



Nikon  
*100<sup>th</sup>*  
anniversary

Inverted Metallurgical Microscopes ECLIPSE MA200/MA100N

Inverted Metallurgical Microscopes  
**ECLIPSE**  
**MA200**  
**MA100N**



MA200 / MA100N

Model features



MA200

Thanks to its unique, solid-box structure, the MA200 offers high stability, durability, and a smaller footprint than conventional models as well as easy access to the stage handle, the nosepiece, BF/DF change lever, and diaphragms located at front side.



MA100N NEW

The MA100N is a compact inverted microscope designated for bright field and simple polarizing observations. This model offers cost-effective solution to manufacturing and QA/QC situations in industries, such as automotive/ electronic parts and industrial machinery/tools. This simple but durable microscope enables high contrast image observation and capture.

Compatible observation methods	<table><tr><th>Brightfield</th><th>Darkfield</th><th>Simple polarizing</th><th>DIC</th><th>Fluorescence</th></tr><tr><td>○</td><td>○</td><td>○</td><td>○</td><td>○</td></tr></table>					Brightfield	Darkfield	Simple polarizing	DIC	Fluorescence	○	○	○	○	○	<table><tr><th>Brightfield</th><th>Darkfield</th><th>Simple polarizing</th><th>DIC</th><th>Fluorescence</th></tr><tr><td>○</td><td>—</td><td>○</td><td>—</td><td>—</td></tr></table>					Brightfield	Darkfield	Simple polarizing	DIC	Fluorescence	○	—	○	—	—
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○	—	○	—	—																										
*DIA illuminator is available for transmitted light observation.						*Dedicated reflected illumination models.																								
Compatible illuminators	<ul style="list-style-type: none"><li>● LV-LH50PC 12V50W Halogen Lamp Illuminator</li><li>● C-HGFI HG Precentered Fiber Illuminator (*option)</li></ul>					<ul style="list-style-type: none"><li>● High-intensity white LED Illuminator (internal power supply)</li></ul>																								
Magnification module	<ul style="list-style-type: none"><li>● 1x/1.5x/2x</li></ul>					—																								
Compatible stages	<ul style="list-style-type: none"><li>● MA2-SR Mechanical Stage (stroke: 50 x 50 mm)</li></ul>					<ul style="list-style-type: none"><li>● MA-SR-N Rectangular 3-plate Stage N (stroke: 50 x 50 mm)</li><li>● MA-SP-N Plain Stage N</li><li>● TS2-S- SM Mechanical Stage (stroke: 126 x 78 mm)</li></ul> <p>*Please use in combination with MA-SP-N Plain stage N.</p>																								



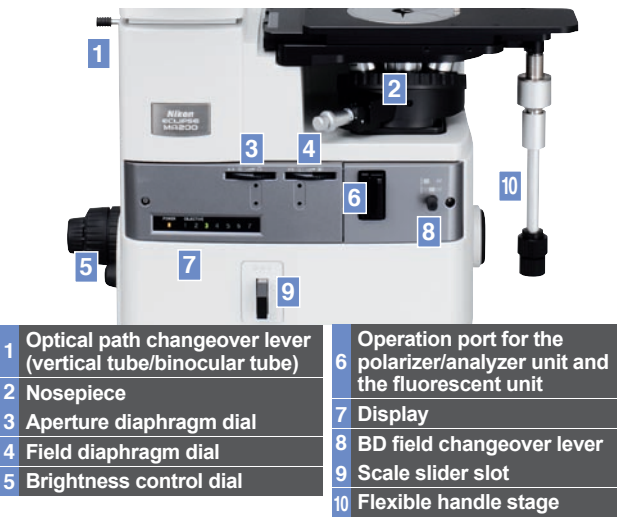
# ECLIPSE MA200

New solution from Nikon:  
An ideal inverted microscope



## Front Operation

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



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.

