



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-Type
MM-400N/LV

MM TYPE

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

P6

P6

P7

P7

- In addition to the easy-to-use design, an motorized vertical movement mechanism is available.
- Transmissive lighting enables switching between white and green LED light.
- Stages can be selected from 3 types for MM-400N and 6 types for MM-800N (max 300x200 mm).
- Digital image measurement is possible with the E-MAX (V3 set) measurement support system.
- Data processing unit DP-E1A which combines high functionality and ease of use is available.
- 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)

Function Icons

	Focusing Aid The Focusing Aid (FA) ensures accurate Z-axis focusing.
	Universal Epi-illuminator Focusing Aid A universal epi-illuminator with Focusing Aid (FA) mechanism.
	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.
	Dual Side Coarse/Fine Focus Knob Coarse/fine focus knobs are on both sides.
	Built-in Z-axis Linear Scale Z-axis reading is possible for non-contact height measurement.
	Trinocular Optical Head Ideal for configuration with photomicrography equipment.
	Monocular Optical Head For applications where cost performance is priority.
	Universal Epi-illuminator Supports a wide range of applications.
	LED Illuminator White LED illuminator for brightfield use.



U-Type
MM-800N/U

UNIVERSAL TYPE

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

P8

P8

P9

MM TYPE

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

Improved lighting performance for wide range of needs

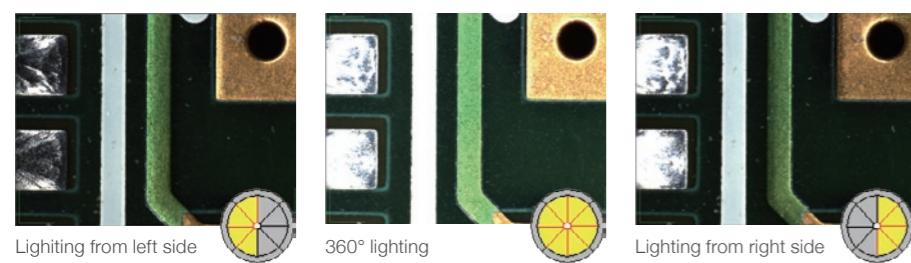
LED Illuminator

The diascopic LED illuminator has both white and green light sources, 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.



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 1x, 3x, 5x, and 10x measuring microscope objective lenses

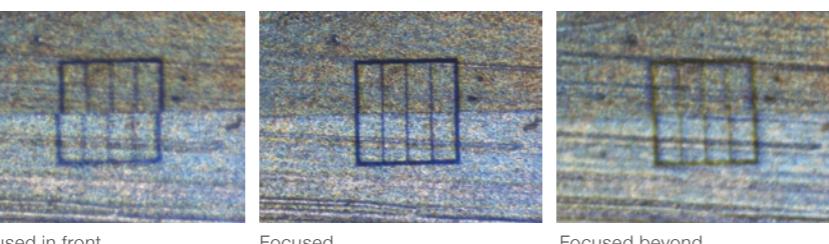
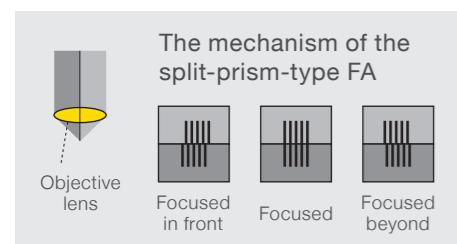


8-segment LED Ring Light CYN-E1

Improved accuracy/repeatability of height measurements

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.



Objective lenses for MM TYPE

These compact objectives feature long working distance and excellent resolution, which helps to reduce measurement errors.



Magnification	1x	3x	5x	10x	20x	50x	100x
WD (mm)	79	75	64	48	20	15	4
NA	0.03	0.09	0.13	0.2	0.4	0.55	0.75
Physical depth of focus (μm)	305.5	33.9	16.2	6.8	1.7	0.9	0.4
F.O.V for eyepieces (CFWN 10x F.N.20)	20	6.66	4	2	1	0.4	0.2

UNIVERSAL TYPE

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

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

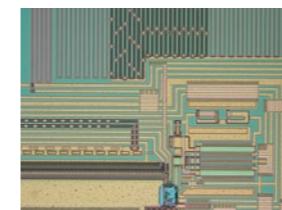
Automatically opens the field of view aperture and aperture diaphragm when switching between brightfield and darkfield.

FA Reflective Illuminator LV-UEPI FA

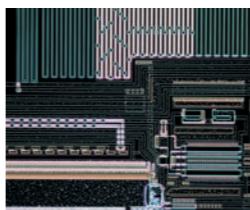
Has the FA for more precise height measurement.



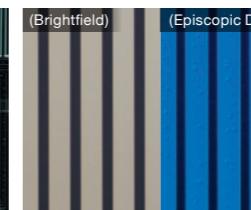
FA Reflective Illuminator LV-UEPI FA



Brightfield
Semiconductors (IC wafers)



Darkfield
Semiconductors (IC wafers)



(Brightfield)
(Episcopic DIC)
Episcopic DIC
Substrate

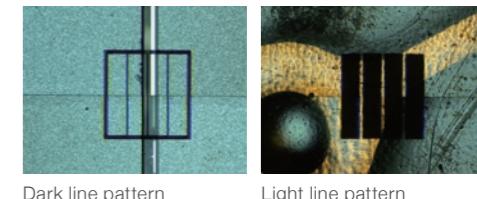
	Brightfield	Darkfield	DIC	Polarizing
Episcopic (LED)	○	○	○	△*
Diascopic (LED)	○	—	—	—

* only simple polarizing observation

Enhanced accuracy/repeatability of height measurements

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

Objective lenses for UNIVERSAL TYPE

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.

