



Measuring Microscopes MM-Series



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Nikon Measuring Microscopes

MM Series

Innovative measuring microscopes designed for industrial measurement and image analysis.

- Greater accuracy
- Digital imaging and vision processing metrology
- Stage sizes to handle Larger stages for increased workpiece handling
- Non-contact Z-height measurements
- Coordination with data processing systems



Focused on high-precision and easy operability, a wide range of MM products are available.

| | | Basic Model MM-400 | Large-Stage Model MM-800 | Compact Model MM-200 |
|------------------------------------|--------------------|---------------------------|-----------------------------|-------------------------|
| | | | | |
| Stage Size/ Loading Capacity | 50x50 mm / 5 kg | ✓ | ✓ | ✓ |
| | 100x100 mm / 15 kg | ✓ | ✓ | — |
| | 150x100 mm / 15 kg | ✓ | ✓ | — |
| | 200x150 mm / 20 kg | — | ✓ | — |
| | 250x150 mm / 20 kg | — | ✓ | — |
| | 300x200 mm / 20 kg | — | ✓ | — |
| Maximum Workpiece Height | | 150 mm | 200 mm | 110 mm |
| Optical Head | Monocular | ✓ | — | ✓ |
| | Binocular | ✓ | ✓ | — |
| X-Y-Z | 2-axis | ✓ | ✓ | ✓ |
| | 3-axis | ✓ | ✓ | — |
| CCD | | ✓ | ✓ | ✓* |
| Obj. Magnification | | 1x/3x/5x/10x/20x/50x/100x | | 1x/3x/5x/10x |

*For C-mount video head only
✓: Available / —: Not available

MM Type

With Nikon's optical technology stages, high-precision measurement can be achieved.

Universal Type

Offers a lineup compatible with dimensional measurement and various observation methods.

MM-400 Series MM-Type

MM-400/LM



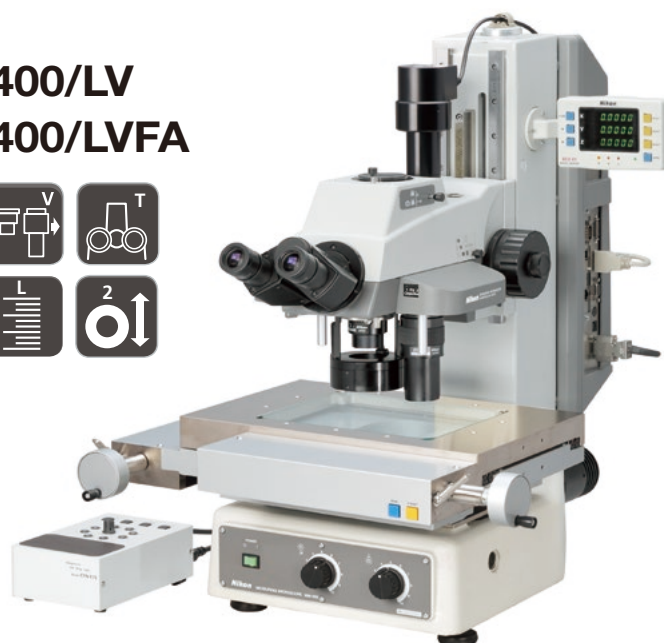
Configured with PS 6x4B stage, trinocular optical FA head

MM-400/L MM-400/SL



Configured with PS 4x4B stage, trinocular optical head

MM-400/LV MM-400/LVFA



MM-400



Configured with PS 2x2B stage, monocular optical head

MM-400/S



Configured with PS 2x2B stage, trinocular optical head

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 noncontact 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

A high-intensity white LED illuminator for brightfield use.

MM-800 Series MM-Type

MM-800/LM



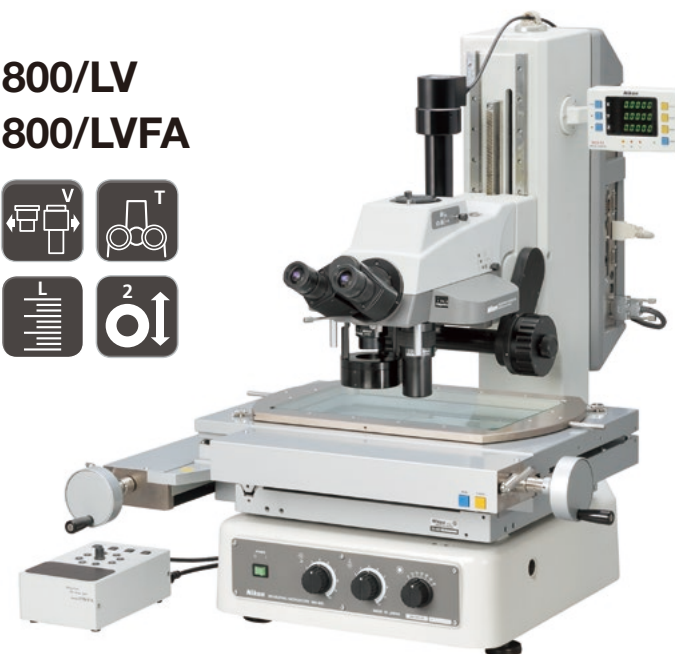
Configured with PS 10x6B stage, trinocular optical FA head

MM-800/L MM-800/SL



Configured with PS 8x6B stage, trinocular optical FA head

MM-800/LV MM-800/LVFA



MM-800



Configured with PS 8x6B stage, trinocular optical head

MM-800/S



Configured with PS 8x6B stage, trinocular optical head

Function Icons



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Z-axis reading is possible for noncontact height measurement.



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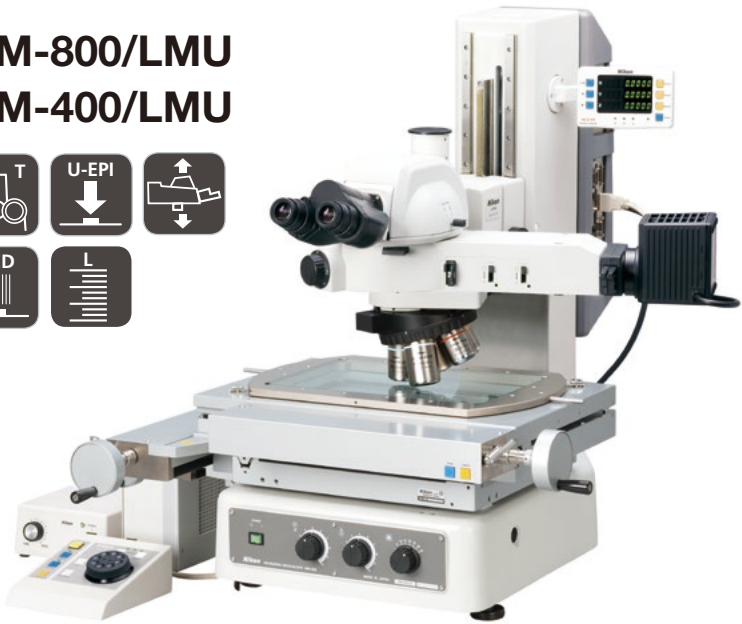
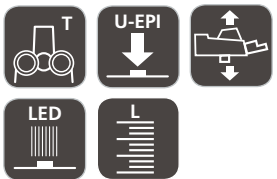
LED Illuminator
A high-intensity white LED illuminator for brightfield use.



