ECLIPSE MA200 LED MA100N

Inverted Metallurgical Microscopes

ECLIPSE
MA200 LED / MA100N

Features

MA200 LED

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.

MA100N

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.

	MA200 LED	MA100N
Compatible observation methods	Brightfield: ○ / Darkfield: ○ / Simple polarizing: ○ / DIC: ○ / Fluorescence: —	Brightfield: ○ / Darkfield: — / Simple polarizing: ○ / DIC: — / Fluorescence: — *Dedicated reflected illumination models.
Compatible illminators	● High color-rendering LED Illuminator (built-in)	● High-intensity white LED Illuminator (built-in)
Magnification module	● 1x/1.5x/2x	—
Compatible stages	● MA2-SR Mechanical Stage (stroke: 50 x 50 mm)	● 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.

ECLIPSE MA200 LED

An ideal inverted microscope offered only by Nikon

Front Operation

Delivers ease-of-use by placing all important controls at the front of MA200N LED.

1 Optical path changeover lever (vertical tube/binocular tube)
2 Nosepiece
3 Aperture diaphragm dial
4 Field diaphragm dial
5 Brightness control dial
6 Operation port for polarizer/analyzer unit
7 Display
8 BD field changeover lever
9 Scale slider slot
10 Flexible handle stage

Quick Status Check

Automatically detects the address of the objective lens currently in use and displays it on the main unit front panel.

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

Evolved Optical Performance

Provides a more ergonomic observation with clearer images.

Super-wide field of view

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

• T Plan EPI 1×

Wide field of view

Even Illumination

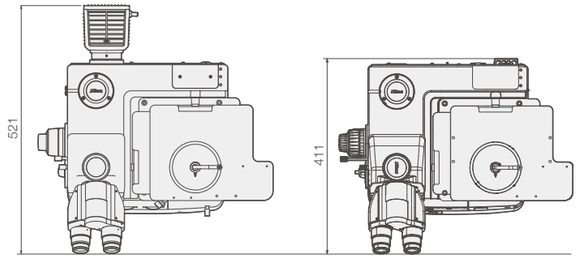
Improved uniformity of illumination delivers clear images, especially for digital imaging.

Combine images with the stitching feature

Can combine up to eight images with uniform lighting and no seams.

Illumination

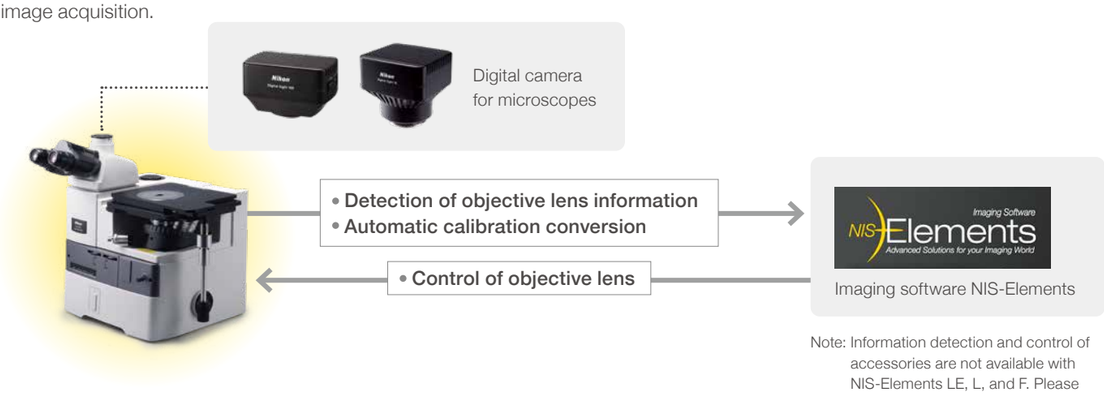
The built-in LED light source makes the footprint 100 mm smaller than previous models, allowing MA200 LED to be installed in compact spaces.
The newly developed high color-rendering LED light source offers improved brightness, color, and color rendering properties. Lamp life has significantly extended from 1,100 hours to 50,000 hours, achieving a longer lifespan.



