



INDUSTRIAL INSTRUMENTS

Industrial Instruments General Brochure

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Stereo Microscopes

SMZ Series

The highly cost-effective SMZ series offer outstanding optical performance, flexible system expandability, and superb operability.

Parallel Optics Type				
				
	SMZ25	SMZ18	SMZ1270 SMZ1270i	SMZ800N
Zoom Ratio	25 : 1	18 : 1	12.7 : 1	8 : 1
Zoom Range	0.63–15.75x	0.75–13.5x	0.63–8x	1–8x
Total Magnification*1 (Standard combination*2)	3.15–945x (6.3–157.5x)	3.75–810x (7.5–135x)	3.15–480x (6.3–80x)	5–480x (10–80x)
WD *3	60 mm	60 mm	70 mm	78 mm
Camera	✓	✓	✓	✓

✓ : Available / — : Not available

Greenough Type			
			
	SMZ745 SMZ745T	SMZ445 SMZ460	SMZ-2
Zoom Ratio	7.5 : 1	4.4 : 1 4.3 : 1	5 : 1
Zoom Range	0.67–5x	0.8–3.5x 0.7–3x	0.8–4x
Total Magnification*1 (Standard combination*2)	3.35–300x (6.7–50x)	4–70x (8–35x) 3.5–60x (7–30x)	4–120x (8–40x)
WD *3	115 mm	100 mm	77.5 mm
Camera	✓ (SMZ745T only)	—	—

✓ : Available / — : Not available

*1: Depending on combination of Eyepiece and Objective lens. *2: Combination of Eyepiece 10x and Objective lens 10x. *3: Objective lens 1x or no Auxiliary lens.

Please refer to individual product brochures for further details.

Nikon's Industrial Microscopes utilize the CF160-2 optical system, highly evaluated for providing a high NA combined with long WD.

Upright Microscopes (General model)

LV100ND LED
LV100NDA LED

Model offers various observation methods with reflected/transmitted illumination.



LV100ND LED

LV150NA LED
LV150N LED

Stand and illumination units are selectable according to observation methods and purpose of use.



LV150NA LED

	BF	DF	DIC	FL	POL	2-Beam	Ph-C
EPI	✓	✓	✓	✓	✓	✓	—
DIA	✓	✓	✓	—	✓	—	✓

✓ : Available / — : Not available

Illuminator • Episcope / Diascopic

Stage • 3x2 Stage (stroke 75x50 mm)
• 6x4 Stage (stroke 150x100 mm)
*See the "LV-N Series" brochure for other compatible stages.

	BF	DF	DIC	FL	POL	2-Beam
EPI	✓	✓	✓	✓	✓	✓

✓ : Available

• Episcope

• 3x2 Stage (stroke 75x50 mm)
• 6x6 Stage (stroke 150x150 mm)
*See the "LV-N Series" brochure for other compatible stages.

BF: Brightfield DF: Darkfield DIC: Differential Interference Contrast FL: Fluorescence POL: Polarizing 2-Beam: Two-Beam Interferometry Ph-C: Phase-Contrast

Inverted Metallurgical Microscopes

MA100N

MA100N is compact, inverted microscopes designed for brightfield and simple polarizing observations.



MA200 LED

With its unique, solid-box structure, the MA200 offers high stability, durability, and a smaller footprint than conventional models.



	BF	DF	S-POL	DIC	FL
EPI	✓	—	✓	—	—

✓ : Available / — : Not available
*Dedicated reflected illumination models.

Illuminator • Episcope

Stage • MA-SR-N Rectangular 3-plate Stage N (stroke 50x50 mm)
• MA-SP-N Plain Stage N
• TS2-S-SM Mechanical Stage CH (stroke 126x78 mm)
*Please use in combination with MA-SP-N Plain stage N.

	BF	DF	S-POL	DIC	FL
EPI	✓	✓	✓	✓	—

✓ : Available / — : Not available
*DIA illuminator is available for transmitted light observation.

• Episcope

• MA2-SR Mechanical Stage (stroke 50x50 mm)
*High color-rendering LED illuminator (built-in)

BF: Brightfield DF: Darkfield DIC: Differential Interference Contrast S-POL: Simple Polarizing FL: Fluorescence

Upright Microscopes (Large-sized stage model)

L200N
L200ND

Stage with stroke 200x200 mm is available. Suitable for ø200 mm wafer observation.



L200ND

L300N
L300ND

Stage with stroke 350x300 mm is available. Suitable for ø300 mm wafer observation.



