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.

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.

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

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

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**MM TYPE**

<table>
<thead>
<tr>
<th>Compact</th>
<th>Z Motorized</th>
<th>Variable Magnification</th>
<th>Z-axis Linear Scale</th>
<th>Basic</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM-200</td>
<td></td>
<td>MM-800N/LV</td>
<td>MM-800N/LT</td>
<td>MM-800N/T</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MM-800N/LFA</td>
<td>MM-800N/LST</td>
<td>MM-800N/ST</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MM-400N/LV</td>
<td>MM-400N/LT</td>
<td>MM-400N/ST</td>
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<td></td>
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<td>MM-400N/LST</td>
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<tr>
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<td></td>
<td>MM-400N/LFA</td>
<td>MM-400N/LFA</td>
<td>MM-400N/SL</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>MM-400N/LFA</td>
<td>MM-400N/SL</td>
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<tr>
<td></td>
<td></td>
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<td>MM-400N/LFA</td>
<td>MM-400N/SL</td>
</tr>
</tbody>
</table>

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**UNIVERSAL TYPE**

<table>
<thead>
<tr>
<th>Z Motorized</th>
<th>Z-axis Linear Scale</th>
<th>Basic</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM-800N/LMU</td>
<td>MM-800N/LU</td>
<td>MM-800N/U</td>
</tr>
<tr>
<td>MM-400N/LMU</td>
<td>MM-400N/LU</td>
<td>MM-400N/U</td>
</tr>
<tr>
<td>MM-800N/SLU</td>
<td>MM-400N/SLU</td>
<td>MM-400N/SU</td>
</tr>
<tr>
<td>MM-400N/SLU</td>
<td>MM-400N/SLU</td>
<td>MM-400N/SU</td>
</tr>
</tbody>
</table>

---

**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**: A high-intensity white LED illuminator for brightfield use.

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*2: Based on Nikon standards, in consideration of domestic and foreign laws and regulations.
**MM-200**

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

- Shortens measurement time with its built-in 50 x 50 mm stage and rotating table.
- Built-in light sources are all long-life white LEDs. The optional LED ring light enhances edge observation with the use of an oblique illumination angle.
- Features a space-saving design with a footprint equivalent to an A3 size sheet, or 420 x 297 mm.
- *Value does not include handles*

**UNIVERSAL TYPE**

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

**E-MAX set**

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

**Main Specifications**

<table>
<thead>
<tr>
<th>Type</th>
<th>Monocular Eyepiece Tube Type</th>
<th>C-mount Video Head Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical head</td>
<td>MM-200 monocular optical head</td>
<td>C-mount video head for MM-200</td>
</tr>
<tr>
<td>Field of view</td>
<td>50 x 50 mm</td>
<td>50 x 50 mm</td>
</tr>
<tr>
<td>Magnification accuracy</td>
<td>0.1%</td>
<td></td>
</tr>
<tr>
<td>Objective lens</td>
<td>Standard: 3× (75.5 mm)</td>
<td>Optional: 3× (75.5 mm), 5× (84 mm), 10× (45 mm)</td>
</tr>
<tr>
<td>Light sources</td>
<td>Standard: diascopic/episcopic (white LED)</td>
<td>Optional: 8-segment ring light (white LED)</td>
</tr>
<tr>
<td>Dimensions &amp; weight</td>
<td>315 x 455 x 533 mm (W x D x H), 40 kg</td>
<td></td>
</tr>
<tr>
<td>Input voltage range</td>
<td>100 - 240 V (Max. 1.8 A)</td>
<td></td>
</tr>
</tbody>
</table>

**Improved height measurement accuracy**

**Focusing Aid (FA)**

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

**Improved lighting performance for wide range of needs**

**LED Illuminator**

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

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

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

**Enhanced height measurement**

**Focusing Aid (FA)**

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

**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.

**MM TYPE**

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

**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.
Two objective lenses, low magnification and high magnification, can be mounted and it is easy to switch between them. A single microscope can be used for applications where cost performance is priority. For applications where cost performance is priority.

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.

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.

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.

A dedicated controller provides easy and accurate up/down movements.

For applications where cost performance is priority. For applications where cost performance is priority.

A high-intensity white LED illuminator for brightfield use.

Universal Epi-illuminator Supports a wide range of applications.

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

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

*1: Excludes stage and eyepiece

*2: *There is no measurement controller on the back side for S/SL type. Connection is made with the DP unit.