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

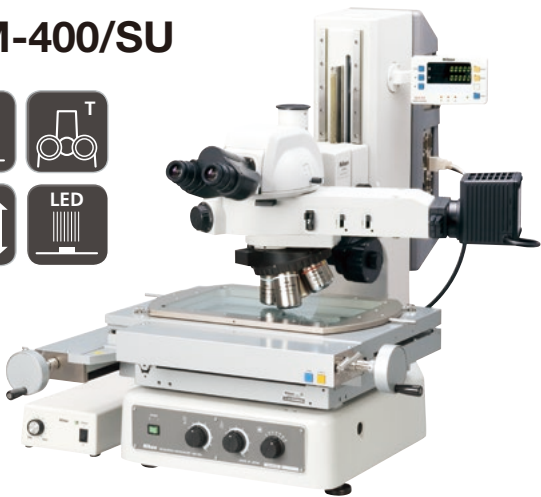
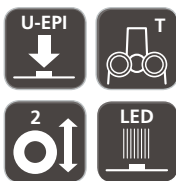
MM-400/800 Series U-Type

MM-800/LMU MM-400/LMU



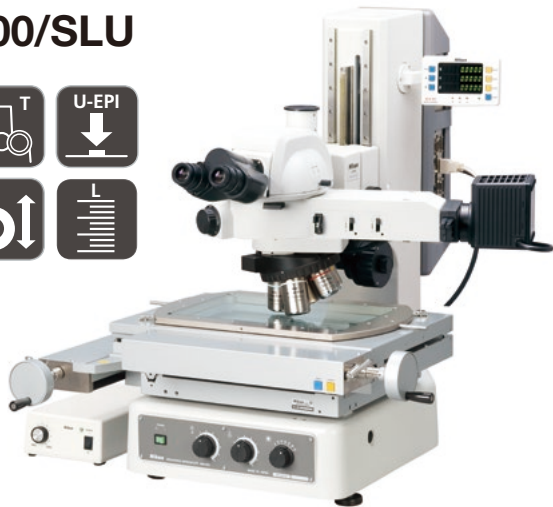
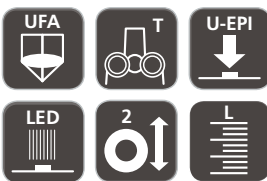
Configured with PS 12x8B stage,
TTL Laser AF, LV-U EPI epi-illuminator

MM-800/U MM-800/SU MM-400/U MM-400/SU



Configured with PS 12x8C stage, LV-U EPI2
universal epi-illuminator, tilting trinocular
eyepiece tube with built-in reticle

MM-800/LU MM-800/SLU MM-400/LU MM-400/SLU



*All product photos on P8 are that of MM-800 series

MM Series High-Precision Type

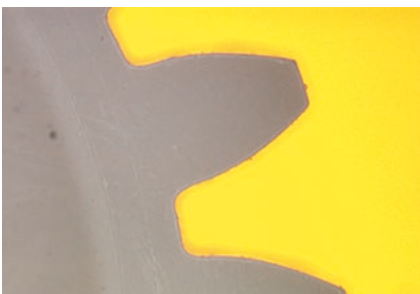
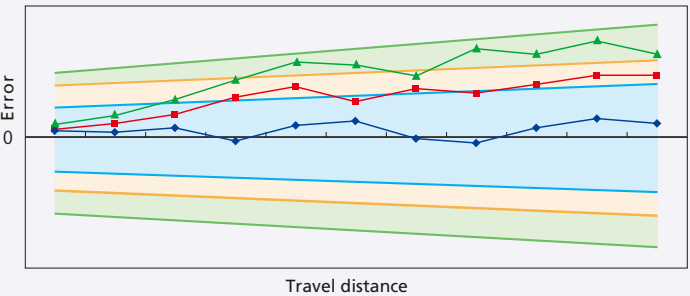
Nikon offers high-precision type measuring microscopes for customers who need higher precision. Type 1 is calibrated by a certified engineer for customer site. Type 2 (available only for MM-800) is calibrated with high-precision stage at Nikon factory before shipment.

| Accuracy (with MM main body) | Stage |
|---|--|
| • 1.5+L/100 μm (Type 2)*1*2 | PS 12x8C, PS 10x6B, PS 8x6B |
| • 2.0+L/50 μm (Type 1)*2 • 2.5+L/50 μm (Standard Type; calibration data included) | PS 12x8C, PS 10x6B, PS 8x6B, PS 6x4B, PS 4x4B, PS 2x2B |

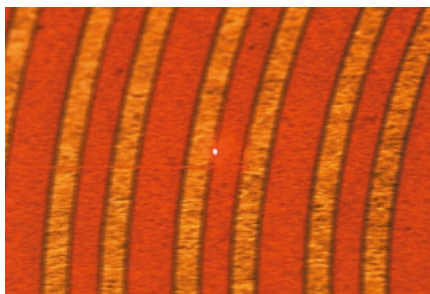
To ensure accuracy, both types require a temperature controlled room.
*1 Type 2 requires objective lens higher than 10x and vibration isolation table.
*2 Please contact Nikon for details regarding Type 1 and Type 2.

Combination precision (example)

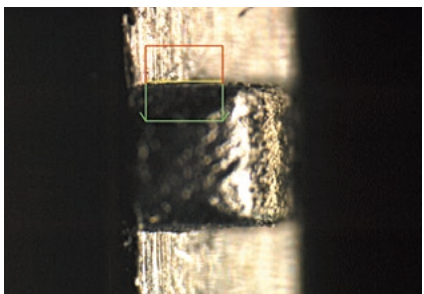
- Standard precision: $(2.5+L/50) \mu\text{m}$
- High-precision Type 1: $(2.0+L/50) \mu\text{m}$
- High-precision Type 2: $(1.5+L/100) \mu\text{m}$



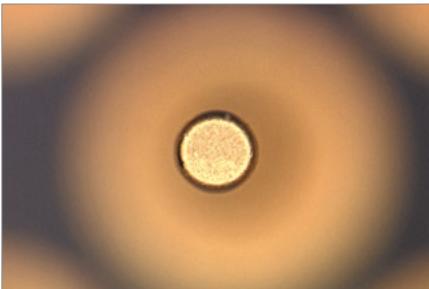
Plastic Gear Teeth with Smaller Module



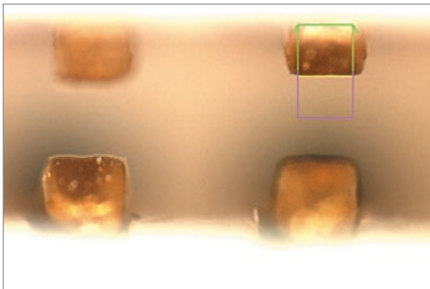
Laser AF Tracking on FPC



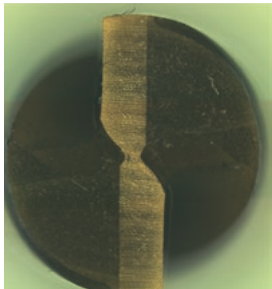
Black Injection Molding Parts - Connector



PGA - Insertion Pin



Connector - Housing Inside



Drill Bits

Function Icons



Built-in Z-axis Linear Scale
Z-axis reading is possible for noncontact height measurement.



Trinocular Optical Head
Ideal for configuration with photomicrography equipment.



