MEASURING MICROSCOPES
MM-SERIES

The lineup provides high accuracy and ease of use and meets a wide range of needs.

Measuring Microscopes

MM-Series

The MM-series are products Nikon is most proud of, with a variety of enhanced features such as higher measurement accuracy and coordination with data processing systems.

MM-200 with E-MAX V2 set

MM-Type
MM-400N/LV

• In addition to the easy-to-use design, an motorized vertical movement mechanism is available.
• Newly developed transmissive lighting enables to switch white and green LED light (MM-400N, MM-800N)
• Improved body rigidity enables the mounting of a stage with a stroke of 300 x 200 mm (only for the MM-800N)
• Digital image measurement is possible with the E-MAX (V2 set) measurement support system.
• The newly developed DP-E1A data processing unit combine high functionality and ease of use.
• The coarse/fine movement switching lever and RESET/SEND button are near the X/Y axis handle of the stage.
• Aperture diaphragm function for transmitted illuminator is available for both MM-400N and MM-800N, supporting the measurement of cylindrical parts.
• Power consumption has been reduced by 10%*1 compared to the former MM-400/MM-800 series models. The manufacturer provides environmentally friendly products and complies with the RoHS Directive and other laws and regulations*2.

*1. Calculated based on Nikon evaluation values *2. Based on Nikon standards, in consideration of domestic and foreign laws and regulations

X-axis handle (around switch)

Y-axis handle (around switch)

U-Type
MM-800N/U

▮ Function Icons

FA — Focusing Aid
The Focusing Aid (FA) ensures accurate Z-axis focusing.

UFA — Universal Epi-illuminator Focusing Aid
A universal epi-illuminator with Focusing Aid (FA) mechanism.

V — Variable Magnification
Two objective lenses can be attached, making magnification changeover easy.

Z-axis Motorized Motion
A dedicated controller provides easy and accurate up/down movements.

2 — Dual Side Coarse/Fine Focus Knob
Coarse/fine focus knobs are on both sides.

L — Built-in Z-axis Linear Scale
Z-axis reading is possible for non-contact height measurement.

T — Trinocular Optical Head
Ideal for configuration with photomicrography equipment.

M — Monocular Optical Head
For applications where cost performance is priority.

U-EPI — Universal Epi-illuminator
Supports a wide range of applications.

LED — LED Illuminator
A high-intensity white LED illuminator for brightfield use.

MM TYPE

Compact	Z Motorized	Variable Magnification	Z-axis Linear Scale	Basic
MM-200	MM-800N/LMT MM-800N/LMFA MM-400N/LMT MM-400N/LMFA	MM-800N/LV MM-800N/LVFA MM-400N/LV MM-400N/LVFA	MM-800N/LT MM-800N/SLT MM-400N/LT MM-400N/SLT MM-800N/LFA MM-400N/LFA	MM-800N/T MM-800N/ST MM-400N/T MM-400N/ST MM-400N/M MM-400N/SM
P5	P6	P6	P7	P7

UNIVERSAL TYPE

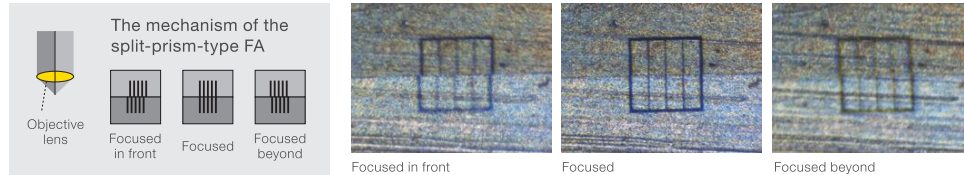| Z Motorized	Z-axis Linear Scale	Basic
MM-800N/LMU MM-400N/LMU	MM-800N/LU MM-800N/SLU MM-400N/LU MM-400N/SLU	MM-800N/U MM-800N/SU MM-400N/U MM-400N/SU
P8	P8	P9

MM TYPE

Highly accurate measurement is achieved with proven optical technology and control functions.

Improved height measurement accuracy

Focusing Aid (FA)

A newly developed split-prism-type FA with a clear pattern makes it possible to accurately focus in the Z-axis and reduces height measurement errors caused by the depth of field of the objective lens. There are two types of patterns, light and dark, and it is possible to switch between them according to the surface properties of the test object.

The mechanism of the split-prism-type FA

Objective lens

Focused in front Focused Focused beyond

Focused in front Focused Focused beyond

Improved lighting performance for wide range of needs

LED Illuminator

The newly developed diascopic LED illuminator has now both white and green light sources (excluding MM-200), and the operator can easily switch the light without inserting or removing filters. The high-intensity white LED lighting has a constant color temperature and the light modulator responds quickly, so efficient high-precision measurement is possible. Furthermore, it has low power consumption and long life.

LED transmissive illuminator LED reflective illuminator

8-segment LED Ring Light CYN-E1 (option for MM-type)

• Highlights the edges of samples that are difficult to see under normal lighting, such as plastic molded products.
• Selectable 8-segment ON/OFF LED with a large amount of light and a 30° angle of incidence.
• Compatible with 1×, 3×, 5×, and 10×measuring microscope objective lenses

UNIVERSAL TYPE

Enhanced height measurement and a variety of illuminators make possible both an expanded observation area and high-precision measurement

Enhanced height measurement

Focusing Aid (FA)

There is a newly developed split-prism type FA. It enables more accurate focusing and reduces measurement errors caused by the depth of field of the objective lens. (Must be used with the LV-UEPI FA illuminator.)
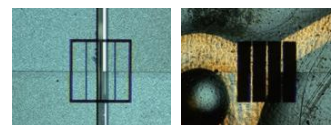
Dark line pattern Light line pattern

Lineup of a variety of illuminators

• **Universal Reflective Illuminator LV-UEPI2**
  Optimal illumination conditions can be linked to the field of view aperture, aperture diaphragm, and shutter.
• **Universal Reflective Illuminator LV-UEPI**
  Automatically opens the field of view aperture and aperture diaphragm when switching between brightfield and darkfield.
• **FA Reflective Illuminator LV-UEPI FA**
  Has the FA for more precise height measurement.

4

MM-200

Compact, light, precise and easy to use measuring microscope for dimensioning and tolerancing

Shortens measurement time with its builtin 50 x 50 mm stage and rotating table.

Built-in light sources are all long-life white LEDs. The optional LED ring light enhances edge observation with the use of an oblique illumination angle.

A3 size

A3 size

Features a space-saving design with a footprint equivalent to an A3 size sheet, or 420 x 297 mm*.

*Value does not include handles

Get digital image measurement with a video head, E-MAX, and color camera (optional)

E-MAX set

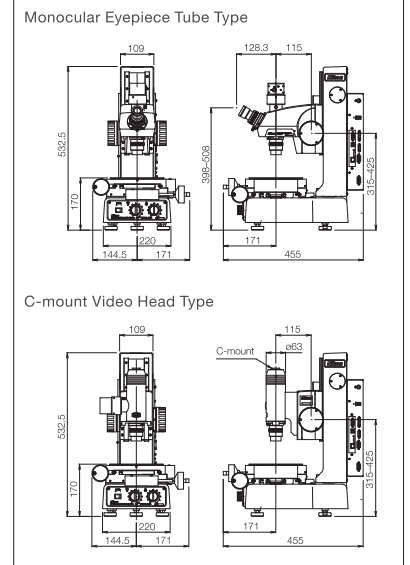Combine digital camera with E-MAX software for advanced edge detection.

