ECLIPSE MA200
MA100N
Inverted Metallurgical Microscopes
Designated for brightfield and simple polarizing observation, the MA100 is a cost-effective solution to manufacturing and QA/QC situations in industries such as automotive/electronic parts and industrial machinery/tools.

### Features

#### MA200

Offers high stability, durability, and a smaller footprint than conventional models, as well as easy access to the stage handle, the nosepiece, the BF/DF change lever, and diaphragms, all located on the front side.

**Compatible observation methods**

<table>
<thead>
<tr>
<th>Brightfield</th>
<th>Darkfield</th>
<th>Simple polarizing</th>
<th>DIC</th>
<th>Fluorescence</th>
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</table>

*Simple polarizing is available for transmitted light observation.\(\triangle\): only available with Halogen Lamp and Fiber Illumination.

**Compatible illuminators**

- LV-LH50PC 12V50W Halogen Lamp Illuminator
- C-HGFI HG Precentered Fiber Illuminator (option)
- LV-LL LED Lamphouse

**Magnification module**

- 1x/1.5x/2x

**Compatible stages**

- MA2-SR Mechanical Stage (stroke: 50 x 50 mm)

### MA100N

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</table>

*Dedicated reflected illumination models.

**Compatible illuminators**

- High-intensity white LED Illuminator (internal power supply)

**Magnification module**

- MA-SR-N Rectangular 3-plate Stage N (stroke: 50 x 50 mm)
- MA-SP-N Plain Stage N
- TS2-S- SM Mechanical Stage (stroke: 126 x 78 mm)

*Please use in combination with MA-SP-N Plain stage N.
Polarizing Units
Polarizing observation is effective for birefringence samples. MA2-PA unit is suitable for observation of aluminium.

Single-action operation
Links the attachment/release of the analyzer/polarizer.

DIC Units
Standard and high contrast type DIC prism are available to match needs of the sample. These prisms are effective for observation of minute step heights.

Even illumination
Improved uniformity of illumination delivers clear images, especially for digital imaging.

Combining with Digital Camera
The MA200 allows detection of information and control of objective lenses, enabling optimization of the conditions vital for image acquisition.

Digital camera for microscopes

Detection of objective lens information
Automatic calibration conversion

Accessories

Stage
Samples can be rotated by the stage clip. The stage delivers high durability needed to support heavy samples.

Polarizing Units
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Grain Size Reticle & Scale
Overlays a pattern onto the observed image. The Grain Size Reticle is used for grain size analysis and complies with the JIS G0551 and ASTM E112 standards. The Scale displays a scale for each objective lens magnification.

Markers & Magnification Module
Enables communication of objective lens position, magnification and intermediate magnification module information with the NIS-Elements image software.

Holders
A full lineup is available that correspond to a variety of sample shapes.

Box Structure
The unique box structure is 1/3 smaller than conventional models and offers improved durability.

Expanded lineup
Added a compact LED illuminator to the existing lineup. With the use of LED, Nikon illuminators are power saving and achieve long life.

Illumination

TME300
Conventional model

LV-LL LED Lamphouse

Grain Size Reticle & Scale

Nosepiece & Magnification Module

Even illumination

Combining with Digital Camera

Holders

Stage

Accessories

Polarizing Units

Combination with Digital Camera

Evolved Optical Performance
Provides a more ergonomic observation with clearer images.

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ECLIPSE MA100N

A durable, user-friendly Inverted Microscope with superior image quality, a small footprint and great cost performance.

Illumination

Employment of high-intensity LED illumination (Eco-illumination)

Compared to conventional halogen illumination, these high intensity LED sources need only about one third of consuming electricity and last approximately 30 times longer. The MA100N ensures stable sample observation with uniform color temperature even in different light intensity.

Stage

Controlled stability even with heavy samples/Beats superior durability

The MA-SR-N Rectangular Stage was developed especially for the MA100N. The three-plate structure allows for observation of heavy samples, such as a grinder resin mounted samples.

Aperture Diaphragm

Standard with MA100N

The epi illuminator comes standard with a variable aperture diaphragm to control image contrast and depth of field.