Previous model (MA200) MA200 LED

Combination with Digital Camera

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



Note: Information detection and control of accessories are not available with NIS-Elements LE, L, and F. Please use NIS-Elements D for these functions.

Accessories

Stage

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

1 MA-2 SR Stage

Holders

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

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.

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

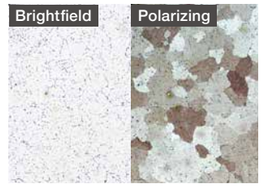
Polarizing Units

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.

● **Aluminium sample**

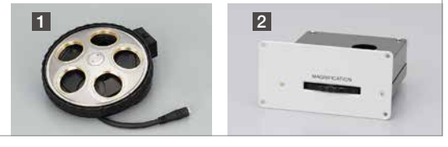


1 MA2-PA Unit
2 MA2-UPA Unit*
3 MA2-λP λ Plate
*It is suitable for inspecting aluminium sample.

Nosepiece & Magnification Module

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

1 MA2-MC Magnification Module
2 LV-NU5IN Nosepiece



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.

1 MA2-GR Grain Size Reticle
JIS G0551/objective lense 10x (100× magnification)
ASTM E112/
objective lense 10x
(100× magnification)
2 MA2-MR Scale

ECLIPSE MA100N

Brightfield and simple polarized observation can be done on samples such as metallic structures and electronic components. This compact inverted microscope features a robust and compact design, user-friendly operation, maintenance-free LED illumination, and high-contrast observation and image acquisition.

Illumination

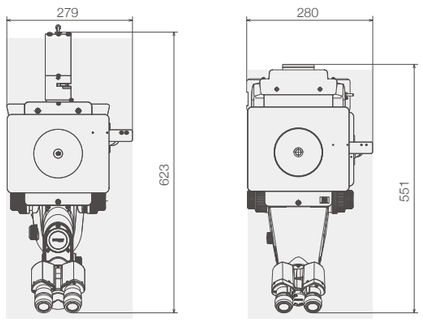
Compared to conventional halogen illumination, these high intensity LED sources need only about one third of consuming electricity and last approximately 30 times longer. The MA100N ensures stable sample observation with uniform color temperature even in different light intensity.

Stage

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.

Compact

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



Previous model (MA100L) MA100N

Aperture Diaphragm

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.

1 MA-SR-N Rectangular Stage N Specimen Holder (ø20/30/40 mm aperture)
2 MA-SH3 Specimen Holder 3
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.

1 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.

1 Microscope Camera Digital Sight 100
2 C-0.63x-TS2 C-mount Adapter
3 TS2-P-CF Camera port 100

Other accessories

1 TI-SM Mechanical Stage CH
2 MA-SP-N Plain Stage N
3 MA-SH2-N Specimen Holder 2N
4 MA-S-HU Universal Holder
5 MA-SH3 Specimen Holder 3
6 MA-SRSH 25-40 Holder
7 MA-SRSH1 Universal Specimen Holder
8 MA-SH1-N Specimen Holder 1N
9 MA-P/A Simple Polarizer

Objective Lense

CFI60-2

Nikon's CFI60 optical systems are highly evaluated for their unique concept of high NA combined with a long working distance. These lenses have been developed further and evolved achieving the apex in long working distance specifications, correct chromatic aberration, and an optimized lens weight.

Standard objective lenses

TU Plan Fluor Series

Long WD · Semi-apo · Light weight · Fly-eye lens

EPI/BD 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.

*Brightfield observation (EPI) objective lens

Model	Magnification	NA	Working Distance (mm)
TU Plan Fluor EPI (brightfield type)	5×	0.15	23.5
	10×	0.30	17.5
	20×	0.45	4.5
	50×	0.80	1.0
	100×	0.90	1.0
TU Plan Fluor BD (brightfield/darkfield type)	5×	0.15	18.0
	10×	0.30	15.0
	20×	0.45	4.5
	50×	0.80	1.0
	100×	0.90	1.0

Long working distance objective lenses

TU Plan ELWD Series

Long WD · Semi-apo · Light weight

EPI/BD 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.