MM-200 with E-MAX V2 set

▎ Main Specifications

Type	Monocular Eyepiece Tube Type	C-mount Video Head Type
Optical head	MM-200 monocular optical head	C-mount video head for MM-200
XYZ stroke	50 x 50 x 110 mm	
Stage accuracy	2.5 + L/50 µm (with LEC), 3 + L/50 µm (L = measurement length in mm)	
Scale resolution	0.01 / 0.1 (default) / 1 / 10 µm	
Magnification accuracy	0.1 %	
Objective lenses (WD)	Standard: 3× (75.5 mm) Optional: 1× (79 mm), 5× (64 mm), 10× (48 mm)	
Light sources	Standard: diascopic/episcopic (white LED) Optional: 8-segmented ring light (white LED)	
Dimensions & weight	316 x 455 x 533 mm (W x D x H), 40 kg	
Input voltage range	100 - 240 V (Max. 1.8 A)	

▎ Dimensional Diagram (Unit: mm)

Monocular Eyepiece Tube Type

109 128.3 115
532.5 398–508
170 315–425
144.5 220 171
171 455

C-mount Video Head Type

109 115
C-mount ø63
532.5 315–425
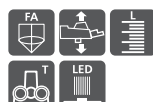170 220
144.5 171 171
455

5

MM TYPE

Z Motorized

Vertical movement is motorized so it is easy on the operator, and precise movements are possible. When combined with the FA trinocular observation unit height measurement error can be minimized.

MM-800N/LMT
MM-400N/LMT

MM-800N/LMFA
MM-400N/LMFA

Variable magnification

Two objective lenses, low magnification and high magnification, can be mounted and it is easy to switch between them. A single microscope can efficiently perform wide-field measurement at low magnification and high-precision height measurement at high magnification.

MM-800N/LV
MM-400N/LV

MM-800N/LVFA
MM-400N/LVFA

Z-axis linear encoder

Dual-axis handle type with built-in Z-axis scale. An FA trinocular optical head or non-FA trinocular optical head can be selected according to the application.

MM-800N/LT
MM-800N/SLT
MM-400N/LT
MM-400N/SLT

MM-800N/LFA
MM-400N/LFA

Basic

These are basic types for the MM-800N and 400N measuring microscopes with excellent cost performance. The optical head and stage can be selected according to the measurement application. (for XY measurement only)

MM-800N/T
MM-800N/ST
MM-400N/T
MM-400N/ST

MM-400N/M
MM-400N/SM

Function Icons

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Z-axis Motorized Motion
A dedicated controller provides easy and accurate up/down movements.

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Coarse/fine focus knobs are on both sides.

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Ideal for configuration with photomicrography equipment.

M — Monocular Optical Head
For applications where cost performance is priority.

U-EPI — Universal Epi-illuminator
Supports a wide range of applications.

LED — LED Illuminator
A high-intensity white LED illuminator for brightfield use.

Main Specifications (left)

Model	MM-800N/LMT, MM-800N/LMFA	MM-800N/LV, MM-800N/LVFA	MM-400N/LMT, MM-400N/LMFA	MM-400N/LV, MM-400N/LVFA
Z-axis movement	Motorized (max. speed: 10 mm/sec)	Manual (dual side coarse/fine focus knob)	Motorized (max. speed: 10 mm/sec)	Manual (dual side coarse/fine focus knob)
Optical head	Trinocular optical head, Trinocular optical FA head	Variable magnification optical head, Variable magnification optical FA head	Trinocular optical head, Trinocular optical FA head	Variable magnification optical head, Variable magnification optical FA head
Eyepiece inclination angle	25°			
Eyepiece	CFWN10X (Field No. 20)			
Objective lenses (WD)	Measuring microscope objectives 1X (79 mm), 3X (75 mm), 5X (64 mm), 10X (48 mm), 20X (20 mm), 50X (15 mm), 100X (4 mm)	Low magnification: 1X (79 mm), 3X (75 mm), 5X (64 mm), 10X (48 mm) High magnification: 5X (64 mm), 10X (48 mm), 20X (20 mm), 50X (15 mm), 100X (4 mm)	Measuring microscope objectives 1X (79 mm), 3X (75 mm), 5X (64 mm), 10X (48 mm), 20X (20 mm), 50X (15 mm), 100X (4 mm)	Low magnification: 1X (79 mm), 3X (75 mm), 5X (64 mm), 10X (48 mm) High magnification: 5X (64 mm), 10X (48 mm), 20X (20 mm), 50X (15 mm), 100X (4 mm)
Stage[*1]	MHS 12x8C, MHS 10x6B, MHS 8x6B, MHS 6x4B, MHS 4x4B, MHS 2x2B		MHS 6x4B, MHS 4x4B, MHS 2x2B	
Light Source	Diascopic: White LED (standard), Green LED (standard) / Episcopic: White LED			
Maximum sample height	200 mm		150 mm	
Dimensions (WxDxH), Weight (approx.)[*2]	380(W)×703(D)×725(H)mm, Approx. 72 kg		300(W)×567(D)×638(H)mm, Approx. 50 kg	

*1: When attaching a MHS 6x4B, MHS 4x4B, or MHS 2x2B stage to MM-800N, a stage adapter is required.
*2: Excludes stage and eyepiece

Main Specifications (right)

Model	MM-800N/L, MM-800N/LFA, MM-800N/SLT	MM-400N/L, MM-400N/LFA, MM-400N/SLT	MM-800N/T, MM-800N/ST	MM-400N/T, MM-400N/ST	MM-400N/M
Z-axis movement	Manual (dual side coarse/fine focus knob)				
Optical head	Trinocular optical head, Trinocular optical FA head			Trinocular optical head	Monocular optical head
Eyepiece inclination angle	25°				30°
Eyepiece	CFWN10X (Field No. 20)				MM Eyepiece 10X (Field No. 20)
Objective lenses (WD)	Measuring microscope objectives 1X (79 mm), 3X (75 mm), 5X (64 mm), 10X (48 mm), 20X (20 mm), 50X (15mm), 100X (4 mm)				
Stage[*1]	MHS 12x8C, MHS 10x6B, MHS 8x6B, MHS 6x4B, MHS 4x4B, MHS 2x2B	MHS 6x4B, MHS 4x4B, MHS 2x2B	MHS 12x8C, MHS 10x6B, MHS 8x6B, MHS 6x4B, MHS 4x4B, MHS 2x2B	MHS 6x4B, MHS 4x4B, MHS 2x2B	
Light Source	Diascopic: White LED (standard), Green LED (standard) / Episcopic: White LED				
Maximum sample height	200 mm	150 mm	200 mm	150 mm	
Dimensions (WxDxH), Weight (approx.)[*2]	380(W)×703(D)×725(H)mm, Approx. 72 kg	300(W)×567(D)×638(H)mm, Approx. 50 kg	380(W)×703(D)×725(H)mm, Approx. 72 kg	300(W)×567(D)×638(H)mm, Approx. 50 kg	

*1: When attaching a MHS 6x4B, MHS 4x4B, or MHS 2x2B stage to MM-800N, a stage adapter is required. 2: Excludes stage and eyepiece
*There is no measurement controller on the back side for S/SL type. Connection is made with the DP unit.