The Focusing Aid (FA) ensures accurate Z-axis focusing.
Universal-type with motorized vertical movement with universal reflective illuminator capable of brightfield, darkfield, simple polarization, and differential interference observation. Dual-axis handle type with built-in Z-axis scale. Combining with the LV-U EPI FA reflective illuminator, high-precision height measurements can be made.

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**Main Specifications**

<table>
<thead>
<tr>
<th>Model</th>
<th>MM-800N/LMU</th>
<th>MM-400N/LMU</th>
<th>MM-800N/LU, MM-800N/SLU</th>
<th>MM-800N/SU, MM-800N/SU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Z-axis movement</strong></td>
<td>Motorized (max. speed: 10 mm/sec)</td>
<td>Manual (dual side coarse/fine focus knobs)</td>
<td>Manual (dual side coarse/fine focus knobs)</td>
<td>Manual (dual side coarse/fine focus knobs)</td>
</tr>
<tr>
<td><strong>Optical head</strong></td>
<td>C-T1 binocular tube, C-T2 binocular eyepiece tube, LV-T12 Tilted binocular eyepiece tube (with built-in reticle)</td>
<td>C-T1 binocular tube, C-T2 binocular eyepiece tube, LV-T12 Tilted binocular eyepiece tube (with built-in reticle)</td>
<td>C-T1 binocular tube, C-T2 binocular eyepiece tube, LV-T12 Tilted binocular eyepiece tube (with built-in reticle)</td>
<td>C-T1 binocular tube, C-T2 binocular eyepiece tube, LV-T12 Tilted binocular eyepiece tube (with built-in reticle)</td>
</tr>
<tr>
<td><strong>Eyepiece Tube</strong></td>
<td>C-T1 binocular tube, LV-T12 Tilted binocular eyepiece tube, LV-T12 Tilted binocular eyepiece tube (with built-in reticle)</td>
<td>C-T1 binocular tube, LV-T12 Tilted binocular eyepiece tube, LV-T12 Tilted binocular eyepiece tube (with built-in reticle)</td>
<td>C-T1 binocular tube, LV-T12 Tilted binocular eyepiece tube, LV-T12 Tilted binocular eyepiece tube (with built-in reticle)</td>
<td>C-T1 binocular tube, LV-T12 Tilted binocular eyepiece tube, LV-T12 Tilted binocular eyepiece tube (with built-in reticle)</td>
</tr>
<tr>
<td><strong>Objective lenses</strong></td>
<td>CFI 10X (Field No. 22), CFI 10XCM (Field No. 22), CFI 10X (Field No. 22), CFI 10XCM (Field No. 22), CFI 10X (Field No. 22), CFI 10XCM (Field No. 22)</td>
<td>CFI 10X (Field No. 22), CFI 10XCM (Field No. 22), CFI 10X (Field No. 22), CFI 10XCM (Field No. 22), CFI 10X (Field No. 22), CFI 10XCM (Field No. 22)</td>
<td>CFI 10X (Field No. 22), CFI 10XCM (Field No. 22), CFI 10X (Field No. 22), CFI 10XCM (Field No. 22), CFI 10X (Field No. 22), CFI 10XCM (Field No. 22)</td>
<td>CFI 10X (Field No. 22), CFI 10XCM (Field No. 22), CFI 10X (Field No. 22), CFI 10XCM (Field No. 22), CFI 10X (Field No. 22), CFI 10XCM (Field No. 22)</td>
</tr>
<tr>
<td><strong>Eyepiece Tube</strong></td>
<td>LV-TT2 (Field No. 22), LV-TT3 (Field No. 22), LV-TT4 (Field No. 22), LV-TT5 (Field No. 22), LV-TT6 (Field No. 22), LV-TT7 (Field No. 22)</td>
<td>LV-TT2 (Field No. 22), LV-TT3 (Field No. 22), LV-TT4 (Field No. 22), LV-TT5 (Field No. 22), LV-TT6 (Field No. 22), LV-TT7 (Field No. 22)</td>
<td>LV-TT2 (Field No. 22), LV-TT3 (Field No. 22), LV-TT4 (Field No. 22), LV-TT5 (Field No. 22), LV-TT6 (Field No. 22), LV-TT7 (Field No. 22)</td>
<td>LV-TT2 (Field No. 22), LV-TT3 (Field No. 22), LV-TT4 (Field No. 22), LV-TT5 (Field No. 22), LV-TT6 (Field No. 22), LV-TT7 (Field No. 22)</td>
</tr>
<tr>
<td><strong>Stage</strong></td>
<td>MHS 3x4, MHS 4x4, MHS 5x5, MHS 6x6, MHS 7x7, MHS 8x8, MHS 9x9, MHS 10x10, MHS 11x11, MHS 12x12, MHS 13x13, MHS 14x14, MHS 15x15, MHS 16x16, MHS 17x17, MHS 18x18, MHS 19x19, MHS 20x20</td>
<td>MHS 3x4, MHS 4x4, MHS 5x5, MHS 6x6, MHS 7x7, MHS 8x8, MHS 9x9, MHS 10x10, MHS 11x11, MHS 12x12, MHS 13x13, MHS 14x14, MHS 15x15, MHS 16x16, MHS 17x17, MHS 18x18, MHS 19x19, MHS 20x20</td>
<td>MHS 3x4, MHS 4x4, MHS 5x5, MHS 6x6, MHS 7x7, MHS 8x8, MHS 9x9, MHS 10x10, MHS 11x11, MHS 12x12, MHS 13x13, MHS 14x14, MHS 15x15, MHS 16x16, MHS 17x17, MHS 18x18, MHS 19x19, MHS 20x20</td>
<td>MHS 3x4, MHS 4x4, MHS 5x5, MHS 6x6, MHS 7x7, MHS 8x8, MHS 9x9, MHS 10x10, MHS 11x11, MHS 12x12, MHS 13x13, MHS 14x14, MHS 15x15, MHS 16x16, MHS 17x17, MHS 18x18, MHS 19x19, MHS 20x20</td>
</tr>
<tr>
<td><strong>Light Source</strong></td>
<td>380(W)×703(D)×725(H)mm, Approx. 72 kg, Approx. 50 kg</td>
<td>380(W)×703(D)×725(H)mm, Approx. 72 kg, Approx. 50 kg</td>
<td>380(W)×703(D)×725(H)mm, Approx. 72 kg, Approx. 50 kg</td>
<td>380(W)×703(D)×725(H)mm, Approx. 72 kg, Approx. 50 kg</td>
</tr>
</tbody>
</table>