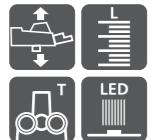
Observation Methods	Type	Magnifications	NA	WD (mm)	Physical depth of focus(μm)	F.O.V for eyepieces (CFI 10x F.N.22)
Brightfield	TU Plan Fluor EPI	5x	0.15	23.5	12.22	4.4
		10x	0.30	17.5	3.06	2.2
	TU Plan EPI ELWD	20x	0.40	19.0	1.72	1.1
		50x	0.50	11.0	0.76	0.44
Brightfield/ Darkfield	TU Plan Fluor BD	100x	0.80	4.5	0.43	0.22
		5x	0.15	18.0	12.22	4.4
	TU Plan BD ELWD	10x	0.30	15.0	3.06	2.2
		20x	0.40	19.0	1.72	1.1
		50x	0.60	11.0	0.76	0.44
		100x	0.80	4.5	0.43	0.22

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



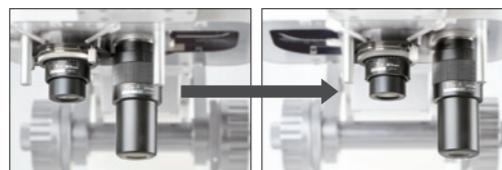
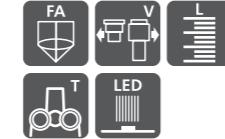
Variable magnification

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



Main Specifications

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	Measuring microscope objectives 1X, 3X, 5X, 10X, 20X, 50X, 100X	Low magnification: 1X, 3X, 5X, 10X High magnification: 5X, 10X, 20X, 50X, 100X	Measuring microscope objectives 1X, 3X, 5X, 10X, 20X, 50X, 100X	Low magnification: 1X, 3X, 5X, 10X High magnification: 5X, 10X, 20X, 50X, 100X
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

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



Main Specifications

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		Measuring microscope objectives 1X, 3X, 5X, 10X, 20X, 50X, 100X		Measuring microscope objectives 1X, 3X, 5X, 10X, 20X, 50X, 100X	
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	MHS 6x4B, MHS 4x4B, MHS 2x2B
Light Source		Diascopic: White LED (standard), Green LED (standard) / Episcopic: White LED		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	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

Function Icons



Focusing Aid

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



Universal Epi-illuminator

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



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.



Dual Side Coarse/Fine Focus Knob

Coarse/fine focus knobs are on both sides.



Built-in Z-axis Linear Scale

Z-axis reading is possible for non-contact height measurement.



Trinocular Optical Head

Ideal for configuration with photomicrography equipment.



Monocular Optical Head

For applications where cost performance is priority.



Universal Epi-illuminator

Supports a wide range of applications.



LED Illuminator

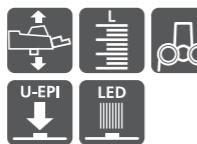
White LED illuminator for brightfield use.

UNIVERSAL TYPE

Z Motorized

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

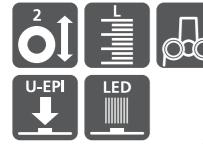
**MM-800N/LMU
MM-400N/LMU**



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/SLUFA
MM-400N/SLU**



Main Specifications

Model	MM-800N/LMU	MM-400N/LMU	MM-800N/LU, MM-800N/SLU	MM-400N/SLUFA, MM-400N/SLU
Z-axis movement	Motorized (max. speed: 10 mm/sec)		Manual (dual side coarse/fine focus knob)	
Eyepiece Tube	C-TB binocular tube, LV-T13 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-C-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

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-T13 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-C-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

Function Icons



Focusing Aid

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



Universal Epi-illuminator Focusing Aid

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



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.



Dual Side Coarse/Fine Focus Knob

Coarse/fine focus knobs are on both sides.



Built-in Z-axis Linear Scale

Z-axis reading is possible for non-contact height measurement.



Trinocular Optical Head

Ideal for configuration with photomicrography equipment.



Monocular Optical Head

For applications where cost performance is priority.



Universal Epi-illuminator

Supports a wide range of applications.



LED Illuminator

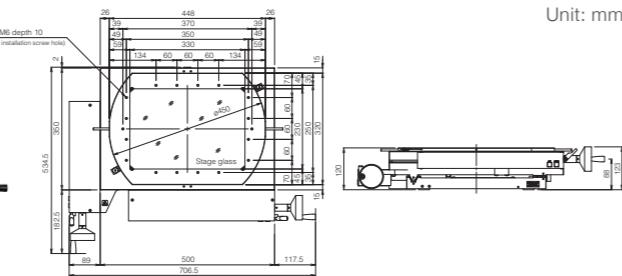
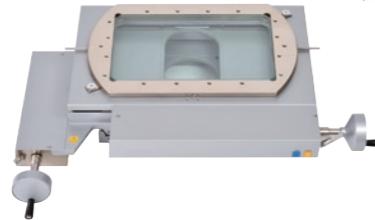
White LED illuminator for brightfield use.

