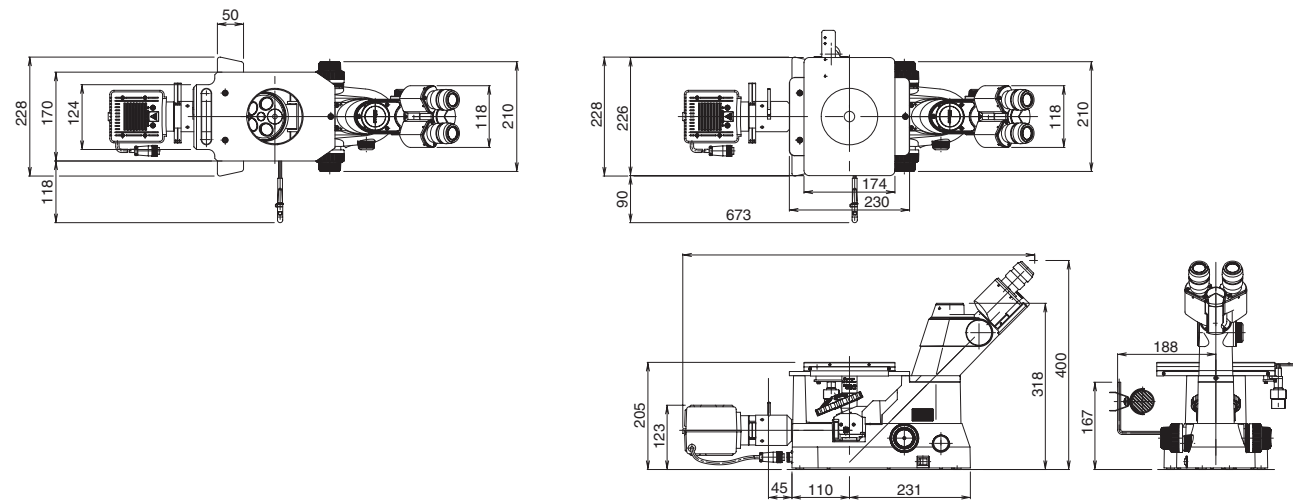


Specifications

| | |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Optics | CFI60 optics |
| Observation image | Upright back image |
| Observation method | Brightfield and simple polarizing (when using MA-P/A Simple Polarizing Set) |
| Focusing section | Vertical action revolver (fixed stage) Single-axis coarse/fine adjustment handle with 8.5mm stroke (coarse adjustment of 37.7mm per turn, fine adjustment of 0.2mm per turn) |
| Nosepiece | Brightfield 5-position nosepiece |
| Stage | MA-SP Plain Stage: 170 x 230mm (includes two holders for acrylic samples ϕ 30mm aperture, crescent aperture) Can be combined with MA-SRSH1 Universal Specimen Holder or MA-SH3 Specimen Holder 3. TI-SM Mechanical Stage CH: 126 x 80mm stroke; Handle can be attached on the right or left side of the stage Can be combined with MA-SH1 Specimen Holder 1, MA-SH2 Specimen Holder 2, or C-HU Universal Holder. MA-SR Rectangular Stage: 50 x 50mm stroke (includes two sample holders at ϕ 20mm and 40mm apertures) and handle fixed on right side. Can be combined with MA-SRSH1 Universal Specimen Holder or MA-SH3 Specimen Holder 3. |
| Illuminator | Internal power supply 6V 30W Halogen Lamp (long-life type) Condenser built-in (lever operated) ϕ 25mm filter (includes NCB11 and ND4) can be inserted. |
| Eyepiece tube | Built-in mirror type, 45° depression angle and 50 to 75mm interpupillary adjustment |
| Max. power consumption | 96VA |
| External dimensions | 228 x 663 x 382 mm (W x D x H) |
| Weight | Approx. 9kg |

Dimensions (mm)



Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. October 2006 ©2006 NIKON CORPORATION

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



NIKON CORPORATION
Parale Mitsui Bldg., 8, Higashida-cho, Kawasaki-ku, Kawasaki,
Kanagawa 210-0005, Japan
phone: +81-44-223-2175 fax: +81-44-223-2182
<http://www.nikon-instruments.jp/eng/>



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.nikonusa.com/>

NIKON INSTRUMENTS EUROPE B.V.