1: When attaching a MHS 6x6, MHS 8x8, or MHS 20x20 stage to MM-800N, a stage adapter is required.
2: Used with TI-P5100W power supply + MM-LH100PC.
3: Excludes stage and eyepiece.

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**Basic**

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

### Stage Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Surface area (mm²)</th>
<th>Stage glass dimensions (mm)</th>
<th>Stroke (µm)</th>
<th>Min. reading (µm)</th>
<th>Rotation range</th>
<th>Tool installation screw hole</th>
<th>Loading capacity (kg)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS 12x8C</td>
<td>446×620</td>
<td>330×150</td>
<td>320×250</td>
<td>0.01</td>
<td>±3° (Servo plate)</td>
<td>12-M6 depth 10</td>
<td>20</td>
<td>67</td>
</tr>
<tr>
<td>PS 10x6B</td>
<td>286×230</td>
<td>210×150</td>
<td>180×150</td>
<td>±3° (Servo plate)</td>
<td>12-M6 depth 10</td>
<td>15-M6 depth 10</td>
<td>15</td>
<td>53.5</td>
</tr>
<tr>
<td>PS 8x6B</td>
<td>Ø262</td>
<td>150×150</td>
<td>100×100</td>
<td>±3° (Servo plate)</td>
<td>8-M6 depth 10</td>
<td>6-M6 depth 10</td>
<td>5</td>
<td>23.5</td>
</tr>
<tr>
<td>PS 6x4B</td>
<td>Ø174</td>
<td>50×50</td>
<td>50±3</td>
<td>±3° (Rotating table)</td>
<td>5-M6 depth 7</td>
<td>5-M6 depth 7</td>
<td>5</td>
<td>15.5</td>
</tr>
</tbody>
</table>

