fluorescence images with very little noise.

LLC-PK1 cells expressing GFP-EB3 tubulin with low noise. Large linear full well capacity allows acquiring both the brightest and dimmest areas in a single capture.
Sample courtesy of: Michael Davidson, National High Magnetic Field Laboratory, Florida State University

▲ Rat primary culture neuron
Dendron labeled with MAP-2(Red) and Actin(cytoskeleton) labeled with Phalloidin (Green)

▶ LLC-PK1 cells expressing GFP-EB3 tubulin (green) and H2B-labeled histones (red) illustrating the large field of view of the DS-Qi2 camera.
Sample courtesy of: Michael Davidson, National High Magnetic Field Laboratory, Florida State University
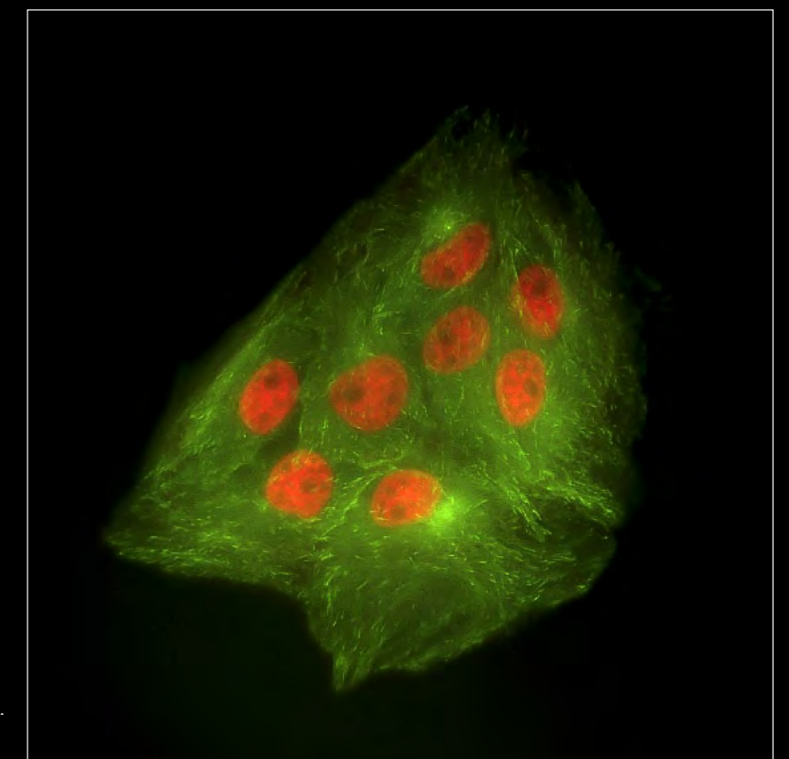
A microscope digital camera system with selectable combinations of camera head and controller for every application

Three models of compact color digital cameras for microscopy are available as camera heads. Two models of controller are available: a stand-alone type with built-in monitor for easy image capture, and a PC-use controlled type that enables advanced image processing and analysis via imaging software.

The three camera head models and two controller models can be freely combined to create a system for every purpose.