ACCESSORIES

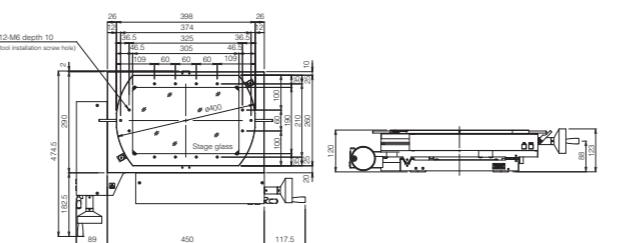
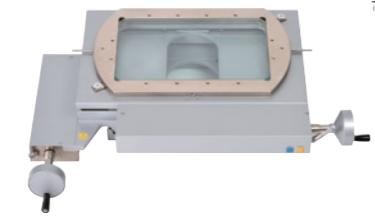
Stages

Stages for MM-800N series

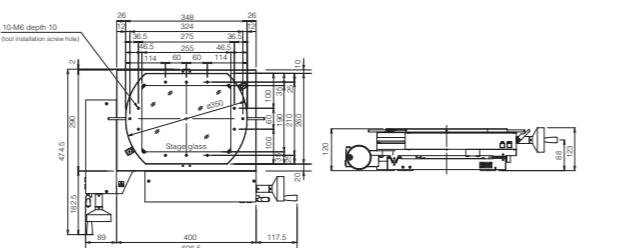
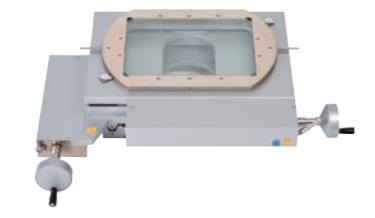
PS 12x8C Stage



PS 10x6B Stage

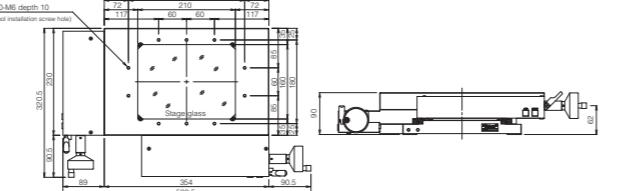


PS 8x6B Stage

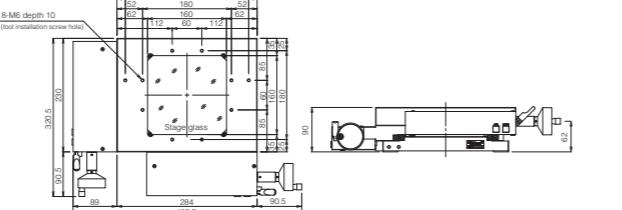


Stages for MM-400N series

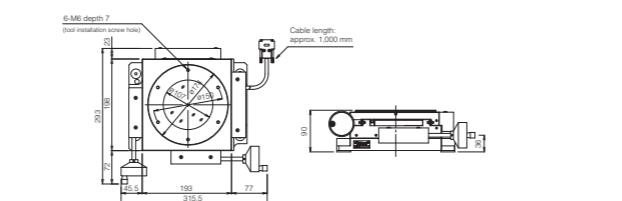
PS 6x4B Stage



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 hole	Loading capacity (kg)	Weight (approx.) (kg)
PS 12x8C	448x320	330x230	300x200	Linear encoder	0.01	±3° (Swivel plate)	16-M6 depth 10	20	67
PS 10x6B	398x260	305x190	250x150			12-M6 depth 10	12-M6 depth 10		51.5
PS 8x6B	348x260	255x190	200x150			10-M6 depth 10	10-M6 depth 10		48.5
PS 6x4B	354x230	210x160	150x100			—	10-M6 depth 10	15	27.5
PS 4x4B	284x230	160x160	100x100			—	8-M6 depth 10	15	23.5
PS 2x2B	Ø174	Ø107	50x50			360° (Rotating table)	6-M6 depth 7	5	15.5

MM Series Accuracy (with MM main body)

Accuracy	Conditions
2.0 + $L/50 \mu\text{m}$	Calibrated by a certified engineer
2.5 + $L/50 \mu\text{m}$	Rotating table + Calibrated by a certified engineer

* L =measurement length in mm

*Temperature controlled room is required to ensure accuracy.

*Please contact Nikon for details regarding calibration by a certified engineer.

Rotating Tables

Rotating Table Type 4

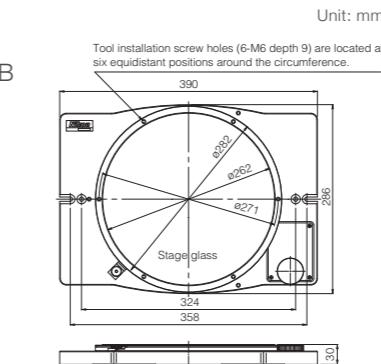
For PS 12x8C*, PS 10x6B, PS 8x6B



*When using rotating table type 4, stage stroke is limited for X and Y axis.

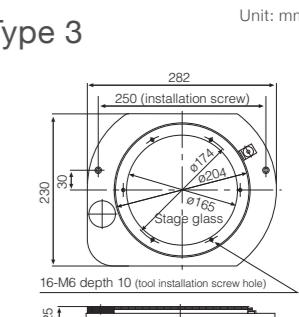
Rotating table specifications

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



Rotating Table Type 3

For PS 6x4B, PS 4x4B



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 PS 2x2B, Rotating Table Type 3.