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



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



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



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



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



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

MM-400/800 Specifications

MM-400 Series

| Type | | MM-400 | MM-400/S | MM-400/L | MM-400/SL | MM-400/LM | MM-400/LV | MM-400/LVFA | MM-400/U | MM-400/SU | MM-400/LU | MM-400/SLU | MM-400/LMU |
|----------------------------------|-----------|--|----------|---|-----------|--------------------------------------|--|-------------|---|-----------|-----------|------------|--------------------------------------|
| Z-axis movement | | Manual (dual side coarse/fine focus knob) | | | | Motorized (max. speed: 10 mm/sec) | Manual (dual side coarse/fine focus knob) | | Manual (dual side coarse/fine focus knob) | | | | Motorized (max. speed: 10 mm/sec) |
| MM controller backpack interface | | Built-in | — | Built-in | — | Built-in | — | | Built-in | — | Built-in | — | Built-in |
| Optical head | | Monocular optical head, Trinocular optical head | | Monocular optical head, Trinocular optical head, Trinocular optical FA head | | | Variable magnification optical head, Variable magnification optical FA head | | C-TB binocular tube, LV-TI3 trinocular eyepiece tube, LV-TT2 tilting trinocular eyepiece tube (with built-in reticle) | | | | |
| Z-axis linear scale | | — | | Built-in | | | — | | — | | Built-in | | |
| Eyepiece inclination angle | | 25° | | | | | 25° | | — | | | | |
| Eyepiece | | MM Eyepiece for Monocular optical head, CFWN10x (Field No. 20) for Trinocular optical head | | | | | MM Eyepiece for Monocular optical head, CFWN10x (Field No. 20) for Trinocular optical head | | CFI10x (Field No. 22), CFI10x CM (Field No. 22) | | | | |
| Objective | | Measuring microscope objectives | | | | | Measuring microscope objectives | | CFI60-2 TU Plan Fluor EPI series, CFI60-2 TU Plan Fluor BD series, CFI60 L Plan EPI CR series | | | | |
| Stage | | PS 6x4B, PS 4x4B, PS 2x2B | | | | | | | PS 6x4B, PS 4x4B, PS 2x2B | | | | |
| Light source | Diascopic | LED diascopic illuminator (standard), 12V-50W halogen light source (option)* ¹ | | | | | | | | | | | |
| | Episcopic | LED episcopic illuminator | | | | | LED episcopic illuminator | | White LED illuminator LV-EPI LED, Universal epi-illuminator LV-U EPI2* ¹ , Universal epi-illuminator U-EPI* ¹ , Universal epi-illuminator with Focusing Aid LV-U EPI FA | | | | |
| Maximum workpiece height | | 150 mm | | | | | 150 mm | | | | | | |
| Dimensions (W x D x H) | | 300 x 600 x 638 mm | | | | | 300 x 600 x 638 mm | | | | | | |
| Weight (approx.) | | 50 kg | | | | | 50 kg | | | | | | |

*1 TI-PS100W power supply is required

MM-800 Series

| Type | | MM-800 | MM-800/S | MM-800/L | MM-800/SL | MM-800/LM | MM-800/LV | MM-800/LVFA | MM-800/U | MM-800/SU | MM-800/LU | MM-800/SLU | MM-800/LMU |
|---------------------------------|-----------|--|----------|---|-----------|--------------------------------------|---|-------------|---|-----------|-----------|------------|--------------------------------------|
| Z-axis movement | | Manual (dual side coarse/fine focus knob) | | | | Motorized (max. speed: 10 mm/sec) | Manual (dual side coarse/fine focus knob) | | Manual (dual side coarse/fine focus knob) | | | | Motorized (max. speed: 10 mm/sec) |
| MM contoller backpack interface | | Built-in | — | Built-in | — | Built-in | — | | Built-in | — | Built-in | — | Built-in |
| Optical head | | Monocular optical head, Trinocular optical head | | Monocular optical head, Trinocular optical head, Trinocular optical FA head | | | Variable magnification optical head, Variable magnification optical FA head | | C-TB binocular tube, LV-TI3 trinocular eyepiece tube, LV-TT2 tilting trinocular eyepiece tube (with built-in reticle) | | | | |
| Z-axis linear scale | | — | | Built-in | | | — | | — | | Built-in | | |
| Eyepiece inclination angle | | 25° | | | | | 25° | | — | | | | |
| Eyepiece | | MM Eyepiece for Monocular optical head, CFWN10x (Field No. 20) for Trinocular optical head | | | | | MM Eyepiece for Monocular optical head, CFWN10x (Field No. 20) for Trinocular optical head | | CFI10x (Field No. 22), CFI10x CM (Field No. 22) | | | | |
| Objective | | Measuring microscope objectives | | | | | Measuring microscope objectives | | CFI60-2 TU Plan Fluor EPI series, CFI60-2 TU Plan Fluor BD series, CFI60 L Plan EPI CR series | | | | |
| Stage | | PS 12x8C, PS 10x6B, PS 8x6B, PS 6x4B, PS 4x4B, PS 2x2B* ² | | | | | | | PS 12x8C, PS 10x6B, PS 8x6B, PS 6x4B, PS 4x4B, PS 2x2B* ² | | | | |
| Light source | Diascopic | LED diascopic illuminator (standard), 12V-50W halogen light source (option)* ¹ | | | | | | | | | | | |
| | Episcopic | LED episcopic illuminator | | | | | White LED illuminator LV-EPI LED, Universal epi-illuminator LV-U EPI2* ¹ , Universal epi-illuminator U-EPI* ¹ , Universal epi-illuminator with Focusing Aid LV-U EPI FA | | | | | | |
| Maximum workpiece height | | 200 mm | | | | | 200 mm | | | | | | |
| Dimensions (W x D x H) | | 385 x 785 x 725 mm | | | | | 385 x 785 x 725 mm | | | | | | |
| Weight (approx.) | | 72 kg | | | | | 72 kg | | | | | | |