UNIVERSAL TYPE

Z Motorized

Universal-type with motorized vertical movement with universal reflective illuminator capable of brightfield, darkfield, simple polarization, and differential interference observation.

MM-800N/LMU
MM-400N/LMU
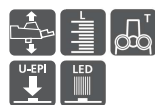
Z-axis linear encoder

Dual-axis handle type with built-in Z-axis scale. Combining with the LV-UEPI FA reflective illuminator, high-precision height measurements can be made.

MM-800N/LU
MM-800N/SLU

MM-400N/LU
MM-400N/SLU

Main Specifications

Model	MM-800N/LMU	MM-400N/LMU	MM-800N/LU , MM-800N/SLU	MM-400N/LU, MM-400N/SLU
Z-axis movement	Motorized (max. speed: 10 mm/sec)		Manual (dual side coarse/fine focus knob)	
Optical head	C-TB binocular tube, LV-TI3 trinocular eyepiece tube, LV-TT2 tilting trinocular eyepiece tube (with built-in reticle)			
Eyepiece	CFI10X (Field No. 22), CFI10XCM (Field No. 22)			
Objective lenses	TU Plan FLUOR EPI series, TU Plan FLUOR BD series, CFI L Plan EPI CR series			
Stage[*1]	MHS 12x8C, MHS 10x6B, MHS 8x6B, MHS 6x4B, MHS 4x4B, MHS 2x2B	MHS 6x4B, MHS 4x4B, MHS 2x2B	MHS 12x8C, MHS 10x6B, MHS 8x6B, MHS 6x4B, MHS 4x4B, MHS 2x2B	MHS 6x4B, MHS 4x4B, MHS 2x2B
Light Source	Diascopic: White LED (standard), Green LED (standard)			
	Episcopic: Universal epi-illuminator with Focusing Aid LV-U EPI FA, Universal epi-illuminator LV-U EPI2[*2], Universal epi-illuminator U-EPI[*2], MM-LL LED Lamphouse (option for LV-U EPI and LV-U EPI2)[*2]			
Maximum sample height	200 mm	150 mm	200 mm	150 mm
Dimensions (WxDxH), Weight (approx.)[*3]	380(W)×703(D)×725(H)mm, Approx. 72 kg	300(W)×567(D)×638(H)mm, Approx. 50 kg	380(W)×703(D)×725(H)mm, Approx. 72 kg	300(W)×567(D)×638(H)mm, Approx. 50 kg

[*1]: When attaching a MHS 6x4B, MHS 4x4B, or MHS 2x2B stage to MM-800N, a stage adapter is required.
[*2]: Used with TI-PS100W power supply + MM-LH60PC   **[*3]:** Excludes stage and eyepiece
*There is no measurement controller on the back side for S/SL type. Connection is made with the DP unit.

Basic

Basic universal-type with universal reflective illuminator capable of brightfield, darkfield, simple polarization, and differential interference observation. (for XY measurement only)

MM-800N/U
MM-800N/SU

MM-400N/U
MM-400N/SU

Main Specifications

Model	MM-800N/U, MM-800N/SU	MM-400N/U, MM-400N/SU
Z-axis movement	Manual (dual side coarse/fine focus knob)	
Eyepiece Tube	C-TB binocular tube, LV-TI3 trinocular eyepiece tube, LV-TT2 tilting trinocular eyepiece tube (with built-in reticle)	
Eyepiece	CFI10X (Field No. 22), CFI10XCM (Field No. 22)	
Objective lenses	TU Plan FLUOR EPI series, TU Plan FLUOR BD series, CFI L Plan EPI CR series	
Stage[*1]	MHS 12x8C, MHS 10x6B, MHS 8x6B, MHS 6x4B, MHS 4x4B, MHS 2x2B	MHS 6x4B, MHS 4x4B, MHS 2x2B
Light Source	Diascopic: White LED (standard), Green LED (standard)	
	Episcopic: Universal epi-illuminator with Focusing Aid LV-U EPI FA, Universal epi-illuminator LV-U EPI2[*2], Universal epi-illuminator U-EPI[*2], MM-LL LED Lamphouse (option for LV-U EPI and LV-U EPI2)[*2]	
Maximum sample height	200 mm	150 mm
Dimensions (WxDxH), Weight (approx.)[*3]	380(W)×703(D)×725(H)mm, Approx. 72 kg	300(W)×567(D)×638(H)mm, Approx. 50 kg

[*1]: When attaching a MHS 6x4B, MHS 4x4B, or MHS 2x2B stage to MM-800N, a stage adapter is required.
[*2]: Used with TI-PS100W power supply + MM-LH60PC   **[*3]:** Excludes stage and eyepiece
*There is no measurement controller on the back side for S/SL type. Connection is made with the DP unit.

Function Icons

FA Focusing Aid
The Focusing Aid (FA) ensures accurate Z-axis focusing.

UFA Universal Epi-illuminator Focusing Aid
A universal epi-illuminator with Focusing Aid (FA) mechanism.

V Variable Magnification
Two objective lenses can be attached, making magnification changeover easy.

Z-axis Motorized Motion
A dedicated controller provides easy and accurate up/down movements.

2 Dual Side Coarse/Fine Focus Knob
Coarse/fine focus knobs are on both sides.

L Built-in Z-axis Linear Scale
Z-axis reading is possible for non-contact height measurement.

T Trinocular Optical Head
Ideal for configuration with photomicrography equipment.

M Monocular Optical Head
For applications where cost performance is priority.

U-EPI Universal Epi-illuminator
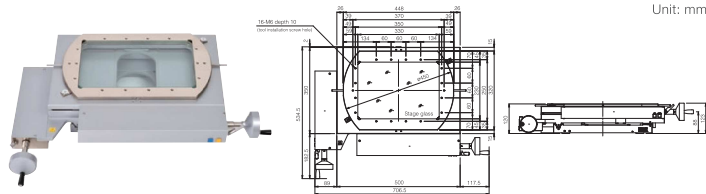Supports a wide range of applications.

LED LED Illuminator
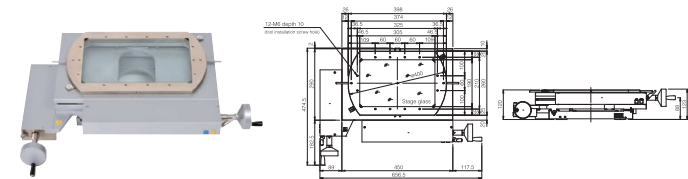A high-intensity white LED illuminator for brightfield use.