Camera Heads
DS-Fi2
DS-Fi1c
DS-Vi1

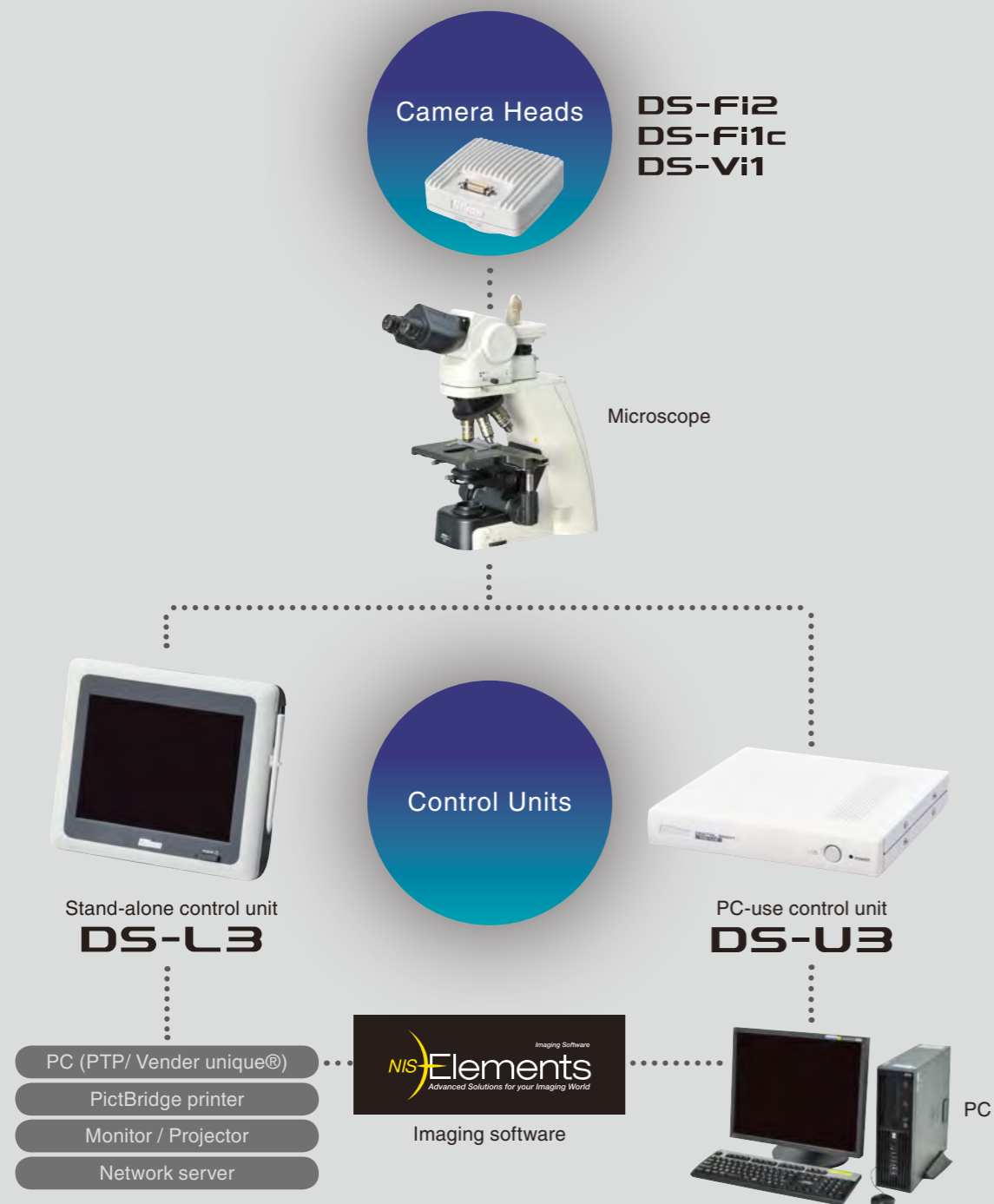Microscope

Control Units

Stand-alone control unit
DS-L3

PC-use control unit
DS-U3

PC (PTP/ Vender unique®)

PictBridge printer

Monitor / Projector

Network server

NIS-Elements
Imaging Software
Advanced Solutions for your Imaging World

Imaging software

PC

DS-Fi2 — 5.0-megapixel — Color — High-resolution

High-definition color camera head

The DS-Fi2 is capable of high-resolution 2560×1920 pixel shooting. In addition to a high-speed frame rate of 21 fps*, this model expands the range of settings available for exposure time to adapt to a wider variety of samples. Suitable for a wide range of applications including brightfield, phase contrast, and differential interference, the DS-Fi2 achieves high functionality and high cost-performance.

* When using DS-L3 and FAST mode

| Image sensor		2/3" color, 5.0 megapixels, CCD
Max recordable pixels		2560×1920
Display speed	DS-U3	4.4 fps (2560×1920), max. 37 fps
	DS-L3	Standalone: 10 fps (2560×1920), max. 37 fps Used with NIS-Elements: 2.0 fps (2560×1920), max. 37 fps
ISO sensitivity		Equivalent to ISO 64
Features and main applications		High resolution/brightfield, phase contrast, differential interference, etc.
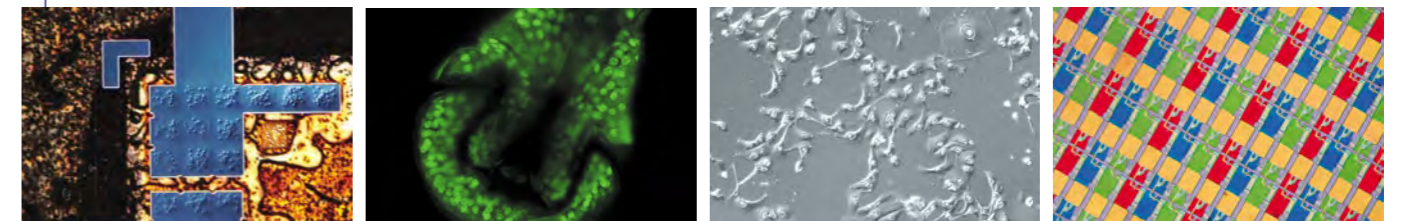
DS-Fi1c — 5.0-megapixel — Color — Cooled — High-resolution

High-definition cooled color camera head

The DS-Fi1c is equipped with a 5.0-megapixel color CCD and Peltier element capable of cooling to a -20°C ambient temperature. Even in fluorescent image shooting requiring long exposure times, high-contrast images can be obtained with limited thermal background noise.

Image sensor		2/3" color, 5.0 megapixels, CCD
Max recordable pixels		2560×1920
Cooling device		20°C below ambient temperature
Display speed	DS-U3	4.4 fps (2560×1920), max. 23 fps
	DS-L3	Standalone: 5.9 fps (2560×1920), max. 23 fps Used with NIS-Elements: 2.0 fps (2560×1920), max. 23 fps
ISO sensitivity		Equivalent to ISO 64
Features and main applications		High-speed live display/brightfield, phase contrast, differential interference, etc.
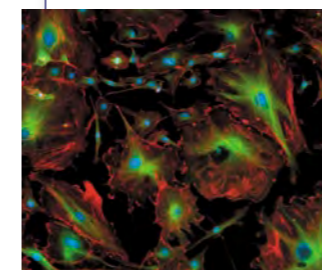
DS-Vi1 — 2.0-megapixel — Color

High-speed color camera head

The DS-Vi1 is equipped with a 2.0-megapixel color CCD that displays SXGA video at a high frame rate of 15 fps* (maximum 29 fps). This model is suitable for monitoring applications as well, with an excellent balance of smooth movement and clear imaging made possible through its high sensitivity.

* When using DS-L3 or external monitor output.

| Image sensor		1/1.8" color, 2.0 megapixels, CCD
Max recordable pixels		1600×1200
Display speed	DS-U3	12 fps (1600×1200), max. 27 fps
	DS-L3	Standalone: 15 fps (1600×1200), max. 29 fps Used with NIS-Elements: 5.0 fps (1600×1200), max. 27 fps
ISO sensitivity		Equivalent to ISO 100
Features and main applications		High-speed live display/brightfield, phase contrast, differential interference, etc.
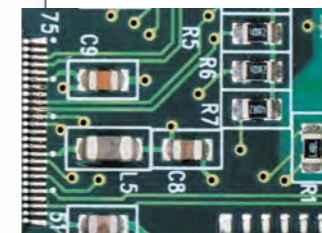
Stand-alone control unit
DS-L3

Equipped with a large touch panel monitor and a rich feature set, the DS-L3's ease of operation enables quick image acquisition even without a PC or computer monitor.

