

## Specifications (MA200)

<b>Main body</b>	
<b>Focusing mechanism</b>	Focusing nosepiece (Fixed stage) Coaxial coarse/fine adjustment knob (torque adjustable) Coarse adjustment of 4.0mm per rotation, fine adjustment of 0.2mm per rotation
<b>Illumination</b>	With flare prevention, Built in UV cut filter Field diaphragm: dialing continuous variable (centerable), Aperture diaphragm: dialing continuous variable (centerable) Filter: Double turret (ND16, ND4/GIF, NCB, Additional option available), Polarizing block (Selectable with or without 1/4 λ Plate) Fluorescence filter blocks: B/G/V/BV, Built in 12V50W halogen lamp, C-HGFI HG Fiber Illuminator
<b>Light Distribution</b>	Eyepiece tube/Back port: 100/0, 55/45
<b>Optics</b>	CF160 Optics
<b>Image orientation</b>	Erect
<b>Observation method</b>	Bright/Darkfield/Simple Polarizing/DIC/Epi-Fluorescence
<b>Revolving nosepieces</b>	MA2-NU15: Bright/Darkfield/DIC 5 position nosepiece, LV-NU5A: Motorized Bright/Darkfield/DIC 5 position nosepiece D-NID6: Bright/Darkfield 6 position nosepiece (Intelligent), D-NI7: Brightfield 7 position nosepiece (Intelligent)
<b>Stage</b>	MA2-SR Mechanical Stage (X/Y flexible handle) Dimension: 295x215mm, Stroke: 50mmx50mm (with distance graduation), Standard accessory: φ22 universal specimen holder (with sample clip)
<b>Trinocular eyepiece</b>	Seidentopf, Interpupillary Distance Adjustment 50-75mm
<b>Power input</b>	100-240V, 50-60Hz
<b>Electric power consumption</b>	1.2A 50/60Hz
<b>Maximum electric power consumption</b>	1.2A 75W
<b>Weight Approximately</b>	26kg
<b>Option</b>	
<b>Intermediate magnification</b>	Turret (1x, 1.5x, 2x), Status detection (Output magnification information to main unit)
<b>Scale</b>	MA2-GR Grain Reticle (ASTM E112-63 grain sizing numbers 1 to 8), Grid Reticle(20 lines, 0.5mm) MA2-MR Scale Reticle (compatible with 5-100x, Read in μm, Dialing System)

## Specifications (MA100)

<b>Optics</b>	CF160 LU system
<b>Observation image</b>	Upright reversed image
<b>Observation method</b>	Brightfield and polarization (with MA P/A simple polarizer/analyzer set)
<b>Focusing</b>	Focusing nosepiece (fixed stage) Coaxial coarse/fine adjustment knob with 8.5-mm stroke (Coarse adjustment of 37.7mm per turn, fine adjustment of 0.2mm per turn)
<b>Nosepiece revolver</b>	Brightfield 5-position nosepiece
<b>Stage</b>	MA-SP Plain Stage: 170 x 230mm - Includes two stage inserts (1) clear acrylic stage insert with φ30mm opening, (2) clear acrylic stage insert with crescent opening (width 30mm) to allow clearance for rotation of high magnification objectives Optional stage inserts: MA-SRSH1 Specimen Holder 1 with 15mm opening or MA-SH3 Specimen Holder 3 with 2mm to 32mm adjustable opening Accepts Attachable Mechanical Stage TI-SM TI-SM Attachable Mechanical Stage CH for use with Plain Stage: 126mm x 80mm stroke, handle can be attached on the right or left side of the plain stage Optional Specimen Holders to fit Attachable Mechanical stage: MA-SH1 Specimen Holder 1 (φ15mm opening) MA-SH2 Specimen Holder 2 (φ30mm opening), or C-HU Universal Holder (30mm to 65mm adjustable opening) MA-SR Rectangular 3-plate Stage: 50 x 50 mm stroke (includes two stage inserts (φ20mm and 40mm 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 (φ15mm opening or MA-SH3 Specimen Holder 3 with 2mm to 32mm adjustable opening
<b>Illuminator</b>	Internal power supply 6V 30W Halogen Lamp (long-life type) Condenser built-in (lever operated) φ25mm filter (includes NCB11 and ND4) can be inserted
<b>Binocular body with photo tube</b>	Built-in Seidentopf binocular 45° inclination angle and 50 to 75-mm interpupillary adjustment; photo tube accepts ISO type CCTV/Digital Camera "C" mount adapters Light path knob switches between 100% visual and 20% visual: 80% photo
<b>Electrical specification</b>	Input: 100v/110v/120v, 220v/230v/240v 50-60Hz; Output: 1.5v to 6v; Max. power consumption: 96VA
<b>Lamp</b>	6V 30W Halogen
<b>External dimensions</b>	228 x 663 x 382 mm (W x D x H)
<b>Weight</b>	Approx. 9kg

Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. October 2008 ©2006/2007/2008 NIKON CORPORATION

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



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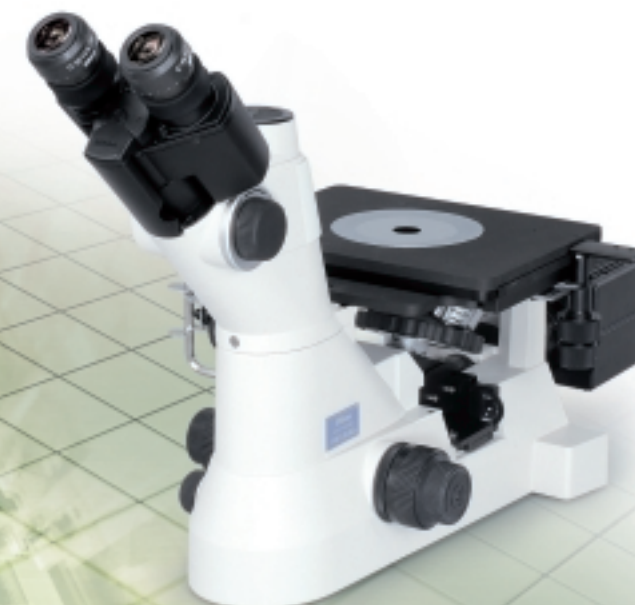
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Inverted Metallographic Microscopes  
**ECLIPSE**

**MA2000**  
**MA1000**

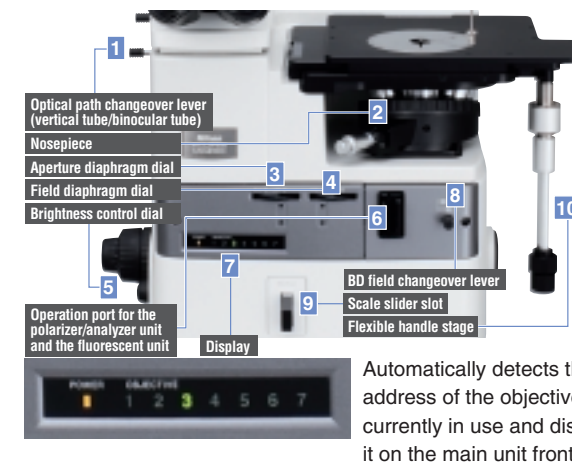


## New solution from Nikon: An ideal new microscope



## Front Operation

All controls are on the front of the instrument.  
Delivers ease-of-use by placing all important controls on the front.



### Compact built-in design

Employs internal turrets that keep dust off the illumination filters, maintaining bright uniform illumination. Also, the power supply is built in to save space.



### Quick Status Check

The observation position of the objective lens and sample can be checked easily from the microscope's front panel.

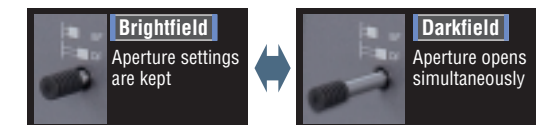
### Single-action operation

#### Analyzer/polarizer interlock mechanism

Links the attachment/release of the analyzer/polarizer.