ACCESSORIES

Stages
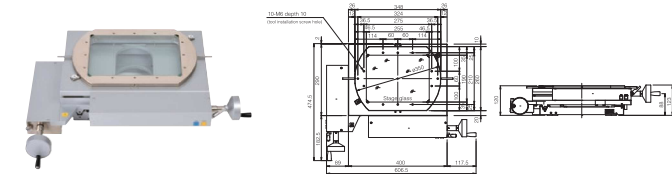
Stages for MM-800N series
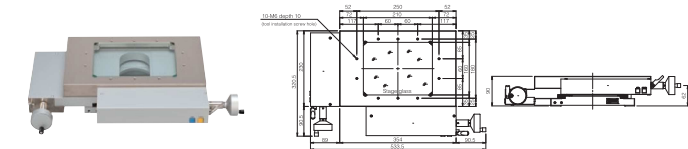
PS 12x8C Stage

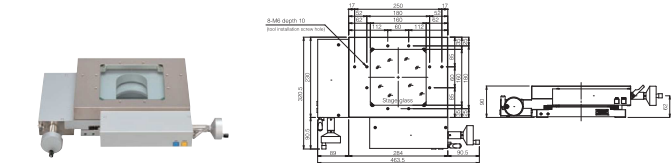**PS 10x6B** Stage

PS 8x6B Stage

Unit: mm

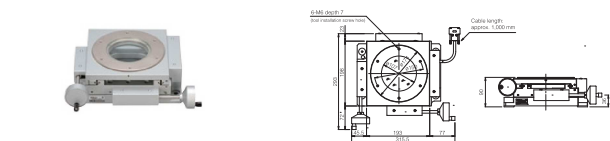### Stages for MM-400N series

PS 6x4B Stage

PS 4x4B Stage

PS 2x2B Stage

Stage specifications

Type	Surface area (mm)	Stage glass dimensions (mm)	Stroke (mm)	Reading method	Min. reading (µm)	Rotation range	Tool installation screw hall	Loading capacity (kg)	Weight (approx.)(kg)
PS 12x8C	448×320	330×230	300×200	Linear encoder	0.01	±3° (Swivel plate)	16-M6 depth 10	20	67
PS 10x6B	398×260	305×190	250×150				12-M6 depth 10		51.5
PS 8x6B	348×260	255×190	200×150				10-M6 depth 10		48.5
PS 6x4B	354×230	210×160	150×100				10-M6 depth 10	15	27.5
PS 4x4B	284×230	160×160	100×100			—	8-M6 depth 10		23.5
PS 2x2B	Ø174	Ø107	50×50			360° (Rotating table)	6-M6 depth 7	5	15.5

MM Series High-Precision Type

Nikon offers high-precision type measuring microscopes for customers who need higher precision. Type 1 is calibrated by a certified engineer for customer site.

Accuracy (with MM main body)	Stage
2.0 + L/50 µm (Type 1)* 2.5 + L/50 µm (Standard Type; calibration data included)*	MHS 12x8C, MHS 10x6B, MHS 8x6B, MHS 6x4B, MHS 4x4B, MHS 2x2B

To ensure accuracy, both types require a temperature controlled room.
*Please contact Nikon for details regarding Type 1.

Combination precision (example)

- Standard precision: (2.5+L/50) µm
- High-precision Type 1: (2+L/50) µm

Error +2.5 0 -2.5

Travel distance   300 mm
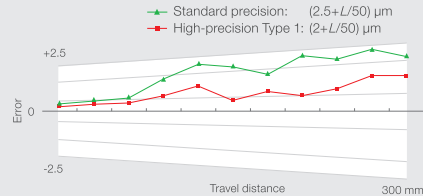
Stage Accessories

Stage Adapter

Used to mount PS 6x4B, PS 4x4B, or PS 2x2B stages to MM-800N.

Rotating Tables

Rotating Table Type 4
For PS 12x8C*, PS 10x6B, PS 8x6B

Unit: mm

Tool installation screw holes (6-M6 depth 9) are located at six equidistant positions around the circumference.

*When using rotating table type 4, stage stroke is limited for X and Y axis.
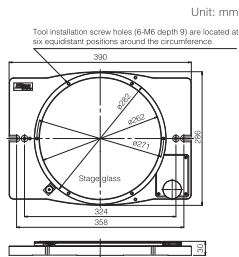
Rotating Table Type 3
For PS 6x4B, PS 4x4B

Unit: mm
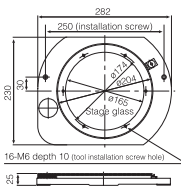
Rotating table specifications

Table	Table size(mm)	Glass insert size (mm)	Rotation range	Tool installation screw hole	Weight (kg)
Type 4	ø282	ø262	360° (uncalibrated)	6-M6 depth 9	Approx. 8
Type 3	ø204	ø165	360° (uncalibrated)	6-M6 depth 10	Approx. 5

Large Stage Adjustment Knob

Enables fine adjustment of swivel plate rotation for PS 12x8C, PS 10x6B and PS 8x6B.

Tilting Center Fixture A

Used to hold machined samples for MM-200, PS 2x2B, and Rotating Table Type 3.

Max. sample diameter and length when held level (mm)	Center height (mm)	Tilting angle	Weight (kg)
ø68×120	45	10°(in 1° increment)	Approx. 2.2

ACCESSORIES

Objectives 1x, 3x, 5x, 10x, 20x, 50x, 100x

These compact objectives feature long working distance and excellent resolution.
Almost all have the same parfocal distances and come with lens adapters for quick and easy replacement.

• 3x objective is included with the measuring microscope

Magnification	1×	3×	5×	10×	20×	50×	100×
WD (mm)	79	75	64	48	20	15	4
NA	0.03	0.09	0.13	0.2	0.4	0.55	0.75

Illuminators

8-Segment LED Ring Light

Enables illumination from eight directions.

• Can be used with MM-400N/800N and E-MAX
• RS-232C cable comes standard
• E-BUS cable is required to control with E-MAX

Ring Illuminator Adapter

Can be used to mount fiber-optic, fluorescent lamp, and LED ring illuminator.

• Cannot be mounted with 8-segment LED Ring Light

Fiber-optics Illuminator Set

Offers easily adjustable brightness. The ring fiber illuminator minimizes shadows caused by any unevenness on the sample surface. The bifurcated fiber enables illumination from two directions.

• Cannot be used with metallurgical microscope objectives
• Cannot be mounted when using 20x, 50x and 100x measuring microscope objectives

LED Ring Illuminator

Ideal for use in a production environment as LEDs have long product life. Uses white LEDs with a variable intensity control and constant color temperature.

• Cannot be used with metallurgical microscope objectives
• Cannot be mounted when 20x, 50x and 100x measuring microscope objectives are used

Protractor Eyepieces (for MM Type only)

Note: Monocular adapter is required when using these eyepieces with trinocular tubes

Digital Protractor Eyepiece*

Rotate crosshairs in the viewfield to measure angles.
Display unit: 1 minute, 10 minutes

*Not available for S and SL models

1-Minute Reading Eyepiece

Viewfield includes crosshairs and 60° lines. Angle indexes are read by appropriate microscopes.
Measuring range: 360°

10-Minute Reading Eyepiece

Viewfield includes crosshairs and angle indexes. When the knurled ring at the lower section of the eyepiece tube is turned, the crosshairs and the vernier both rotate 180°.
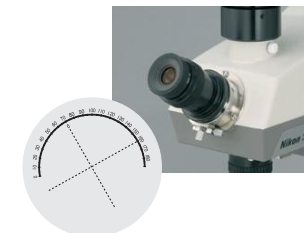
Direct C-mount Adapter

Used to install C-mount camera on the measuring microscope.
• LV-TV tube is required

ACCESSORIES

The use of the CFI60-2 series of high-performance objective lenses is possible, further improving optical performance

The TU Plan Fluor series of standard objective lenses with both excellent chromatic aberration correction and long working distances

This is a universal-type standard objective lens that make possible all observation methods with a single objective lens: brightfield, darkfield, simple polarization, differential interference, and epifluorescence using not only the visible region but also the UV region.