### Rotating Tables

#### Rotating Table Type 4
For PS 12x8C, PS 10x6B, PS 8x6B
- Plate rotation for PS 12x8C, PS 10x6B, PS 8x6B

#### Rotating Table Type 3
For PS 6x4B, PS 4x4B

### Stage Accessories

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

#### Rotating Tables

#### Rotating Table Type 4
For PS 12x8C, PS 10x6B, PS 8x6B
- Plate rotation for PS 12x8C, PS 10x6B, PS 8x6B

#### Rotating Table Type 3
For PS 6x4B, PS 4x4B

### Tilting Center Fixture A
Used to hold machined samples for MM-200, PS 2x2B, and Rotating Table Type 3.

### 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.

#### Stage Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>Surface area (mm²)</th>
<th>Stage glass dimensions (mm)</th>
<th>Stroke (µm)</th>
<th>Min. reading (µm)</th>
<th>Rotation range</th>
<th>Tool installation screw hole</th>
<th>Loading capacity (kg)</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>2.0 + 0.25 µm (Standard Type)</td>
<td>2.5 + 0.25 µm (Standard Type)</td>
<td>360° (uncalibrated)</td>
<td>±3° (Standard precision)</td>
<td>MHS 12x8C, MHS 10x6B, MHS 6x4B, MHS 4x4B, MHS 2x2B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type 2</td>
<td>2.5 + 0.25 µm (Standard Type)</td>
<td>4.0 + 0.25 µm (Standard Type)</td>
<td>360° (uncalibrated)</td>
<td>±3° (High-precision Type 1)</td>
<td>MHS 12x8C, MHS 10x6B, MHS 6x4B, MHS 4x4B, MHS 2x2B</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*To ensure accuracy, both types require a temperature controlled room.

*Please contact Nikon for details regarding Type 1.

### Rotation Table Specifications

<table>
<thead>
<tr>
<th>Table</th>
<th>Table size (mm)</th>
<th>Glass insert size (mm)</th>
<th>Rotation range</th>
<th>Tool installation screw hole</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 4</td>
<td>ø262</td>
<td>ø162</td>
<td>360° (uncalibrated)</td>
<td>6-M6 depth 10</td>
<td>Approx. 8</td>
</tr>
<tr>
<td>Type 3</td>
<td>ø107</td>
<td>ø107</td>
<td>360° (uncalibrated)</td>
<td>6-M6 depth 15</td>
<td>Approx. 10</td>
</tr>
</tbody>
</table>

### Large Stage Adjustment Knob
Enables fine adjustment of swivel plate rotation for PS 12x8C, PS 10x6B and PS 8x6B.
**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

<table>
<thead>
<tr>
<th>Magnification</th>
<th>1x</th>
<th>3x</th>
<th>5x</th>
<th>10x</th>
<th>20x</th>
<th>50x</th>
<th>100x</th>
</tr>
</thead>
<tbody>
<tr>
<td>WD (mm)</td>
<td>79</td>
<td>75</td>
<td>64</td>
<td>48</td>
<td>20</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>NA</td>
<td>0.03</td>
<td>0.09</td>
<td>0.13</td>
<td>0.2</td>
<td>0.4</td>
<td>0.55</td>
<td>0.75</td>
</tr>
</tbody>
</table>

**Illuminators**

**8-Segment LED Ring Light**

Enables illumination from eight directions.

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

**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**

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

- Cannot be mounted with 8-segment LED Ring Light

**LED Ring Illuminator**

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

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

**Protractor Eyepieces (for MM Type only)**

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

**Digital Protractor Eyepiece**

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

*Not available for S and SL models

**1-Minute Reading Eyepiece**

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

**10-Minute Reading Eyepiece**

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

**Direct C-mount Adapter**

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

- LV-TV tube is required

*Not available for S and SL models
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.

<table>
<thead>
<tr>
<th>Brightfield</th>
<th>Magnification</th>
<th>NA</th>
<th>W.D. (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TU Plan Fluor EPI</td>
<td>5x</td>
<td>0.15</td>
<td>22.5</td>
</tr>
<tr>
<td></td>
<td>10x</td>
<td>0.30</td>
<td>17.5</td>
</tr>
<tr>
<td>TU Plan EPI ELWD</td>
<td>20x</td>
<td>0.40</td>
<td>19.0</td>
</tr>
<tr>
<td></td>
<td>50x</td>
<td>0.60</td>
<td>11.0</td>
</tr>
<tr>
<td></td>
<td>100x</td>
<td>0.80</td>
<td>4.5</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>With correction mechanism</th>
<th>Magnification</th>
<th>NA</th>
<th>W.D. (mm)</th>
<th>Glass thickness correction range (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFI L Plan EPI CR</td>
<td>20x</td>
<td>0.45</td>
<td>10.9-10.0</td>
<td>0-1.2</td>
</tr>
<tr>
<td>CFI L Plan EPI CR</td>
<td>50x</td>
<td>0.7</td>
<td>5.9-5.9</td>
<td>0-1.2</td>
</tr>
<tr>
<td>CFI L Plan EPI CRA</td>
<td>100x</td>
<td>0.85</td>
<td>1.2-0.85</td>
<td>0-0.7</td>
</tr>
<tr>
<td>CFI L Plan EPI CRB</td>
<td>100x</td>
<td>0.85</td>
<td>1.3-0.95</td>
<td>0.6-1.3</td>
</tr>
</tbody>
</table>