P.O. Box 222, 1170 AE Badhoevedorp, The Netherlands
phone: +31-20-44-96-222 fax: +31-20-44-96-298
<http://www.nikon-instruments.com/>

NIKON INSTRUMENTS (SHANGHAI) CO., LTD.

CHINA phone: +86-21-5836-0050 fax: +86-21-5836-0030
(Beijing office) phone: +86-10-5869-2255 fax: +86-10-5869-2277
(Guangzhou office) phone: +86-20-3882-0552 fax: +86-20-3882-0580

NIKON SINGAPORE PTE LTD

SINGAPORE phone: +65-6559-3618 fax: +65-6559-3668
NIKON MALAYSIA SDN. BHD.
MALAYSIA phone: +60-3-78763887 fax: +60-3-78763387
NIKON INSTRUMENTS KOREA CO., LTD.
KOREA phone: +82-2-2186-8410 fax: +82-2-555-4415

NIKON CANADA INC.

CANADA phone: +1-905-625-9910 fax: +1-905-625-0103

NIKON FRANCE S.A.S.

FRANCE phone: +33-1-45-16-45-16 fax: +33-1-45-16-00-33

NIKON GMBH

GERMANY phone: +49-211-9414-0 fax: +49-211-9414-322

NIKON INSTRUMENTS S.p.A.

ITALY phone: +39-55-3009601 fax: +39-55-300993

NIKON AG

SWITZERLAND phone: +41-43-277-2860 fax: +41-43-277-2861



Inverted Metallographic Microscope

ECLIPSE MA100



Introducing a durable, user-friendly microscope with a small footprint, superior image quality, and great cost performance



The ECLIPSE MA100 is a compact-size inverted microscope specially designed for reflected illumination. This instrument was developed for brightfield observation and simple polarizing observation. Thanks to its compact, durable design, simple operation, and high-contrast observation and image capture, it is excellent for metallographic and electronic components as well as use at product sites in the materials field and quality control departments.

■ Stage

**Stable control even with heavy samples
A newly developed stage boasting superior durability**

Nikon developed the all-new MA-SR Rectangular Stage especially for the MA100. The three-plate structure gives the microscope stable control and superior durability and enables observation of heavy samples, including embedded samples that are still mounted on a grinder's holder.



■ CFI60

Sharp, clear images using CFI60 optics

Nikon's proprietary CFI60 optics provide high NA and a longer working distance. CFI60 optics deliver bright, high-resolution images. Up to five objective lenses can be mounted.



■ Aperture Diaphragm

Comes standard with a condenser

The epi illuminator comes standard with a condenser which enables users to control image contrast and depth of field of the sample.



■ Mirror

Identify objective magnification at a glance with an adjustable mirror.

The ECLIPSE MA100 ships complete with a mirror for checking objective lenses, which makes observation much more efficient. Now users can verify what objective lens is being used as well as the observation position of the sample in a comfortable position, without having to look beneath the stage.



■ Polarizer/Analyzer

Simple polarization observation with a single-action polarizer/analyzer mechanism.

This device makes possible simple polarizing observation, which is effective for samples such as polymer materials. It takes just a single action to engage the polarizer and analyzer in the light path. The polarizer can rotate 360° degrees, allowing users to set a polarization direction suited to the sample being observed.



Digital Sight Series

A flexible system that enables various configurations consisting of a camera head and a control unit to suit the needs of each sample or application.



Camera Heads



High-definition color camera head DS-Fi1

| Image sensor | Max. recordable pixels | Cooling | Display speed | Sensitivity |
|--------------------------------|------------------------|---------|---------------|----------------------|
| 5-megapixel 2/3-inch color CCD | 2,560 x 1,920 | None | 5.9 to 23 fps | Equivalent to ISO 64 |

The DS-Fi1 features a 5-megapixel CCD that can faithfully capture 2,560 x 1,920-pixel high-resolution images. This camera head features frame rates far beyond conventional models with improved image quality and ease of use, including a refined IR cut filter. Advanced functionality and high cost performance are the hallmarks of the DS-Fi1.