This new optical system combines excellent chromatic aberration correction and long working distances. The edge detection for the location being measured and operability have been improved, and a wider variety of samples can be handled.

TU Plan Fluor series

• Brightfield

Type	Magnification	NA	W.D.(mm)
TU Plan Fluor EPI	5x	0.15	23.5
	10x	0.30	17.5
TU Plan EPI ELWD	20x	0.40	19.0
	50x	0.60	11.0
	100x	0.80	4.5

• Brightfield/Darkfield

Type	Magnification	NA	W.D.(mm)
TU Plan Fluor BD	5x	0.15	18.0
	10x	0.30	15.0
TU Plan BD ELWD	20x	0.40	19.0
	50x	0.60	11.0
	100x	0.80	4.5

Objective lenses with cover glass thickness correction rings
The CFI L Plan EPI CR Series

These are objective lenses with correction rings. High-contrast observation of cells and patterns is possible without being affected by the cover glass.

The CFI L Plan EPI CR series with correction rings

• With correction mechanism

Type	Magnification	NA	W.D.(mm)	Glass thickness correction range (mm)
CFI L Plan EPI CR	20x	0.45	10.9–10.0	0–1.2
CFI L Plan EPI CR	50x	0.7	3.9–3.0	0–1.2
CFI L Plan EPI CRA	100x	0.85	1.2–0.85	0–0.7
CFI L Plan EPI CRB	100x	0.85	1.3–0.95	0.6–1.3
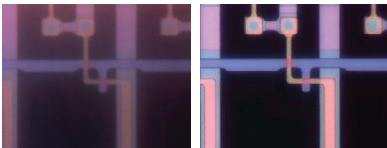
No correction for cover glass thickness (with 50× objective lens)

Corrected for cover glass thickness of 0.7 mm (with 50x objective lens)

Environmental Considerations

The TU Plan Fluor and CFI L Plan EPI CR series use eco-friendly glass that does not contain lead, arsenic, or toxic substances, making them meet the environmental needs of the times.

Tilting trinocular eyepiece tube

Tilting trinocular eyepiece tube

The LV-TT2 tilting trinocular eyepiece tube with built-in reticle offers comfort to all users, regardless of their viewing positions. The optical path changeover of 100:0/20:80 allows simultaneous use of a monitor.

Manual nosepieces

A variety of manual control nosepieces are available to suit all needs.

	Brightfield	Darkfield	DIC
C-N6	○	—	—
L-NBD5	○	○	—
L-NU5	○	○	○

○ : Supported   — : Not supported

New light source for EPI illuminators

A newly designed compact LED EPI lamphouse for brightfield, darkfield, and DIC observations has been added to the existing lineup.

Templates

The following dedicated templates are available to facilitate profile comparison and measurements. Templates are designed for 3x objectives.

• Standard angle templates (standard)
• Concentric (diameter 0.2-4.6)*

*Cannot be attached to monocular type
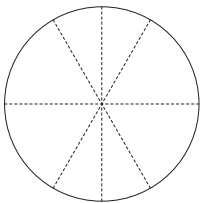
Standard
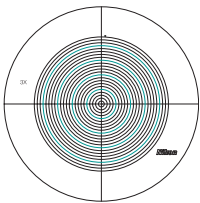
Concentric

ACCESSORIES

E-Max Series

FOV Measurement with advanced digital image processing technology

Combined with the V2 digital camera, E-MAX series software provides various advanced measurements and processing functions, ranging from 2D data processing and image measurement, to data storage. Automated edge detection with sub-pixel processing enables more precise and repeatable measurement.

E-MAX V2 set

DP-E1A

Data Processor with improved accuracy and ease of use

Effectively used in combination with a measuring microscope/profile projector, the DP-E1A quickly calculates geometrical features with simple and interactive operations. Measurement results are automatically memorized as teaching steps and can be easily used as a measurement routine.

Simple & interactive operation
Feature Oriented Operation allows the user to conduct measurements by following the graphics, providing a seamless measuring environment. Measurement results are automatically memorized as teaching steps and can be easily used as a measurement routine.

GD&T compliance
Geometric Dimensioning & Tolerancing defined by the ANSI Y 14.5M Specification is supported. In addition to Location Tolerancing such as True Position, MMC and LMC, determination of Form, Orientation and Runout can be conducted interactively.

Multi-language support
English, German, Japanese and various other Asian and European languages are supported.

LCD
Coordinate reset keys
DRO display
List
Measurement prompts, results
Function keys
Measurement code keys
File control keys
Numeric keys
Macro keys
Data load key

Application Software for Measurement Support/Data Processing System

Custom Fit QC: Report and chart generating

Suitable for lot control of inspection data such as maximum value, minimum value, range, standard deviation, and process capability index.

• Customization of inspection result sheets are possible, in addition to the 10 standard sheets
• BMP and JPEG files can be pasted onto the inspection result sheets
• Graphs can be automatically generated
• Displays are adjustable between degree/minute/second
• Easy to generate histograms, X-R control charts, and scatter diagrams
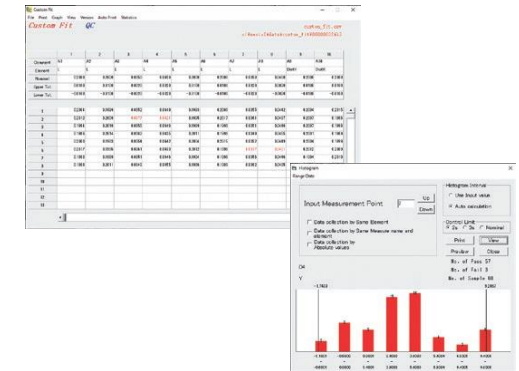
Custom Create: Direct link to Excel worksheets

Measurement data from counters and/or data processors can be transferred directly to Excel sheets. Multiple worksheets can be transferred at once, achieving efficient measurements.

• Compatible measuring instruments: MM-400/800 series, DP-E1A, V-20B, V-12B
• Allows data transfer to customized inspection-result sheet forms
• 3 standard inspection result sheets are available
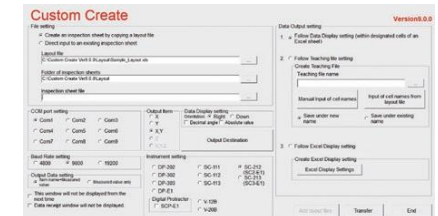
Operating environment:
• Windows®7 or Windows®10   • Microsoft Excel® 2003 or later   • Required memory: 512MB (min)   • Codevelopment: Aria Co., Ltd.

ACCESSORIES

Counters

3-Axis/2-Axis Counters

The display unit can be mounted on either side of the main body. Counters can be connected with data processors and digital printers via the RS-232C port.

3-axis counter

2-axis counter

XY Reset Switch

Can be attached to the main body to easily reset values while using the stage.