Accessories

Basic stage set

A triple-platform stage structure lets you use heavy samples.

- MA-SR-N Rectangular Stage N
- Specimen Holder (ø20/30/40 mm aperture)
- MA-SH3 Specimen Holder 3
- MA-SRSH1 Universal Specimen Holder

Grain size reticle

The class of grain size in a sample can be easily distinguished while observing its image.

- MA100-EPRGS Grain Size Reticle

Digital Camera

Redesigned with optical systems suitable for sample observations. The camera port is located on the side of MA100N to provide improved visibility of the stage.

- Microscope Camera D5-F3
- C-0.63x-TS2 C-mount Adapter
- TS2-P-CF Camera port 100

Other accessories

- Ti-SM Mechanical Stage CH
- MA-SFN Plain Stage N
- MA-SH2-N Specimen Holder 2N
- MA-S-HJ Universal Holder
- MA-SH3 Specimen Holder 3
- MA-SRSH1 25-40 Holder
- MA-SRSH1 Universal Specimen Holder
- MA-SH1-N Specimen Holder 1N
- MA-P/A Simple Polarizer

Compact Body

Redesigned to be smaller

Designed for LED illumination, the footprint is 11% smaller than conventional models, allowing users to have more installation choices.

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Nikon’s CFi60 optical system, highly evaluated for its unique concept of high NA and long working distance, has achieved the apex in long working distance, chromatic aberration correction, and light weight.

**Standard objective lenses**

**TU Plan Fluor Series**

- 5x/10x/20x/50x/100x
- Enable brightfield, darkfield, simple polarizing, sensitive polarizing, differential interference, and epi-fluorescence observations with just one lens.
- Achieves superior chromatic aberration performance with long working distance for all magnifications to adapt to any application.

**TU Plan BD ELWD Series**

- 20x/50x/100x
- Light weight, semi-apo, long working distance objective lenses
- Low-magnification objective lenses
  - 10x 0.30 15.0
- High-magnification objective lenses
  - 100x 0.9 2.0

**TU Plan Fluor BD Series**

- 5x/10x/20x/50x/100x
- Standard objective lenses
- With the phase Fresnel lenses, these objective lenses achieve significantly longer operating distances while maintaining the superior chromatic aberration performance of apochromatic lenses.

**TU Plan Apo Series**

- 50x/100x/150x
- By using phase Fresnel lenses, these objective lenses achieve significantly longer operating distances while maintaining the superior chromatic aberration performance of apochromatic lenses.

**Low-magnification objective lenses**

- **T Plan EPI**
  - 1x/2.5x
  - Both clear observation using a conventional analyzer/polarizer and operability-oriented observation without the need of an analyzer/polarizer are possible.

Low-magnification objective lenses

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**Apochromatic objective lenses**

- **TU Plan Apo EPI**
  - 50x 0.8 2.0
  - 100x 0.9 2.0
  - 150x 0.9 2.0

**Long working distance objective lenses**

- **TU Plan EPI ELWD Series**
  - 20x/50x/100x
  - With the phase Fresnel lenses, these objective lenses enable long working distances while offering higher level chromatic aberration correction than conventional objective lenses. This improves operability for samples with different heights.

- **TU Plan Apo EPI ELWD Series**
  - 20x/100x/150x
  - By using phase Fresnel lenses, these objective lenses achieve significantly longer operating distances while maintaining the superior chromatic aberration performance of apochromatic lenses.

**Other Lenses**

- **CFI L Plan EPI 40x**
  - A 40x objective lens is best for metal analysis.
  - NA: 0.65 W.D.: 1.0 mm

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**Digital camera system for microscopes**

**DS-Fi3**

- Three main features of the previous models: high-resolution, high sensitivity, and low noise, and high-speed live display are offered in 1 camera.

**DS-Ri2**

- Capable of expressing images as is, this microscope digital camera offers high resolution, color reproduction, and frame rate.

**Using a tablet PC**

- NIS-Elements
  - The imaging software
  - DS-Fi3/DS-Ri2 microscope cameras, live image display, and image acquisition.