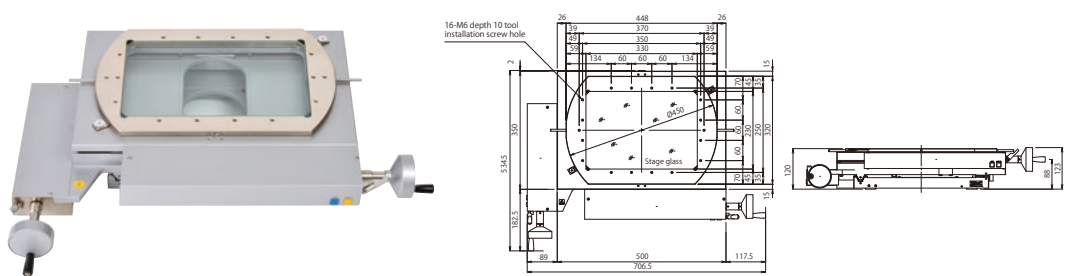
*1 TI-PS100W power supply is required

*2 For PS 6x4B stages or smaller, a stage adapter is required

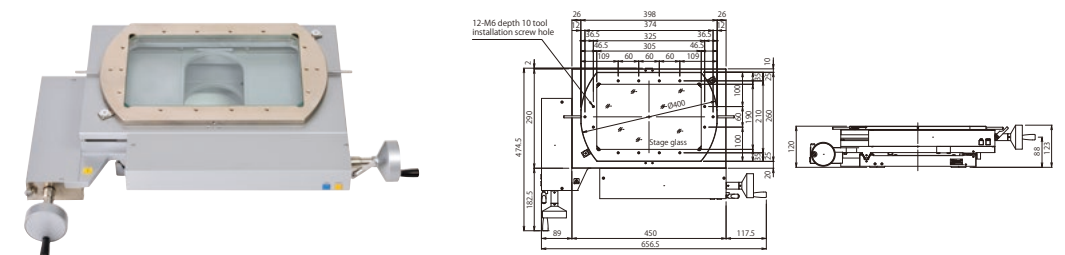
Stages

Stages for
MM-800
series

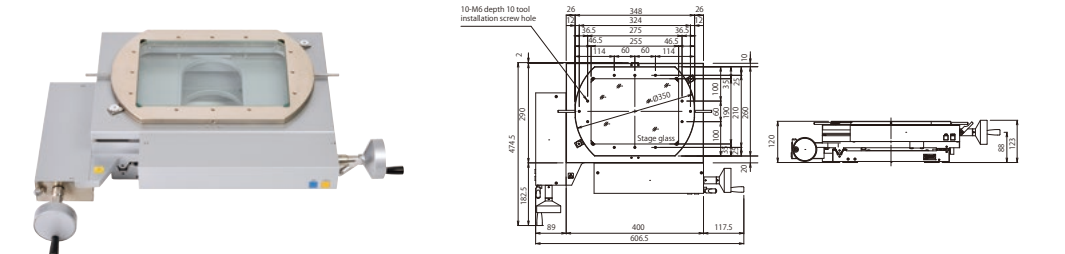
PS 12x8C
Stage



PS 10x6B
Stage

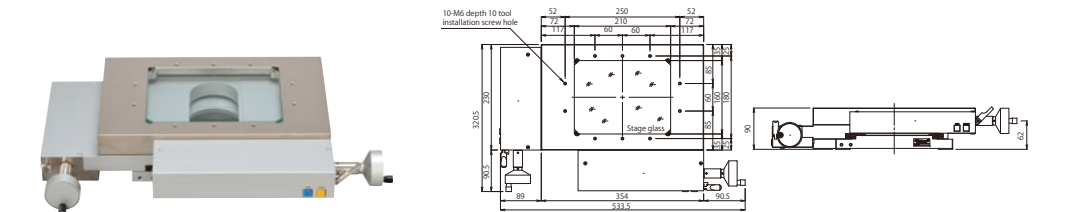


PS 8x6B
Stage

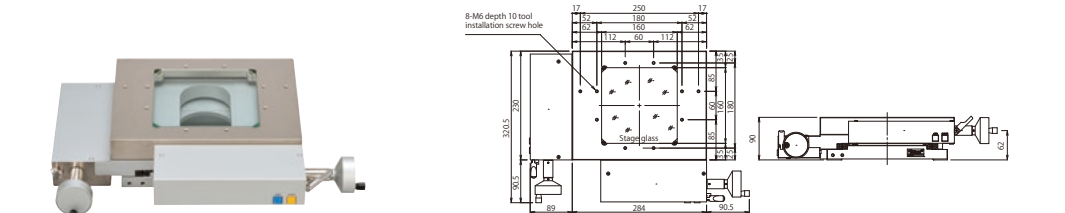


Stages for
MM-400
series

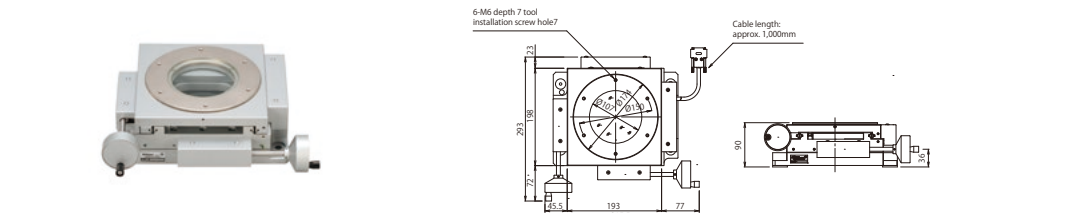
PS 6x4B
Stage



PS 4x4B
Stage



PS 2x2B
Stage



Stage specifications

| Type | Surface area | Stage glass dimensions | Stroke | Reading method | Min. reading | Rotation range | Tool installation screw hall | Loading capacity | Weight (approx.) |
|----------|--------------|------------------------|--------------|----------------|--------------|-----------------------|------------------------------|------------------|------------------|
| PS 12x8C | 448 x 320 mm | 330 x 230 mm | 300 x 200 mm | Linear encoder | 0.0001 mm | ±3° (Swivel plate) | 16-M6 depth 10 | 20 kg | 67 kg |
| PS 10x6B | 398 x 260 mm | 305 x 190 mm | 250 x 150 mm | | | | 12-M6 depth 10 | | 52 kg |
| PS 8x6B | 348 x 260 mm | 255 x 190 mm | 200 x 150 mm | | | | 10-M6 depth 10 | | 49 kg |
| PS 6x4B | 350 x 230 mm | 210 x 160 mm | 150 x 100 mm | | | — | 10-M6 depth 10 | 15 kg | 27.5 kg |
| PS 4x4B | 284 x 230 mm | 160 x 160 mm | 100 x 100 mm | | | | 8-M6 depth 10 | | 23.5 kg |
| PS 2x2B | ø174 mm | ø107 mm | 50 x 50 mm | | | 360° | 6-M6 depth 7 | 5 kg | 15.5 kg |

Stage Accessories

Stage Adapter

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



Rotating Tables

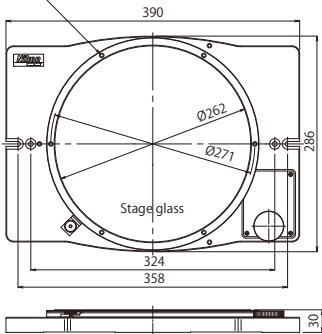
Used to rotate the workpiece and align it in the direction to which the stage moves.

Rotating Table Type 4

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



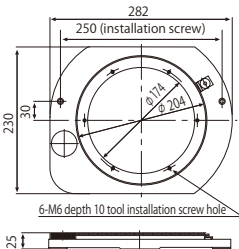
Tool installation screw holes (6-M6 depth 9) are located at six equidistant positions around the circumference.



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

Rotating Table Type 3

For PS 6x4B, PS 4x4B



Rotating table specifications

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

Tilting Center Fixture A

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



| Max. workpiece diameter and length when held level | Center height | Tilting angle | Weight (approx.) |
|--|---------------|-----------------------|------------------|
| ø68 x 120 mm | 45 mm | 10° (in 1° increment) | 2.2 kg |

Large Stage Adjustment Knob

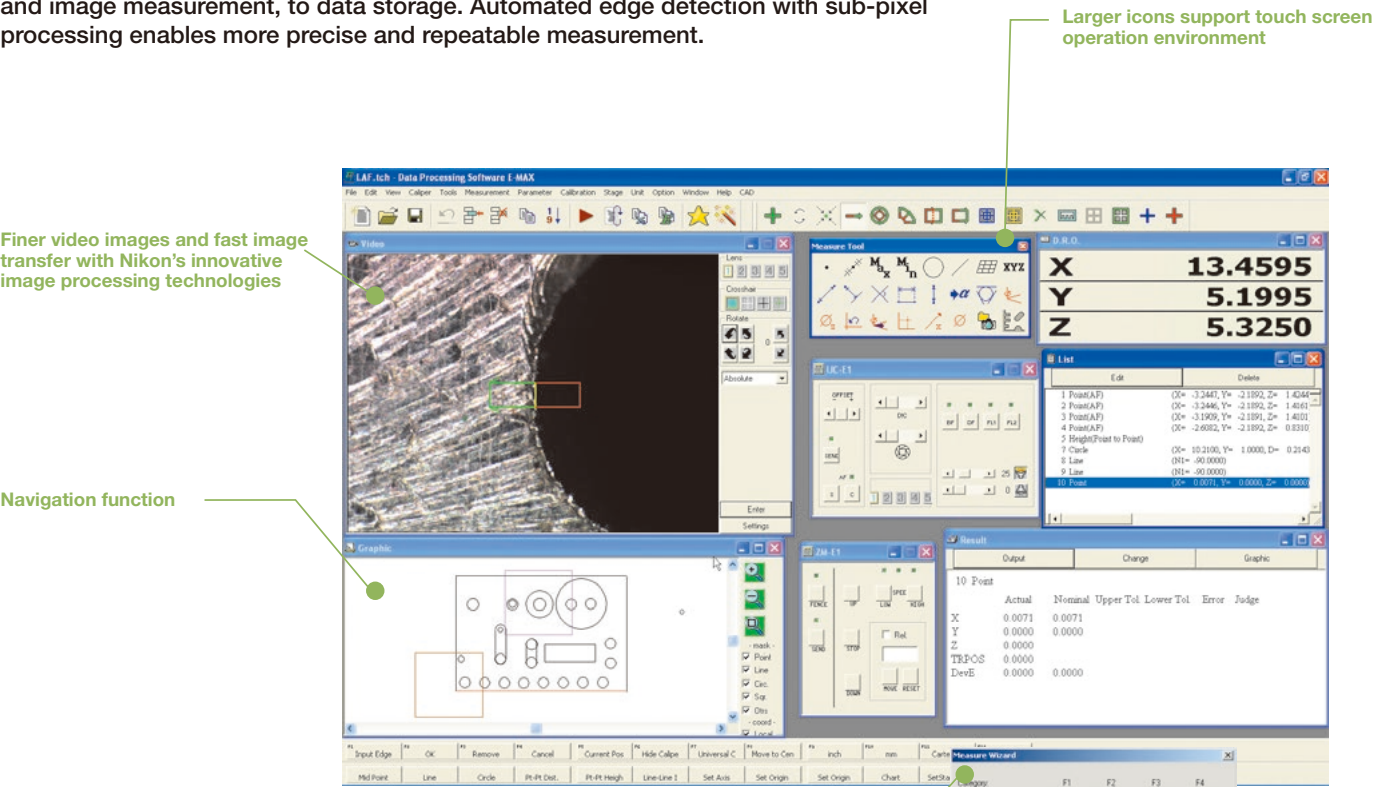
Enables fine adjustment of swivel plate rotation for PS 12x8C, PS 10x6B and PS 8x6B.