X/Y-axis

Counter Remote Switch

Enables remote control of the counter's RESET and SEND.

Digital Thermal Printer TSP743II

Connect to the MM-400N/800N control box to print out values from the counter.

TSP743 II

Foot Switch

Used to send load command to DP-E1A. Frees both hands to enhance measurement efficiency.

Calibration Scale 300 mm

Used to calibrate feeding accuracy of stage up to 300 mm. The scale is made of low expansion glass to minimize thermal error. Both 10 mm-interval sensor patterns and calibrations are provided.
Accuracy: Within 1 μm against compensation values.

Vibration Isolation Table

Provides a stable, even surface by reducing floor vibrations. Compatible with measuring microscopes, data processing systems, external light modulators, and computers.

MM-400N/800N	
Installation part (WxD)	450(W)×689(D)mm
Dimensions (WxDxH)	1058(W)×689(D)×751(H)mm

▌ Dimensional Diagram

MM-400N/M
PS 2x2B Stage
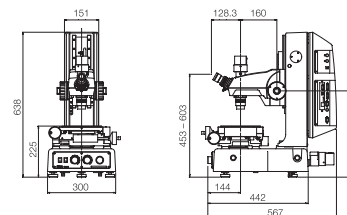
MM-800N/LM
PS 12x8C Stage
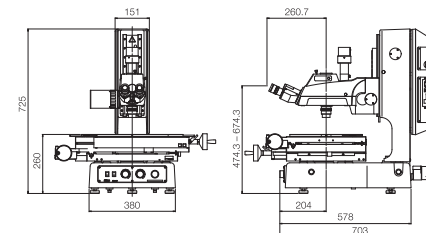
MM-400N/LV
PS 6x4B Stage
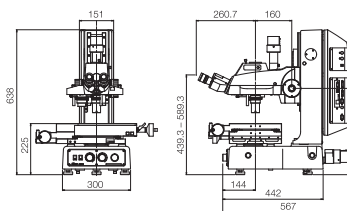
MM-400N/LUFA
PS 6x4B Stage
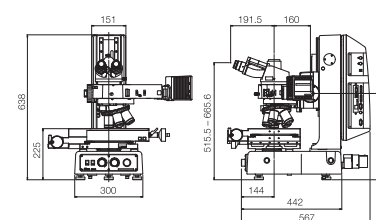
MM-400N/L
PS 4x4B Stage

MM-800N/LU
PS 8x6B Stage

MM-800N/L
PS 10x6B Stage

MM-800N/LMU
PS 12x8C Stage

System Diagram (MM-Type)

MBJ99000 Eye Guard for CFWN 10x Eyepiece

EDG40105 MM Eyepiece Lens 10x for Monocular Head

EDG20100 Eyepiece 10x

EXA20340 Monocular Eyepiece Tube Adapter

EDG20600 Protractor 10' Reading

EDG20701 Protractor 1' Reading A

EDG50700 Digital Protractor for Monocular Head

MBJ20105 ME CFWN 10x

EDB40205 Binocular Tube

PPB27700 PS 2x2B Stage

PPG40000 Tilting Center Fixture A

PPE42100 Rotating Table Type 3

PPB37700 PS 4x4B Stage

PPB47700 PS 6x4B Stage

PPE50110 Rotating Table Type D

EDH40400 Concentric Circles Reticle (0.2–4.6mm diameters in 0.2mm increments)

EDD50001 LED Epi-illuminator

EDD52001 Epi-illuminator for MM400/800N Monocular Optical Head

MQD42005 C-mount Adapter

Digital Cameras for Microscopes Digital Sight Series

C-mount Camera

MBB63435 LV-TV Tube

PXA20225 Large Stage Adjustment Knob

EFH28000 MM Stage Adapter for MM800N

PPB57700 PS 8x6B Stage

EDC50005 Trinocular Optical Head

EDC50200 Trinocular Optical FA Head

EDC51005 Variable Magnification Optical Head

EDC51200 FA Variable Magnification Optical Head

EDC52005 Monocular Optical Head

EDF50001 Measuring Microscope Objective Adapter

Objective Lens

EXK30083 8-segment Ring Illuminator for Variable Magnification Optical Head

Objective Lens

PPB67700 PS 10x6B Stage

EDF20010 Objective Lens 1x
EDF20031 Objective Lens 3x
EDF20052 Objective Lens 5x
EDF20102 Objective Lens 10x
EDF20201 Objective Lens 20x
EDF20501 Objective Lens 50x
EDF21001 Objective Lens 100x

PPB77700 PS 12x8C Stage

EDA64300 MM-400N/S
EDA64400 MM-400N/SL
EDA64000 MM-400N
EDA64100 MM-400N/L
EDA64200 MM-400N/LM

EFB50200 2-axis Digital Counter SC2-E1

EFB50300 3-axis Digital Counter SC3-E1

EFB51500 Data Processor Console DP-E1A

PPL00100 Counter Remote Switch

EFE00202 Foot Switch 4

PPL00200 XY Reset Switch

Printer

EDA68300 MM-800N/S
EDA68400 MM-800N/SL
EDA68000 MM-800N
EDA68100 MM-800N/L
EDA68200 MM-800N/LM

Data Processing Software E-MAX

EXA20409 Illuminator Adapter

MME39610 C-FID Bifurcated Fiber Light Guide

MNF52760 LED Light Source for Fiber Illuminator

EXK30024 8-segment LED Ring Light

MXK60234 LED Ring Illuminator

MME49600 C-FID2 Double Arm Fiber Light Guide

PAE00104 MM AC Adapter

Power Cord (local supply)

Power Source Unit for Motorized Z-axis

Motorized Z-axis Console

*Please contact Nikon sales for the combination of S/SL stand and DP-E1A.

System Diagram (U-Type)

MM Camera V2

C-mount Camera

MBB92106 C-TB Binocular Tube

MBB63425 LV-T3 Trinocular Eyepiece Tube

EDB50300 LV-T2 Tilting Trinocular Eyepiece Tube with Built-in Reticle

PPB27700 PS 2x2B Stage

PPG40000 Tilting Center Fixture A

MQD42005 C-mount Adapter

MBJ99000 Eye Guard for CFWN 10x Eyepiece

MAK12105 CFI 10x CM Eyepiece

PPE42100 Rotating Table Type 3

MBB63435 LV-TV Tube

MAK10110 CFI 10x Eyepiece

PPB37700 PS 4x4B Stage

MBE60300 LV-U EPI2

MBE60201 LV-UEPI-N

EDC52200 LV-U EPI FA

EDC54005 U Bracket Mount LV

PPB47700 PS 8x6B Stage

MBP60115 L-NU5 U5 Nosepiece

MBP60125 L-NBD5 BD5 Nosepiece

MBP71315 C-N6 Nosepiece

EFH28000 MM Stage Adapter for MM800N

PPE50110 Rotating Table Type D

MXA23017 LU Nosepiece Adapter M32-25

PXA20225 Large Stage Adjustment Knob

TU PLAN FLUOR BD Objective Lens MUE42050, etc.

TU PLAN FLUOR EPI Objective Lens MUE12050, etc.