High-speed color camera head DS-2Mv

| Image sensor | Max. recordable pixels | Cooling | Display speed | Sensitivity |
|----------------------------------|------------------------|---------|---------------|-----------------------|
| 2-megapixel 1/1.8-inch color CCD | 1,600 x 1,200 | None | 5.0 to 30 fps | Equivalent to ISO 100 |

The DS-2Mv features a 2-megapixel CCD that displays SXGA video at a high frame rate of 15 fps*1 (max. 30fps). This camera head enables the smooth display of live images and the capture of crystal-clear still images with a high sensitivity. With the exceptionally high frame rates it can even be used for live monitoring.

*1) When using DS-L2 and outputting to an external monitor.

* In addition to these camera heads, Nikon also has a variety of other models, such as the DS-5Mc high-definition camera head with a built-in cooling mechanism.

Camera Control Unit

PC-Based Control Unit DS-U2

The DS-U2 controls everything from live image display and capture to advanced image processing and analysis on a computer. It supports a wide range of applications.



Simple connection via high-speed USB 2.0

The U2 control unit employs a USB 2.0 interface for connecting with a PC. It makes operation with a PC seamless and improves transfer speed up to 1.6 faster than previous models.

NIS-Elements series

of newly developed image integration software

The NIS-Elements series is used for the control software. This software allows the user to perform everything from basic image capture to the measurement, analysis, and management of captured images. Users can add a wide array of the plug-ins to basic packages according to their intended use.

F NIS-Elements F Package

Free bundle

This package enables display of a scale over a live image, switching to full-screen display, and other functions. It allows the user to easily capture images with a simple intuitive control screen.

D NIS-Elements Documentation

Standard set

This package provides functions for performing measurements and creating reports. Use it for general microimage capture in the industrial field. Expandability is also possible by adding plug-ins, such as EDF and databases.

Br NIS-Elements Basic Research

Option

In addition to the measurement function and report-generating function of NIS-Elements Documentation, this package enables automatic object measurement by creating a binary image. Expandability is also possible by adding plug-ins, such as EDF and databases.

Operating environment

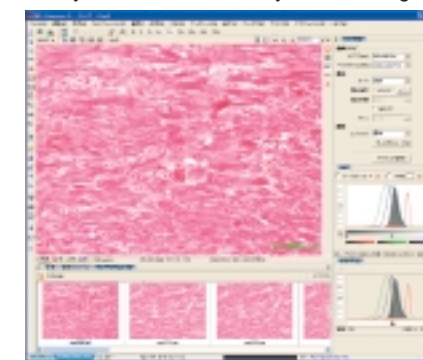
The following PC environment is recommended for maximizing the performance of NIS-Elements.

| | |
|-----------------|-----------------------------------------------|
| CPU | 3.2GHz Intel® Pentium® IV processor or better |
| RAM | 1GB or more |
| OS | Microsoft® Windows® XP SP2 (English version) |
| Hard disk space | 600MB or more required for installation |
| Display | 1280 x 1024 or better (TrueColor mode) |

Application window

F (There is no organizer window.) D Br

Freely select the window layout according to the purpose at hand.



Docked controls window



Full-screen window



Organizer window

Measurement

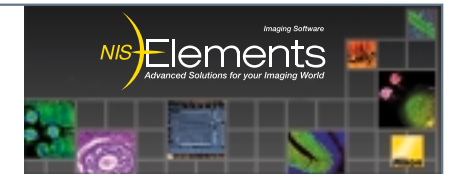
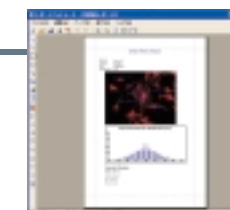
D (Manual only) Br

Measure quantity, length, radius, angle, area, and pixel intensity profile.

Report generator

D Br

Create reports containing images, database descriptions, and measured data. PDF files can be created directly from NIS-Elements.