Environmental Considerations

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

Tilting trinocular eyepiece tube

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.

<table>
<thead>
<tr>
<th>Brightfield</th>
<th>Darkfield</th>
<th>DIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-N6</td>
<td>☐</td>
<td>—</td>
</tr>
<tr>
<td>L-NBD5</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>L-NU5</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

New light source for EPI illuminators

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

Templates

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

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

*Cannot be attached to monocular type
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.

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.

Application Software for Measurement Support/Data Processing System

Custom Fit QC: Report and chart generating

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

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

Custom Create: Direct link to Excel worksheets

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

- Compatible measuring instruments: MM-400/800 series, DP-E1A, V-20B, V-12B
- Allows data transfer to customized inspection-result sheet forms
- 3 standard inspection result sheets are available

Operating environment:

- Windows® 7 or Windows® 10
- Microsoft Excel® 2003 or later
- Required memory: 512MB (min)
- Codevelopment: Aria Co., Ltd.
ACCESSORIES

Counters
3-Axis/2-Axis Counters
The display unit can be mounted on either side of the main body. Counters can be connected with data processors and digital printers via the RS-232C port.

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

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.

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

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

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

<table>
<thead>
<tr>
<th>Dimensional Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM-400N/M</td>
</tr>
<tr>
<td>PS 2x2B Stage</td>
</tr>
<tr>
<td>MM-800N/LM</td>
</tr>
<tr>
<td>PS 12x8C Stage</td>
</tr>
<tr>
<td>MM-400N/LV</td>
</tr>
<tr>
<td>PS 6x4B Stage</td>
</tr>
<tr>
<td>MM-800N/LUFA</td>
</tr>
<tr>
<td>PS 6x4B Stage</td>
</tr>
<tr>
<td>MM-400N/L</td>
</tr>
<tr>
<td>PS 4x4B Stage</td>
</tr>
<tr>
<td>MM-800N/LU</td>
</tr>
<tr>
<td>PS 8x6B Stage</td>
</tr>
<tr>
<td>MM-800N/LM</td>
</tr>
<tr>
<td>PS 12x8C Stage</td>
</tr>
<tr>
<td>MM-800N/LV</td>
</tr>
<tr>
<td>PS 10x6B Stage</td>
</tr>
<tr>
<td>MM-800N/LMU</td>
</tr>
<tr>
<td>PS 12x8C Stage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MM-400N/800N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation part</td>
</tr>
<tr>
<td>(WxD) 450(W)x689(D)</td>
</tr>
<tr>
<td>Dimensions</td>
</tr>
<tr>
<td>(WxDxH) 1058(W)x689(D)x751(H)</td>
</tr>
</tbody>
</table>
*Please contact Nikon sales for the combination of S/SL stand and DP-E1A.
### Suggested Configuration Chart

#### MM-Type

<table>
<thead>
<tr>
<th>Model</th>
<th>MM-400N</th>
<th>MM-400N/L</th>
<th>MM-400N/SL</th>
<th>MM-400N/LM</th>
<th>MM-400N/S</th>
<th>MM-800N</th>
<th>MM-800N/L</th>
<th>MM-800N/LM</th>
<th>MM-800N/S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Main Body Stand, U-bracket and Eyepiece Tube/Lenses</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Illuminators</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Stages and Rotating Tables</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Monocular Optical Head</strong></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Objective Lenses and Accessories</strong></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Data Processing System and Printer</strong></td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### U-Type

<table>
<thead>
<tr>
<th>Model</th>
<th>U-FA</th>
<th>U-FL</th>
<th>BF-FA</th>
<th>BF-FL</th>
<th>BF-FA</th>
<th>BF-FL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Main Body Stand, U-bracket and Eyepiece Tube/Lenses</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Illuminators</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Stages and Rotating Tables</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Monocular Optical Head</strong></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Objective Lenses and Accessories</strong></td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
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<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Notes
- **MM** Cable for Simultaneous Use (PA2002C) is required for simultaneous use of Foot Switch and [96E7159291] buttons.
- **U** Cable for Simultaneous Use (PA4002A) is required for simultaneous use of Foot Switch and [96E7159291] buttons.

