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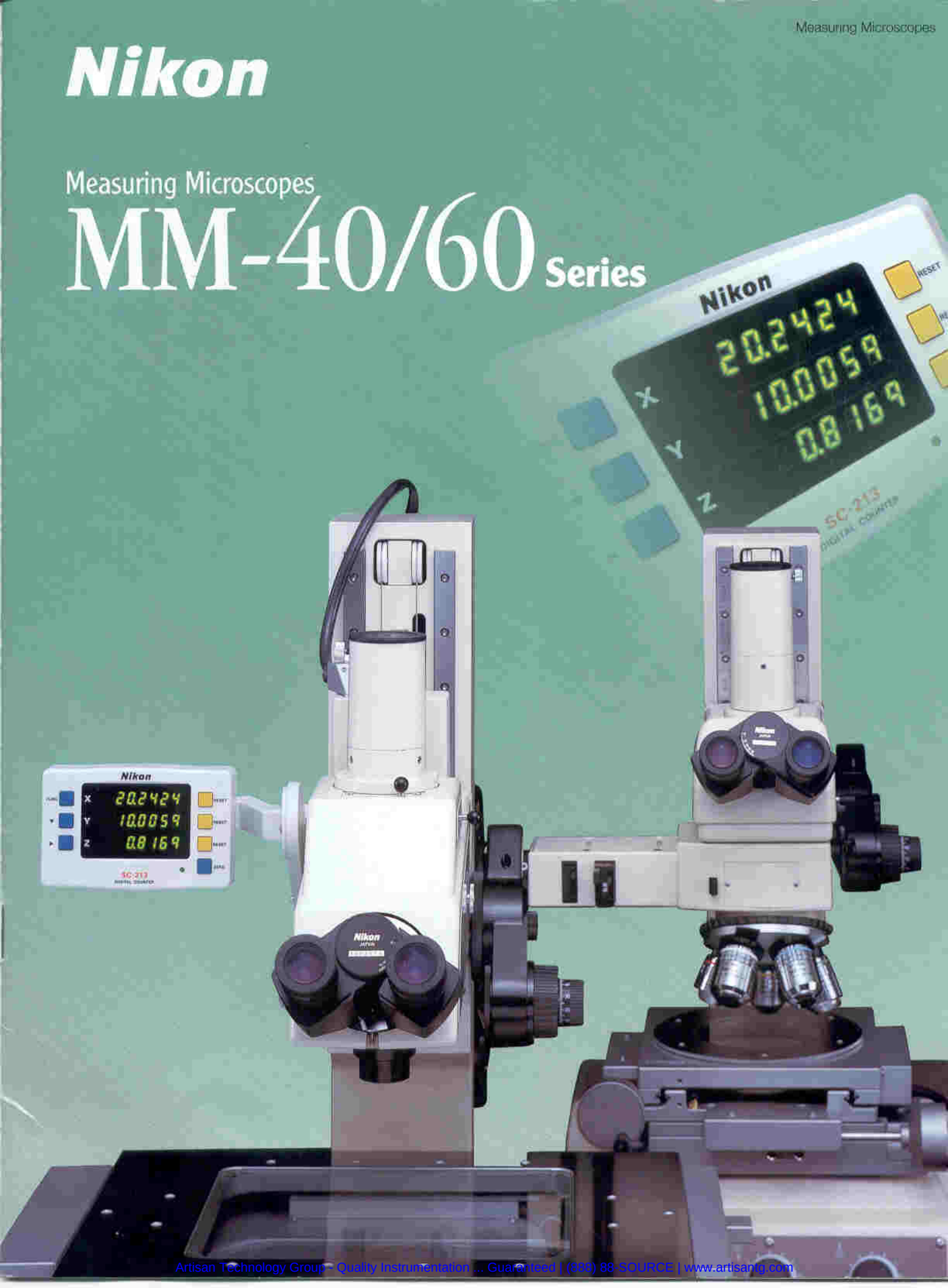
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Find the *Nikon CF Plan 20x / 0.40* at our website: ***Click HERE***

Nikon

Measuring Microscopes

MM-40/60 Series



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Combining Superb Basic Per
for System

In our technologically advanced society, users demand the utmost in a measuring microscope: higher accuracy, greater reliability in both optics and construction, and the ability to attach various accessories.

Nikon meets these needs with a new line of microscopes featuring the latest state-of-the-art technologies.

First and foremost, they incorporate renovated counters, giving them a high resolving power of 0.1µm. By adding cameras, digital readout devices or computer-based measurement packages, you can build an optical or video measuring system to meet your specific requirements.

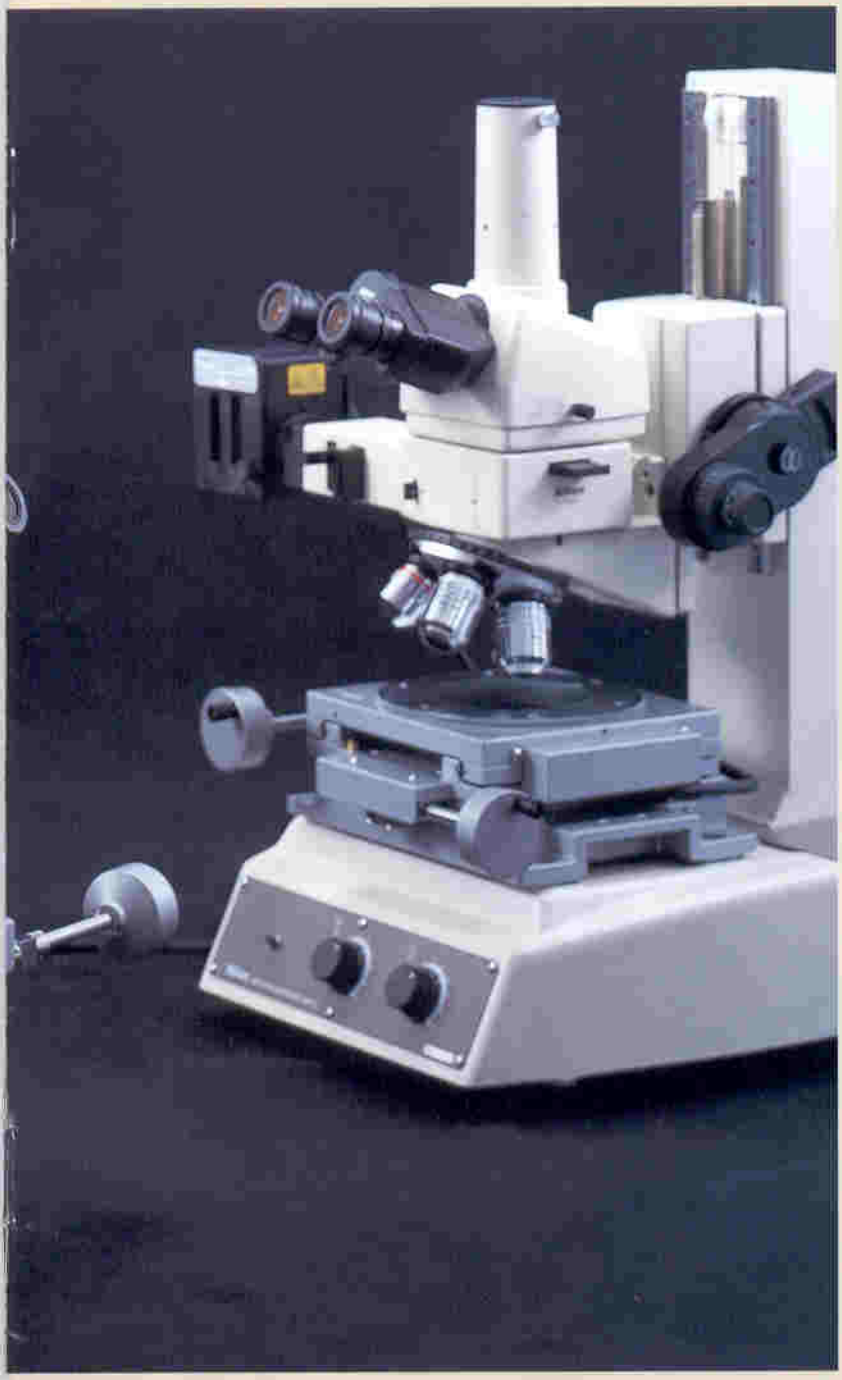
Moreover, they have many worthwhile features, including a bright, low-flare optical system, a rigid base capable of supporting a wide-stroke stage, amazing ease of operation, and they can accept a wide variety of accessories.

Nikon measuring microscopes. Meeting the requirements for even greater precision in R&D and manufacturing facilities.