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.

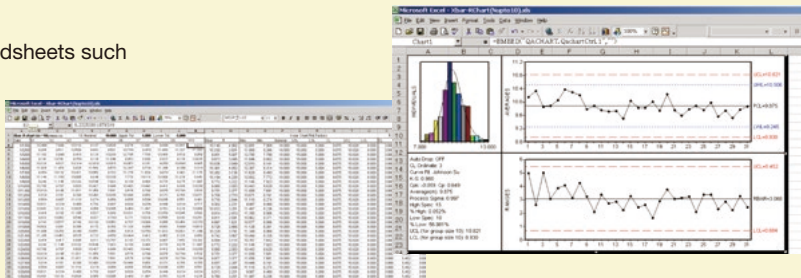


Functions provided by each set

| | V2 set | D set |
|--------------------------------|--------|-------|
| Data processing | ✓ | ✓ |
| Navigation during replay | ✓ | ✓ |
| Live video monitoring | ✓ | — |
| Chart measurement | ✓ | — |
| Automated video edge detection | ✓ | — |

DDE (Dynamic Data Exchange) Function

Measured data can be immediately transferred to spreadsheets such as Microsoft Excel®, making real-time SPC analysis possible.



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.

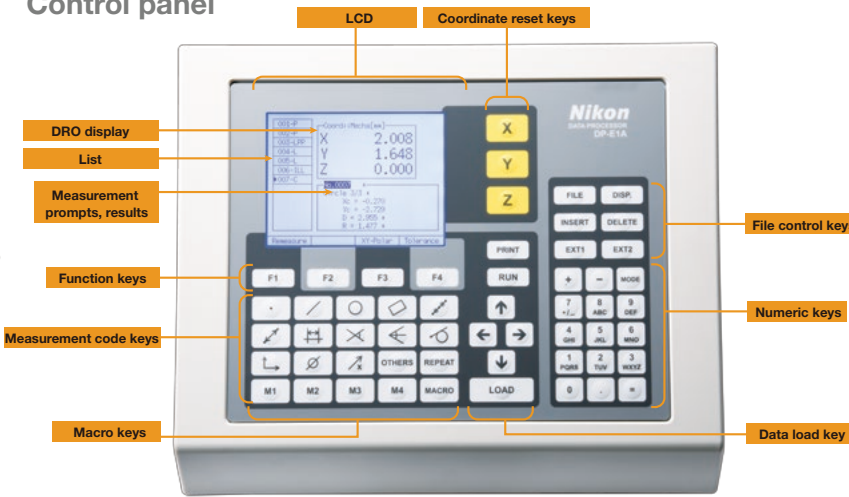
GD&T compliance

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.

Control panel



| | | | |
|--|--|--|---|
| Measure code key [Basic feature elements] • Point Calculates entered measurement point, or average point from multiple points • Line Calculates line from two entered measurement points or from multiple points by least-square method • Circle/arc Calculates circle from three entered measurement points or from multiple points by least-square method • Rectangle Calculates square from entered five measurement points [Constructed elements] • Mid-point Calculates middle point from two measured points • Pitch Calculates pitch between multiple measured points • Mid-line Calculates middle line from two measured lines | • Distance Calculates distance between two measured points • Intersection Calculates intersection point from two measured lines Calculates intersection point from measured point and line Calculates intersection point from two measured circles • Tangent Calculates tangent point from measured point and circle Calculates circle to contact two measured lines Calculates circle to contact three measured lines [Coordinate systems] • Set origin (datum) Sets up origin of local coordinate system • Set axis (datum) Sets up axis of local coordinate system • Displacement Sets up move, rotation and reversion of local coordinate system | Macro code key • Macro key • Macro setup key Registers combination of measurement codes for macro keys (M1 to M4) File key [File run] • Run key Runs teaching file • Repeat key Sets up repetition number of teaching file [File control] • Print key Conducts print output at discretionary timing during teaching • File key Shows menu to access file for file controls • Insert key Inserts measurement codes between list items • Delete key Deletes measurement code and entered measurement point Deletes file during file control | Display setting key • Disp. key Switches display settings Data input key • Load key Enters measurement points Accessory function key • Ext1 key Sets up print out of standard deviation • Ext2 key Reserved • Others key Reserved Function key • Function key Performance differs depending on displayed screen and item |
| M1 | | DISP. | |
| MACRO | | LOAD | |
| RUN | | EXT1 | |
| REPEAT | | EXT2 | |
| PRINT | | OTHERS | |
| FILE | | F1 | |
| INSERT | | | |
| DELETE | | | |

Retrofit Unit

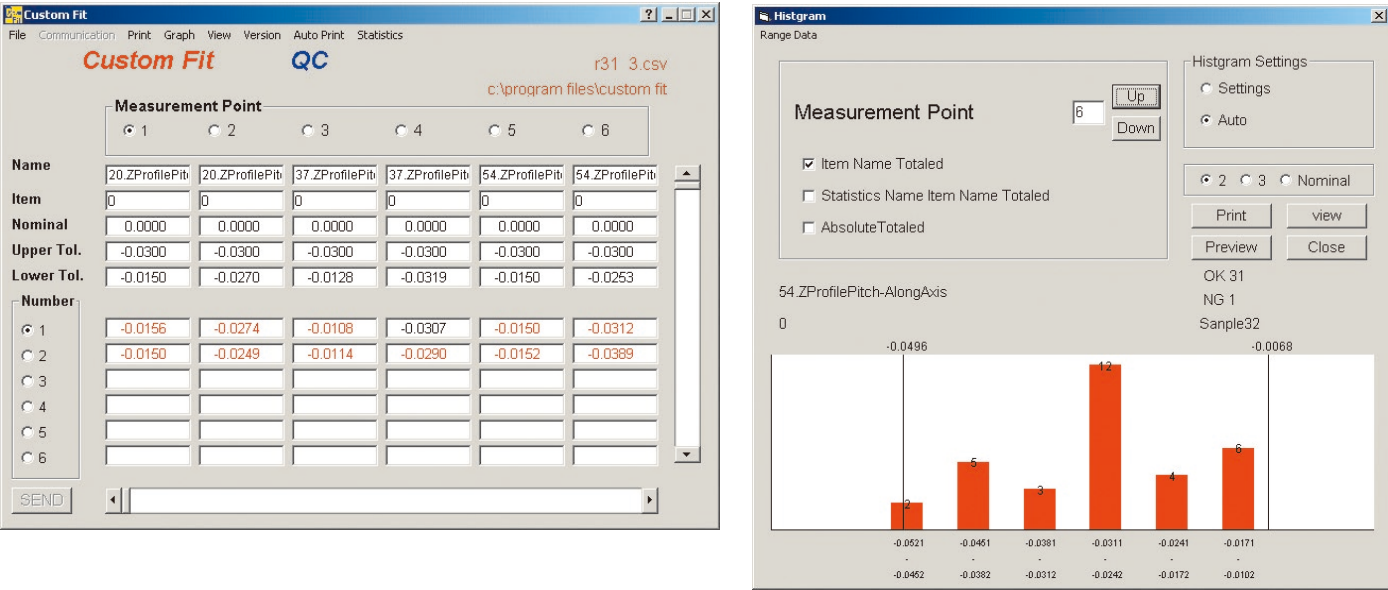
To use DP-E1A with the following models, a Retrofit Unit is required as an interface: Measuring Microscopes MM-40/MM-60 and Profile Projectors V-12B/V-20B



Application Software for Measurement Support/Data Processing System

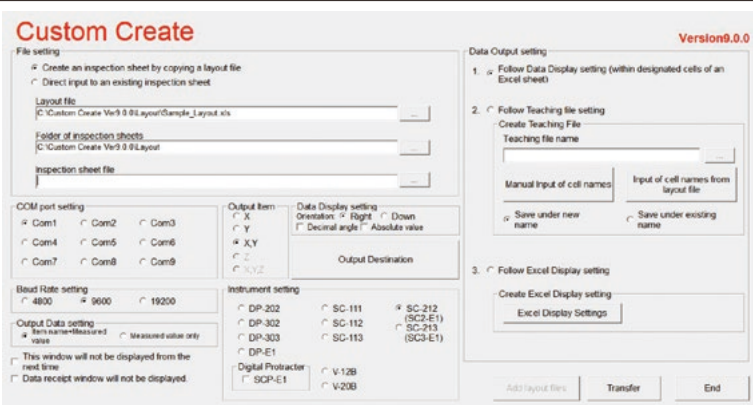
Custom Fit QC: Report and chart generating

- 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.