## 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.

## Evolved Optical 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.

T Plan EPI 1x

Semi-Apochromat

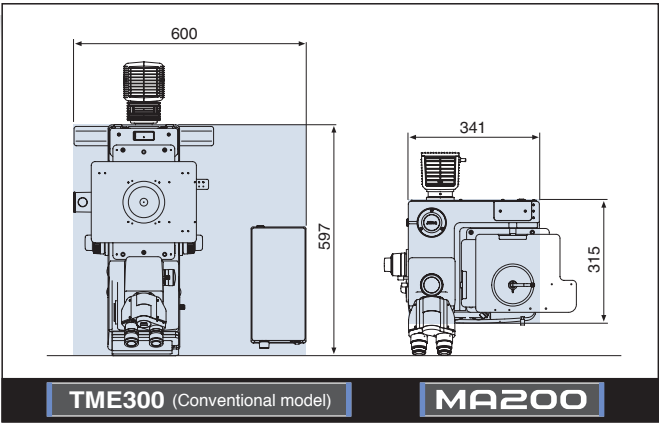
Wide field of view

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.



## Combination with Digital Camera

Integration with digital camera for microscopy "Digital Sight series"

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

- Detection of objective lens information
- Automatic calibration conversion
- Control of objective lens\*1

\*1: Control of the nosepiece from the camera control unit is available in combination with the Motorized Nosepiece and the LV-NCNT-N Motorized Nosepiece Controller.

Stand alone unit DS-L4

Imaging software NIS-Elements

## Accessory

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

DIC

You can choose standard or high contrast type DIC prism for best match to the sample. It is effective for observation of minute step heights.

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

Holders

We offer a full lineup of holders that correspond to a variety of sample shapes.

Polarizing

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.

1 MA2-PA Unit 2 MA2-UPA Unit\* 3 MA2-λ P λ Plate

\*It is suitable for inspecting aluminium sample.

Aluminium sample

Brightfield

Polarizing

Nosepiece & Magnification Module

Enables communication of objective lens position, magnification and intermediate magnification module information with the DS-L3 control unit and NIS-Elements image software.

1 MA2-MC Magnification Module 2 LV-NU51 Intelligent Universal Quintuple Nosepiece

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 JIS G0551/objective lense 10x (100× magnification) ASTM E112/objective lense 10x (100× magnification) 2 MA2-MR Scale



# ECLIPSE MA100N

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

The MA100N is a compact inverted microscope designated for bright field and simple polarizing of industries, Nikon developed this simple but durable model which enables high contrast image frequent lamp replacement.

observations. Responding to the requests from manufacturing and QA/QC sections in a variety observation and capture. Further, the high intensity LED illumination reduces the need for



## 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

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

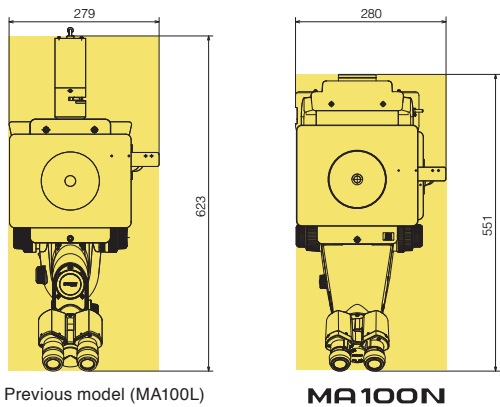
Nikon developed the new MA-SR-N Rectangular Stage especially for the MA100N. The three-plate structure gives the microscope superior control and durability for observation of heavy samples, such as a grinder resin mounted samples.



## Compact Body

Redesign to 11% smaller than the conventional models

The MA100N is a model designated for LED illumination, which enables to save about 11% of footprint and allows users to have more installation choices.



## Aperture Diaphragm

Aperture diaphragm coming standard

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



## Accessory



### Basic stage set

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

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

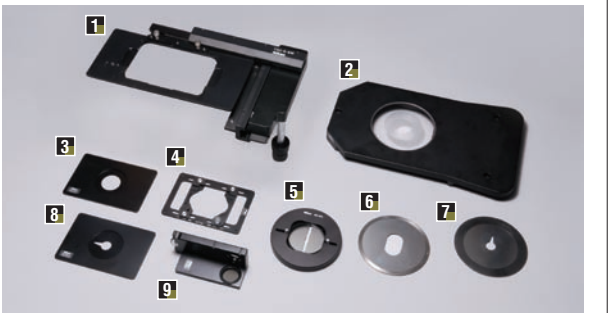
The digital camera is redesigned with new optical system suitable for sample observations. Also, the camera port is located on the side of the microscope to provide highly improved visibility of the stage.