Configuration of ECLIPSE L200ND

High-definition touch panel monitor

Built-in 8.4" 1024×768 monitor. Easy to see and easy to use, the large touch-panel monitor allows simple setting and operation of the camera head with a touch of a finger or stylus.
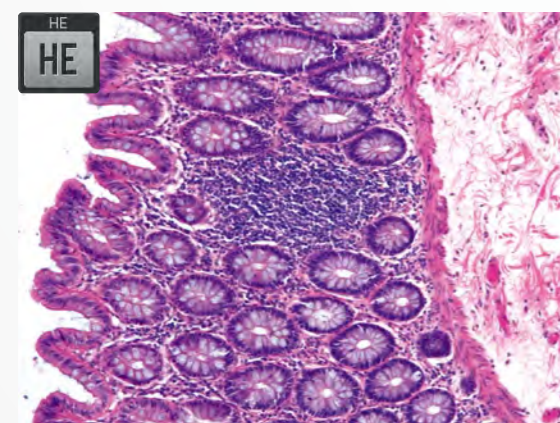
GUI for intuitive operation

The DS-L3's icon-based menu screens offer excellent recognizability. From image acquisition to setting of shooting parameters, measurement, and export of image data, all operations can be performed easily by touching the screen.

Main menu/Tool menu GUI

Scene mode

Optimal imaging parameters for each sample type and observation method can easily be set through the icons. A choice of five modes for biological imaging and four modes for industrial imaging are available, and up to seven custom modes with freely configurable shooting parameters can be set.
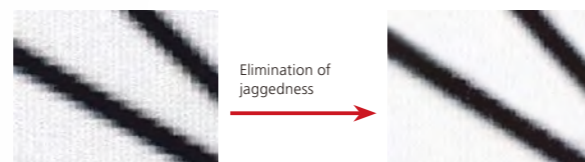
Improved image processing performance

The DS-L3 reduces or eliminates diagonal line jaggedness in images and improves color reproduction as well, reducing unevenness in sample colors caused by cameras.

Elimination of jaggedness

Integration with microscopes

When used with a microscope equipped with motorized units or state detection units, the microscope motor functions and peripheral equipment can be controlled through the DS-L3, with automatic detection of information such as objective lens magnification.
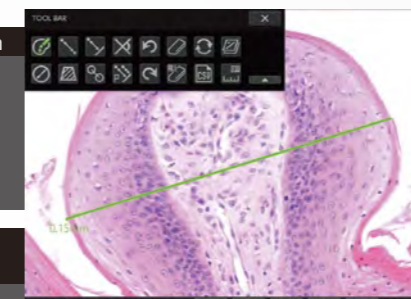
Used with ECLIPSE Ni-E

Biological Scene Mode
- Darkfield/Fluorescence
- Brightfield
- DIC/PH
- HE
- ELISA

Industrial Scene Mode
- Wafer/IC
- Metal, Ceramic/Plastic
- Circuit board
- Flat Panel Display

A wide variety of tools

The DS-L3 enables the conducting of simple measurements on images, with input of lines and comments. These can also be written onto and saved with the image, and measurement data can be output.

Measurement function
- Measurement
  [2 point distance, Point to line distance, Circle distance, Angle, Circle (Diameter, Radius), Area, Pitch distance]
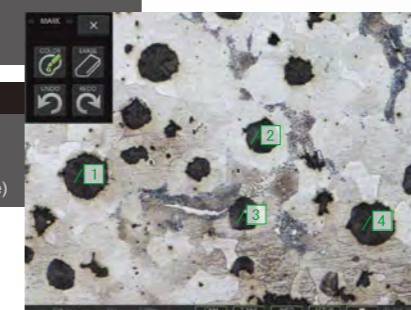
Position and size comparison functions
- Scale indication
- Cross-hairs
- Grid
- XY scale
- XY measurement

Measurement (2 point distance)

Drawing functions
- Count marking
- Text input
- Pen drawing (Straight line, Curved line)

Count marking

Interface for a full range of peripheral equipment

Interface	Connector, Type	Connected device	Signal format	Features, etc.
CF card	CF card slot	CF card Typel	FAT16/32 format	Data storage
USB (host)	USB Type A (2 ports)	USB mouse, USB keyboard	2.0/1.1 compatible	Camera operation
		USB bar code reader	2.0/1.1 compatible	Bar code reader (file/directory names)
		USB memory stick	2.0/1.1 compatible, FAT16/32 format	Data storage
		Microscope	2.0/1.1 compatible	Microscope state detection/control
USB (device) (mode selection)	USB Type B	PC	2.0/1.1 compatible, PTP	Data transfer
			2.0/1.1 compatible, Vendor unique	Controlled via NIS-Elements series
		Printer	2.0/1.1 compatible, PictBridge	Printing possible at set magnification ratios (real 10 mode) with direct printing/specified relay lens combination
Network	RJ-45	PC, network hub	10Base-T/100Base-TX compatible IP address automatically acquirable via DHCP	HTTP/FTP/telnet server (data transfer and camera operation), FTP client (data storage)
External monitor output	DVI-I	PC monitor, Projector	Analog RGB/DVI	Image display Resolution SXGA/XGA/720p switchable
External sync input/output	ø3.5 stereo pin-jack	External microscope, etc.	(Input) 4.7 kΩ pull-up (Output) TTI Level	Video syncing with external device

Controllable via PC

The DS-L3 can be controlled via PC using the NIS-Elements software (available separately; see page 12). The DS-L3 can also be used as is for complicated analysis and image processing.