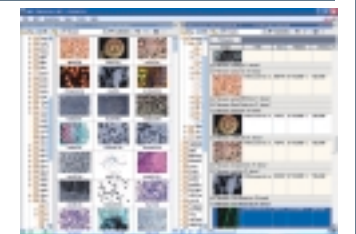
S: Standard O: Optional

| Main functions of each package | | F | D | Br |
|--------------------------------|----------------------------------------------------------------------|----------|---------------|---------------|
| Image display | Enlarge/reduce, full screen, and magnifying glass | S | S | S |
| | Capture thumbnail | S | S | S |
| | Scale, annotation, and profile | S (live) | S | S |
| | Grid | | S | S |
| | LUT, histogram, and sequence replay | | S | S |
| | 3D surface model | | O | O |
| Image capture | Auto-capture | S | S | S |
| | Multi-dimensional support | | 3D | 4D |
| | Time lapse | | Individual | Multi |
| | Z series and multi-point | | S | S |
| | Large image | | S | S |
| | Live compare | | O | S |
| Data formats | BMP, TIFF, JPEG, and JPEG2000 | S | S | S |
| | GIF, PNG, ICS/IDS, and original format | | S | S |
| Image processing | White balance and tone | S | S | S |
| | LUT and shading correction | | S | S |
| | Contrast and hue/saturation correction | S | S | S |
| | Edge enhancement, averaging, and smoothing | | S | S |
| | EDF and realtime EDF | | O | S |
| Image editing | Crop | S | S | S |
| | Image overlay | 3 (RGB) | 4 (RGB+α) | Multi-channel |
| | Cut, copy, paste, rotate, invert, and resize | | S | S |
| | Component extraction | | S | S |
| | Pseudo-color | | S | S |
| Image analysis | Calibration (length) | S | S | S |
| | Manual measurement (count, length, area, angle, circle, and ellipse) | | S | S |
| | Auto-measurement (digitization and object extraction) | | O | S |
| | 3D measurement (EDF) | | O | O |
| | Time measurement | | | O |
| Peripheral device control | Microscope control | | S | S |
| | Control of other companies' devices | | O | O |
| Screen control | Organizer layout | | S | S |
| | Layout manager | | S | S |
| | Customize | | O | O |
| Other | Printing, PDF output, mail transmission | S | S | S |
| | Optical configuration | | S | S |
| | Report generator | | S | S |
| | Macros | | S | S |
| | Databases | | S | O |
| | Window style | SDI | SDI(Japanese) | MDI |

Databases

Plug-in D Br

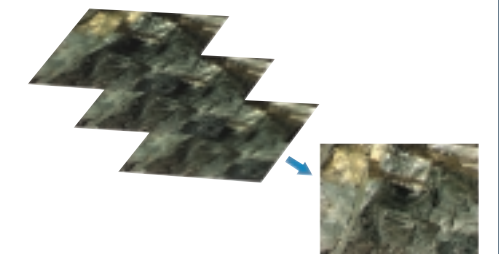
Users can easily create a variety of databases, file types and store images with a simple click of the mouse. Image categorization is easier than ever before.



EDF (Extended Depth of Focus)

Plug-in D Br

Create reports containing images, database descriptions, and measured data. PDF files can be created directly from NIS-Elements.



Digital Sight Series (2)

Stand-alone Control Unit DS-L2

The DS-L2 features a large high-definition LCD and a host of features. There is no need for a PC and monitor, which allows the system to be used with a flick of a switch.

Large, high-definition monitor

The unit has a built-in 8.4-inch TFT LCD monitor with 1,024 x 786 pixels, a brightness of 350cd/m², and 400:1 contrast.

Handy save/print features

The unit enables data to be saved on USB memory sticks, as well as on CF cards and microdrives, transferred through a network path. In addition, it comes standard with direct printing to PictBridge printers. It also features "Real 10" modes that make it possible to set and adjust print scaling.

Easy-to-use toolbar

Frequently used features are displayed as toolbar buttons. This enables control without hampering the display of the image to be captured. It is also possible to customize the buttons.