### Configuration Details
- **Stage Type**: PS 6x4B (or smaller)
- **Head**: LV-FA or LV-FL
- **Illuminator**: LV-U EPI FA or LV-U EPI2
- **Controller Backpack Interface**: Yes
- **Z-axis Motion**: Manual or Motorized
- **Model**: MM-400N/LU, MM-800N/LU, MM-800N/LMU

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**Product Code**
- MM-400N Stand: EDA64000
- MM-800N Stand: EDA64400
- MM-400N/L Stand: EDA64100
- MM-400N/LM Stand: EDA64200
- MM-800N/LM Stand: EDA68400
- MM-800N/S Stand: EDA68300
- MM-800N/SL Stand: EDA68200
- MM-400N/SL Stand: EDA64400
- MM-400N/LM Stand: EDA64200
- MM-400N/S Stand: EDA64000
- MM-800N/S Stand: EDA68000

---

**Head Options**
- Monocular Optical Head: EDB40205, EDC50005, EDC52005, EDB50001
- Trinocular Optical Head: MBB63435

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**Stage Options**
- PS 6x4B (or smaller): PPB27700
- PS 4x4B: PPB37700
- PS 8x6B: PPB47700
- PS 10x6B: PPB57700
- PS 12x8C: PPB77700

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**Illuminator Options**
- LED Ring Illuminator: EDD50001, EDD52000
- LED Ring – White LED: EDD55810
- LED Ring – 8-seg. LED: EDD41001
- LED Ring with 10x Magnification: EDD50001
- Ring LED – White LED: EDD55810

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**Other Accessories**
- Power Cable: Local supply
- CFWN 10x Eyepiece: MBJ20105
- CFWN 20x Eyepiece: MBJ20105
- CFWN 50x Eyepiece: MBJ20105
- CFWN 100x Eyepiece: MBJ20105
- CFWN 1000x Eyepiece: MBJ20105

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**Technical Specifications**
- Field of View: 100mm
- Resolution: 1024x1024 pixels
- Magnification: 10x
- Objective Lens: 40x
- Illumination Source: 100Watt LED
- Observation Mode: Bright Field
- Microscope Type: Upright

---

**Additional Features**
- Foot Switch: EFE00202
- XY Reset Switch: PPL00200
- AL check: EDE50110
- Stage Adjust: PXA20218
- Stage Adapter: EFH28000
- Eyepiece: MAK10110, MAK12105
- Binocular Tube: MBB92106
- Trinocular Eyepiece Tube: MBB63435
- Power Supply: MEF52251
- LED Lamphouse: EDD55810
- ND Filters: MBN66750, MBN66760
- Polarizers: MBN66921, MBN66923
- Calibration Plates: EXA20371, EXA20478

---

**System Compatibility**
- MM-400N/LU, MM-800N/LU, MM-800N/LMU: RequiresPA2002C for simultaneous use.
- MM-400N/LM, MM-800N/LM: RequiresPA4002A for simultaneous use.
- MM-400N/SU, MM-800N/SU: RequiresPA4002A for simultaneous use.
- MM-800N/LSU, MM-800N/LMU: RequiresPA2002C for simultaneous use.
ISO/IEC 17025 Certified

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

Date of Initial accreditation: September 8, 2006

Scope of accreditation: Measuring microscopes

Accredited section: Industrial Metrology Business Unit

Calibration site: Customer’s laboratory (field service)

Expanded Uncertainty: X/Y-axis indication accuracy of measuring microscopes Linear scale up to 300 mm: \((0.70 + 5.0 \times 10^{-3} \times L) \mu m\)

Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. May 2023 ©2006-2023 NIKON CORPORATION

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

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ISO 9001 Certified for NIKON CORPORATION Industrial Metrology Business Unit

LED Episcopic & Diascopic Illuminator is a Class 1 LED Product

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

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CAUTION – CLASS 2 LED RADIATION
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