Saving and printing functions

Saving to a wide range of media (CF cards, USB memory devices, etc.) is possible, as is network transfer. Direct printing to PictBridge printers is a standard feature. Print scaling can be set and adjusted.

Network functions

Images acquired or under observation can be viewed simultaneously on the DS-L3, a projector, a PC monitor, etc. Through split-screen display, simultaneous comparative observation of an acquired image and a live image is possible, as is upload of shot images to an FTP server.

Split-screen display

PC-use control unit
DS-U3

From display and shooting of live images to advanced image processing and analysis, the DS-U3 allows the control of all functions from a PC and is flexibly adaptable to a wide range of applications.

Adaptable to a wide range of applications

Using NIS-Elements imaging software(available separately; see page 12), you can perform image acquisition, processing, and analysis with integrated control of the camera and microscope peripherals.

Integration with microscopes

The DS-U3 enables the control of a motorized microscope system (turning of nosepiece or filter turret, etc.) and automatic detection of objective magnification using a state detection nosepiece.

Configuration of ECLIPSE Ti

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 `Bundled`

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 (DS-Ri2 / DS-Qi2 / DS-U3 / DS-L3 vender unique mode) * Nikon provides confirmed compatible PCs with up-to-date specifications. Contact Nikon for details.
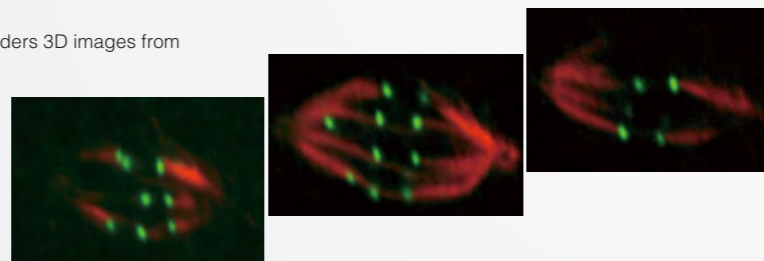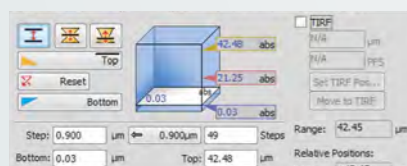
Multichannel (multi color) Ar Br

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
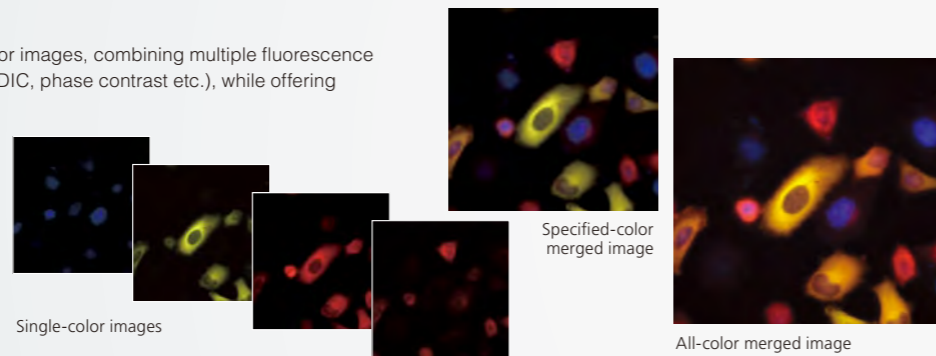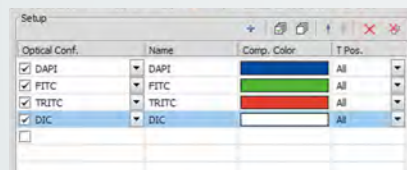
Z-series Ar Br D

Through motorized focus control, NIS-Elements reconstructs and renders 3D images from multiple Z-axis planes.
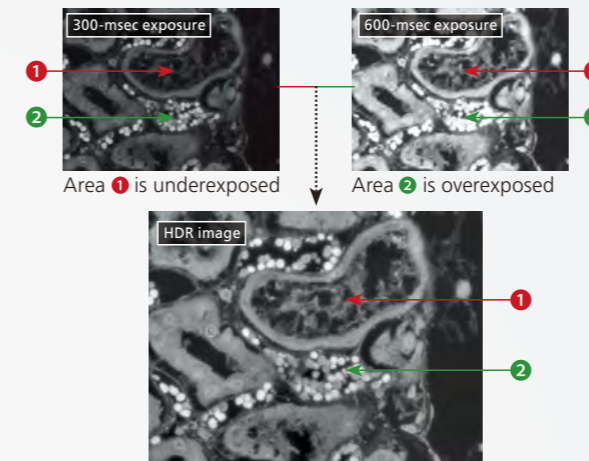
Multi-dimensional Image Display Ar Br

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.

Time
Multipoint
Z-series
Channel
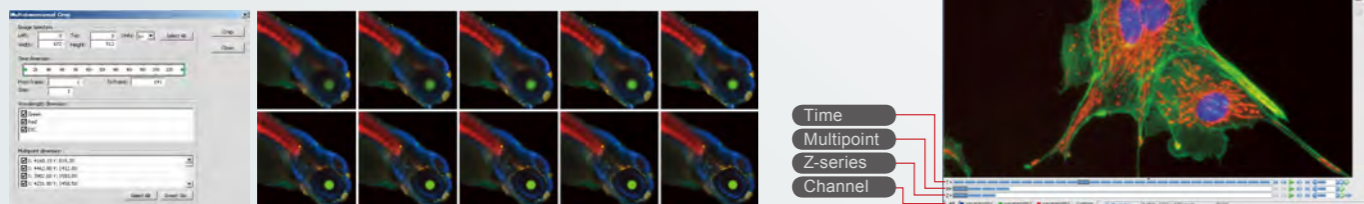
HDR (High Dynamic Range) image acquisition Ar `Option` Br D

HDR creates an image with appropriate brightness in both the dark and bright regions in a sample by combining multiple images acquired with different exposure settings. It is also possible to create HDR image using multiple captured images.