Example of toolbar buttons (Left: Short/Right: Large)

Scene mode: optimal image capture with a single button

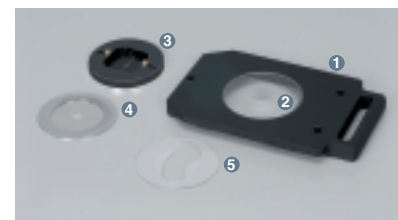
The unit features three scene modes for industrial samples. These modes all offer capture conditions optimized for the particular sample type. Users can also register up to seven freely configurable custom modes.

Scene modes for industrial samples

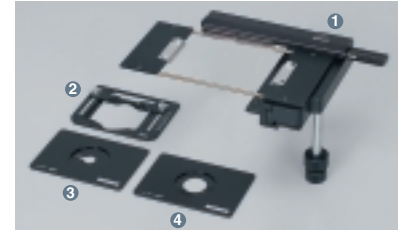


Accessory

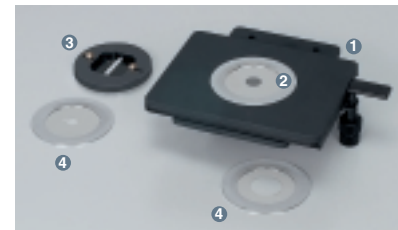
Stages + Holders



- 1 MA-SP Plain Stage
- 2 Acrylic Sample Holder (standard accessory/φ30mm aperture)
- 3 MA-SH3 Specimen Holder 3
- 4 MA-SRSH1 Universal Specimen Holder
- 5 Acrylic Sample Holder (standard accessory/crescent aperture)



- 1 TI-SM Mechanical Stage CH
 - 2 C-HU Universal Holder
 - 3 MA-SH1 Specimen Holder 1
 - 4 MA-SH2 Specimen Holder 2
- * Use in combination with the MA-SP Plain Stage.



- 1 MA-SR Rectangular Stage Specimen Holder (standard accessory/φ20mm aperture)
- 2 MA-SH3 Specimen Holder 3
- 3 MA-SRSH1 Specimen Holder
- 4 Specimen Holder (standard accessory/φ40mm aperture)

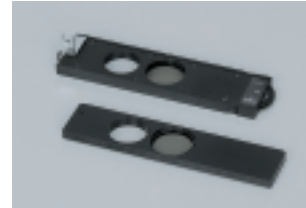
Objective Lenses



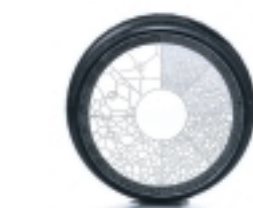
CFI60 optics objective lens

| Type | Power | Numerical aperture (NA) | Working distance (W.D.) (mm) |
|-----------------------|-------|-------------------------|------------------------------|
| CFI L Plan EPI | 2.5x | 0.075 | 8.8 |
| CFI LU Plan Fluor EPI | 5x | 0.15 | 23.5 |
| | 10x | 0.30 | 17.5 |
| | 20x | 0.45 | 4.5 |
| | 50x | 0.80 | 1.0 |
| | 100x | 0.90 | 1.0 |
| CFI LU Plan EPI ELWD | 20xA | 0.40 | 13.0 |
| | 50xA | 0.55 | 10.1 |
| | 100xA | 0.80 | 3.5 |
| CFI L Plan EPI SLWD | 20x | 0.35 | 24.0 |
| | 50x | 0.45 | 17.0 |
| | 100x | 0.70 | 6.5 |
| CFI LU Plan Apo EPI | 100x | 0.95 | 0.4 |
| | 150x | 0.95 | 0.3 |
| CFI L Plan Apo EPI WI | 150x | 1.25 | 0.25 |