Max. sample diameter and length when held level (mm)	Center height (mm)	Tilting angle	Weight (kg)
Ø68x120	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.
- For installation on the optical head, an objective lens adapter is required. (excluding variable magnification optical head)



Magnification	1x	3x	5x	10x	20x	50x	100x
WD (mm)	79	75	64	48	20	15	4
NA	0.03	0.09	0.13	0.2	0.4	0.55	0.75
Physical depth of focus (μm)	305.5	33.9	16.2	6.8	1.7	0.9	0.4
F.O.V for eyepieces (CFWN 10x F.N.20)	20	6.66	4	2	1	0.4	0.2

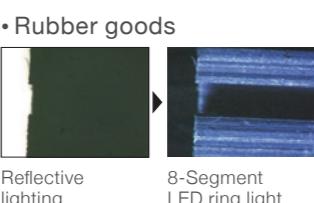
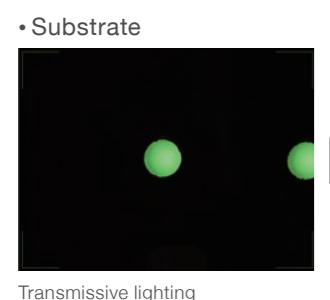
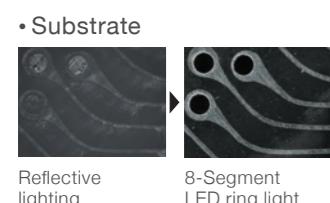
These objective lenses use eco-friendly glass that does not contain lead, arsenic, or toxic substances, making them meet the environmental needs of the times.

Illuminators

8-Segment LED Ring Light

Enables illumination from eight directions.

- Can be used with E-MAX
- RS-232C cable comes standard
- E-BUS cable is required to control with E-MAX



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

*Ring illuminator adapter is required for installation.



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

*Ring illuminator adapter is required for installation.

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

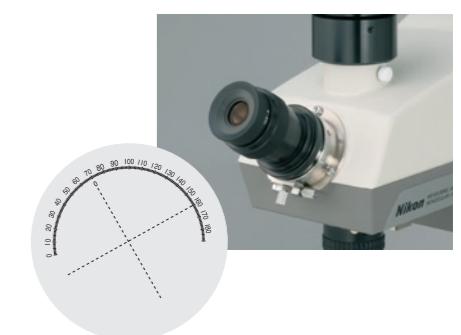
Viewfield includes crosshairs and 60° lines. Angle indexes are read by appropriate microscopes.

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	Magnifications	NA	WD (mm)	Physical depth of focus(μm)	F.O.V for eyepieces (CFI 10x F.N.22)
TU Plan Fluor EPI	5x	0.15	23.5	12.22	4.4
	10x	0.30	17.5	3.06	2.2
	20x	0.40	19.0	1.72	1.1
TU Plan EPI ELWD	50x	0.50	11.0	0.76	0.44
	100x	0.80	4.5	0.43	0.22

• Brightfield/Darkfield

Type	Magnifications	NA	WD (mm)	Physical depth of focus(μm)	F.O.V for eyepieces (CFI 10x F.N.22)
TU Plan Fluor BD	5x	0.15	18.0	12.22	4.4
	10x	0.30	15.0	3.06	2.2
	20x	0.40	19.0	1.72	1.1
TU Plan BD ELWD	50x	0.60	11.0	0.76	0.44
	100x	0.80	4.5	0.43	0.22

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.

• With correction mechanism

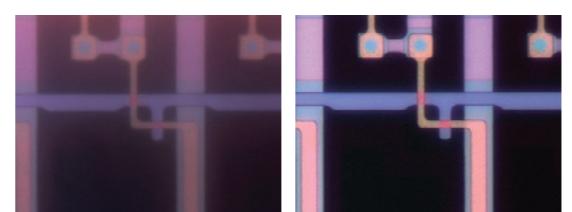
Type	Magnification	NA	W.D.(mm)	Glass thickness correction range (mm)
CFI L Plan EPI CR	20x	0.45	10.9-10.0	0-1.2
CFI L Plan EPI CR	50x	0.7	3.9-3.0	0-1.2
CFI L Plan EPI CRA	100x	0.85	1.2-0.85	0-0.7
CFI L Plan EPI CRB	100x	0.85	1.3-0.95	0.6-1.3

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.



The CFI L Plan EPI CR series with correction rings



No correction for cover glass thickness (with 50x objective lens)

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

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.



Light source

A compact LED EPI lamphouse for brightfield, darkfield, and DIC observations is available.



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.