300-msec exposure 600-msec exposure

Area ❶ is underexposed   Area ❷ is overexposed

HDR image

Captures both areas ❶ and ❷ with optimal exposure

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
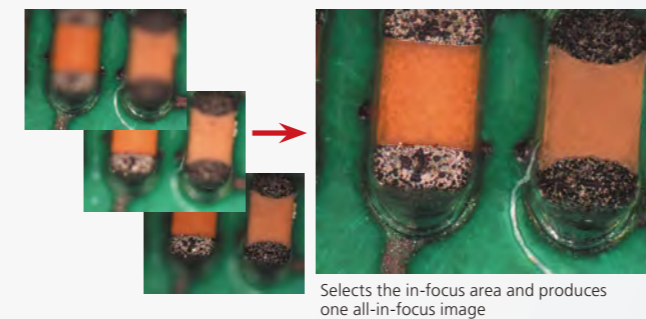
Image stitching (Large Image) `Option` Ar Br D

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

Images are stitched together during shooting
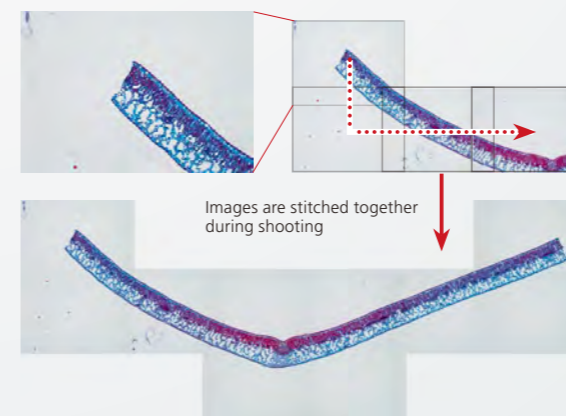
Manual measurement and image annotation Ar Br D

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.

Auto measurement (Object Counting) Ar Br `Option` D

Performs binarization on images using previously set thresholds to measure the number, area, brightness, etc. of identified objects.
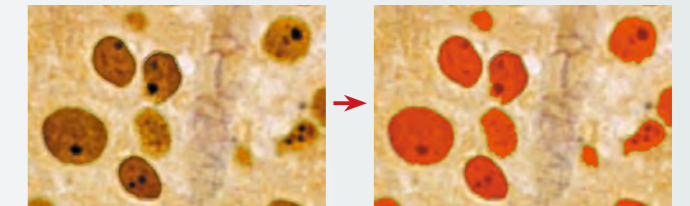
Grain size analysis `Option` Ar Br D

Detects and measures grains in one and two phase samples according to JIS G0551 or ASTM E112-96/E1382-97 standards.

Cast iron analysis `Option` Ar Br D

Detects, measures and classifies graphite content as well as ferrite content in graphite-corrected samples according to JIS G5502 or ASTM A247-06 standards.

Dimensions

DS-Ri2 / DS-Qi2 — 153, 134, 105

DS-Fi2 — 48, 77.5, 82

DS-Vi1 / DS-Fi1c — 44, 76, 77

DS-L3 — 200, 52, 230, 66.5

DS-U3 — 196, 193, 35

System Diagram

DS-Ri2 / DS-Qi2 — Standard set / Option; Universal-type AC power adapter; USB 3.0; DS-Ri2 / DS-Qi2; F mount adapter; Microscope; Windows® 7; NIS-Elements

DS-L3 — Standard set / Option; SXGA/XGA; Large-screen monitor (External output); Projector (External output); Network server (WEB, FTP, telnet); PC (PTP/Vendor unique*); PictBridge printer (Direct printing); USB memory; USB mouse; USB keyboard; Microscope; DVI-I; LAN (Ethernet); USB (D); USB (H); USB (H); Compact flash card; Universal-type AC power adapter; Dedicated camera cable (3m); DS-L3 DS Camera Control Unit; DS-Fi2 / DS-Fi1c / DS-Vi1

* Can be controlled via Nikon "NIS-Elements" image integration software series.

DS-U3 — Standard set / Option; IEEE 1394b; Windows® 7; Microscope; Universal-type AC power adapter; Dedicated camera cable (3m); DS-U3 Digital Camera Control Unit; DS-Fi2 / DS-Fi1c / DS-Vi1