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formance with the Flexibility Expansion



These icons represent the capabilities of each Measuring Microscope:

Three-step Super-Coarse/ Coarse/Fine Focusing Knob

Two-step Coarse/Fine Focusing Knob

Trinocular Optical Head with Focusing Aid

Focusing-Aid Epi-illuminator

Trinocular Optical Head

Monocular Optical Head

Simple Video Head

Universal Illuminator for Metallurgical Microscopes

Built-in Z-axis Linear Scale

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Unrivaled performance in virtually every aspect of image measurement





E-Max Series data-processing software, external light intensity control, and a new counter enhance overall performance, allowing measurements to be made quickly and accurately.

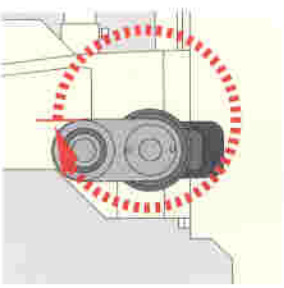
Total management from measurement to reuse of data
PC-based data-processing software—the E-Max Series—carries out 2-dimensional data processing and other sophisticated image measurements to support your measurements by saving results data and reusing them. If you want, you can connect a data processor—the DP-303 or DP-202—directly to the microscope without using a PC.

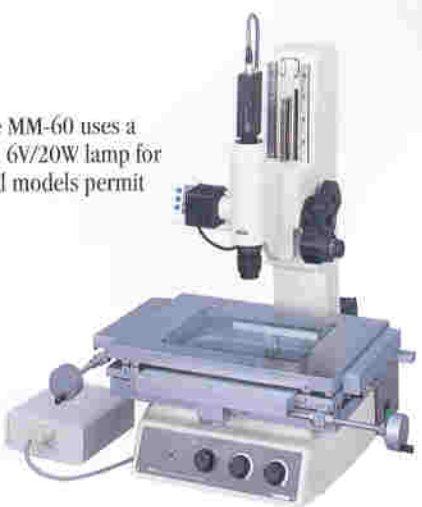
External light control
In addition to the light control built into the stands, all models are provided with a connector that allows computer connection for CNC light control. CNC light control insures repeatability of light intensity during measurements.

New 0.1µm minimum reading counter
Nikon's new counter features a 0.1µm minimum reading—one of the highest levels in this class. In addition, the display unit is located close to the eyepiece, making viewing easier. The control unit makes interface with the data processor easy.

Brilliant, low-flare optical systems
New relay lenses are just one of the reasons why Nikon's optical system produces crisp, low-flare images. The MM-60 uses a 12V/50W halogen lamp for measurements using either episcopic or diascopic illumination. The MM-40 has a 6V/20W lamp for episcopic or diascopic illumination or can be fitted with a 12V/50W lamp solely for episcopic illumination. All models permit continuous adjustment of brightness to match the measuring task.

3-step and 2-step coarse/fine focusing knobs allow fine adjustment over the full range of vertical movements
Each of the focusing knobs for super-coarse, coarse, and fine adjustments can be manipulated over the entire range of vertical movement. On models with 3-step adjustment for super-coarse, coarse, and fine modes, super-coarse adjustments are performed with a crank. The position of the coarse and fine knobs on the crank places the knobs within easy reach of the operator on systems with stages having a large Y stroke.





MM-60/L3TV + Type 8x6 Stage

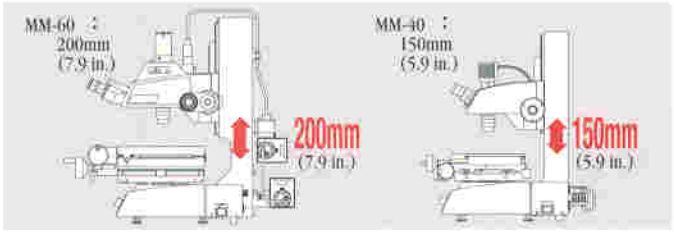
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Z-Axis Measurements Are Now More Precise and Easier to Make

Thanks to Nikon's optical Focusing Aid, much more accurate measurements of the Z-axis are possible. These microscopes feature a linear scale that covers the full range of vertical movements. Together, the focusing aid and scale yield a substantial improvement in the reliability of Z-axis measurements.

Built-in Nikon Linear Scale for precise Z-axis measurements over a wide range
A linear scale built into the microscope body covers the entire range of vertical movement—200mm (7.9 in.) in the MM-60 and 150mm (5.9 in.) in the MM-40—to permit accurate measurements.

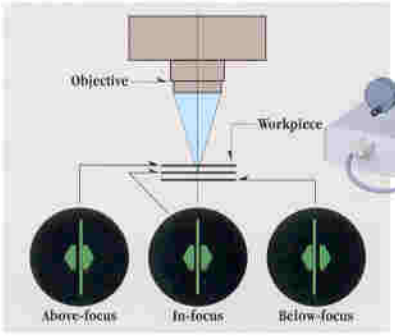
One-guide-rail system adopted for vertical movement
To ensure optimum precision, a single rail is used for vertical movement. This construction offers a significant improvement in Z-axis measurements compared with units that have two or more guide rails.



Optical Focusing Aid for Z-axis measurements
Nikon's own darkfield bisection method enables highly-precise focusing. Above-focus, below-focus, and in-focus views are shown within the Measuring Microscope's field of view.
Even low-magnification objectives with wide depth of focus offer higher focusing repeatability.

Depth of focus	Focusing repeatability
10x objective···14 μm	5 μm
20x objective···3.5 μm	1.5 μm

These data are reference values based on experiments conducted with Nikon samples.





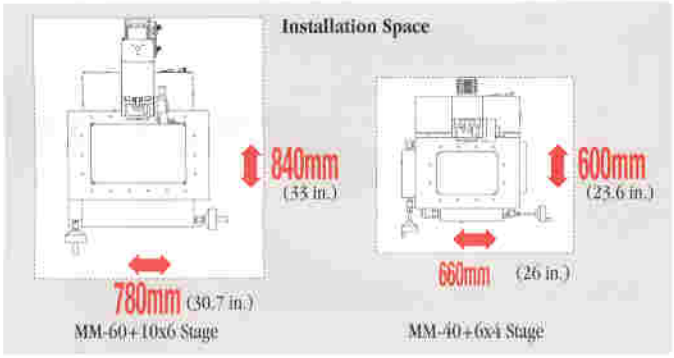
MM-60/L3UFA + Type 8x6 Stage + SC-213 Counter + Counter Arm

Flexible Wide-Stroke Stages

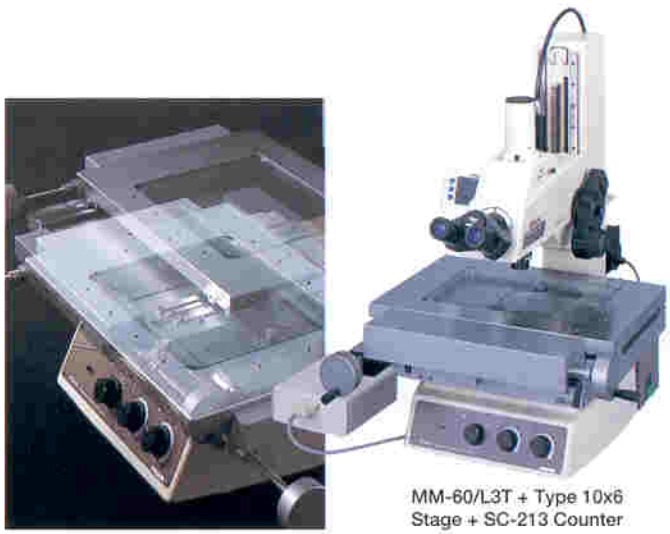
Using CAE (Computer Aided Engineering) analysis, Nikon has developed rigid body designs that allow the incorporation of long-stroke stages:

250x150mm (9.8x5.9 in.) for the MM-60
150x100mm (5.9x3.9 in.) for the MM-40

Minimum installation space, maximum stage strokes
To permit long-stroke stages in compact spaces, Nikon employed CAE analysis from the initial steps of development to completion. The result is a sturdier base that allows the use of a large stage on a compact body.



Utmost precision assured even when heavy accessories are mounted
Nikon has increased the rigidity of these microscopes, strengthening the weak portions as identified by CAE analysis. These microscopes offer excellent stability and measuring performance even when equipped with photomicrography, CCTV cameras, or other devices.



MM-60/L3T + Type 10x6 Stage + SC-213 Counter

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Z-Axis Measurements

These measuring microscopes are equipped with Nikon's unique Focusing Aid (FA) designed exclusively for Z-axis measurements. The focusing aid makes focusing easy during low-magnification observations by indicating whether the workpiece is in focus, is focused in front of, or is focused behind the workpiece. It also minimizes deviations in measurement results caused by differences in the depth of focus of different objectives. Accuracy in Z-axis measurement was further enhanced by installing a linear encoder into the main pillar.

MM-60/L3FA
MM-40/L3FA

- **Built-in Linear Scale for Z-axis**
- **Three-step super-coarse/coarse/fine focusing knob**
- **Trinocular Optical Head with Focusing Aid**

Note: When using the focusing aid, it is recommended to use 10x, 20x, or 50x objectives and a high-intensity fiber illuminator.