#### Brightfield/Darkfield auto-aperture switching

The field stop and aperture stop automatically open when switched from brightfield to darkfield. When returning to brightfield observation, the previous field and aperture stop settings are reproduced.



#### Flash prevention mechanism

Reflection flashes when switching objective lenses are automatically prevented.

## Box Structure

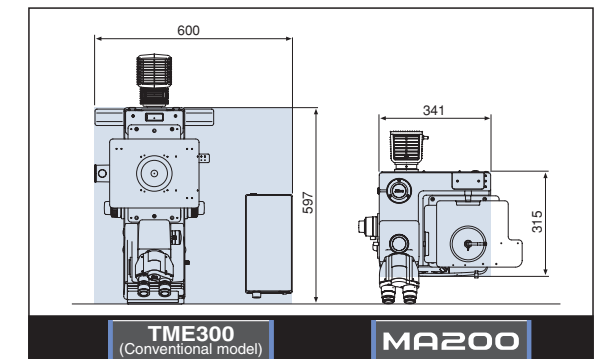
Smaller footprint than conventional models:  
Three times free spaces left!  
Improved durability thanks to the unique box structure.

### Compact structure with a depth of 315 mm

A box shaped microscope, not only the width but also the depth is reduced dramatically: The foot print is only one-third of the conventional model!

### High stability/durability

Vibration during high-power observation is reduced. Extremely high rigidity.

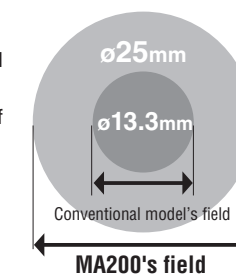


## High Performance

Basic performance dramatically improved. Provides a more ergonomic and clear image observation.

### Super-wide field of view

The ultra wide field of view eyepiece and with the combination of the newly developed 1x objective lens, a sample of 25mm diameter can be observed in an one field of view.



### CFI60 optics

Nikon's world-class CFI60 optics, which provide clear, high-contrast brightfield images and darkfield images with three times the brightness of conventional models. New 1x and 40x objective lenses have been added to the line up.

### Even Illumination

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

#### Combine up to eight images with the stitching feature

Combine up to eight images with the stitching feature. Get natural looking images with uniform lighting and no seams.



### Energy saving

The 50W halogen light source realizes the same brightness as the previous 100W light source with only about half the power consumption.

# ECLIPSE MA100

Cost-effective microscopy, now simpler than ever



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

The ECLIPSE MA100 is a compact inverted microscope specially designed to meet the needs of reflected light observations requiring either brightfield or simple polarization illumination techniques. Its small foot-print, durable construction, simple operation, and superior Nikon optics, make it an ideal bench-top solution for: metallurgical samples, electronic components, failure analysis, materials science and quality control/quality assurance applications.

## Stage

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

Nikon developed the new MA-SR Rectangular Stage especially for the MA100. The three-plate structure gives the microscope superior control and durability for observation of heavy samples, such as a grinder resin mounted samples.



## CFI60

**Sharp, clear images using CFI60 optics**

Nikon's proprietary CFI60 System optics provide high Numerical aperture and longer working distance. CFI60 LU optics deliver bright, high-resolution images with superior contrast. The built-in photo port, makes the MA100 ideally suited for digital image capture. The built-in nosepiece turret mounts up to five objective lenses for a complete range of magnifications.



## Aperture Diaphragm

**Aperture diaphragm comes standard**

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



## Mirror

**Identify objective magnification at a glance**

The ECLIPSE MA100 incorporates a unique feature, a mirror to check under the stage. Now users can verify what objective lens is being used as well as the position of the sample without having to look beneath the stage.