Note: Power adapter not required when using single DS-Vi1 unit.
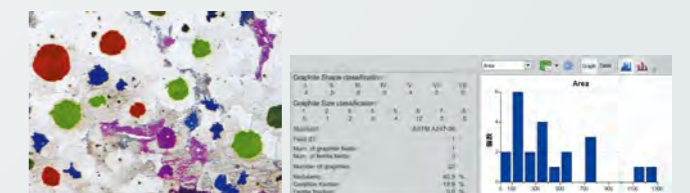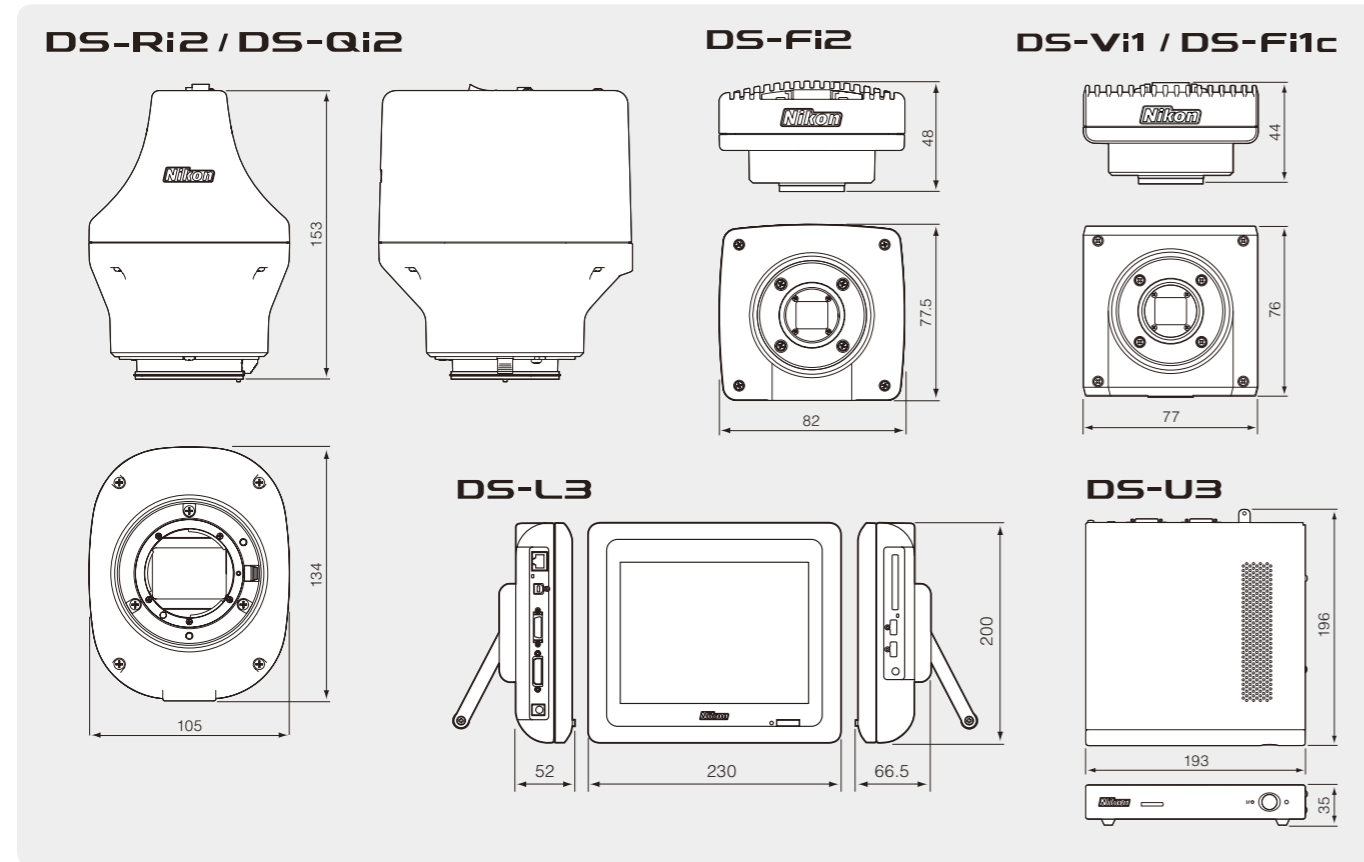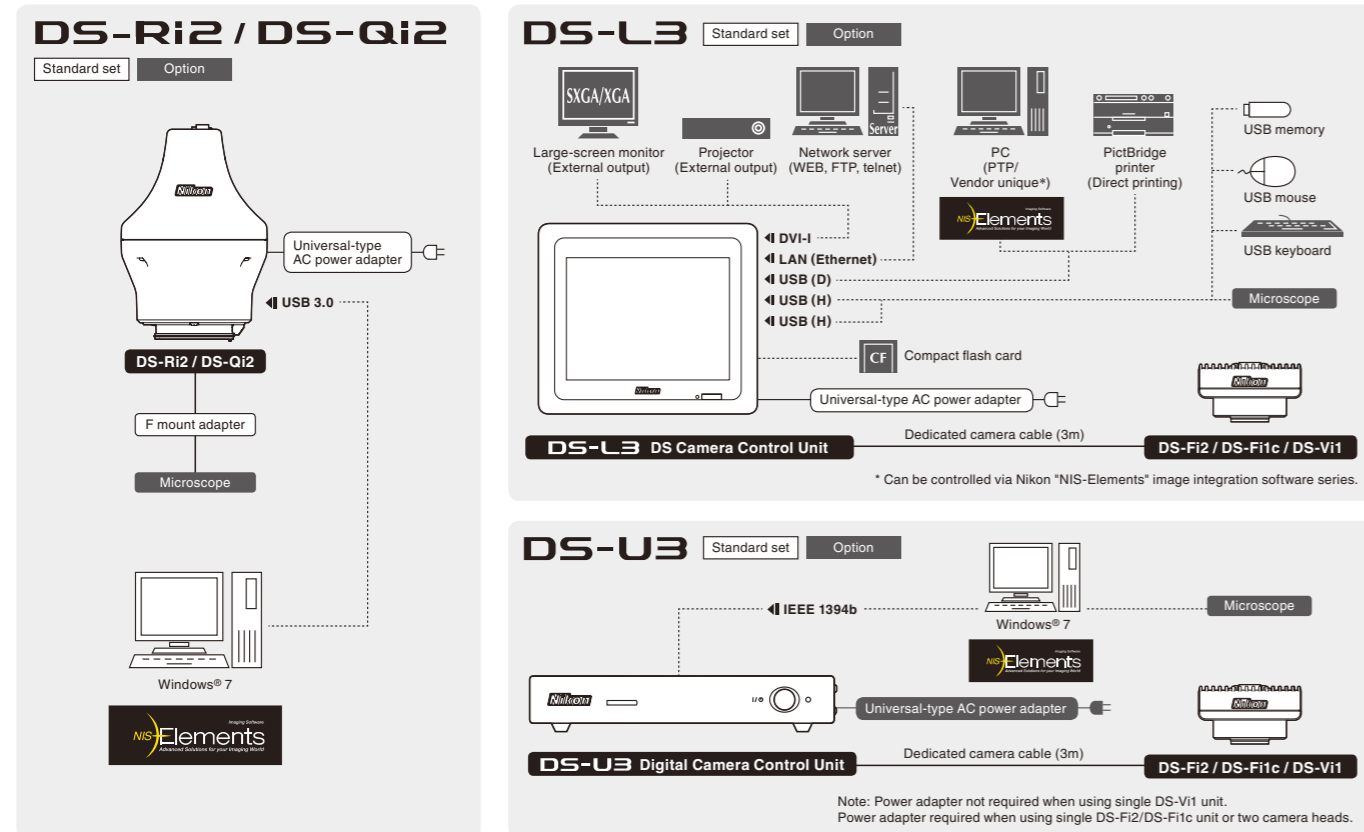Power adapter required when using single DS-Fi2/DS-Fi1c unit or two camera heads.