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.



Y-axis

X-axis

Counter Remote Switch

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



Digital Thermal Printers
DPU-414/TSP654II 2

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



DPU-414

TSP654II 2

Calibration Scale 300mm

Used to calibrate feeding accuracy of stage up to 300mm. The scale is made of low expansion glass to minimize thermal error. Both 10mm-interval sensor patterns and calibrations are provided. Accuracy: Within 1μm 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-400/800 |
| Installation part (W x D) | 450 x 689 mm |
| Dimensions (W x D x H) | 1058 x 689 x 751 mm |



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

Foot Switch

Used to send load command to DP-E1A and DPU-414. Frees both hands to enhance measurement efficiency.



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 | 1x | 3x | 5x | 10x | 20x | 50x | 100x |
|---------------|----|----|----|-----|-----|-----|------|
| WD (mm) | 79 | 75 | 64 | 49 | 20 | 15 | 4 |



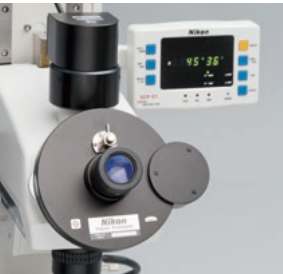
Protractor Eyepieces (for MM Type only)

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°



Direct C-mount Adapter

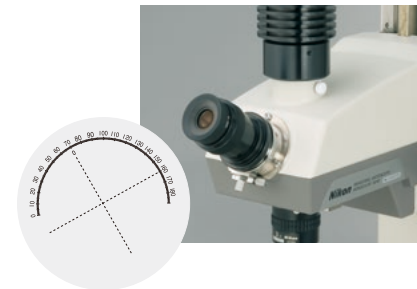
Used to install C-mount camera on the measuring microscope.

- LV-TV tube is required



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°.



High-performance Objective Lenses

Standard objective lenses

CFI60-2 TU Plan Fluor Series

Suitable for various research, analysis, and examination needs, while maintaining Nikon's commitment to high NA and long working distance. Offering high resolution and ease of use, these objectives can be used for brightfield, darkfield, simple polarizing, DIC and UV epifluorescence observations.



TU Plan Fluor series

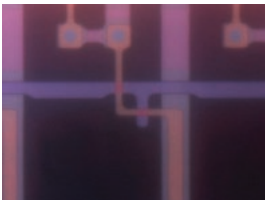
Objective lenses with correction ring

CFI60 L Plan EPI CR Series

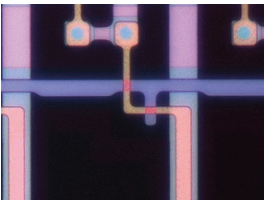
Objectives for use with thin cover-glass used in liquid crystal displays and highly integrated, dense devices. Coverglass correction can be continuously made from 0mm up to 1.2mm (0-0.7mm and 0.6-1.3mm for 100x). The 100x objective lens offers 0.85 high NA, while enabling high-contrast imaging of cells and patterns without being affected by the coverglass.



L Plan EPI CR series of objective lenses with correction ring



Without correction (50x)



With correction at 0.7mm (50x)

Illuminators

8-Segment LED Ring Light

Enables illumination from eight directions.

- Can be used with MM-400/800 and 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 workpiece 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 60 high output 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



CFI60/CFI60-2 Series

Brightfield

| Type | Magnification | NA | W.D. (mm) |
|-------------------|---------------|-------|-----------|
| L Plan EPI | 2.5x | 0.075 | 8.8 |
| T Plan EPI | 1x | 0.03 | 4.0 |
| | 2.5x | 0.075 | 6.5 |
| TU Plan Fluor EPI | 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 EPI ELWD | 20x | 0.40 | 19.0 |
| | 50x | 0.60 | 11.0 |
| T Plan EPI SLWD | 100x | 0.80 | 4.5 |
| | 10x | 0.20 | 37.0 |
| | 20x | 0.30 | 30.0 |
| | 50x | 0.40 | 22.0 |
| TU Plan Apo EPI | 100x | 0.60 | 10.0 |
| | 50x | 0.80 | 2.0 |
| | 100x | 0.90 | 2.0 |
| | 150x | 0.90 | 1.5 |

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 |

Brightfield/Darkfield

| Type | Magnification | NA | W.D. (mm) |
|------------------|---------------|------|-----------|
| TU Plan Fluor BD | 5x | 0.15 | 18.0 |
| | 10x | 0.30 | 15.0 |
| | 20x | 0.45 | 4.5 |
| | 50x | 0.80 | 1.0 |
| TU Plan BD ELWD | 100x | 0.90 | 1.0 |
| | 20x | 0.40 | 19.0 |
| | 50x | 0.60 | 11.0 |
| | 100x | 0.80 | 4.5 |
| TU Plan Apo BD | 50x | 0.80 | 2.0 |
| | 100x | 0.90 | 2.0 |
| | 150x | 0.90 | 1.5 |

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

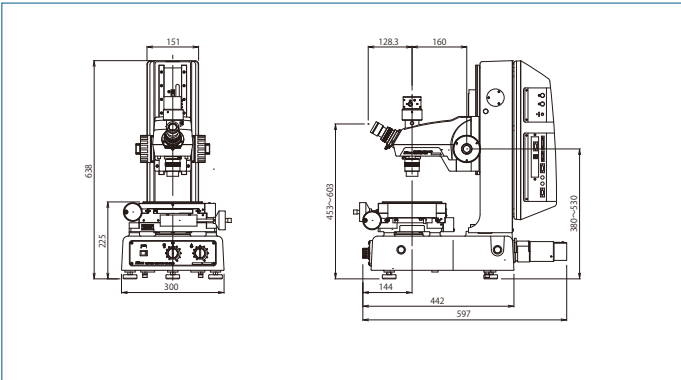
A variety of manual control nosepieces are available to suit all needs.



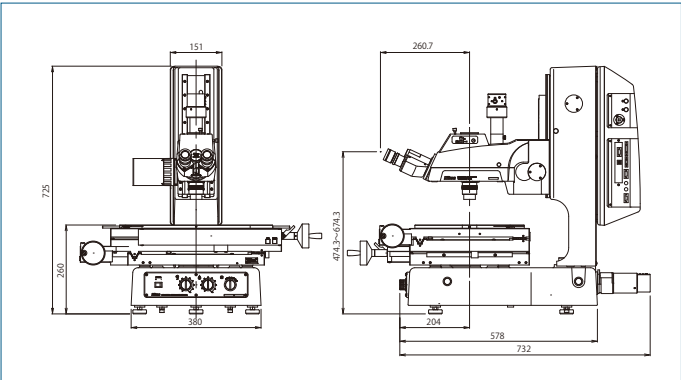
Note: Dimensions will vary, depending on which stage and eyepiece tube are used.