## Polarizer/Analyzer

**Simple polarization with a single-action polarizer/analyzer mechanism**

The MA-P/A Pol Set makes reflected polarized light observation simple. It takes just a single action to slide the polarizer and analyzer in the light path. The polarizer can rotate 360° degrees, allowing users to set a polarization direction suited for the sample being observed. Samples typically observed under polarized light include: plastics, thin-films, metals, contaminants, chemicals, strain-tested materials, glasses and other materials etc.



# ECLIPSE MA200/MA100

The ultimate imaging that only Nikon can offer.



## Image Capture



### DS-L2 camera control unit Stand-alone type

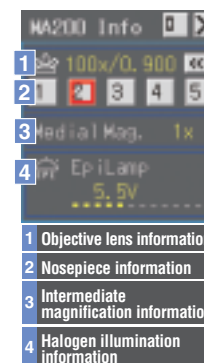
The built-in, high-definition, large 8.4-inch XGA LCD screen lets you view & discuss the sample without the need to look in the eyepieces.

### Easily save/print data

Captured images can be saved to USB memory or a CF card. In addition to printing directly via a PictBridge-compatible printer, you can save data onto a server over a LAN.

### Status Display MA200 only

The calibration data is automatically changed when the objective magnification is changed. This feature makes it easy to use the measurement function in the DS-L2. Quantitative illumination adjustment can be made manually by viewing the voltage value. This is crucial when acquiring the optimum settings for observation and image capture.



## Image Analysis



### DS-U2 camera control unit PC-controlled type

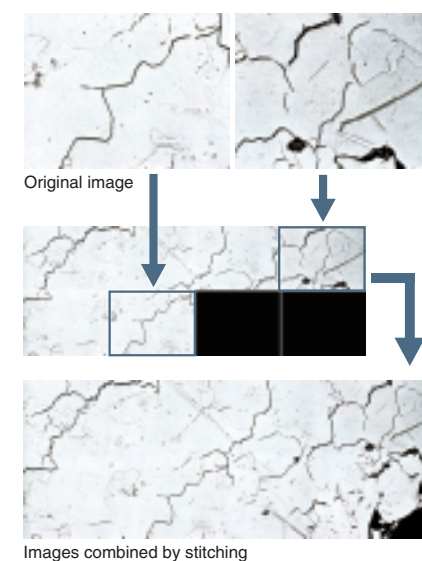
### Imaging software NIS-Elements Control software

DS-U2 and NIS-Elements allow the user to perform everything from basic image capture to the measurement, analysis, and management of captured images.

\*See the NIS-Elements catalog for more information.

### Stitching

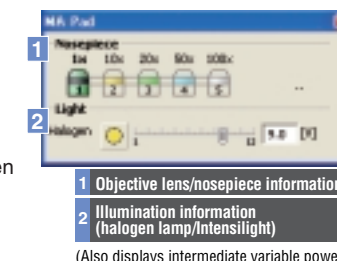
Adjacent images can be put together to create an image with a wide field. It is now possible to capture even more vivid images due to the improved uniformity of the illumination.



### Status Display MA200 only

The calibration data is automatically changed when the objective magnification is changed. This feature makes the measurement function and other optional software modules such as grain sizing and cast iron analysis in the NIS-Elements easy to use.

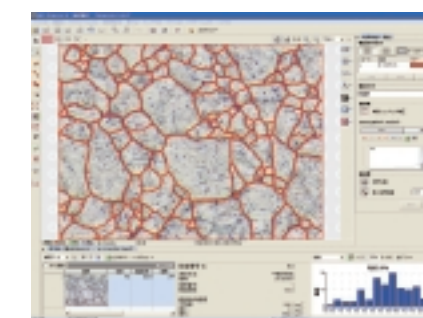
Quantitative illumination adjustment which is crucial when acquiring the optimum settings for observation, image capture and especially large image stitching, can be made via PC control.