Specifications

Camera Type

Digital Camera	DS-Ri2	DS-Qi2
Image sensor	Nikon FX-format, Color CMOS senser / Size: 36.0×23.9mm	Nikon FX-format, Monochrome CMOS senser / Size: 36.0×23.9mm
	Effective 16.25 megapixels	
Recordable pixels	4908×3264 pixel (full-pixel), 1636×1088 pixel (3×3 pixel averaging)	
Cooling method	—	Electronic cooling
ISO sensitivity (recommended exposure index)	Standard: equivalent to ISO 200 (Slectable from ISO200 to12800 equivalent)	Standard: equivalent to ISO 800 (Slectable from ISO800 to 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	Full-pixel 4908×3264 pixel (max 6fps) / 3×3 pixel averaging 1636×1088 (max 45fps)	
Lens mount	F mount	
Exposure time	100 µsec to 60 sec	
Image format	BMP, TIFF, JPEG, etc., selectable in NIS-Elements	
Interface	USB3.0 (computer control connection) ×1, External sync input/output ×1	
Power supply	AC100-240V 50/60Hz	
Power consumption	13W	24W
Dimensions	105 (W) × 134 (D) × 153 (H) mm	
Weight	1200g	
Operating environment	0-40°C, 60% RH max. (without condensation)	0-30°C, 80% RH max, 30-40°C, 60% RH max. (without condensation)

System Type (Camera Head + Control Unit)

Camera Head	DS-Fi2	DS-Fi1c	DS-Vi1
Image sensor	2/3 in. high-density CCD; Total number of pixels: 5.24 megapixels (effective 5.07 megapixels)		1/1.8 in. high-density CCD; Total number of pixels: 2.11 megapixels (effective 2.01 megapixels)
Recordable pixels	2560×1920, 1280×960, 640×480		1600×1200, 800×600, 400×300
Cooling method	—	Electronic cooling	—
ISO sensitivity (recommended exposure index)	Standard: equivalent to ISO64 (Slectable from ISO32 to 1250 equivalent)		Standard: equivalent to ISO100 (Slectable from ISO50 to 2000 equivalent)
Live display mode (DS-L3 Standalone mode)	2560×1920 (max. 10 fps), 1280×960 (max. 21 fps), ROI mode (max. 37 fps) *Display reduced or enlarged to SXGA/XGA	2560×1920 (max. 5.9 fps), 1280×960 (max. 12 fps), ROI mode (max. 23 fps) *Display reduced or enlarged to SXGA/XGA	1600×1200 (max. 15 fps), 800×600 (max. 27 fps), 800×560 (max. 29 fps), Center Scan (max. 29 fps) *Display reduced or enlarged to SXGA/XGA
Live display mode (DS-L3/Used with NIS-Elements)	2560×1920 (max. 2.0 fps), 1280×960 (max. 7.8 fps), 640×480 (max. 21 fps), ROI mode (max. 37 fps)	2560×1920 (max. 2.0 fps), 1280×960 (max. 7.8 fps), 640×480 (max. 12 fps), ROI mode (max. 23 fps)	1600×1200 (max. 5.0 fps), 800×600 (max. 27 fps), ROI mode (max. 15 fps)
Live display mode (DS-U3)	2560×1920 (max. 4.4 fps), 1280×960 (max. 18 fps), 640×480 (max. 21 fps), ROI mode (max. 37 fps)	2560×1920 (max. 4.4 fps), 1280×960 (max. 12 fps), 640×480 (max. 12 fps), ROI mode (max. 23 fps)	1600×1200 (max. 12 fps), 800×600 (max. 27 fps), ROI mode (max. 15 fps)
Lens mount	C mount		
Exposure time	130 µsec to 60 sec	1/1000 to 600 sec	1/1000 to 60 sec
Dimensions	82 (W) × 77.5 (D) × 48 (H) mm	77 (W) × 76 (D) × 44 (H) mm	
Weight	270g	290g	260g
Operating environment	0-40°C, 60% RH max. (without condensation)	0-30°C, 80% RH max, 30-40°C, 60% RH max. (without condensation)	