MM-60/L3FA + Type 8x6 Stage + SC-213 Counter



MM-60/L3UFA + Type 8x6 Stage + SC-213 Counter + Counter Arm

MM-60/L3UFA
MM-40/L3UFA

- **Built-in Linear Scale for Z-axis**
- **Three-step super-coarse/coarse/fine focusing knob**
- **Focusing-aid epi-illuminator**

Note: When using the focusing aid, it is recommended to use 10x, 20x, or 50x objectives. The focusing aid can only be used for brightfield observations and cannot be used with some objectives.

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Type

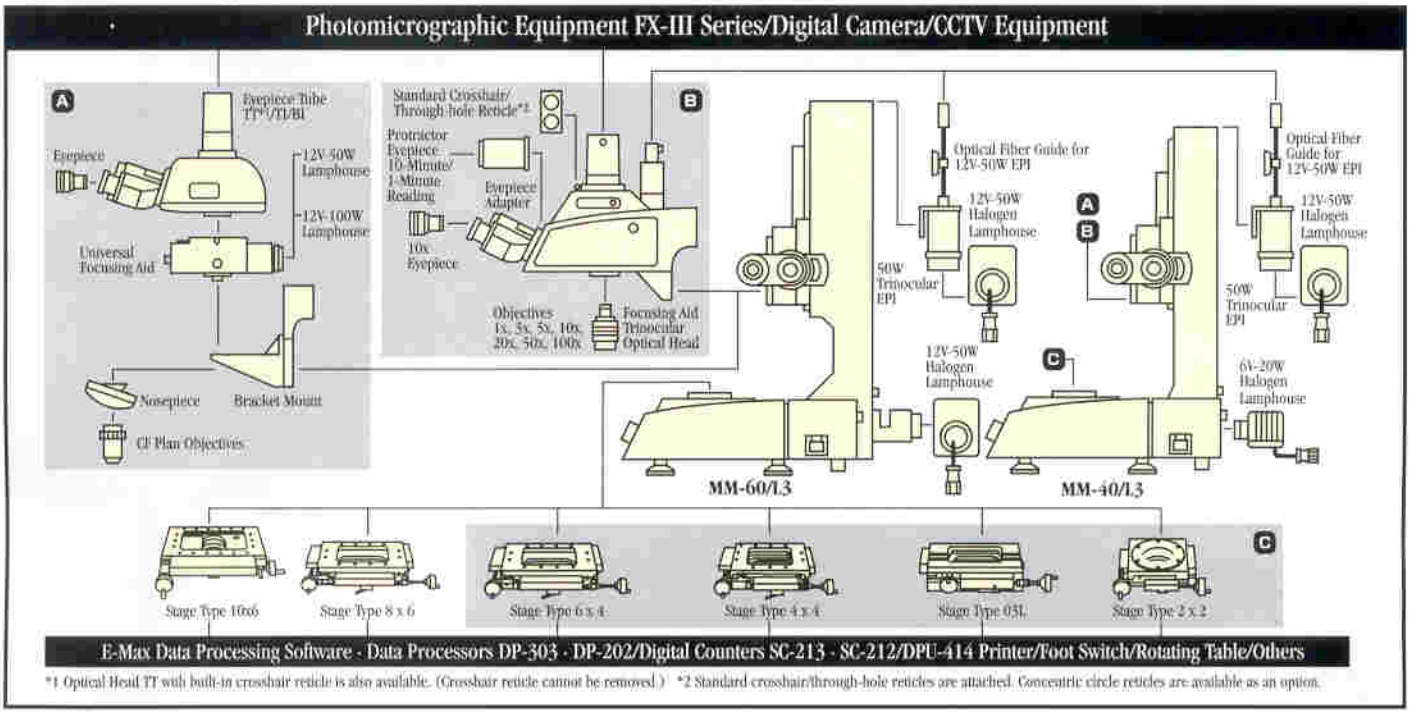
with Greater Precision

Specifications

Type	MM-60/L3FA	MM-40/L3FA	MM-60/L3UFA	MM-40/L3UFA
Optical head	Erect image focusing-aid trinocular; inclined 25° from horizontal		—	
Eyepiece tube	—		Erect image trinocular TT*1/TI, inverted image binocular BI	
Eyepiece	CFWN10x (Field No. 20)		CFWN10x , CFWN10x CM (Field No. 20)	
Objective	Measuring microscope objectives: : 1x (W.D.; 79mm), 3x (W.D.; 75mm), 5x (W.D.; 64mm), 10x (W.D.; 49mm), 20x (W.D.; 20mm), 50x (W.D.; 15mm), 100x (W.D.; 4mm)		CF plan objectives for metallurgical microscopes	
Focusing aid	Provided		Can be used for brightfield only.	
Stage	Type 10x6, Type 8x6, Type 6x4, Type 4x4, Type 03L, Type 2x2	Type 6x4, Type 4x4, Type 03L, Type 2x2	Type 10x6, Type 8x6, Type 6x4, Type 4x4, Type 03L, Type 2x2	Type 6x4, Type 4x4, Type 03L, Type 2x2
Max. workpiece height	200mm (7.87 in.) 170mm (6.69 in.) with Type 10x6 stage	150mm (5.91 in.)	200mm (7.87 in.) ; 170mm (6.69 in.) with Type 10x 6 stage	150mm (5.91 in.)
Light source	Episcopic illuminator: 12V-50W Diascopic illuminator: 12V-50W	Episcopic illuminator: 12V-50W Diascopic illuminator: 6V-20W	Episcopic illuminator: 12V-50W Diascopic illuminator: 12V-50W	Episcopic illuminator: 12V-50W Diascopic illuminator: 6V-20W
Dimensions (W x D x H)/weight	350 x 449 x 674 mm (13.8 x 17.7 x 26.5 in.); approx. 55kg (120 lb.)	350 x 415 x 624 mm (13.8 x 16.3 x 24.6 in.); approx. 51kg (112 lb.)	350 x 449 x 674 mm (13.8 x 17.7 x 26.5 in.); approx. 55kg (120 lb.)	350 x 415 x 624 mm (13.8 x 16.3 x 24.6 in.); approx. 50kg (110 lb.

*1: Eyepiece tubes TT are also available in crosshair reticle built-in types. (Crosshair reticles cannot be removed.)

System Diagram



*1 Optical Head TT with built-in crosshair reticle is also available. (Crosshair reticle cannot be removed.) *2 Standard crosshair/through-hole reticles are attached. Concentric circle reticles are available as an option.

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A Wide Variety of Mo

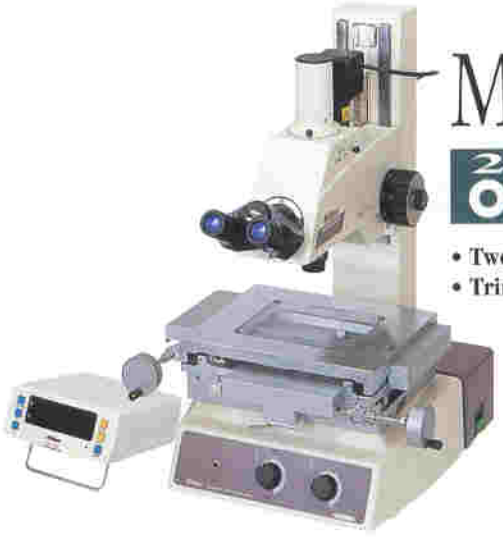
The MM-60 series boasts a stage cross travel of 250mm on the X-axis, 150mm on the Y-axis, and 200mm on the Z-axis, while the compact MM-40 series has a travel range of 150 x 100 x 150 mm. To match your application and budget, a wide variety of models are available, including those featuring a 2- or 3-step coarse/fine focus knob, monocular or trinocular optical head, or a model with a Z-axis encoder.

MM-60/L3T
MM-40/L3T

- **Built-in Linear Scale for Z-axis**
- **Three-step super-coarse/coarse/fine focusing knob**
- **Trinocular Optical Head**



MM-60/L3T + Type 10x6 Stage + SC-213 Counter



MM-40/2T + Type 4x4 Stage + SC-212 Counter

MM-40/2T

- **Two-step coarse/fine focusing knob**
- **Trinocular Optical Head**

MM-40/2M

- **Two-step coarse/fine focusing knob**
- **Monocular Optical Head**



MM-40/2M + Type 2x2 Stage + SC-212 Counter

Specifications

Type	MM-60/L3T	MM-40/L3T	MM-40/2T	MM-40/2M
Optical head	Erect image trinocular; inclined 25° from horizontal			Erect image monocular; inclined 30° from horizontal
Eyepiece	CFWN10x (Field No. 20)	CFWN10x (Field No. 20)		Dedicated 10x (Field No. 20)
Objective	Measuring microscope objectives: 1x (W.D.; 79mm), 3x (W.D.; 75mm), 5x (W.D.; 64mm), 10x (W.D.; 49mm), 20x (W.D.; 20mm), 50x (W.D.; 15mm), 100x (W.D.; 4mm), 100x (W.D.; 4mm)			
Stage	Type 10x6, Type 8x6, Type 6x4, Type 4x4, Type 03L, Type 2x2	Type 6x4, Type 4x4, Type 03L, Type 2x2		
Max. workpiece height	200mm (7.87 in.); 170mm (6.69 in.) with Type 10x6 stage	150mm (5.91 in.)		
Light source	Episcopic illuminator: 12V-50W Diascopic illuminator: 12V-50W	Episcopic illuminator: 6V-20W Diascopic illuminator: 6V-20W (Episcopic illumination on MM-40/2T and MM-40/L3T can be changed to a 12V-50W type.)		
Dimensions (W x D x H)/weight	350 x 449 x 674 mm (13.8 x 17.7 x 26.5 in.); approx. 55kg (120 lb.)	350 x 415 x 624 mm (13.8 x 16.3 x 24.6 in.); approx. 51kg (112 lb.)	350 x 415 x 624 mm (13.8 x 16.3 x 24.6 in.); approx. 50kg (110 lb.)	