PPB57700 PS 8x6B Stage

PPB67700 PS 10x6B Stage

EDA64300 MM-400N/S
EDA64400 MM-400N/SL
EDA64000 MM-400N
EDA64100 MM-400N/L
EDA64200 MM-400N/LM

PPB77700 PS 12x8C Stage

EDA68300 MM-800N/S
EDA68400 MM-800N/SL
EDA68000 MM-800N
EDA68100 MM-800N/L
EDA68200 MM-800N/LM

EFB50200 2-axis Digital Counter SC2-E1

EFB50300 3-axis Digital Counter SC3-E1

EFB51500 Data Processor Console DP-E1A

PPL00100 Counter Remote Switch

EFE00202 Foot Switch 4

PPL00200 XY Reset Switch

Printer

EDD51001 LED Dia-illuminator

EDD55810 MM-LL LED Lamphouse

EDD55805 MM-U Epi Lamphouse LV

MXA23045 LV-HL50W 12V50W-LL Halogen Lamp

MXA 20095 12V50W Lamp

MEF52251 TI-PS100W Power Supply

EDD52200 Halogen Light Intensity Control Cable

PAE00104 MM AC Adapter

Power Cord (local supply)

Power Source Unit for Motorized Z-axis

Motorized Z-axis Console

Data Processing Software E-MAX

▌ Suggested Configuration Chart

MM-Type

	Product Code	Model	MM-400N/S	MM-400N	MM-400N/L	MM-400N/SL	MM-400N/LM	MM-800N/S	MM-800N	MM-800N/SL	MM-800N/L	MM-800N/LM
		Z-axis Motion	Manual	Manual	Manual	Manual	Motorized	Manual	Manual	Manual	Manual	Motorized
		Z-axis Scale	No	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes
		MM Controller Backpack Interface	No	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes
		Stage	PS 4x4B	PS 2x2B	PS 6x4B	PS 6x4B	PS 6x4B	PS 8x6B	PS 10x6B	PS 10x6B	PS 12x8C	PS 12x8C
		Head	Trinocular	Monocular	Trinocular	Trinocular	Trinocular	Trinocular	Trinocular	FA	Trinocular	FA
		Illuminators	–	–	Fiber Ring	–	8-seg. LED Ring	–	White LED Ring	–	8-seg. LED Ring	8-seg. LED Ring
	Product Code	Data Processors	–	–	DP-E1A	–	E-MAX V2	–	DP-E1A	–	E-MAX V2	E-MAX V2
Main Body Stand	EDA64000	MM-400N Stand		✓								
	EDA64100	MM-400N/L Stand			✓							
	EDA64200	MM-400N/LM Stand					✓					
	EDA64300	MM-400N/S Stand	✓									
	EDA64400	MM-400N/SL Stand				✓						
	EDA68000	MM-800N Stand							✓			
	EDA68100	MM-800N/L Stand									✓	
	EDA68200	MM-800N/LM Stand										✓
	EDA68400	MM-800N/SL Stand								✓		
	EDA68300	MM-800N/S Stand						✓				
	PAE00104	MM AC Adapter	✓	✓	✓2pcs	✓		✓	✓2pcs	✓	✓	
	Local supply	Power Cable	✓	✓	✓2pcs	✓		✓	✓2pcs	✓	✓	
Optical Head and Eyepiece Tube/ Lenses Illuminators	EDC52005	Monocular Optical Head		✓								
	EDG40105	MM Eyepiece Lens 10x for Monocular Head		✓								
	EDC50005	Trinocular Optical Head	✓		✓	✓	✓	✓	✓		✓	
	EDC50200	Trinocular Optical FA Head								✓		✓
	EDB40205	Binocular Tube	✓		✓	✓	✓	✓	✓	✓	✓	✓
	MBJ20105	CFWN 10x Eyepiece (2pcs)	✓		✓	✓	✓	✓	✓	✓	✓	✓
	EDD50001	LED Epi-illuminator	✓		✓	✓	✓	✓	✓	✓	✓	✓
	EDD52001	Epi-illuminator for MM400N/800N Monocular Optical Head		✓								
	EXK30024	8-segment LED Ring Light (100-240V)					✓				✓	✓
	EXA20411	E-BUS Cable			✓		✓		✓		✓	✓
	Local supply	Power Cable					✓				✓	✓
	EXA20409	Illuminator Adapter			✓				✓			
	MME39610	C-FIR Ring Fiber Illuminator Guide			✓							
	MNF52760	C-FLED2 LED Light Source for Fiber Illuminator			✓							
	MXK60234	LED Ring Illuminator (100-240V) (ESD Type only)							✓			
Objective Lenses	EDF20031	Objective Lens 3x	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	EDF20102	Objective Lens 10x								✓		✓
	EDF50001	Measuring Microscope Objective Adapter	✓	✓	✓	✓	✓	✓	✓	✓2pcs	✓	✓2pcs
Stages and Rotating Tables	PPB27700	PS 2x2B Stage		✓								
	PPB37700	PS 4x4B Stage	✓									
	PPB47700	PS 6x4B Stage			✓	✓	✓					
	PPB57700	PS 8x6B Stage						✓				
	PPB67700	PS 10x6B Stage							✓	✓		
	PPB77700	PS 12x8C Stage									✓	✓
	EFH28000	MM Stage Adapter for MM800 (PS 6x4B or smaller)										
	PXA20225	Large Stage Adjustment Knob						✓	✓			
	PPE42100	Rotating Table Type 3			✓	✓	✓					
	PPE50110	Rotating Table Type 4						✓	✓	✓		
Data Processing System and Printer	EFB50200	2-axis Digital Counter SC2-E1				✓		✓				
	EFB50300	3-axis Digital Counter SC3-E1			✓		✓				✓	✓
	EFB51500	Data Processor Console DP-E1A			✓		✓		✓			
	PXA20218	SC-213 Z-signal Cable					✓				✓	
	PPL00200	XY Reset Switch				✓						
	EFE00202	Foot Switch 4			✓		✓		✓		✓	✓
	EXK30330	Thermal Printer Model TSP743 II			✓				✓			
	EXA20478	9-25 Pins RS-232C Cross Cable (2 m)			✓				✓			
	EXK30105	Printer Paper			✓				✓			
	Local supply	Power Cable			✓				✓			
	EDF11000	Data Processing Software E-MAX					✓				✓	✓
	EXA20371	E-MAX Calibration Plate					✓				✓	✓
	EDE50100	MM Camera V2					✓				✓	✓
	EDE50110	MM Camera V2 Cable					✓				✓	✓
	MBB63435	LV-TV Tube					✓				✓	✓
	MQD42005	C-mount Adapter					✓				✓	✓

• MM Cable for Simultaneous Use (PXA20224) is required for simultaneous use of Foot Switch and [RESET/SEND] buttons.