**Using a desktop PC**

- NIS-Elements L
  -DS-Fi3/Ds-Ri2 microscope cameras, live image display, and image acquisition.
  - Simply installing NIS-Elements L on a tablet PC enables setting and control of DS-Fi3/DS-Ri2 microscope cameras, live image display, and image acquisition.

**Scene Mode**

- Ten camera setting patterns for optimal color reproduction and contrast for each microscope light source, observation method and type of sample, as well as custom settings, can be selected.
  - Waffle/IC, Metal, Ceramic/Plastic
  - Circuit board, Flat Panel Display

**Measurement function**

- Line distance, Area, Circle, Angle

**Annotate function**

- Line, Arrow, Text, Marker, Polyl ine

**Image Stitching**

- Stitches together images acquired from multiple fields of view to create one image.

**EDF (Extended Depth of Focus)**

- Create a single, all-in-focus image from images of differing focus.

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*See the “Digital Camera Digital Sight Series for Microscopes” brochure for details on Digital Sight features.
as well as operability-oriented observation without need for an analyzer/polarizer.

*2: T Plan EPI 1x/2.5x enable clear observation using a conventional analyzer/polarizer,
### Specifications (MA200)

<table>
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<tr>
<th>Main body</th>
<th>Focusing mechanism</th>
<th>Focusing nosepiece (Fixed stage) Coaxial coarse/fine adjustment knob (torque adjustable)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Coaxial adjustment of 4.0 mm per rotation, fine adjustment of 0.1 mm per rotation</td>
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<tr>
<td></td>
<td>Illumination</td>
<td>With flare prevention, Built in UV cut filter</td>
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<tr>
<td></td>
<td>Field diaphragm: dialing continuous variable (centerable), Aperture diaphragm: dialing continuous variable (centerable)</td>
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<tr>
<td></td>
<td>Filter: Double turret (ND16, ND4/GIF, NCB, Additional option available), Polarizing block (Selectible with or without 1/4  λPlate)</td>
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<tr>
<td></td>
<td>Fluorescence filter blocks: B/G/V/B</td>
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<tr>
<td></td>
<td>125W60 Halogen Lamp, C-HGF1TG Fiber Illuminator, LV-LL LED Lamphouse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Light distribution</td>
<td>Eyepiece tube/Back port: 100/0, 55/45</td>
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<th>CF/Iso/CF/Iso-2 system</th>
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<td>Surface Image</td>
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<tr>
<td>Observation method</td>
<td>Brightfield/Darkfield/Simple Polarizing/DIC/Epi-Fluorescence</td>
</tr>
<tr>
<td>Revolving nosepieces</td>
<td>LV-NUSL: Bright/Darkfield/DIC 5 position nosepiece, LV-NUSA: Motorized Bright/Darkfield/DIC 5 position nosepiece</td>
</tr>
<tr>
<td>Stage</td>
<td>MA2-SR Mechanical Stage (X/Y flexible handle)</td>
</tr>
<tr>
<td></td>
<td>MA-N7 Brightfield 7 position nosepiece (Intelligent)</td>
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<td>MA2-GR Grain Reticle (ASTM E112-63 grain sizing numbers 1 to 8), Grid Reticle(20 lines, 0.5 mm)</td>
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- **Optics**: CF/Iso/CF/Iso-2 system
- **Observation image**: Surface Image
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- **Revolving nosepieces**: LV-NUSL: Bright/Darkfield/DIC 5 position nosepiece, LV-NUSA: Motorized Bright/Darkfield/DIC 5 position nosepiece
- **Stage**: MA2-SR Mechanical Stage (X/Y flexible handle)
- **MA-N7 Brightfield 7 position nosepiece (Intelligent)**
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### Specifications