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rd Type

dels to Choose From

MM-60/L3TV
MM-40/L3TV

- Built-in Linear Scale for Z-axis
- Three-step super-coarse/coarse/fine focusing knob
- Simple Video Head



MM-40/2TV + Type 6x4 Stage + SC-212 Counter



MM-60/L3TV + Type 8x6 Stage + SC-213 Counter

MM-40/2TV

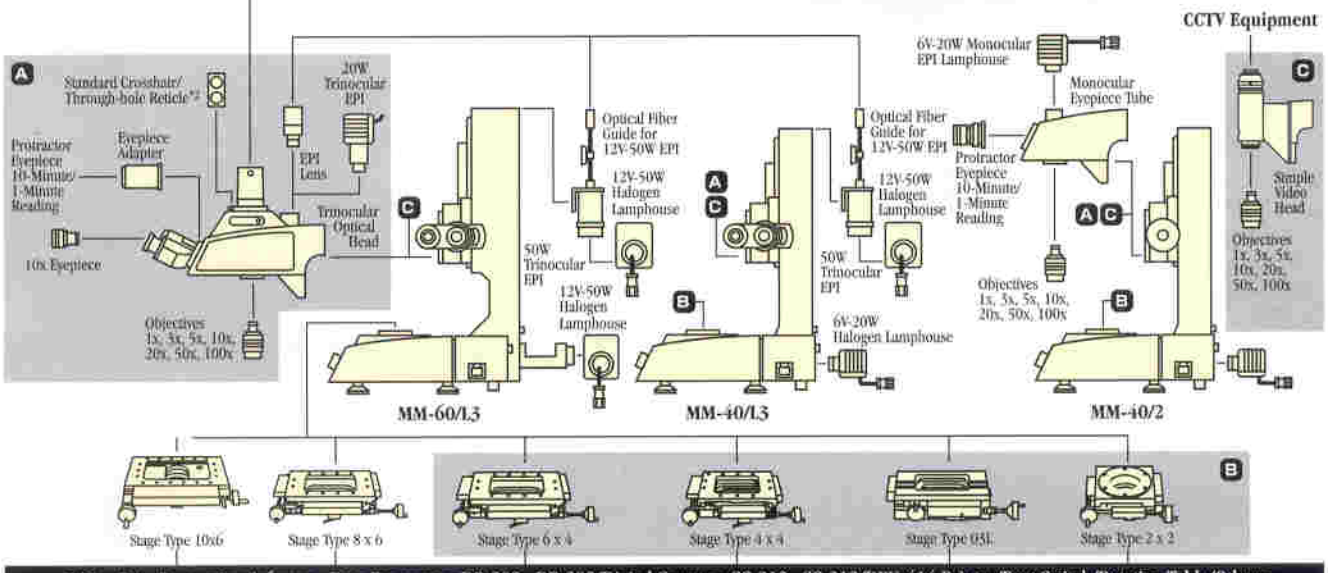
- Two-step coarse/fine focusing knob
- Simple Video Head

Specifications

Type	MM-60/L3TV	MM-40/L3TV	MM-40/2TV
Optical head	CCTV optical head (with C-mount adapter)		
Eyepiece	—		
Objective	Measuring microscope objectives: 1x (W.D.; 79mm), 3x (W.D.; 75mm), 5x (W.D.; 64mm), 10x (W.D.; 49mm), 20x (W.D.; 20mm), 50x (W.D.; 15mm), 100x (W.D.; 4mm)		
Stage	Type 10x6, Type 8x6, Type 6x4, Type 4x4, Type 03L, Type 2x2	Type 6x4, Type 4x4, Type 03L, Type 2x2	
Max. workpiece height	200mm (7.87 in.) 170mm (6.69 in.) with Type 10x6 Stage	150mm (5.91 in.)	
Light source	Episcopic illuminator: 6V-20W Diascopic illuminator: 12V-50W	Episcopic illuminator: 6V-20W Diascopic illuminator: 12V-50W	
Dimensions (W x D x H)/weight	350 x 449 x 674 mm (13.8 x 17.7 x 26.5 in) ; approx. 54kg (119 lb.)	350 x 415 x 624 mm (13.8 x 16.3 x 24.6 in) ; approx. 50kg (110 lb.)	350 x 415 x 624 mm (13.8 x 16.3 x 24.6 in) ; approx. 49kg (108 lb.)

System Diagram

Photomicrographic Equipment FX-III Series/Digital Camera/CCTV Equipment



*1 Standard crosshair/through-hole reticles are attached. Concentric circle reticles are available as an option. *2 Conventional monocular reticles for the MM-11 can be installed.

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Univers

Providing the Features of Measur

Combining the functions of both measuring and metallurgical microscopes, these models permit highly precise measurements at high magnifications. They also support Nikon's revolutionary CF Infinity Corrected optical system, providing high resolution with minimum flare. In addition to brightfield illumination, you can use darkfield, DIC, and other illumination techniques, depending on the nature of the workpiece.

MM-60/L3U
MM-40/L3U

- **Built-in Linear Scale for Z-axis**
- **Three-step super-coarse/coarse/fine focusing knob**
- **Universal illumination**



MM-60/L3U + Type 8x6 Stage + SC-213 Counter



MM-40/2U

- **Two-step coarse/fine* focusing knob**
- **Universal illumination**

*The fine focusing knob of the U-type model is a super-fine movement type to address high-magnification applications.

MM-40/2U + Type 4x4 Stage + SC-212 Counter

Specifications

Type	MM-60/L3U	MM-40/L3U	MM-40/2U
Eyepiece tube	Erect image trinocular TT*1/TI, inverted image binocular BI		
Eyepiece	CFWN10x , CFWN10x CM (Field No. 20)		
Objective	CF plan objectives for metallurgical microscopes		
Stage	Type 10x6, Type 8x6, Type 6x4, Type 4x4, Type 03L, Type 2x2	Type 6x4, Type 4x4, Type 03L, Type 2x2	
Max. workpiece height	200mm (7.1 in.) [150mm (5.9 in.) with 10x6 stage]	150mm (5.9 in.)	
Light source	Episcopic illuminator: 12V-50W (Changeable to 12V-100W) Diascopic illuminator: 12V-50W	Episcopic illuminator: 12V-50W (Changeable to 12V-100W) Diascopic illuminator: 6V-20W	
Dimensions (W x D x H)/weight	350 x 449 x 674 mm (13.8 x 17.7 x 26.5 mm); approx. 55kg (121 lb.)	350 x 415 x 624 mm (13.8 x 16.3 x 24.6 mm); approx. 50kg (110 lb.)	

*1: Eyepiece tubes TT are also available in crosshair reticle built-in types. (Crosshair reticles cannot be removed.)

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al Type

ing and Metallurgical Microscopes



CF Plan EPI ELWD



CF Plan BD ELWD



CF Plan BD ELWD DIC

CF Infinity Corrected Optics Objectives

Type	Magnification	N.A.	W.D. (mm)
Brightfield type			
CF E Plan EPI	5×	0.10	20.0
	10×	0.25	12.5
	20×	0.40	5.8
	50×	0.75	0.48
	100×	0.90	0.23
CF Plan EPI*	1.5×	0.045	3.6
	2.5×	0.075	8.8
	5×	0.13	22.5
	10×	0.3	16.5
	20×	0.46	3.1
	50×	0.8	0.54
	100×	0.95	0.5
CF Plan Apo EPI	50×	0.95	0.35
	100×	0.95	0.32
	150×A	0.95	0.2
	200×	0.95	0.2

* When using a 1.5X objective, use an analyzer and a polarizer together. Otherwise, the periphery of the image cannot be seen.