Manual nosepieces

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

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

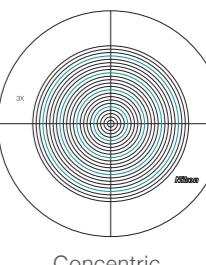
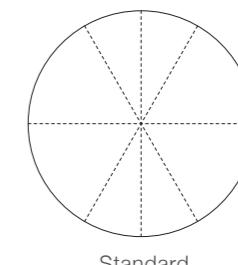
○: Supported —: Not supported

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



ACCESSORIES

E-Max Series

FOV Measurement with advanced digital image processing technology

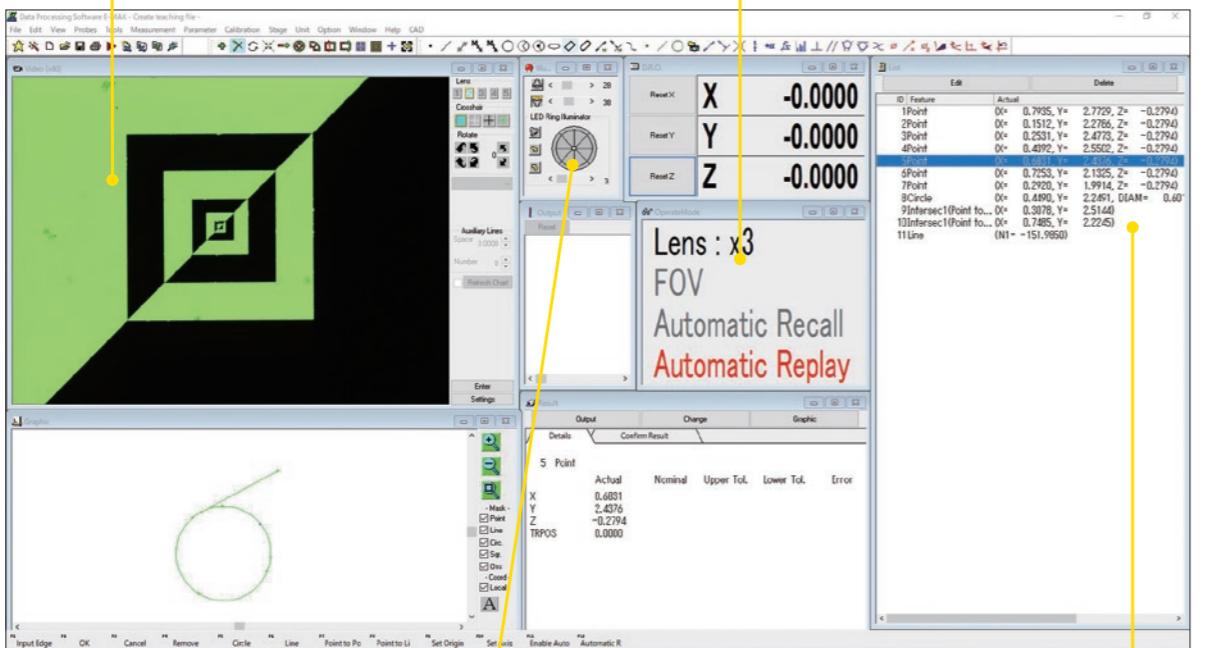
Combined with the V3 digital camera, E-MAX series software provides various advanced measurements and processing functions, ranging from 2D data processing and image measurement, to data storage. Automated edge detection with sub-pixel processing enables more precise and repeatable measurement.



E-MAX V3 set

High-resolution digital images

High-resolution image measurement is possible with the combination of a digital camera and a measuring microscope. Images displayed in the video window can be saved in BMP or JPEG format.



E-MAX screen

One-click output to Excel

Measurement results can be displayed in Excel in real time. Even during manual measurements, measurement result files can be saved and Excel can be launched from E-MAX for speedy work.

Automatic Light Adjustment

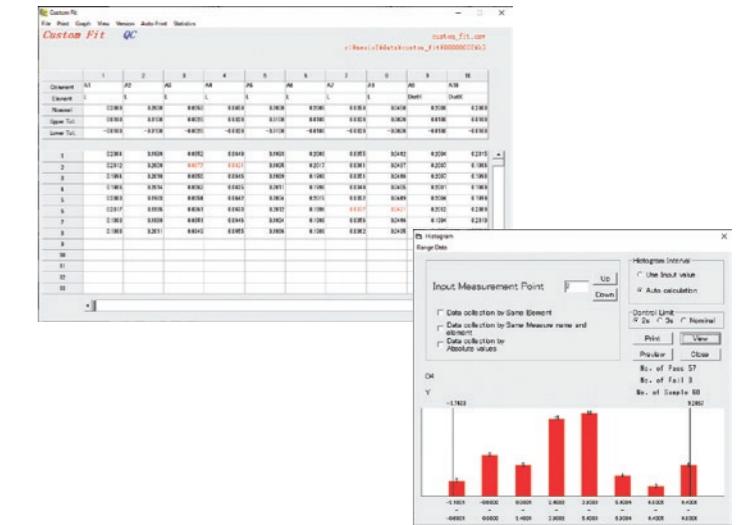
Saves the lighting conditions at the time of teaching for each point input, and reproduces them accurately on replay.

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.

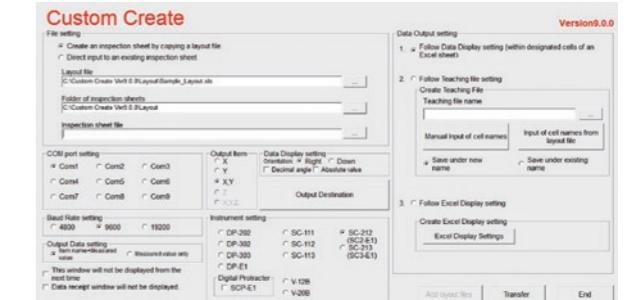
- Customization of inspection result sheets are possible, in addition to the 10 standard sheets
- BMP and JPEG files can be pasted onto the inspection result sheets
- Graphs can be automatically generated
- Displays are adjustable between degree/minute/second
- Easy to generate histograms, X-R control 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-400N/800N 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®10 (32 bit / 64 bit)
- Required memory: 512MB (min)
- Microsoft Excel® 2013, 2016, 2019, 2021
- 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.