*Brightfield observation (EPI) objective lens

Model	Magnification	NA	Working Distance (mm)
TU Plan EPI ELWD (brightfield type)	20×	0.4	19.0
	50×	0.6	11.0
	100×	0.8	4.5
TU Plan BD ELWD (brightfield/darkfield type)	20×	0.4	19.0
	50×	0.6	11.0
	100×	0.8	4.5

Low-magnification objective lenses

T Plan EPI

Wide field of view

EPI 1x/2.5x

Supports both conventional observations using an analyzer/polarizer and work-efficiency-focused observations without an analyzer/polarizer.

Model	Magnification	NA	Working Distance (mm)
T Plan EPI (brightfield type)	1×	0.03	3.8
	2.5×	0.075	6.5

Apochromatic objective lenses

TU Plan Apo Series

Long WD · Semi-apo · Light weight

EPI/BD 50x/100x/150x

Using Fresnel lenses, these lenses achieve significantly longer operating distances while maintaining the superior chromatic aberration performance of apochromatic lenses.

*Brightfield observation (EPI) objective lens

Model	Magnification	NA	Working Distance (mm)
TU Plan Apo EPI (brightfield type)	50×	0.8	2.0
	100×	0.9	2.0
	150×	0.9	1.5
TU Plan Apo BD (brightfield/darkfield type)	50×	0.8	2.0
	100×	0.9	2.0
	150×	0.9	1.5

Other Lenses

Brightfield objective lense

CFI L Plan EPI 40x

A 40x objective lens is best for metal analysis.

NA: 0.65 **W.D.:** 1.0 mm

Digital Sight series

Microscope Camera

Digital Sight 1000

Equipped with a 2 megapixel CMOS image sensor, it can capture full HD microscope images. By connecting a microscope to this camera and HDMI monitor, movies and images can be captured and saved onto a pre-inserted SD card in the camera.

2.0 megapixel · Color · C mount

Digital Sight 100

Combined with industrial microscopes, the camera delivers 6.5-megapixel resolution (2944×2208 pixels). HDMI monitor output enables on-site observation without a PC.

6.5 megapixel · Color · C mount

Digital Sight 10

This high-resolution camera captures both color and monochromatic images at up to 6,000 x 3,984 pixels. This enables the wide range of images to be captured and then many of them to be stitched together making a single and large combined image.

23.9 megapixel · Color/Mono-chrome · F mount

MaxFrame Rate	30 fps (1920×1080)	60 fps (1600×900)	55 fps (2000×1328)
Max Recordable Pixels	1920×1080	2944×2208	6000×3984

*Digital Sight 100, standalone, delivers up to 17.7-megapixel resolution (4864 x 3648 pixels).

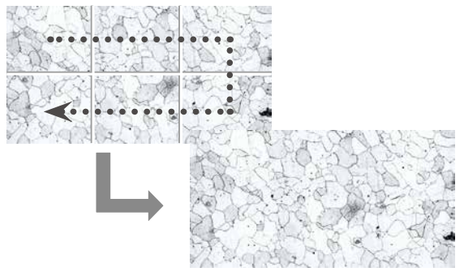
Imaging software NIS-Elements

Using a desktop PC

D · Ar · Br · F

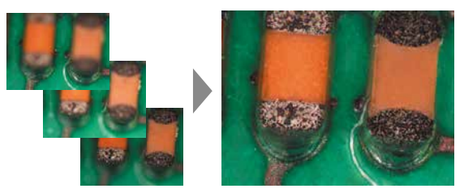
Image Stitching

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.



Using a desktop PC / tablet PC

LE

Free software that allows intuitive control of microscope cameras from the PC. Supports Wi-Fi connectivity when used with the Digital Sight 100.