(Also displays intermediate variable power)

### Grain Size analysis Option

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

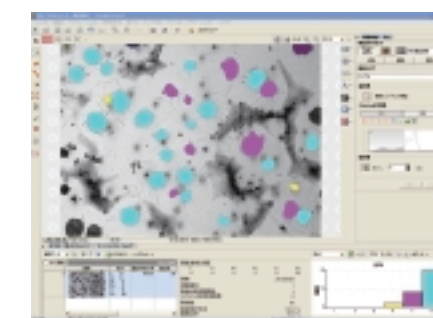


**Measurement results include:**  
 • G grain size • Grain size by area and/or intercepts  
 • Number of grains • Anisotropy index  
 • Other basic grain size statistics

**Customizable measurement techniques provided:**  
 • Planimetric • Linear • Circular • Abrams

### Cast Iron analysis Option

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



**Main applications**  
 • Graphite shape and size classification  
 • Nodularity  
 • Graphite, Ferrite, Pearlite fractions  
 • Other basic iron analysis statistics  
 • Customizable functionality includes image masks, size restrictions and nodule shape classification.

### Camera heads suited to specific applications

Cooled high-definition color camera head  
**DS-Ri1**  
 1.27-megapixel 2/3-inch color CCD



High-definition color camera head  
**DS-Fi1**  
 5-megapixel 2/3-inch color CCD



High-speed color camera head  
**DS-2Mv**  
 2-megapixel 1/1.8-inch color CCD

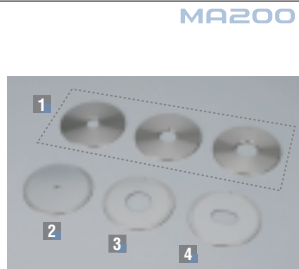


# Accessories

## MA200 Holders

We offer a full lineup of holders.

- 1 MA2-SRSH Holder Set
- 2 MA2-SRSH 10 Holder
- 3 MA2-SRSH 40 Holder
- 4 MA2-SRSH 25-40 Holder



## MA200 Stage

The holder comes with a stage clip that enable sample rotation. This flexible handle stage delivers high durability needed to support heavy samples.

- 1 MA-2 SR Stage

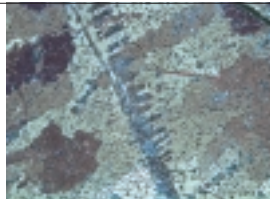


## MA200 Polarizing

Accessory required for simple polarizing observation.

- 1 MA2-PA Unit
- 2 MA2-UPA Unit\*
- 3 MA2-λP λPlate

\*It is suitable for inspecting aluminium sample.



## MA200 DIC

Accessory required for DIC observation.

- 1 MA2-PA Unit
- 2 L-DIHC DIC Prism (High Contrast)
- 3 L-DIC DIC Prism



## MA200 Fluorescence

Accessory required for fluorescence observation.

- 1 MA2-FL FL G
- 2 MA2-FL FL B
- 3 MA2-FL FL BV
- 4 MA2-FL FL V



## MA200 Diascopic Unit

Accessory required for transmitted illumination observation.

- 1 MA2-DP 100W Pillar



## 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.



## MA100 Stage+Holders A

A simple fixed stage.

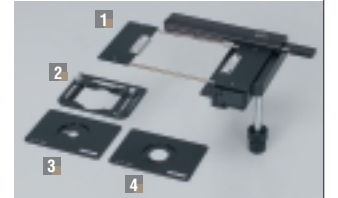
- 1 MA-SP Plain Stage
- 2 Acrylic Sample Holder (standard accessory/φ30mm aperture)
- 3 MA-SH3 Specimen Holder 3
- 4 MA-SRSH1 Universal Specimen Holder
- 5 Acrylic Sample Holder (standard accessory/ crescent aperture)



## MA100 Stage+Holders B

A dual-platform stage.