TSP743II

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.



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

MM-400N/800N

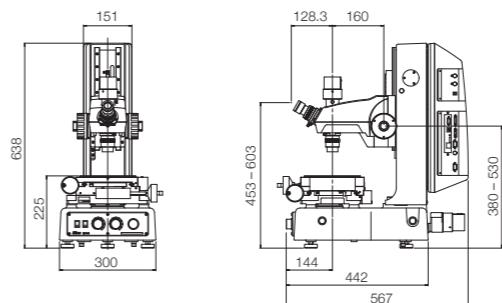
Installation part (WxD) 450(W) x 689(D)mm

Dimensions (WxDxH) 1058(W) x 689(D) x 751(H)mm

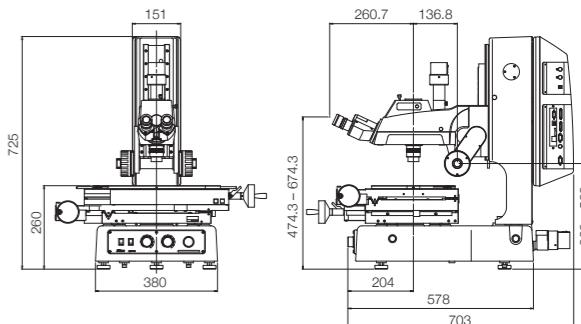


Dimensional Diagram

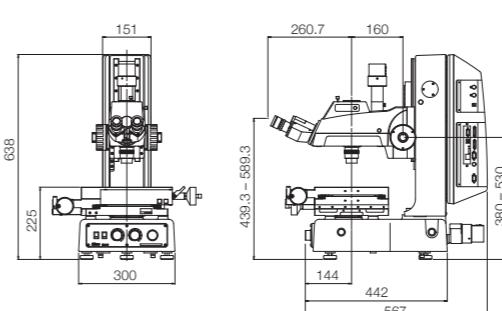
MM-400N/M PS 2x2B Stage



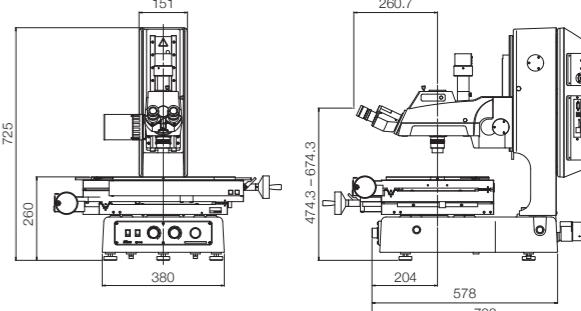
MM-800N/L PS 10x6B Stage



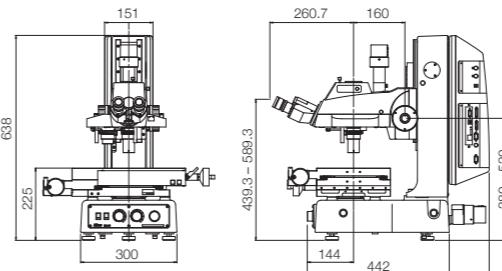
MM-400N/L PS 4x4B Stage



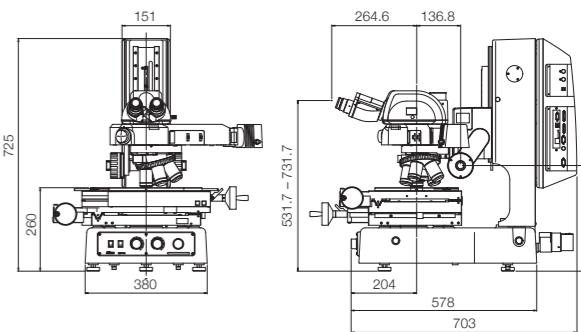
MM-800N/LM PS 12x8C Stage



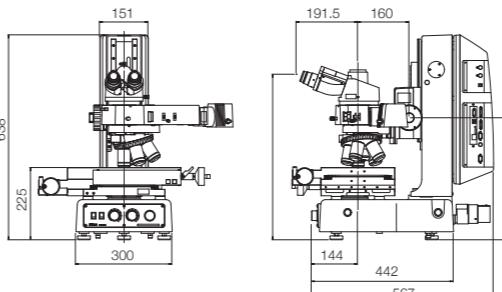
MM-400N/LV PS 6x4B Stage



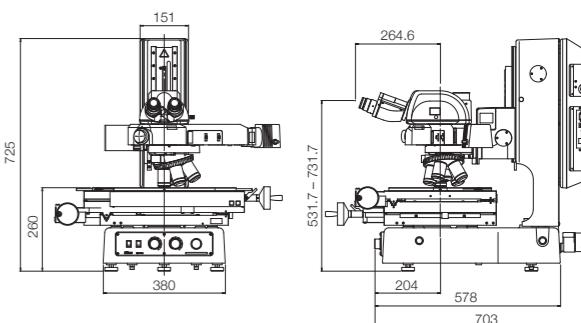
MM-800N/LU PS 8x6B Stage



MM-400N/SLUFA PS 6x4B Stage

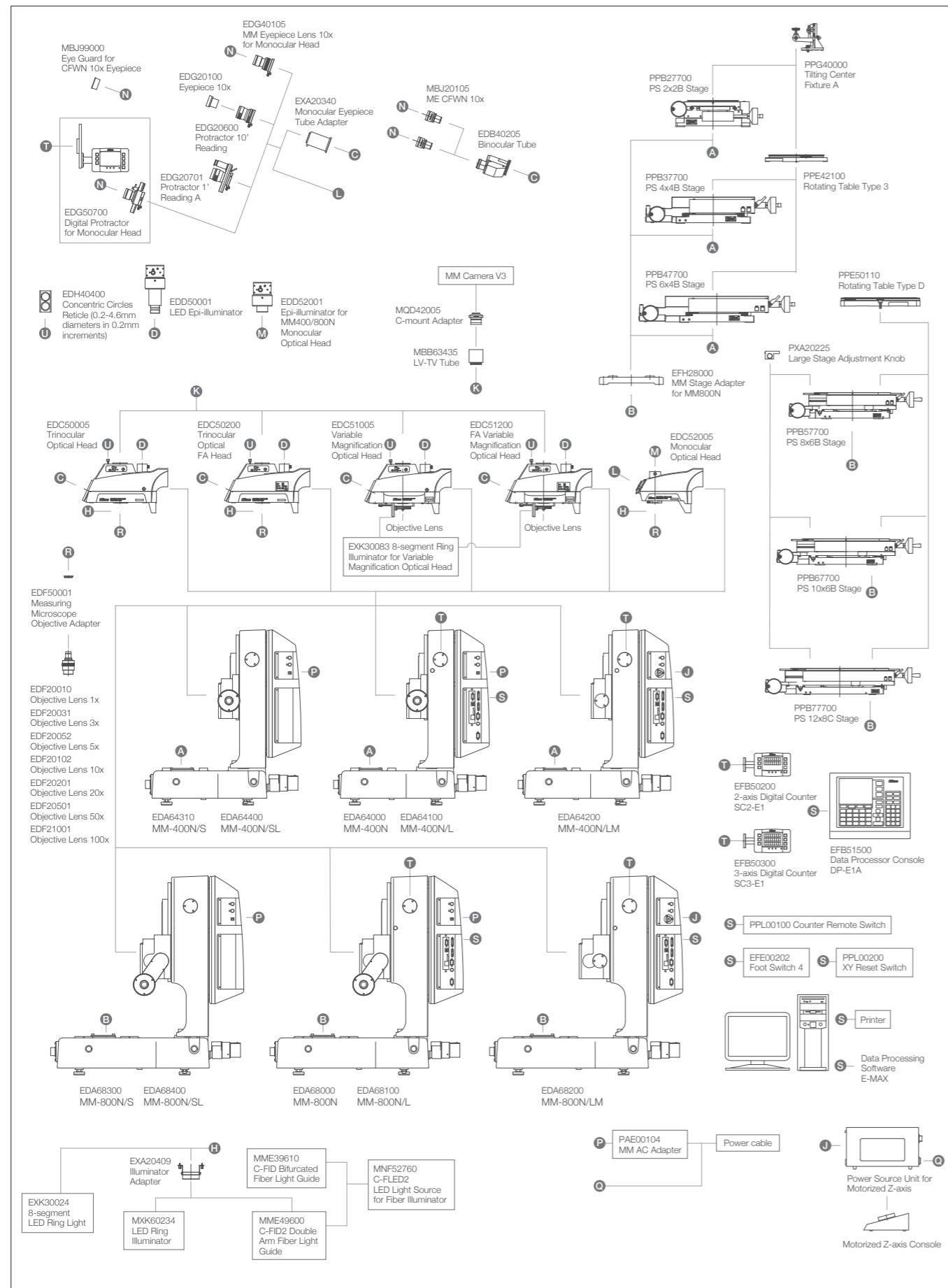


MM-800N/LMU PS 12x8C Stage

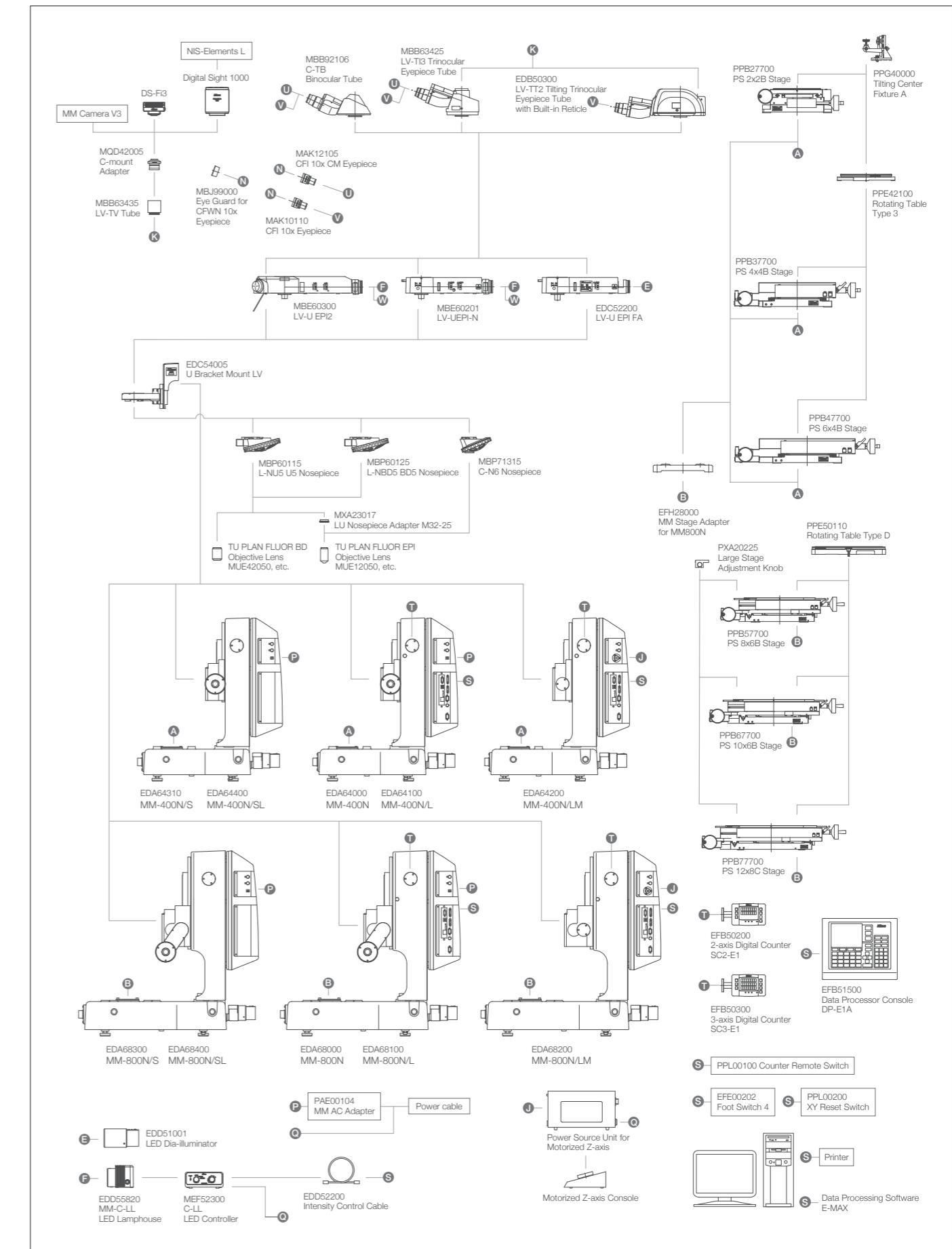


*Dimensions may vary depending on the combination of stage and optical head.

■ System Diagram (MM-Type)



■ System Diagram (U-Type)



Suggested Configuration Chart

MM-Type

	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	Yes	No	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	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 V3	-	DP-E1A	-	E-MAX V3	E-MAX V3