Simple polarizer

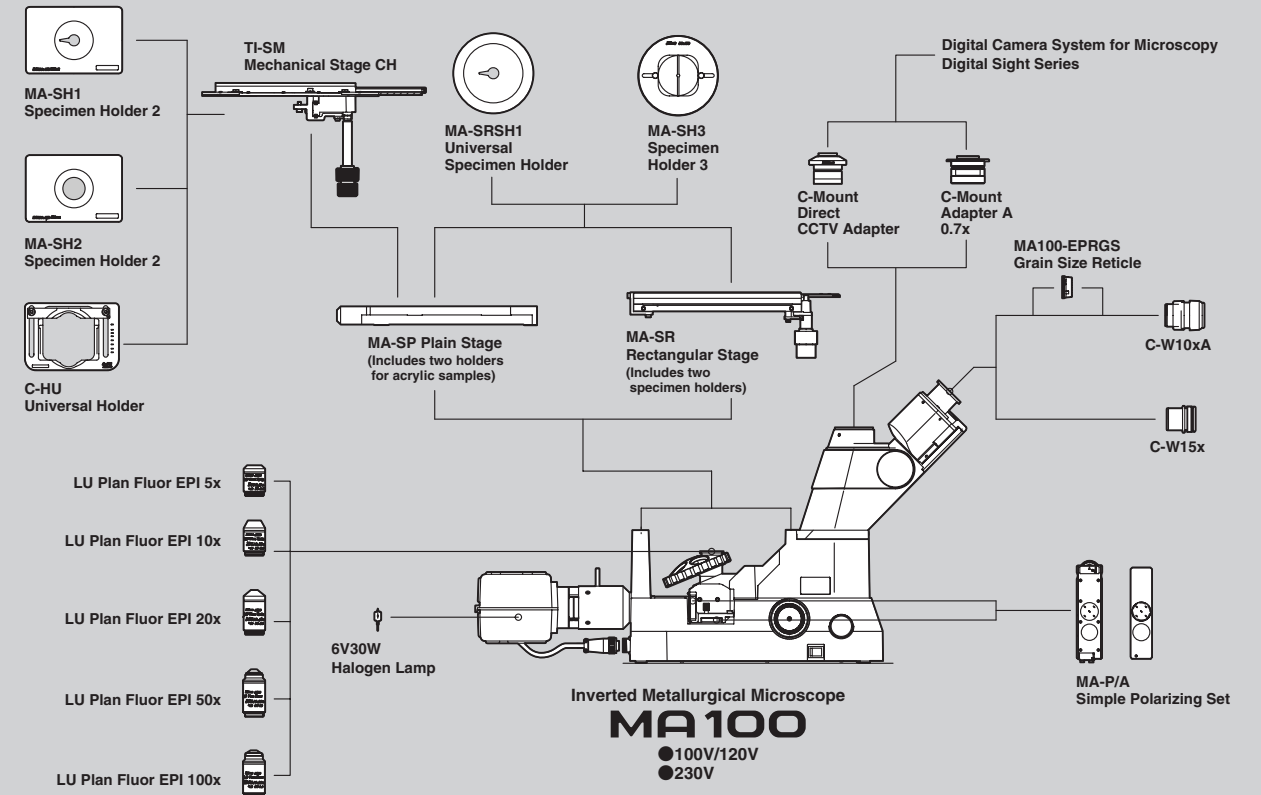


Grain Size Reticle

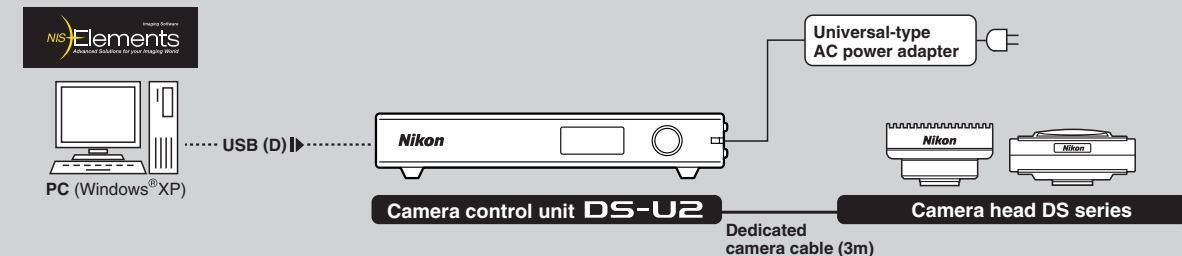


System Diagram

MA100



DS-U2 (→P.4~5)



DS-L2 (→P.6)