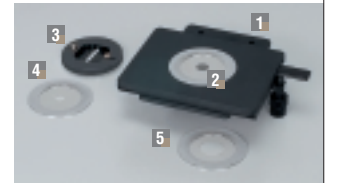
- 1 TI-SM Mechanical Stage CH
- 2 C-HU Universal Holder
- 3 MA-SH1 Specimen Holder 1
- 4 MA-SH2 Specimen Holder 2



## MA100 Stage+Holders C

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

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



## MA200 Nosepiece & Magnification Module

Enables communication of objective lens position, magnification and intermediate magnification module information with the DS-L2 control unit and NIS-Elements image software.

- 1 MA2-MC Magnification Module
- 2 MA2-NUI5 Universal Intelligent Quintuple Nosepiece



## MA100 Grain Size Reticle

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

- 1 MA100-EPRGS Grain Size Reticle



## MA200 Grain Size Reticle & Scale

Overlays a pattern onto the observed image. MA2-GR Grain Size Reticle is used for grain size analysis which is compliant to JIS G0551 and ASTM E112 standards. The MA2-MR Scale is used for scale display for each objective magnification.

- 1 MA2-GR Grain Size Reticle
- 2 MA2-MR Scale



## Objective Lenses

CFI60 optics that provide uniform and clear images with both high NA and long working distance.