Unit: mm

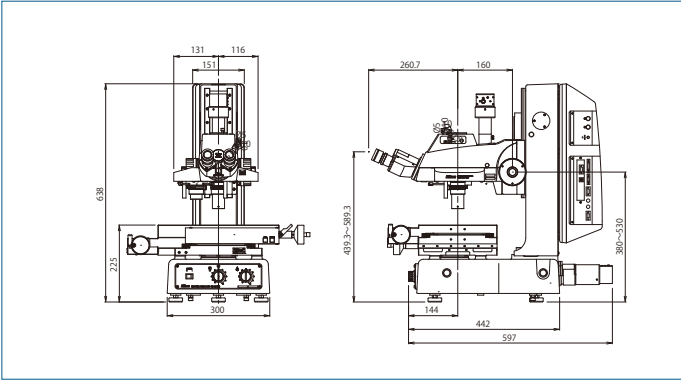
MM-400/M
PS 2x2B Stage



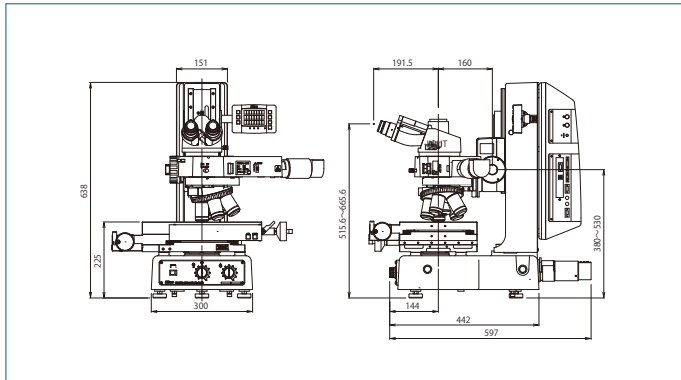
MM-800/LM
PS 12x8C Stage



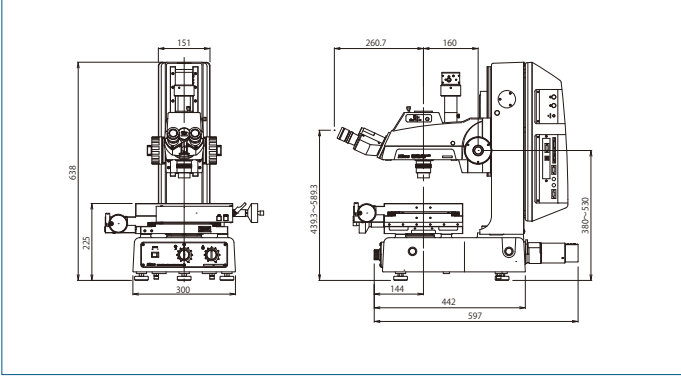
MM-400LV
PS 6x4B Stage



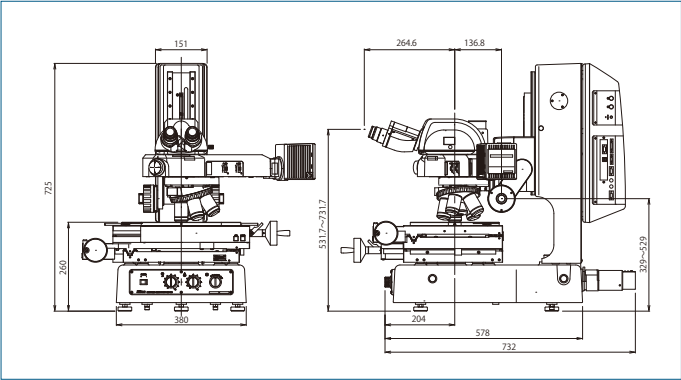
MM-400/LUFA
PS 6x4B Stage



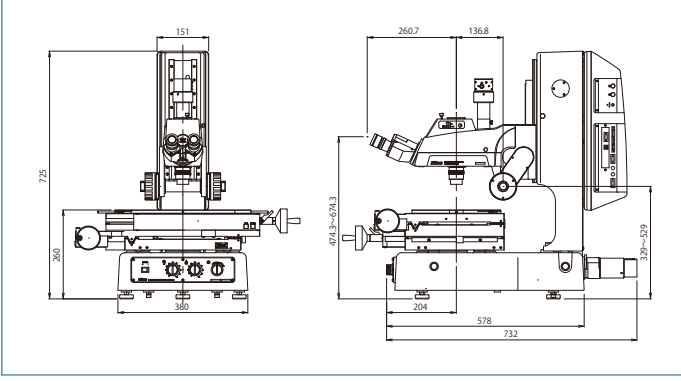
MM-400/L
PS 4x4B Stage



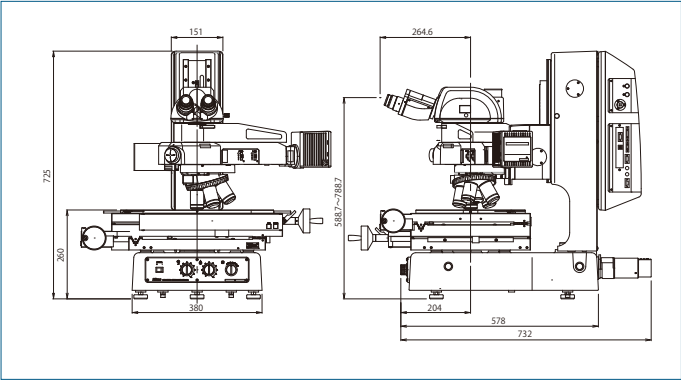
MM-800/LU
PS 8x6B Stage



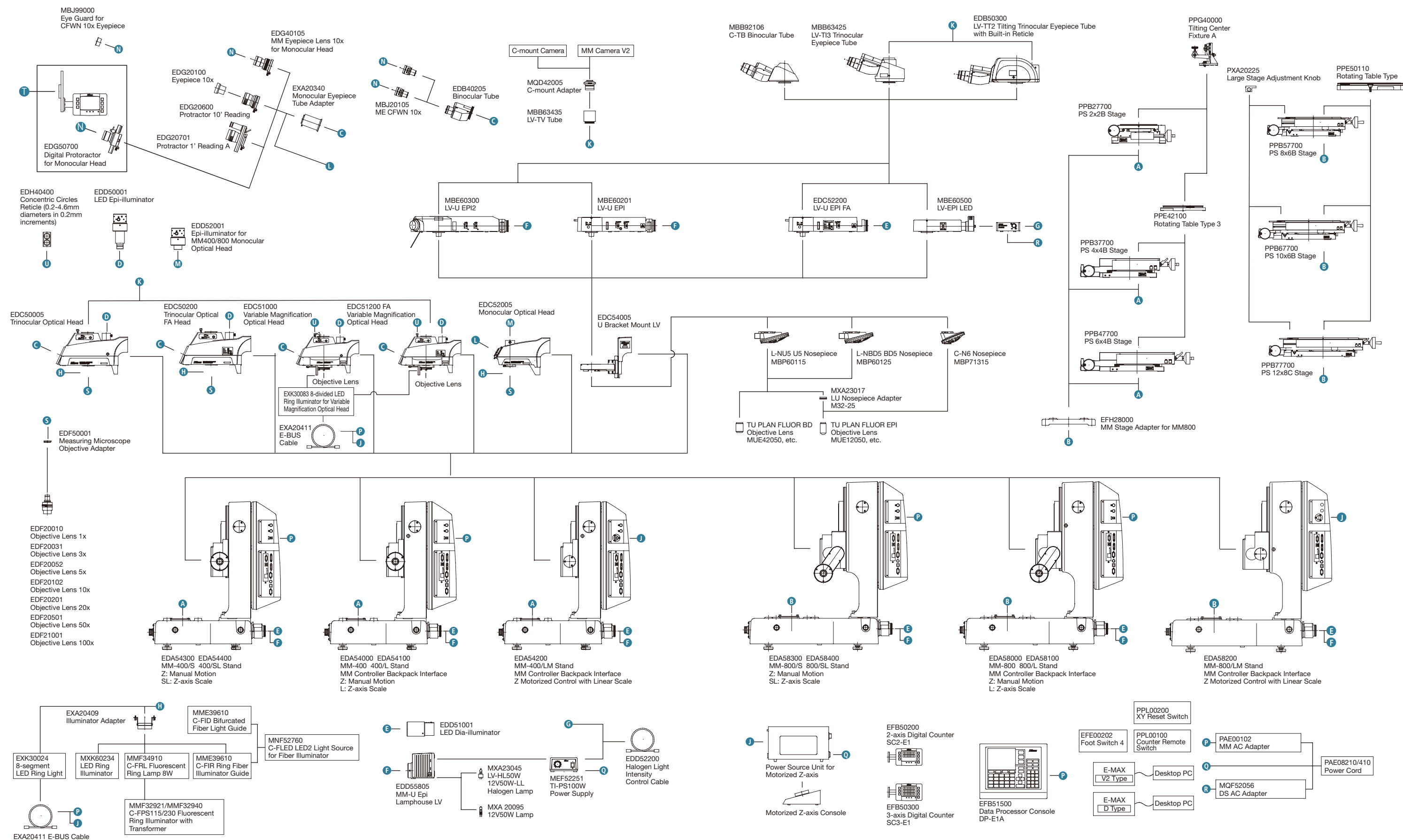
MM-800/L
PS 10x6B Stage



MM-800/LMU
PS 12x8C Stage



MM-400/800 System Diagram



Suggested Configuration Chart

MM-Type

| | | Model | MM-400/S | MM-400 | MM-400/L | MM-400/SL | MM-400/LM | MM-800/S | MM-800 | MM-800/SL | MM-800/L | MM-800/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 | 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 | | EDA54000 | MM-400 Stand | ✓ | | | | | | | | |
| | | EDA54100 | MM-400/L Stand | | ✓ | | | | | | | |
| | | EDA54200 | MM-400/LM Stand | | | | ✓ | | | | | |
| | | EDA54300 | MM-400/S Stand | ✓ | | | | | | | | |
| | | EDA54400 | MM-400/SL Stand | | | ✓ | | | | | | |
| | | EDA58000 | MM-800 Stand | | | | | ✓ | | | | |
| | | EDA58100 | MM-800/L Stand | | | | | | | ✓ | | |
| | | EDA58200 | MM-800/LM Stand | | | | | | | | ✓ | |
| | | EDA58400 | MM-800/SL Stand | | | | | | ✓ | | | |
| | | EDA58300 | MM-800/S Stand | | | | | ✓ | | | | |
| | | PAE00102 | MM AC Adapter | ✓ | ✓ | ✓ 2pcs | ✓ | ✓ | ✓ 2pcs | ✓ | ✓ | |
| | | PAE08210/410 | 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 | CFVN 10x Eyepiece (2pcs) | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | EDD51001 | LED Dia-illuminator | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | EDD50001 | LED Epi-illuminator | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | EDD52001 | Epi-illuminator for MM400/800 Monocular Optical Head | | ✓ | | | | | | | |
| | | EXK30024 | 8-segment LED Ring Light (100-240V) | | | | ✓ | | | | ✓ | ✓ |
| | | EXA20411 | E-BUS Cable | | ✓ | | ✓ | | ✓ | | ✓ | ✓ |
| | | PAE08210/410 | 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 | | ✓ | | ✓ | | | | ✓ | ✓ |
| | | EXK30314 | Thermal Printer Model TSP654II 2 | | ✓ | | | | ✓ | | | |
| | | EXA20478 | 9-25 Pins RS-232C Cross Cable (2m) | | ✓ | | | | ✓ | | | |
| | | EXK30105 | Printer Paper | | ✓ | | | | ✓ | | | |
| | | PAE08210/410 | 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

| | | Model | MM-400/U | MM-400/LU | MM-400/LMU | MM-800/SU | MM-800/LU | MM-800/SLU | MM-800/LMU | MM-800/LMU | MM-800/SLU | |
|--|------------------------------------|--|-------------------------------|-------------|------------|-----------|-------------|-------------|-------------|-------------|------------|-------------|
| | | Z-axis Motion | Manual | Manual | Motorized | Manual | Manual | Manual | Motorized | Manual | Manual | |
| | | Z-axis Scale | No | Yes | Yes | No | Yes | Yes | Yes | Yes | Yes | No |
| | | MM Controller Backpack Interface | Yes | Yes | Yes | No | Yes | No | Yes | Yes | Yes | No |
| | | Stage | PS 4x4B | PS 4x4B | PS 6x4B | PS 8x6B | PS 12x8C | PS 10x6B | PS 12x8C | PS 12x8C | PS 12x8C | PS 10x6B |