- 1 Microscope Camera DS-Fi3
- 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





CFI60-2

Nikon's CFI60 optical system, highly evaluated for its unique concept of high NA combined with long working distance has further evolved to achieve the apex in long working distance and chromatic aberration correction.

Standard objective lenses

**TU Plan Fluor Series**

EPI/BD 5x/10x/20x/50x/100x

These universal type standard objective lenses enable brightfield, darkfield, simple polarizing, sensitive polarizing, differential interference, and epi-fluorescence observation in one lens.

Long WD

Semi-apo

Light weight

Fly-eye lens



\* Depicted is the brightfield observation (EPI) objective lens.

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

Long working distance objective lenses

**TU Plan ELWD Series**

EPI/BD 20x/50x/100x

Through the use of phase Fresnel lenses, these objective lenses enable long working distances while offering higher-level chromatic aberration correction than conventional objective lenses. This further improves operability for samples with differences in level.

Long WD

Semi-apo

Light weight



\* Depicted is the brightfield observation (EPI) objective lens.

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

Low-magnification objective lenses

**T Plan EPI**

EPI 1x/2.5x

These low-magnification objective lenses enable clear observation using a conventional analyzer/polarizer, as well as operability-oriented observation without need for an analyzer/polarizer.

Semi-apo

Wide field of view



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

Apochromatic objective lenses

**TU Plan Apo Series**

EPI/BD 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. A 50x lens is new to the line-up.

Long WD

Apo

Light weight



\* Depicted is the brightfield observation (EPI) objective lens.

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

Other Lens

Brightfield objective lens

**CFI L Plan EPI 40x**

A 40x objective lens is best for metal analysis.

NA: 0.65 W.D.: 1.0mm



Digital cameras for microscopes

DIGITAL SIGHT SERIES

Microscope camera

Stand-Alone Model

**DS-Ri2**

Capable of expressing images as is, this microscope digital camera offers high resolution, color reproduction, and frame rate. The Stand-Alone Model is capable of high-definition image acquisition without a control unit.

16.25 megapixel

Color

High-resolution

Frame Rate

45fps (1636x1088)

Max Recordable Pixels

4908x3264



Microscope camera

**DS-Fi3** NEW

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

5.9 megapixel

Color

High-resolution

Frame Rate

30fps (1440x1024)

Max Recordable Pixels

2880x2048



Microscope camera control unit

**DS-L4** NEW

DS-Fi3 can be optionally connected to the DS-L4 tablet-style control unit, eliminating the need and space requirements of a desktop PC. DS-L4 has a large number of built-in security for network connectivity.

Scene Mode

Optimal imaging parameters for each sample type and observation method can easily be set through the icons.

Wafer/IC

Metal, Ceramic/Plastic

Circuit board

Flat Panel Display

Variety of Tool Features

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

Measurement (two-point distance)

Measurement function

Point to line 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

Drawing functions

Count marking, Text input, Pen drawing (Straight/Curved)

Imaging software

**NIS-Elements series**

Image Stitching

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

EDF (Extended Depth of Focus)

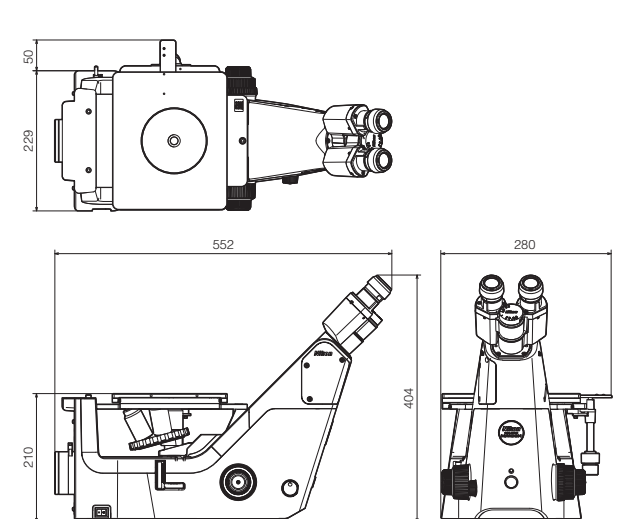
Create a single, all-in-focus image from images of differing focus.

\* See the "Digital Camera Digital Sight Series for Microscopes" catalog for details on Digital Sight features.