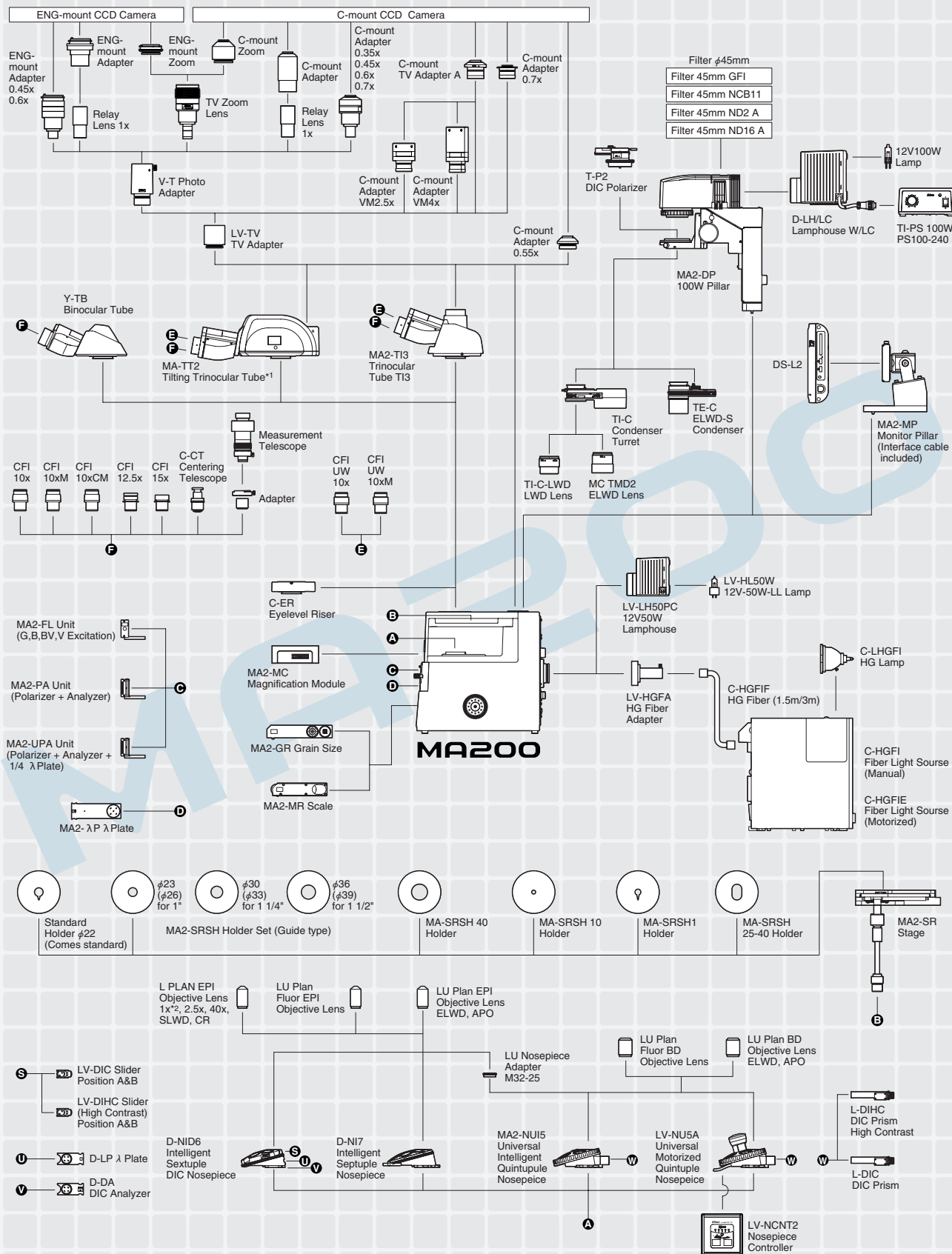
- 1 CFI L Plan EPI 1x, 40x



Type	Power	Numerical aperture (NA)	Working distance (w.d.)(mm)	Type	Power	Numerical aperture (NA)	Working distance (w.d.)(mm)
CFI L Plan EPI	1x*	0.03	3.8	CFI LU Plan Apo EPI	100x	0.95	0.4
	2.5x	0.075	8.8		150x	0.95	0.3
	40x	0.65	1.0	CFI LU Plan Fluor BD	5x	0.15	18.0
CFI LU Plan Fluor EPI	5x	0.15	23.5		10x	0.30	15.0
	10x	0.30	17.5		20x	0.45	4.5
	20x	0.45	4.5		50x	0.80	1.0
	50x	0.80	1.0		100x	0.90	1.0
CFI LU Plan EPI ELWD	100x	0.90	1.0	CFI LU Plan BD ELWD	20x	0.40	13.0
	20xA	0.40	13.0		50xA	0.55	9.8
	50xA	0.55	10.1		100xA	0.80	3.5
	100xA	0.80	3.5	CFI LU Plan Apo BD	100x	0.90	0.51
CFI L Plan EPI SLWD	20x	0.35	24.0		150x	0.90	0.4
	50x	0.45	17.0				
	100x	0.70	6.5				