Wide variety of tools

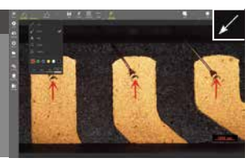
Enables the conducting of simple measurements on images, with input of lines and comments. These can also be written onto and saved with the image, and measurement data can be output.

Measurement function

- Line distance
- Area
- Circle
- Angle
- Circle distance
- Pitch distance

Annotate function

- Line
- Arrow
- Text
- Marker
- Polyline

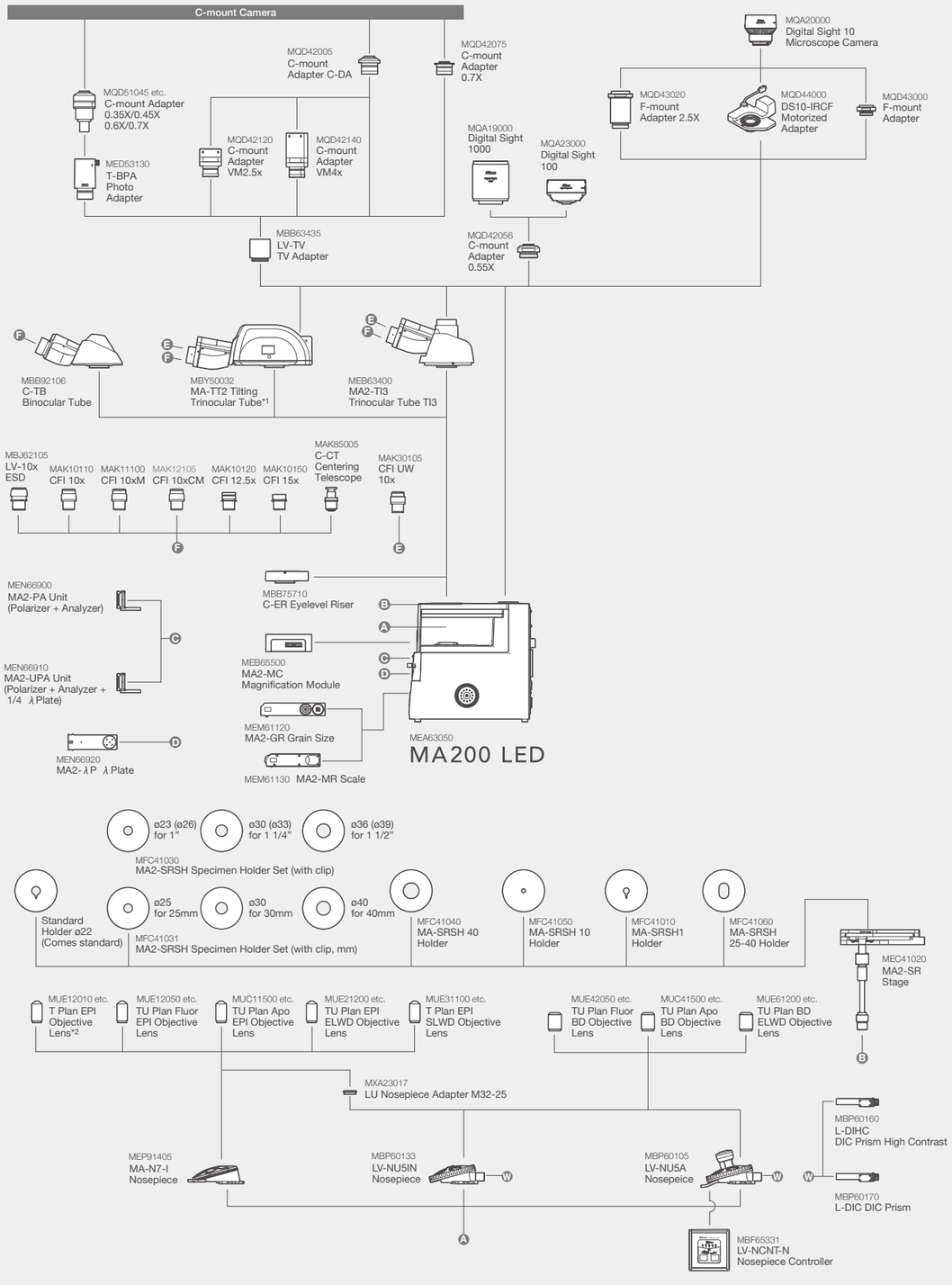


Scene Mode

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.