Type	Magnification	N.A.	W.D. (mm)
Brightfield/darkfield type			
CF E Plan BD	5×	0.10	12.0
	10×	0.25	7.0
	20×	0.40	3.1
	50×	0.75	0.54
	100×	0.90	0.34
CF Plan BD	5×	0.13	10.0
	10×	0.3	6.5
	20×	0.46	3.1
	40×	0.65	1.0
	50×	0.8	0.54
	100×	0.9	0.39
CF Plan Apo BD	50×	0.9	0.42
	100×	0.9	0.4
	150×A	0.9	0.29
	200×	0.9	0.3
CF Plan BD DIC	5×A	0.13	10.0
	10×	0.3	6.5
	20×	0.46	3.1
	50×	0.8	0.54
	100×	0.9	0.39

Type	Magnification	N.A.	W.D. (mm)
Long working distance type			
CF Plan EPI ELWD	20×	0.4	11.0
	50×	0.55	8.7
	100×	0.8	2.0
CF Plan BD ELWD	20×	0.4	11.0
	50×	0.55	8.2
	100×	0.8	2.0
CF Plan BD ELWD DIC	20×	0.4	11.0
	50×	0.55	8.2
	100×	0.8	2.0
CF Plan EPI SLWD	10×	0.21	20.3
	20×	0.35	20.5
	50×	0.45	13.8
	100×	0.73	4.7
Special-use type			
CF Plan EPI DI For interferometry	10× 20× 50×	0.3 0.4 0.55	7.4 4.7 3.4
CF Plan EPI TI For interferometry	2.5× 5×	0.075 0.13	10.5 9.3
CF Plan LCD CR For inspection of LCDs (With cover glass correction 0.6-1.2 mm)	20× 50× 100×	0.4 0.55 0.8	10.11～10.54 7.71～8.15 1.10～1.12



Erect image trinocular TT



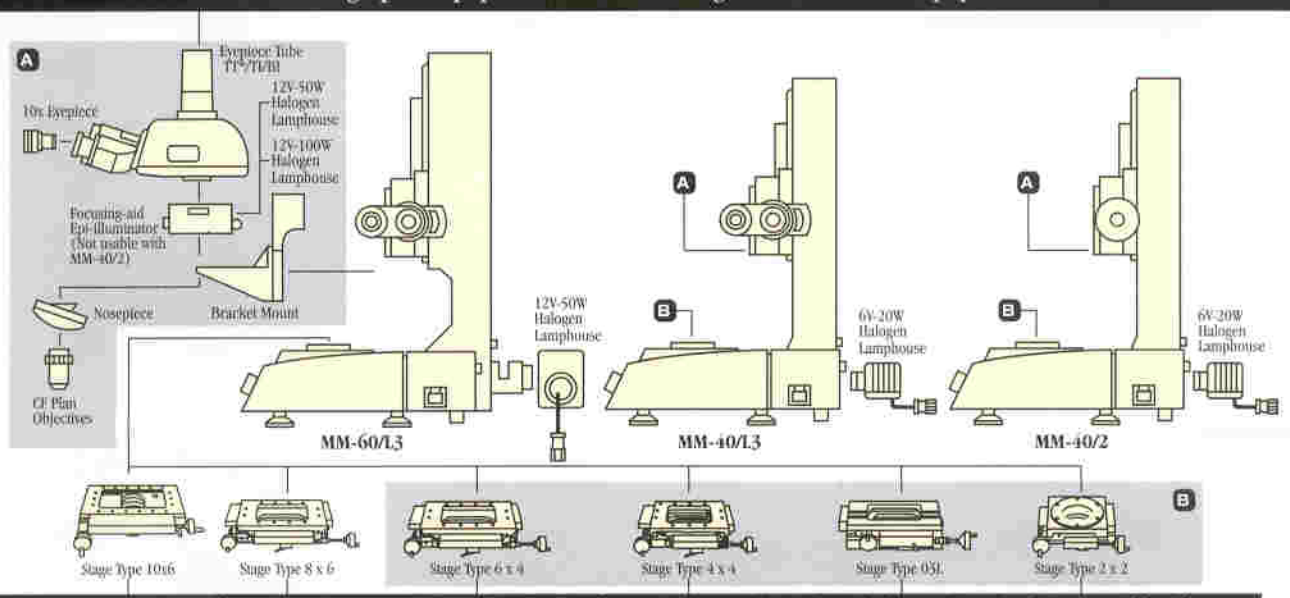
Erect image trinocular TI



Inverted image binocular BI

System Diagram

Photomicrographic Equipment FX-III Series/Digital Camera/CCTV Equipment



E-Max Data Processing Software · Data Processors DP-303 · DP-202/Digital Counters SC-213 · SC-212/DPU-414 Printer/Foot Switch/Rotating Table/Others

* Optical Head TT with built-in crosshair reticle is also available. (Crosshair reticle cannot be removed.)

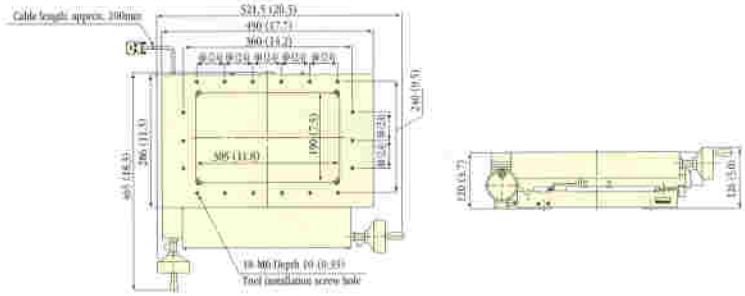
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Acces

Nikon offers a broad range of stages to choose from including the new 10x6 stage.
All models except the O3L boast an outstanding accuracy of 3+L/50μm (L=measurement length).

Stage Type 10x6 — For MM-60

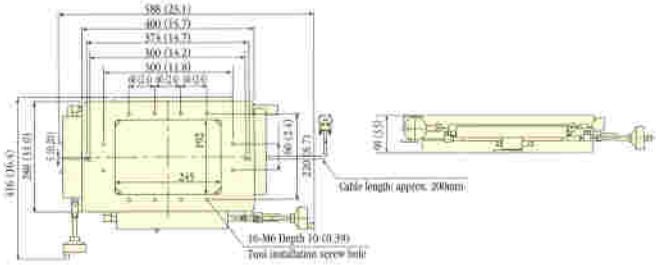




mm (in.)

Stage Type 8x6 — For MM-60

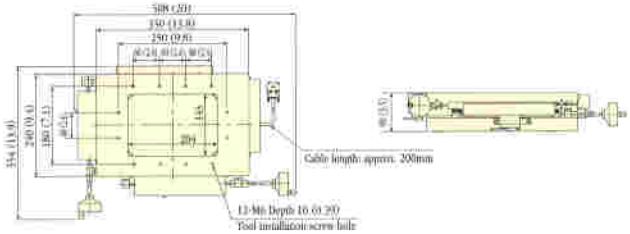




mm (in.)

Stage Type 6x4 — For MM-60/40

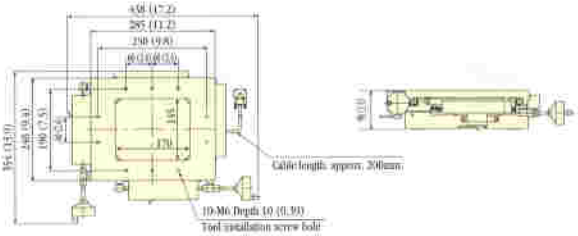




mm (in.)

Stage Type 4x4 — For MM-60/40

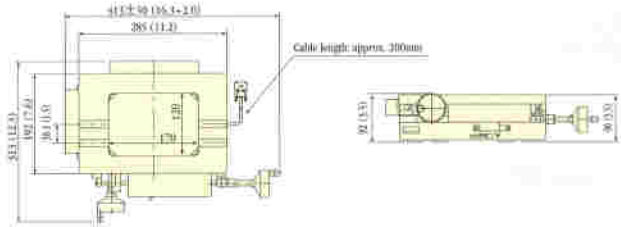




mm (in.)

Stage Type O3L — For MM-60/40

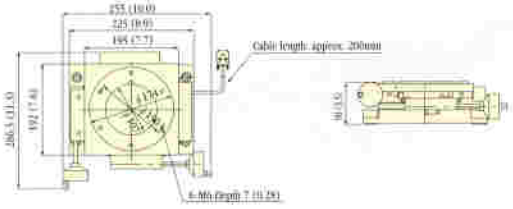




mm (in.)

Stage Type 2x2 — For MM-60/40





mm (in.)