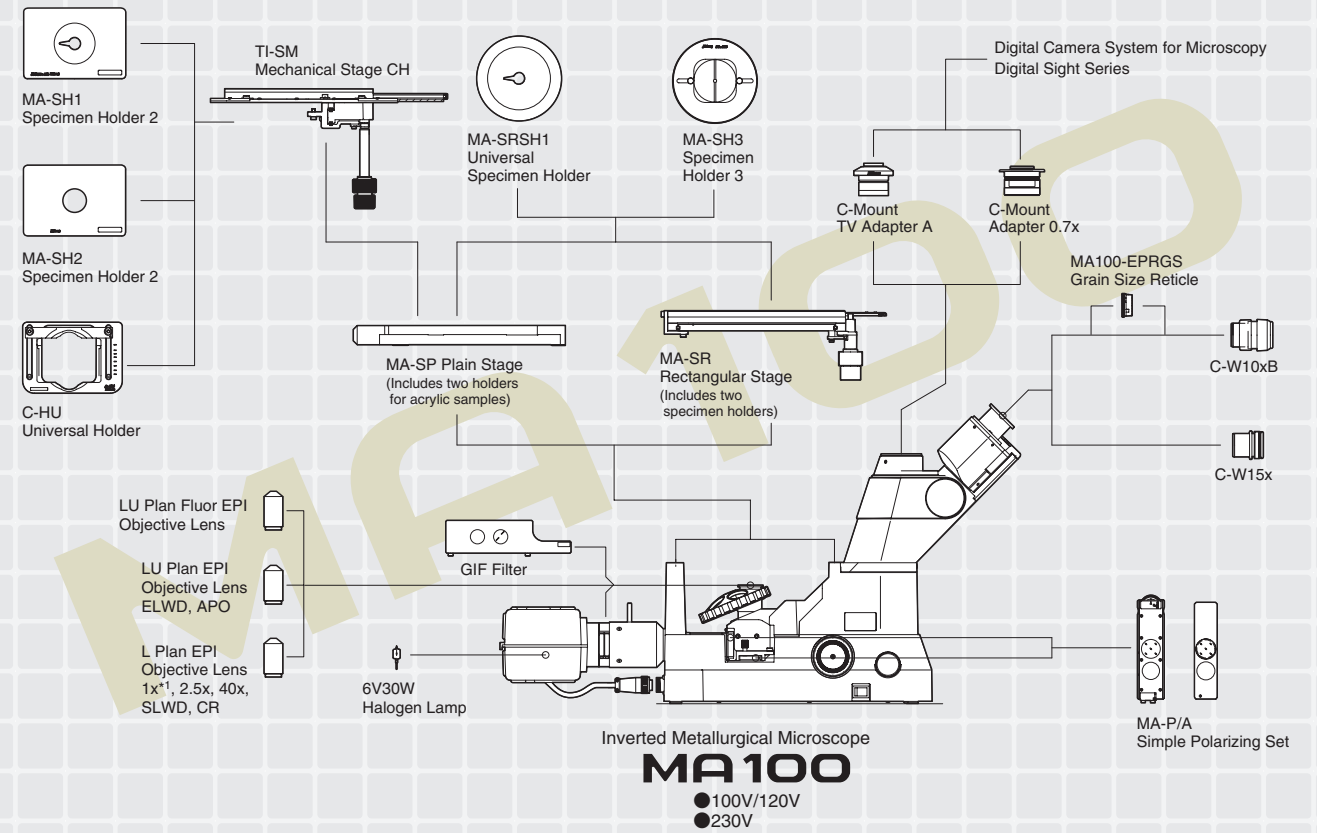
\*When using CFI L Plan EPI 1x with MA100 and MA200, the following accessories are required. "MA2-PA Unit" when using with MA200 and "MA-P/A Simple Polarizing Set" when using with MA100. (Sales will start in January 2009)

# System Diagram (MA200)



\*1: Built to order.  
 \*2: When using CFI L Plan EPI 1x with MA100 and MA200, the following accessories are required.  
 "MA2-PA Unit" when using with MA200 and "MA-P/A Simple Polarizing Set" when using with MA100. (Sales will start in January 2009)

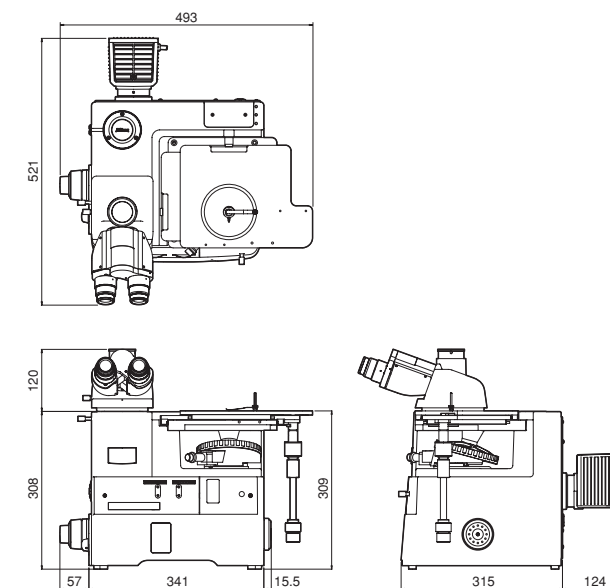
# System Diagram (MA100)



\*1: When using CFI L Plan EPI 1x with MA100 and MA200, the following accessories are required.  
 "MA2-PA Unit" when using with MA200 and "MA-P/A Simple Polarizing Set" when using with MA100. (Sales will start in January 2009)

## Dimensions

### MA200



### MA100