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\*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.





## Specifications (MA200)

MA200		
Main body	<b>Focusing mechanism</b>	Focusing nosepiece (Fixed stage) Coaxial coarse/fine adjustment knob (torque adjustable) Coarse adjustment of 4.0 mm per rotation, fine adjustment of 0.2 mm 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 $\lambda$ 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>	CFI60/CFI60-2 system	
<b>Observation image</b>	Surface Image	
<b>Observation method</b>	Bright/Darkfield/Simple Polarizing/DIC/Epi-Fluorescence	
<b>Revolving nosepieces</b>	LV-NU5I: Bright/Darkfield/DIC 5 position nosepiece, LV-NU5A: Motorized Bright/Darkfield/DIC 5 position nosepiece	
	MA-N7-I 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: $\phi$ 22 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 75W	
<b>Weight</b>	Approx. 26 kg (depends on combination)	
<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 $\mu$ m, Dialing System)

## Specifications (MA100N)

MA100N	
<b>Optics</b>	CFI60/CFI60-2 system
<b>Observation image</b>	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</b>	Brightfield 5-position nosepiece
<b>Stage</b>	MA-SR-N Rectangular 3-plate Stage N: 50x50 mm stroke (includes two stage inserts ( $\phi$ 20mm 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 ( $\phi$ 15mm opening or MA-SH3 Specimen Holder 3 with 2mm to 32mm adjustable opening
	MA-SP-N Plain Stage N: 188x310mm - Includes two stage inserts (1) clear acrylic stage insert with $\phi$ 30mm 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
	TS2-S-SM Mechanical Stage: 126mmx78mm 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 ( $\phi$ 15mm opening)
	MA-SH2-N Specimen Holder 2N ( $\phi$ 30mm opening), or C-S-HU Universal Holder (30mm to 65mm adjustable opening)
<b>Illuminator</b>	Internal power supply white LED light source, condenser built-in (lever operated), $\phi$ 25mm filter can be inserted
<b>Binocular body</b>	Built-in Siedentopf binocular, 45 inclination angle and 50 to 75-mm interpupillary adjustment, attachable camera port, eyepiece/Port: 100/0:0/100
<b>Power consumption (max.)</b>	15W
<b>External dimensions</b>	229x551x404 mm (WxDxH)
<b>Weight</b>	Approx. 10kg

Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. April 2017 ©2006-2017 NIKON CORPORATION

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\*Products: Hardware and its technical information (including software)



**WARNING**

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



### NIKON CORPORATION

Shinagawa Intercity Tower C, 2-15-3,  
Konan, Minato-ku, Tokyo 108-6290, Japan  
phone: +81-3-6433-3701 fax: +81-3-6433-3784  
<http://www.nikon.com/instruments/>

ISO 14001 Certified  
for NIKON CORPORATION

ISO 9001 Certified  
for NIKON CORPORATION  
Microscope Solutions Business Unit  
Industrial Metrology Business Unit

### 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](mailto:Sales.US.NM@nikon.com)  
<http://www.nikonmetrology.com/>

### 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](mailto: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 INSTRUMENTS KOREA CO., LTD.

KOREA phone: +82-2-2186-8400 fax: +82-2-555-4415

### NIKON SINGAPORE PTE LTD.

SINGAPORE phone: +65-6559-3651 fax: +65-6559-3668

### NIKON MALAYSIA SDN. BHD.

MALAYSIA phone: +60-3-7809-3688 fax: +60-3-7809-3633

### P.T. Nikon Indonesia KARAWANG SHOWROOM

INDONESIA phone: +62-267 8643949 fax: +62-267 8643950

### Nikon Sales (Thailand) Co., Ltd.

THAILAND phone: +66-2633-5100 fax: +66-2633-5191

### 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 METROLOGY UK LTD.

UNITED KINGDOM phone: +44-1332-811-349 fax: +44-1332-639-881

E-mail: [Sales.UK.NM@nikon.com](mailto:Sales.UK.NM@nikon.com)

### 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](mailto:Sales.France.NM@nikon.com)

### NIKON METROLOGY GMBH

GERMANY phone: +49-6023-91733-0 fax: +49-6023-91733-229

E-mail: [Sales.Germany.NM@nikon.com](mailto:Sales.Germany.NM@nikon.com)