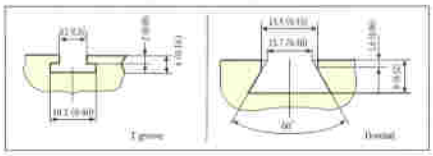
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Stage Specifications

Type	Surface area mm (in.)	Stage glass dimensions mm (in.)	Crosswide travel mm (in.)	Reading method	Min. reading mm (in.)	Stage top	Tool installation	Loading capacity kg (lb.)	Weight kg (lb.)
10x6	450 x 286 (17.7 x 11.3)	305 x 190 (12.0 x 7.5)	250 x 150 (7.9 x 5.9)	Linear encoder	0.0001 (0.000004)	—	N/A (screw)	20 (44)	Approx. 50 (110)
8x6	400 x 286 (15.8 x 11.0)	245 x 192 (9.6 x 7.6)	200 x 150 (7.9 x 5.9)	Linear encoder	0.0001 (0.000004)	—	N/A (screw)	15 (33)	Approx. 36 (79)
6x4	350 x 240 (13.8 x 9.5)	204 x 145 (8.0 x 5.7)	150 x 100 (5.9 x 3.9)	Linear encoder	0.0001 (0.000004)	—	N/A (screw)	10 (22)	Approx. 27 (60)
4x4	285 x 240 (11.2 x 9.5)	170 x 145 (6.7 x 5.7)	100 x 100 (3.9 x 3.9)	Linear encoder	0.0001 (0.000004)	—	N/A (screw)	6 (12)	Approx. 23 (51)
03L	285 x 192 (11.2 x 7.6)	170 x 120 (6.7 x 4.7)	100 x 50 (3.9 x 2.0)	Linear encoder	0.0001 (0.000004)	—	Dovetail	5 (11)	Approx. 15 (33)
2x2	195 x 192 (7.7 x 7.6)	107 in diameter	50 x 50 (2.0 x 2.0)	Linear encoder	0.0001 (0.000004)	360° rotatable	N/A (screw)	5 (11)	Approx. 13 (29)

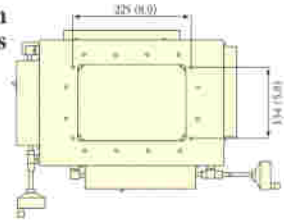
Tool Installation Groove Dimensions



T groove: Rotating Table A
Dovetail: 03L

- 10x6, 8x6, 6x4, 4x4 and 2x2 stages require M6 depth 10 tool installation screw holes.
- T grooves may be specially ordered for 2x2 rotating boards.

Tool installation screw positions

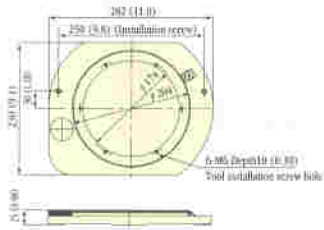


Stage Accessories

Specific for each stage

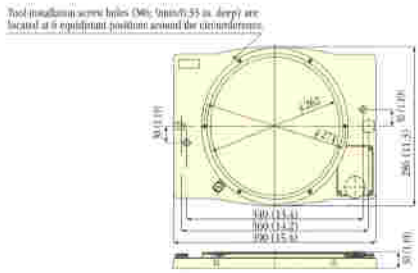
Rotating Table Type 3 (for 6x4, 4x4)





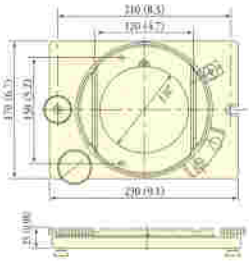
Rotating Table Type 4 (for 10x6, 8x6, 100B)





Goniometer Type 2 (For 03L)





Unit: mm (in.)

Rotating Table Specifications

	Table diameter (in.)	Glass insert diameter (in.)	Rotation range	Tool installation	Weight
Rotating Table Type 3	204mm (8.0)	165mm (6.5)	360° (uncalibrated)	Screw hole 6-M6	Approx. 5kg (11 lb.)
Rotating Table Type 4	282mm (11.0)	262mm (10.3)	360° (uncalibrated)	Screw hole 6-M6	Approx. 8kg (17.6 lb.)
Goniometer Type 2	160mm (6.3)	107mm(4.2)	360° (2'reading)	T groove/Screw hole 2-M6	Approx. 4kg (9 lb.)

Rotary Indexer RI-3600

The rotary indexer can rotate and display the image of a workpiece with a minute 0.01° resolution.

Minimum reading	1°
Control resolution	0.01°
Max. workpiece diameter	75mm
Operation mode	Auto or Manual
Points that can be preset	Point of origin and 3 other points
Compatible stages	10x6, 8x6, 6x4, and 4x4



Rotary Indexer RI-3600 configured with MM-60

Tilting Center Fixture A

Used to hold machined workpieces.

Max. workpiece diameter and length when held level	ø68 x 120 mm (2.7 x 4.7 in.)
Center height	45mm (1.8 in.)
Tilting angle	10° (in 1° increments)
Weight	Approx. 2.2kg (4.9 lb.)



Tilting Center Fixture A configured with Goniometer Type 2

Mounting Compatibility

	Tilting Center Fixtures A	Tilting Center Fixtures B
9V	—	○
10 x 6	—	—
8 x 6	—	—
6 x 4	○*1	—
4 x 4	○*1	—
2 x 2	○	—
03L	○*2	—

*1: Usable via the Rotary Table Type 3.
*2: Usable via the Goniometer Type 2.

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Data Processing Software—E-Max Series

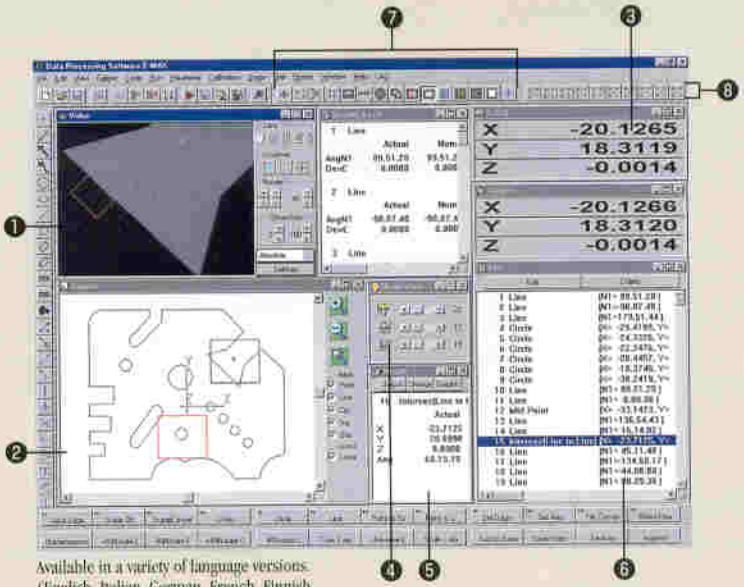
Installed in a PC, this software provides various processing tasks, using the data captured by the connected instrument, such as a measuring microscope or a profile projector. It allows the user to perform 2-dimensional data processing, make visual inspection of images, take measurements, or carry out other tasks that vary depending on the instrument connected—on a PC with a commonly-used Windows®-based operating system.

Provides support to your measurements using a PC with a commonly-used Windows® operating system

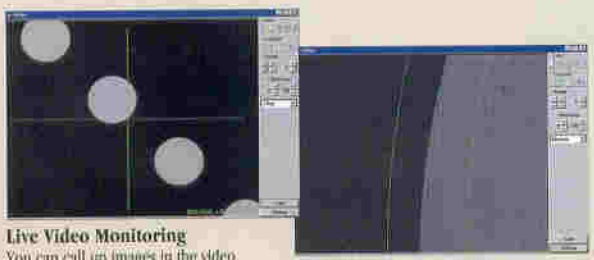
Multi-window display and simple operation make sophisticated measurements and processing easy.

❶ Video window
❷ Graphic window
❸ D.R.O. window
❹ Illumination window
❺ Results window
❻ List window
❼ Caliper bar
❽ Measurement tool bar

Note: You can display the output window, image window, or edit list window whenever necessary.

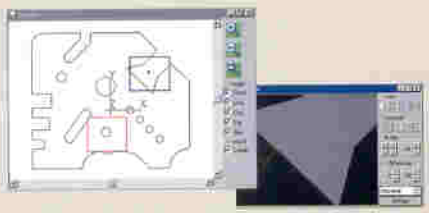


Available in a variety of language versions. (English, Italian, German, French, Finnish, Swedish, Taiwanese, Mandarin Chinese, Korean, Japanese)

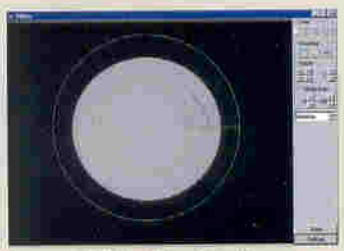


Live Video Monitoring
You can call up images in the video window and perform manual measurements using electronically-generated crosshairs. (with M Set)

CAD Chart Measurement
Using chart generation software from CAD files or data, you can simply make chart measurements in the video window. (with M Set and V Set)



Navigation Function
A Navigation Function allows you to display the current position and the next measurement position simultaneously during replay, increasing measurement efficiency.
□ denotes the current position
□ denotes the next measurement position



Automated Video Edge Detection
This software is provided with an image processing function, allowing manual measuring instruments to perform Automated Video Edge Detection with high repeatability reducing human errors. (with V Set)

Data Processors

For all measurescopes

When connected to measuring microscopes, the DP-303 and DP-202 Data Processors carry out data processing tasks related to your measurements. If necessary, you can import results data to a PC for further processing.