| | | Head | C-TB | TT2 | TI3 | TI3 | TT2 | TT2 | TT2 | 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 EPI FA | LV-U EPI FA | 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 | EDA54000 | MM-400 Stand | ✓ | | | | | | | | | |
| | EDA54100 | MM-400/L Stand | | ✓ | | | | | | | | |
| | EDA54200 | MM-400/LM Stand | | | ✓ | | | | | | | |
| | EDA54400 | MM-400/SL Stand | | | | | | | | | | |
| | EDA58000 | MM-800 Stand | | | | | | | | | | |
| | EDA58100 | MM-800/L Stand | | | | | ✓ | | | | | |
| | EDA58200 | MM-800/LM Stand | | | | | | | ✓ | ✓ | | |
| | EDA58400 | MM-800/SL Stand | | | | | | ✓ | | | ✓ | |
| | EDA58300 | MM-800/S Stand | | | | ✓ | | | | | | |
| | PAE00102 | MM AC Adapter | ✓ | ✓ | | ✓ | ✓ | ✓ | | | ✓ | |
| | PAE08210/410 | Power Cable | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| | EDC54005 | U Bracket Mount LV | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Stages and Rotating Tables | EDD51001 | LED Dia-illuminator (used for U-FA as Epi-illuminator) | ✓ | ✓ 2pcs | ✓ | ✓ | ✓ 2pcs | ✓ 2pcs | ✓ 2pcs | ✓ | ✓ 2pcs | |
| | 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 | | ✓ | ✓ | | ✓ | | ✓ | ✓ | |
| 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 | MBE60500 | LV-EPI LED | ✓ | | | | | | | | | |
| | MQF52056 | DS AC Adapter 2 | ✓ | | | | | | | | | |
| | PAE08210/410 | Power Cable | ✓ | | | | | | | | | |
| | MBE60201 | LV-U EPI (BF DF DIC) | | | | ✓ | | | | | | |
| | EDC52200 | LV-U EPI FA | | ✓ | | | ✓ | ✓ | | | ✓ | |
| | MBE60300 | LV-U EPI2 (BF DF DIC FL) | | | ✓ | | | | | ✓ | | |
| Filters and Halogen Light Source | MBN66750 | YM-NCB25 NCB11 | | | ✓ | ✓ | | | | ✓ | | |
| | MBN66760 | YM-ND25 ND4/ND16 | | | ✓ | ✓ | | | | ✓ | | |
| | EDD55805 | MM-U Epi Lamphouse LV | | ✓ | ✓ | | | | | ✓ | | |
| | EDD52200 | Halogen Light Intensity Control Cable | ✓ | | ✓ | ✓ | | | | ✓ | | |
| | MXA23045 | LV-HL50W 12V50W-LL Halogen Lamp | | | ✓ | ✓ | | | | ✓ | | |
| | MEF52251 | TI-PS100W Power Supply (100-240V) | | | ✓ | ✓ | | | | ✓ | | |
| | PAE08210/410 | Power Cable | | | ✓ | ✓ | | | | ✓ | | |
| Tube 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 | ✓ | | ✓ | ✓ | | | | | ✓ | |
| Rotating 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 ELWD 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) | | ✓ | ✓ | | ✓ | | ✓ | ✓ | | |

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: | CS 1st Engineering Section Engineering Department 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: $(0.70 + 5.0 \times 10^{-3} \times L) \mu\text{m}$ Micrometer up to 50 mm: 0.70 μm |

Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. October 2018 ©2003-18 NIKON CORPORATION

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|---|--|
|  WARNING | TO ENSURE CORRECT USAGE, READ THE CORRESPONDING MANUALS CAREFULLY BEFORE USING YOUR EQUIPMENT. |
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N.B. Export of the products* in this catalog is controlled under the Japanese Foreign Exchange and Foreign Trade Law. Appropriate export procedure shall be required in case of export from Japan.

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

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