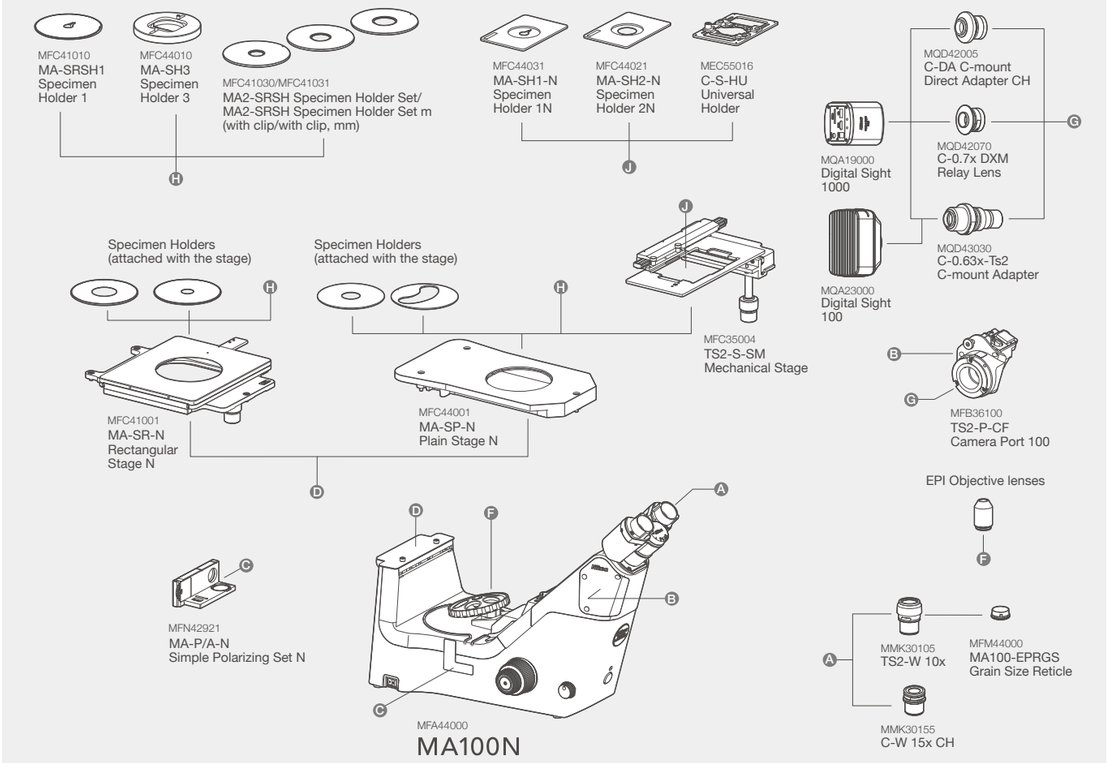
- Wafer/IC
- Metal, Ceramic/Plastic
- Circuit board
- Flat Panel Display

System Diagram (MA200 LED)



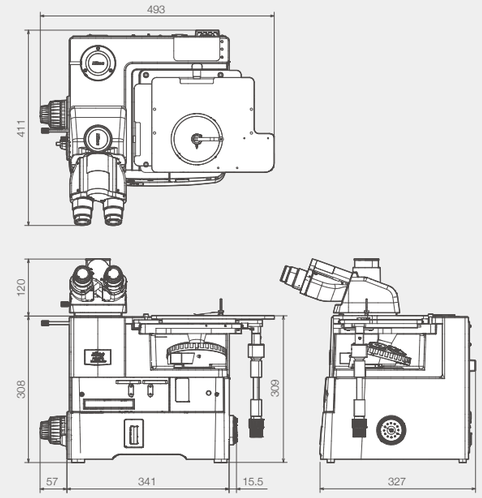
*1: Built to order.
*2: T Plan EPI 1x/2.5x enable clear observation using a conventional analyzer/polarizer, as well as operability-oriented observation without need for an analyzer/polarizer.