U-Type

	Product Code	Model	MM-400N/U	MM-400N/LU	MM-400N/LMU	MM-800N/SU	MM-800N/LU	MM-800N/SLU	MM-800N/LMU	MM-800N/LMU	MM-800N/SLU
		Z-axis Motion	Manual	Manual	Motorized	Manual	Manual	Manual	Motorized	Manual	Manual
		Z-axis Scale	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
		MM Controller Backpack Interface	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes
		Stage	PS 4x4B	PS 4x4B	PS 6x4B	PS 8x6B	PS 12x8C	PS 10x6B	PS 12x8C	PS 12x8C	PS 10x6B
		Head	C-TB	TT2	TI3	TI3	TT2	TI3	TT2	TT2	TI3
		Illuminator	LV-EPI LED	LV-U EPI FA	LV-U EPI2	LV-U EPI	LV-U EPI FA	LV-U EPI FA	LV-U EPI2	LV-U EPI2	LV-U EPI FA
		Illuminators	–	E-MAX V2	E-MAX V2	–	E-MAX V2	–	E-MAX V2	E-MAX V2	–
	Product Code	Data Processors	BF	BD-DIC	BD-DIC-FL	BF	BD-DIC	BD	BD-DIC	BD-DIC-FL	BF
Main Body Stand, U-bracket and Illuminator	EDA64000	MM-400N Stand	✓								
	EDA64100	MM-400N/L Stand		✓							
	EDA64200	MM-400N/LM Stand			✓						
	EDA64400	MM-400N/SL Stand									
	EDA68000	MM-800N Stand									
	EDA68100	MM-800N/L Stand					✓				
	EDA68200	MM-800N/LM Stand							✓	✓	
	EDA68400	MM-800N/SL Stand						✓			✓
	EDA68300	MM-800N/S Stand				✓					
	PAE00104	MM AC Adapter	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Local supply	Power Cable	✓	✓	✓	✓	✓	✓	✓	✓	✓
	EDC54005	U Bracket Mount LV	✓	✓	✓	✓	✓	✓	✓	✓	✓
Stages and Rotating Tables	PPB37700	PS 4x4B Stage	✓	✓							
	PPB47700	PS 6x4B Stage			✓						
	PPB57700	PS 8x6B Stage				✓					
	PPB67700	PS 10x6B Stage						✓			✓
	PPB77700	PS 12x8C Stage					✓		✓	✓	
	EFH28000	MM Stage Adapter for MM800N (PS 6x4B or smaller)									
	PXA20225	Large Stage Adjustment Knob					✓	✓	✓	✓	✓
	PPE42100	Rotating Table Type 3		✓							
	PPE50110	Rotating Table Type 4							✓		
Data Processing System and Printer	EFB50200	2-axis Digital Counter SC2-E1	✓								
	EFB50300	3-axis Digital Counter SC3-E1		✓	✓		✓		✓	✓	
	PXA20218	SC-213 Z-signal Cable			✓				✓		
	EFE00202	Foot Switch 4		✓	✓		✓		✓	✓	
	EDF11000	Data Processing Software E-MAX		✓	✓		✓		✓	✓	
	EXA20371	E-MAX Calibration Plate		✓	✓		✓		✓	✓	
	EDE50100	MM Camera V2		✓	✓		✓		✓	✓	
	EDE50110	MM Camera V2 Cable		✓	✓		✓		✓	✓	
	MBB63435	LV-TV Tube		✓	✓		✓		✓	✓	
	MQD42005	C-mount Adapter		✓	✓		✓		✓	✓	
U-Epi Illuminators	MQF52057	4-AC AC Adapter	✓								
	Local supply	Power Cable	✓								
	MBE60201	LV-U EPI (BF DF DIC)									
	EDC52200	LV-U EPI FA		✓			✓	✓			✓
	EDD51001	LED Dia-illuminator (used for U-FA as Epi-illuminator)		✓			✓	✓			✓
	MBE60300	LV-U EPI2 (BF DF DIC FL)			✓						
Filters and Light Sources	MBN66750	YM-NCB25 NCB11		✓	✓						
	MBN66760	YM-ND25 ND4/ND16		✓	✓						
	EDD55805	MM-U Epi Lamphouse LV		✓	✓						
	EDD55810	MM-LL LED Lamphouse		✓	✓						
	MEF52251	TI-PS100W Power Supply (100-240V)		✓	✓						
	Local supply	Power Cable		✓	✓						
Tubes and Eyepiece Lenses	MBB92106	C-TB Binocular Tube	✓								
	MBB63425	LV-TI3 Trinocular Eyepiece Tube		✓2pcs	✓	✓					✓
	EDB50300	LV-TT2 Trinocular Tube with Built-in Reticle		✓			✓		✓	✓	
	MAK10110	CFI 10x Eyepiece	✓	✓	✓	✓					
	MAK12105	CFI 10x CM Eyepiece with Crosshairs	✓	✓	✓	✓					
Revolving Nosepiece	MBP60115	L-NU5 U5 Nosepiece ESD	✓	✓	✓						
	MBP60125	L-NBD5 BD5 Nosepiece							✓		
	MBP71316	C-N6 Nosepiece (up to 5 objective lenses)	✓		✓						
Objective Lenses and Accessories	MUE12050	TU PLAN FLUOR EPI 5x	✓		✓						
	MUE12100	TU PLAN FLUOR EPI 10x	✓		✓						
	MUE21200	TU PLAN EPI ELWD 20xA	✓		✓						
	MUE21500	TU PLAN EPI ELWD 50xA	✓		✓						
	MUE42050	TU PLAN FLUOR BD 5x		✓	✓	✓	✓	✓	✓	✓	✓
	MUE42100	TU PLAN FLUOR BD 10x		✓	✓	✓	✓	✓	✓	✓	✓
	MUE61200	TU PLAN BD ELWD 20x		✓	✓	✓	✓	✓	✓	✓	✓
	MUE61500	TU PLAN BD 50x		✓	✓	✓	✓	✓	✓	✓	✓
	MUE61900	TU PLAN BD ELWD 100x		✓	✓	✓	✓	✓	✓	✓	✓
	MBP60170	L2-DIC DIC Prism for Eclipse Microscopes		✓	✓		✓		✓	✓	
	MBN66923	LV-PO Polarizer for LV-U EPI2 (MBE60200)			✓				✓	✓	
	MBN66922	L-AN Analyzer for LV-U EPI2 (MBE60200)			✓				✓	✓	
	MBN66921	YM-PO Polarizer for LV-U EPI FA (EDC52200)		✓			✓				✓

LED Episcopic & Diascopic Illuminator is a Class 1 LED Product

CLASS 1 LED PRODUCT

8-segment LED Ring Light is a Class 2 LED Product

**CAUTION – CLASS 2 LED RADIATION
DO NOT STARE INTO THE BEAM**

ISO/IEC 17025 Certified

Nikon Corporation Industrial Metrology Business Unit is certified as an ISO/IEC 17025 accredited calibration laboratory for measuring microscopes and measuring projectors (profile projectors) by the Japan Accreditation Board for Conformity Assessment.
(ISO/IEC 17025: International standard, which specifies the general requirements to ensure that a laboratory is competent to carry out specific tests and/or calibrations)

Date of Initial accreditation:	September 8, 2006
Scope of accreditation:	Measuring microscopes
Accredited section:	Industrial Metrology Business Unit
Calibration site:	Customer's laboratory (field service)
Expanded Uncertainty:	X/Y-axis indication accuracy of measuring microscopes Linear scale up to 300 mm: $(0.70 + 5.0 \times 10^{-3} \times L)$ μm

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

**ISO 14001 Certified
for NIKON CORPORATION**

**ISO 9001 Certified
for NIKON CORPORATION
Industrial Metrology Business Unit**

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