Control Unit	DS-L3 (Standalone)	DS-L3 (Used with NIS-Elements)	DS-U3
Exposure control	Program AE, Shutter-priority AE, Focus AE, Manual with AE lock function	Auto / Manual	
Exposure correction	Correction range: ±2.0, Step: 1/3	13 steps	
Digital zoom	Up to 16× (8 steps)	10 to 1200%	
Interval shooting	10 sec. - 6 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, Chroma, hue adjustment, color saturation adjustment		
Recordable image file format	RGB 8 bit	RGB 8 bit	RGB 8 bit/16 bit
Storage format	BMP, TIFF, JPEG (3-step compression)	BMP, TIFF, JPEG, JPEG2000 etc., selectable in NIS-Elements	
Interface	USB device port × 1 (Printer, PTP support, Vendor unique / switching) USB host port × 2 (USB mouse, USB memory stick, USB keyboard, bar code reader, microscope connection), External sync input/output, Camera I/F × 1		IEEE1394b(bilingual) × 1 (computer control connection), External sync input/output, Camera I/F × 2
Power supply	AC100-240V 50/60Hz		
Power consumption	70W		36W
Dimensions	230 (W) × 66.5 (D) × 200 (H) mm		193 (W) × 196 (D) × 35 (H) mm
Weight	1800g		1400g
Operating environment	0-40°C, 60% RH max. (without condensation)		
Networking	Ethernet (10/100Base-TX), DHCP compatible, HTTP, TELNET or FTP server, FTP client		—
LCD monitor	8.4-in. TFT color LCD XGA (1024×768, 60Hz)		—
External monitor output	DVI-I (Digital: Conforms to DVI 1.0/Analog: 0.7 Vpp (75Ω) SXGA/XGA/720p)		—
Storage media	USB memory stick, CompactFlash™ card		—
Direct printing	PictBridge printer (sold separately)		—

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

NIKON CORPORATION
Shin-Yurakucho Bldg., 12-1, Yurakucho 1-chome
Chiyoda-ku, Tokyo 100-8331 Japan
Bioscience) phone:+81-3-3216-2375 fax:+81-3-3216-2385
Industrial Instruments) phone:+81-3-3216-2384 fax:+81-3-3216-2388
http://www.nikon.com/instruments/

ISO 9001
BUREAU VERITAS
Certification
UKAS
QUALITY MANAGEMENT
008
ISO 9001 Certified
for NIKON CORPORATION
Instruments Company

ISO 14001
BUREAU VERITAS
Certification
UKAS
ENVIRONMENTAL MANAGEMENT
008
ISO 14001 Certified
for NIKON CORPORATION
Yokohama Plant

NIKON INSTRUMENTS INC.
1300 Walt Whitman Road, Melville, N.Y. 11747-3064, U.S.A.
phone: +1-631-547-8500; +1-800-52-NIKON (within the U.S.A. only)
fax: +1-631-547-0306
http://www.nikoninstruments.com/
NIKON METROLOGY, INC.
12701 Grand River Avenue, Brighton, MI 48116 U.S.A.
phone: +1-810-220-4360 fax: +1-810-220-4300
E-mail: Sales.US.NM@nikon.com
http://www.nikonmetrology.com/
NIKON INSTRUMENTS EUROPE B.V.
Tripolis 100, Burgerweeshuispad 101, 1076 ER Amsterdam, The Netherlands
phone: +31-20-7099-000 fax: +31-20-7099-298
http://www.nikoninstruments.eu/
NIKON METROLOGY EUROPE NV
Geldenaaksebaan 329, 3001 Leuven, Belgium
phone: +32-16-74-01-00 fax: +32-16-74-01-03
Email: Sales.Europe.NM@nikon.com
http://www.nikonmetrology.com/
NIKON INSTRUMENTS (SHANGHAI) CO., LTD.
CHINA phone: +86-21-6841-2050 fax: +86-21-6841-2060
(Beijing branch) phone: +86-10-5831-2028 fax: +86-10-5831-2026
(Guangzhou branch) phone: +86-20-3882-0550 fax: +86-20-3882-0580

NIKON SINGAPORE PTE LTD.
SINGAPORE phone: +65-6559-3618 fax: +65-6559-3668
NIKON MALAYSIA SDN. BHD.
MALAYSIA phone: +60-3-7809-3688 fax: +60-3-7809-3633
NIKON INSTRUMENTS KOREA CO., LTD.
KOREA phone: +82-2-2186-8400 fax: +82-2-555-4415
NIKON INDIA PRIVATE LIMITED
INDIA phone: +91-124-4688500 fax: +91-124-4688527
NIKON CANADA INC.
CANADA phone: +1-905-602-9676 fax: +1-905-602-9953
NIKON INSTRUMENTS S.p.A.
ITALY phone: +39-055-300-96-01 fax: +39-055-30-09-93
NIKON AG
SWITZERLAND phone: +41-43-277-28-67 fax: +41-43-277-28-61
NIKON GMBH AUSTRIA
AUSTRIA phone: +43-1-972-6111-00 fax: +43-1-972-6111-40
NIKON BELUX
BELGIUM phone: +32-2-705-56-65 fax: +32-2-726-66-45
NIKON UK LTD.
UNITED KINGDOM phone: +44-208-247-1717 fax: +44-208-541-4584
NIKON METROLOGY UK LTD.
UNITED KINGDOM phone: +44-1332-811-349 fax: +44-1332-639-881
E-mail: Sales.UK.NM@nikon.com

NIKON FRANCE S.A.S.
FRANCE phone: +33-1-4516-45-16 fax: +33-1-4516-45-55
NIKON METROLOGY SARL
FRANCE phone: +33-1-60-86-09-76 fax: +33-1-60-86-57-35
E-mail: Sales.France.NM@nikon.com
NIKON GMBH
GERMANY phone: +49-211-941-42-20 fax:+49-211-941-43-22
NIKON METROLOGY GMBH
GERMANY phone: +49-6023-91733-0 fax: +49-6023-91733-229
E-mail: Sales.Germany.NM@nikon.com

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