System Diagram (MA100N)

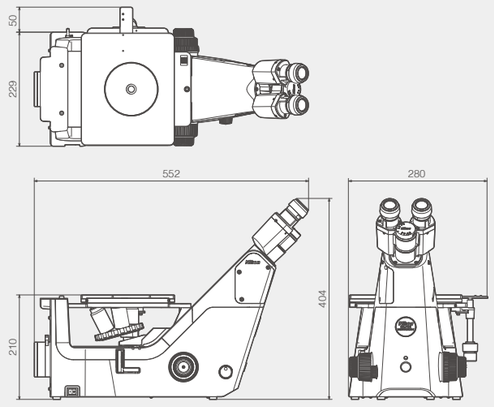


Dimensions (Unit: mm)

MA200 LED



MA100N



Specifications

MA200 LED		
Main body	Focusing mechanism	Focusing nosepiece (Fixed stage) Coaxial coarse/fine adjustment knob (torque adjustable)
		Coarse adjustment of 4.0 mm per rotation, fine adjustment of 0.1 mm per rotation
	Illumination	With flare prevention, Built in UV cut filter, Field diaphragm: dialing continuous variable (centerable)
		Aperture diaphragm: dialing continuous variable (centerable)
		Polarizing block (Selectable with or without 1/4 λ Plate), C-LL-I LED Lamphouse
	Light distribution	Eyepiece tube/Back port: 100/0, 55/45
Optics	CFI60/CFI60-2 system	
Observation image	Surface Image	
Observation method	Bright/Darkfield/Simple Polarizing/DIC	
Revolving nosepieces	LV-NU5IN: Bright/Darkfield/DIC 5 position nosepiece, LV-NU5A: Motorized, Bright/Darkfield/DIC 5 position nosepiece	
	MA-N7-I Brightfield 7 position nosepiece (Intelligent)	
Stage	MA2-SR Mechanical Stage (X/Y flexible handle), Dimension: 295×215 mm, Stroke: 50 mm×50 mm (with distance graduation)	
	Standard accessory: ø22 universal specimen holder (with sample clip)	
Trinocular eyepiece	Siedentopf interpupillary distance adjustment 50-75 mm	
Power source	100-240 V, 50-60 Hz	
Power consumption (max.)	1.2 A 75 W	
Weight	Approx. 25 kg (depends on combination)	
Options	Intermediate magnification	Turret (1×, 1.5×, 2×), Status detection (Output magnification information to main unit)
	Scale	MA2-GR Grain Reticle (ASTM E112-63 grain sizing numbers 1 to 8), Grid Reticle (20 lines, 0.5 mm)
		MA2-MR Scale Reticle (compatible with 5-100×, Read in um, Dialing System)

MA100N	
Optics	CFI60/CFI60-2 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 TI-SM
	TS2-S-SM Mechanical Stage: 126 mm×78 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-SH1-N Specimen Holder 1N (ø15 mm opening)
	MA-SH2-N Specimen Holder 2N (ø30 mm opening), or C-S-HU Universal Holder (30 mm to 65 mm adjustable opening)
Illuminator	Internal power supply white LED light source, condenser built-in (lever operated)
Binocular body	Built-in Siedentopf binocular, 45 inclination angle and 50 to 75-mm interpupillary adjustment, attachable camera port,
	eyepiece/Port: 100/0:0/100
Power consumption (max.)	15W
Weight	Approx. 10 kg

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

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