- **Optics**: CF/Iso/CF/Iso-2 system
- **Observation image**: Reversed image
- **Observation method**: Brightfield and polarization (with MA P/A simple polarizer/analyzer set)
- **Focusing**: Focusing nosepiece (fixed stage), coaxial coarse/ fine adjustment knob with 8.5-mm stroke
- **(Coarse adjustment of 37.7 mm per rotation, fine adjustment of 0.2 mm per rotation)**
- **Nosepiece**: Brightfield 5-position nosepiece
- **Stage**: MA-SR-N Rectangular 3-plate Stage: N: 50×50 mm stroke includes two stage inserts (ø20 mm and 40 mm opening) and coaxial control handle on the right side
- **The 3 plate design allows entire top surface to move. Optional Stage inserts: MA-SRSH1 Specimen Holder 1 with ø15 mm opening or MA-SH3 Specimen Holder 3 with 2 mm to 32 mm adjustable opening**
- **MA-SP-N Plain Stage N: 188×310 mm - Includes two stage inserts (1) clear acrylic stage insert with ø30 mm opening, (2) clear acrylic stage insert with crescent opening (width 30 mm) to allow clearance for rotation of high magnification objectives**
- **Optional stage inserts: MA-SRSH1 Specimen Holder 1 with 15 mm opening or MA-SH3 Specimen Holder 3 with 2 mm to 32 mm adjustable opening**
- **Accepts Attachable Mechanical Stage TS-SM**
- **TS2-S-SM Mechanical Stage: 126 mmx78 mm stroke, handle can be attached on the right or left side of the plain stage**
- **Optional Specimen Holders to fit Attachable Mechanical stage: MA-SHT-N Specimen Holder 1N (ø15 mm opening)**
- **MA-SHT-N Specimen Holder 2N (ø30 mm opening), or C-S-HU Universal Holder (30 mm to 65 mm adjustable opening)**
- **Illuminator**: Internal power source white LED light source, condenser built-in (lever operated)
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- **Binocular body**: Built-in Siedentopf binocular, 45 inclination angle and 50 to 75-mm inter pupillary adjustment, attachable camera port, eyepiece/Port: 100/0, 55/45
- **Power consumption (max.)**: 15W
- **Weight**: Approx. 10 kg

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- **Stage**: MA-SR-N Rectangular 3-plate Stage: N: 50×50 mm stroke includes two stage inserts (ø20 mm and 40 mm opening) and coaxial control handle on the right side
- **The 3 plate design allows entire top surface to move. Optional Stage inserts: MA-SRSH1 Specimen Holder 1 with ø15 mm opening or MA-SH3 Specimen Holder 3 with 2 mm to 32 mm adjustable opening**
- **MA-SP-N Plain Stage N: 188×310 mm - Includes two stage inserts (1) clear acrylic stage insert with ø30 mm opening, (2) clear acrylic stage insert with crescent opening (width 30 mm) to allow clearance for rotation of high magnification objectives**
- **Optional stage inserts: MA-SRSH1 Specimen Holder 1 with 15 mm opening or MA-SH3 Specimen Holder 3 with 2 mm to 32 mm adjustable opening**
- **Accepts Attachable Mechanical Stage TS-SM**
- **TS2-S-SM Mechanical Stage: 126 mmx78 mm stroke, handle can be attached on the right or left side of the plain stage**
- **Optional Specimen Holders to fit Attachable Mechanical stage: MA-SHT-N Specimen Holder 1N (ø15 mm opening)**
- **MA-SHT-N Specimen Holder 2N (ø30 mm opening), or C-S-HU Universal Holder (30 mm to 65 mm adjustable opening)**
- **Illuminator**: Internal power source white LED light source, condenser built-in (lever operated)
- **Optional Specimen Holders to fit Attachable Mechanical stage: MA-SHT-N Specimen Holder 1N (ø15 mm opening)**
- **MA-SHT-N Specimen Holder 2N (ø30 mm opening), or C-S-HU Universal Holder (30 mm to 65 mm adjustable opening)**
- **Binocular body**: Built-in Siedentopf binocular, 45 inclination angle and 50 to 75-mm inter pupillary adjustment, attachable camera port, eyepiece/Port: 100/0, 55/45
- **Power consumption (max.)**: 15W
- **Weight**: Approx. 10 kg

**Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. April 2019 ©2006-2019 NIKON CORPORATION**

**N.B. Export of the products** in this brochure 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.