EDA64000	MM-400N Stand		✓								
EDA64100	MM-400N/L Stand			✓							
EDA64200	MM-400N/LM Stand				✓						
EDA64310	MM-400N/S Stand	✓									
EDA64400	MM-400N/SL Stand				✓						
EDA68000	MM-800N Stand										
EDA68100	MM-800NL 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	✓	✓	✓	✓
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)							✓			
EDF20031	Objective Lens 3x	✓	✓	✓	✓	✓	✓	✓	✓	✓	
EDF20102	Objective Lens 10x								✓	✓	
EDF50001	Measuring Microscope Objective Adapter	✓	✓	✓	✓	✓	✓	✓	✓ 2pcs	✓	✓ 2pcs
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						✓	✓	✓		
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 V3								✓	✓	
EDE50110	MM Camera V3 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

	Model	MM-400N/U	MM-400N/LU	MM-400N/LMU	MM-800N/SU	MM-800N/LU	MM-800N/SLU	MM-800N/LMU	MM-800N/SLMU	MM-800N/SLU	MM-800N/LMU
Z-axis Motion	Manual	Manual	Motorized	Manual	Manual	Manual	Motorized	Manual	Manual	Manual	Manual
Z-axis Scale	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No
MM Controller Backpack Interface	No	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	No