Data Processor DP-303

An all-around model providing measurements and storing of data.



- **ROM-DOS-based operating system**
- **Large, dialog-type LCD display**
- **Built-in 3.5-inch floppy disk drive**
- **3-axis counter**
- **CSV file conversion to read measurement data in spreadsheets such as MS-Excel.**
- **Built-in high-speed line printer**
- **RS-232C interface**

Note: An RS-232C cross cable is necessary when using the DP-303 and the SC-212 counter together. Also, counter values are not displayed on the DP-303 LCD display when both units are used together.

Data Processor DP-202

A feature-packed compact model.



- **No preliminary scanning of the workpiece necessary**
- **Compact design**
- **Display lamp indicating the number of input data**
- **Error warning buzzer**
- **RS-232C interface card (option)**

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E-Max D Set (Data Processing Set)

- Designed exclusively for processing measured data
- Advanced 2-dimensional data processing function developed through experience with the NEXIV CNC Video Measuring System and DP Series Data Processors
- Provides Navigation and many other convenient functions exclusively for manual measuring instruments
- Off-line Teaching software, Report Generation software, and other optional software can be used in combination.
- Can be used with notebook PCs (D Set only)
- Automated illumination control for Diascopic, Episcopic and Ring illuminators

Configuration
- E-Max Data Processing Software
- IBM PC/AT compatible using Windows® 98)

E-Max M Set (Video Monitor Set)

- Video monitoring of the workpiece by calling up its image in the video window
- Allows chart measurements in the video window using chart generation software from CAD files or data.
- Advanced 2-dimensional data processing function developed through experience with the NEXIV CNC Video Measuring System and DP Series Data Processors
- Image filing
- Provides Navigation and many other convenient functions exclusively for manual measuring instruments
- Off-line Teaching software, Report Generation software, and other optional software can be used in combination.
- Automated illumination control for Diascopic, Episcopic and Ring illuminators

Configuration
- E-Max Data Processing Software
- IBM PC/AT compatible using Windows® 98
- CCD camera
- Video capture board

E-Max V Set (Automated Video Edge Detection Set)

- Provided with an image processing function, allowing manual measuring instruments to perform Automated Video Edge Detection with high repeatability, reducing human errors.
- Allows chart measurements in the video window using chart software from CAD files or data.
- Advanced 2-dimensional data processing function developed through experience with the NEXIV CNC Video Measuring System and DP Series Data Processors
- Image filing
- Provides Navigation and many other convenient functions exclusively for manual measuring instruments
- Off-line Teaching software, Report Generation software, and other optional software can be used in combination.
- Automated illumination control for Diascopic, Episcopic and Ring illuminators

Configuration
- E-Max Data Processing Software
- IBM PC/AT compatible using Windows® 98
- CCD camera
- Image processing board



Configuration example of the E-Max V Set

MM-60/L3TV measuring microscope configured with a CCD camera, a PC in which an image processing board and E-Max Series software have been installed.

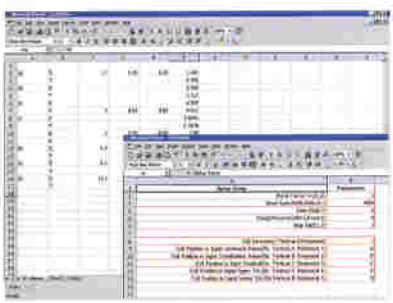
Functions provided by each set:

	D Set	M Set	V Set
Data processing	○	○	○
Navigation during replay	○	○	○
Live video monitoring	—	○	○
Chart measurement	—	○	○
Automated video edge detection	—	—	○

Direct link to Excel sheet programs — DirecSheet

For DP-303, DP-202 (RS-232C interface card required), SC-212, and E-Max
Inputting data to inspection sheets manually is not necessary any longer. The Macro Script Program enables you to transfer data from Nikon counters and/or data processors directly to Excel sheets via the RS-232C interface. Simple to use, yet greatly enhances productivity.

Required software: Microsoft Excel 97 (English version) or newer
Required memory: 24 MB or more
Manufacturer: Nippon Filcon Co., Ltd.

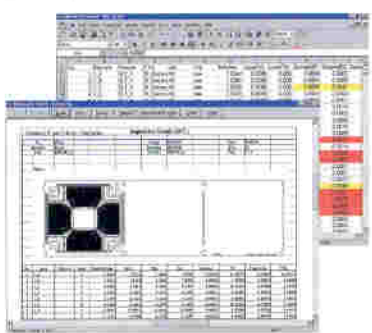


Inspection report generating program—SpreadEye

For DP-303, DP-202 (RS-232C interface card required), SC-212, and E-Max

Saves labor by streamlining inspection processes
This software allows the user to import measurement data and quickly create inspection result sheets in the desired formats. If necessary, the user can import measurement data into SpreadEye data sheets directly via the RS-232C interface.

Required software: Microsoft Excel® 97 (English version) or newer
Required memory: 24 MB or more
Manufacturer: Nippon Filcon Co., Ltd.



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Counters

3-Axis Digital Counter SC-213

This 3-axis counter displays the Z axis in addition to X and Y axes.
The separate display unit can be mounted on the measuring microscope.
An RS-232C port is provided.



Remote Switch Exclusive to SC-213 Counter

Can send Reset and Send commands remotely.



2-Axis Digital Counter SC-212

Capable of displaying X and Y axes, this counter can be connected with data processors and digital printers via the RS-232C port.



Digital Printer DPU-414

Prints outs counter values by connecting it to digital counters, SC-213 or SC-212.



Foot Switch

Used to send load-and-go commands to the DP-303, DP-202, and DPU-414. Frees both hands to enhance measurement efficiency.



Standard 300mm Scale



Gauges stage travel accuracy up to 300mm.
Both 10mm-interval sensor patterns and calibrations are provided. Made of low heat-expansion glass, for minimizing influence of heat.
Accuracy: Within 1 μm against compensation values.

Templates

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

- Standard angle templates (standard equipment)
- No. 1 Metric screw thread (pitch 0.2—2)
- No. 2 Whitworth screw thread (20—10 threads/inch)
- No. 4 Involute gear (20°); module 0.2—2
- No. 6 Concentric diameter 0.2—4.6

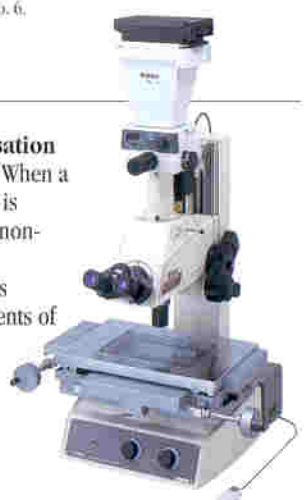
Note: Microscopes other than the MM-40/2M can use No. 6.

Photomicrographic Equipment

Simple operation
Even for novices, the H-III is easy to operate, ensuring superior photographs every time. The built-in control box saves space on your research bench.

Auto exposure, 1% spot and 35% integrated average measurement
One-touch switch changeover gives you a choice of 1% spot or 35% integrated average measurement. The 1% spot mode is indispensable for fluorescence and darkfield photomicrography, where the measured area is clearly indicated by a reticle when seen through the finder.

ISO settings and exposure compensation
Film from ISO 6 to 20,000 can be used. When a DX-coded film is loaded, the equipment is automatically set to that film speed. For non-coded films, set the speed manually.
The exposure compensation dial permits compensation from −2 to +2 in increments of 1/3 for a total of 13 steps.



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CCTV Camera System



Available in two types. The 3CCD type is provided with a digital frame memory, while the 1CCD type features a compact design, high sensitivity and high picture quality and boasts excellent cost performance. Mounted on a measuring microscope through a direct C-mount adapter, this system makes measurement on a TV monitor possible.

Direct C-mount Adapter

Used to install a C-mount NTSC CCTV camera on the microscope.
To use, replace the straight tube in a trinocular tube with this adapter.

Protractor Eyepieces

For all measuring microscope models except those with universal illumination.

1-Minute Reading Eyepiece

The viewfield includes crosshairs and 60' lines, and angle indexes are read by appropriate microscopes. The measuring range is 360°.



10-Minute Reading Eyepiece

The viewfield includes crosshairs and angle indexes, and when the knurled ring at the lower section of the eyepiece tube is turned, the crosshairs and the vernier both rotate up to 180°.



Note: Monocular adapter (standard equipment) is required when using these eyepieces with trinocular tubes.

Illuminators

Fiber-Optics Bifurcated and Ring Illuminators

Since a 15V-150W halogen lamp with reflective mirror is used, a bright light source is obtained and the brightness is adjustable. These illuminators produce cone-shaped illumination, minimizing shadows caused by any unevenness on the workpiece surface. The bifurcated fiber enables flexible illumination from two directions.
Fiber transformer: sequential adjustment of brightness from 7 to 15 volts. (Cannot be used with metallurgical microscope objectives or 20X, 50X and 100X measuring microscope objectives.)