Stage	PS 4x4B	PS 2x2B	PS 6x4B	PS 6x4B	PS 6x4B	PS 8x6B	PS 10x6B	PS 12x8C	PS 12x8C	PS 12x8C	PS 10x6B
Head	C-TB	TT2	TI3	TI3	TT2	TT2	TT2	TT2	TT2	TT2	TT3
Illuminator	LV-EPI LED	LV-U EPI FA	LV-U EPI2	LV-U EPI	LV-U EPI FA	LV-U EPI FA	LV-U EPI FA	LV-U EPI FA	LV-U EPI2	LV-U EPI FA	LV-U EPI FA
Illuminators	-	E-MAX V3	E-MAX V3	-	E-MAX V3	-	E-MAX V3	-	E-MAX V3	E-MAX V3	-
Product Code	Data Processors	BF	BD-DIC	BD-DIC-FL	BF	BD-DIC	BD-DIC	BD-DIC	BD-DIC	BD-DIC	BF
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-800NL 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	✓	✓	✓	✓
EDC54005	U Bracket Mount LV	✓	✓								
PPB37700	PS 4x4B Stage								✓		
PPB47700	PS 6x4B Stage									✓	
PPB57700	PS 8x6B Stage										✓
PPB67700	PS 10x6B Stage		</								

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 Solutions 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 Solutions 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: $(0.70 + 5.0 \times 10^{-3} \times L) \mu\text{m}$

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



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



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