Fluorescent Lamp Illuminator

The ring fluorescent tube provides smooth, uniform illumination without shadows over the entire field. Because a 300V/30mA cold-cathode fluorescent tube is used, illumination starts immediately after the switch is turned on.
The fluorescent tube is also easy to replace.

Fluorescent lamp transformer size: 165 (W) x 75 (D) x 60 (H)mm
(Cannot be used with metallurgical microscope objectives.)



LED Ring Illuminator

A high-luminance type that uses 60 white LEDs, this illuminator is provided with intensity control and features minimum flickers. The LED has a long service life of approximately 20,000 hours.

LED transformer: 66 (W) x 115 (D) x 55 (H) mm (2.6 x 4.5 x 2.2 in.) (not usable with metallurgical microscope objectives)



Notes:
1. The ring fiber illuminator, fluorescent lamp illuminator and LED ring illuminator cannot be mounted when high-magnification objectives (20X, 50X, 100X) for measuring microscopes are used.
2. The LED ring illuminator is not compliant with UL and CE.

External Illuminator Adapter

Commonly used to mount Ring Fiber, Fluorescent illuminators, and LED Ring Illuminator.



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Measuring Microscope Accessory Compatibility Chart

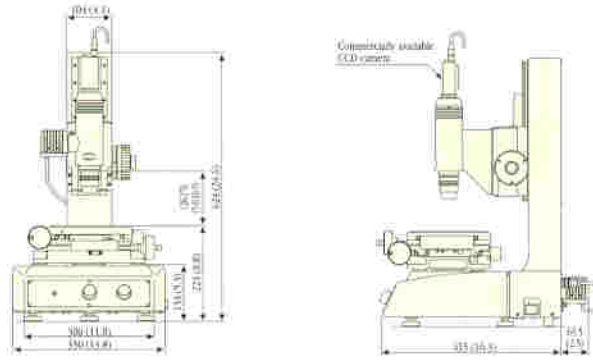
		MM-40 /2M	MM-40 /2T	MM-40 /L3T	MM-40 /L3FA	MM-40 /2U	MM-40 /L3U	MM-40 /2TV	MM-40 /L3TV	MM-40 /L3UFA
Standard Eyepiece	Eyepiece	Dedicated	—	—	—	—	—	—	—	—
	CFWN10 x, CFWN10 x CM	—	○	○	○	○	○	—	—	○
	Protractor eyepiece 1-minute reading	○	○	○	○	—	—	—	—	—
	Protractor eyepiece 10-minute reading	○	○	○	○	—	—	—	—	—
Optical Head/ Eyepiece Tube	Monocular optical head	○	—	—	—	—	—	—	—	—
	Trinocular optical head	—	○	○	—	—	—	—	—	—
	Focusing aid optical head	—	—	—	○	—	—	—	—	—
	Simple Video Head	—	—	—	—	—	—	○	○	—
	Binocular eyepiece tube BI (for Optiphot)	—	—	—	—	○	○	—	—	○
	Trinocular eyepiece tube TI (for Optiphot)	—	—	—	—	○	○	—	—	○
	Trinocular eyepiece tube TT (for Optiphot)	—	—	—	—	○	○	—	—	○
	Trinocular eyepiece tube TT for Optiphot (Crosshair reticle built-in)*1	—	—	—	—	○	○	—	—	○
Objective	1x, 3x(standard equipment), 5x, 10x, 20x, 50x, 100x	○	○	○	○	—	—	—	—	—
	CF Infinity Corrected objectives	—	—	—	—	○	○	—	—	○
Stage	6x4, 4x4, 03L, 2x2	○	○	○	○	○	○	○	○	○
	10x6*2, 8x6	—	—	—	—	—	—	—	—	—
Stage Accessories	Digital counter SC-213	—	—	○	○	—	○	—	○	○
	Digital counter SC-212	○	○	○	○	○	○	○	○	○
	Goniometer Type 2 (for 03L)	As appropriate for the stage								
	Rotating table Type 3 (for 6x4, 4x4)									
	Rotating table Type 4 (for 10x6, 8x6)									
	Rotary indexer RI-3600									
	Tilting center fixture A (for Goniometer Type 2)									
	V-block fixture (for 03L)									
Foot switch		○	○	○	○	○	○	○	○	○
E-Max data processing software		○	○	○	○	○	○	○	○	○
Data processor DP-202*3		○	○	○	○	○	○	○	○	○
Data processor DP-303*4		○	○	○	○	○	○	○	○	○
Printer DPU-414*4		○	○	○	○	○	○	○	○	○
Photomicrographic and CCTV Equipment	Photomicrographic equipment H-III	—	○	○	○	○	○	—	—	○
	CCTV camera system	—	○	○	○	○	○	—*5	—*5	○
	Direct C-mount adapter	—	○	○	○	○	○	—	—	○
RS-232C interface card (for DP)		Can be attached to DP-202 data processor								
Illumination Equipment	Ring surface illuminator adapter	○	○	○	○	—	—	—	—	—
	Fiber optics ring illuminantor (15V-150W, for use with ring surface illuminator adapter)	○	○	○	○	—	—	—	—	—
	Fluorescent ring illuminator (for use with ring surface illuminator adapter)	○	○	○	○	—	—	—	—	—
	Fiber optics bifurcated illuminator	○	○	○	○	○	○	○	○	○
	LED Ring Illuminator (for use with ring surface illuminator adapter)	○	○	○	○					
	Universal epi-illuminator (12V50W, 12V100W with lamphouse replacement)	—	—	—	—	○	○	—	—	—
	Focusing-aid epi-illuminator	—	—	—	—	—	—	—	—	○
Metallurgical microscope nosepiece (brightfield, bright/darkfield, universal)		—	—	—	—	○	○	—	—	○

*1 Built-in crosshair reticles cannot be removed.
*2: Max. workpiece height is 170mm when the 10 x 6 stage is used with the MM-60 microscope
*3 Z-axis data cannot be processed or printed out when DP-202, DPU-414 and SC-213 are used together.
*4 Counter values are not displayed on the DP-303 LCD display when DP-303 and SC-213/212 are used together.
*5: Simple video head comes with a C-mount adapter.

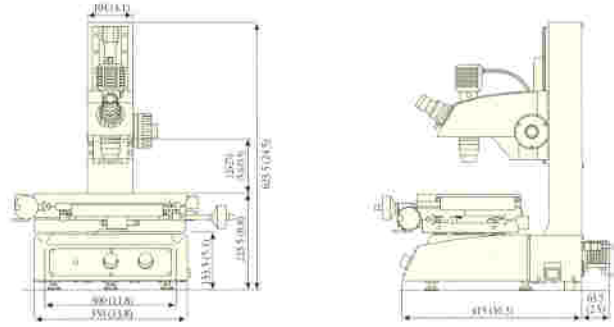
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Dimensional Diagrams

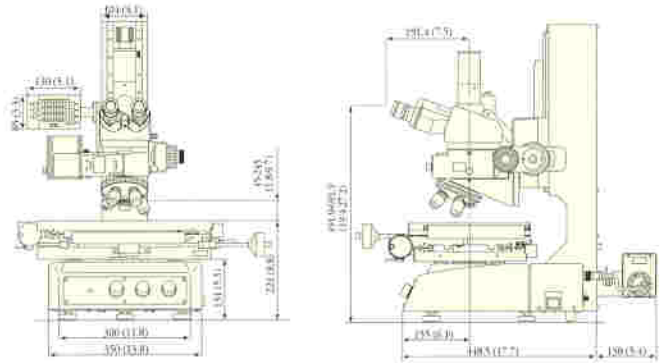
MM-60 /L3T	MM-60 /L3FA	MM-60 /L3U	MM-60 /L3UFA
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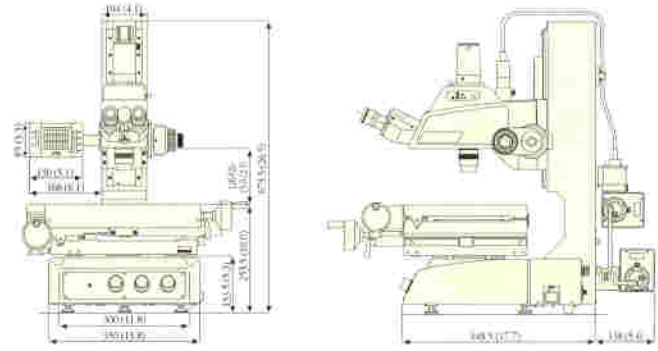
MM-40/20TV + 2x2 Stage



MM-40/20M + 6x4 Stage



MM-60/L3UFA + 8x6 Stage + SC-213 Counter + Counter Arm



MM-60/L3T + 10x6 Stage + SC-213 Counter

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

(Unit: mm (in)

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Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. March 2002.

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

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Printed in Japan (0203-05)T

Code No. 2CE-IWKH-3

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