L300ND

	BF	DF	DIC	S-POL	FL
EPI	✓	✓	✓	✓	✓*
DIA	✓*	—	—	—	—

*L200ND only ✓ : Available / — : Not available

Illuminator • L200N : Episcope
• L200ND : Episcope / Diascopic

Stage • 8x8 Stage (stroke: 200x200 mm)

	BF	DF	DIC	S-POL	FL
EPI	✓	✓	✓	✓	✓
DIA	✓*	—	—	✓	—

*L300ND only ✓ : Available / — : Not available

• L300N : Episcope
• L300ND : Episcope / Diascopic

• 14x12 Stage (stroke: 350x300 mm)

BF: Brightfield DF: Darkfield DIC: Differential Interference Contrast S-POL: Simple Polarizing FL: Fluorescence

Polarizing Microscopes

LV100NPOL LED

Outstanding optical performance, perfect for a wide variety of imaging applications and polarizing techniques.



Ci POL

Compact polarizing microscope that balances optical performance and ease of use.



	BF	POL
EPI	✓	✓
DIA	✓	✓

✓ : Available / — : Not available

Illuminator • Episcope / Diascopic

Stage • High precision rotating stage for polarizing observation

	BF	POL
EPI	✓	✓
DIA	✓	✓

✓ : Available / — : Not available

• Episcope / Diascopic

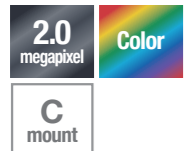
• Rotating stage with stage clamp

BF: Brightfield POL: Polarizing DF: Darkfield DIC: Differential Interference Contrast S-POL: Simple Polarizing FL: Fluorescence

Microscope Camera

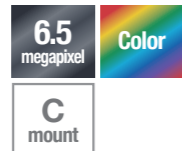
Digital Sight 1000

Equipped with a 2 megapixel CMOS image sensor, it can capture full HD microscope images. By connecting a microscope to this camera and HDMI monitor, movies and images can be captured and saved onto a pre-inserted SD card in the camera.



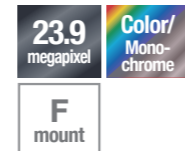
Digital Sight 100

Combined with industrial microscopes, the camera delivers 6.5-megapixel resolution (2944x2208 pixels). HDMI monitor output enables on-site observation without a PC.



Digital Sight 10

This high-resolution camera captures both color and monochromatic images at up to 6,000 x 3,984 pixels. This enables the wide range of images to be captured and then many of them to be stitched together making a single and large combined image.



Max Frame Rate	30 fps (1920x1080)	60 fps (1600x900)	55 fps (2000x1328)
Max Recordable Pixels	1920x1080	2944x2208	6000x3984

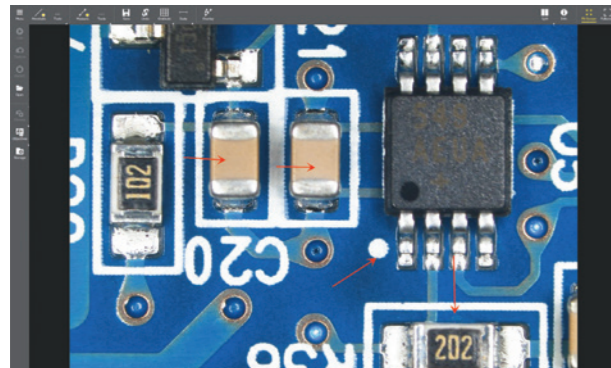
*Digital Sight 100, standalone, delivers up to 17.7-megapixel resolution (4864 x 3648 pixels).



NIS-Elements LE is a free software that allows intuitive control of microscope cameras from the PC. Supports Wi-Fi connectivity when used with the Digital Sight 100.

User Interface for naturally simple operation

Displays various menus for image capture, saving, display, measurement and annotations using intuitive icons. It also supports touch screen operation.



Scene mode

Ten camera setting patterns for optimal color reproduction and contrast for each microscope light source, observation method and type of sample, as well as custom settings, can be selected.

Industrial Scene Mode

- Wafer/IC
- Metal
- Circuit board
- Flat Panel Display

A wide variety of tools

Enables the conducting of simple measurements on images, with input of lines and comments. These can also be written onto and saved with the image, and measurement data can be output.

Measurement function

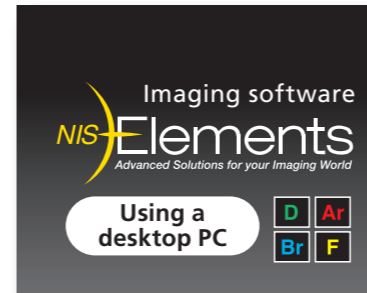
- Line distance
- Area
- Circle
- Circle distance
- Pitch distance
- Angle

Annotate function

- Line
- Arrow
- Text
- Marker
- Polyline

Graticule/scale function

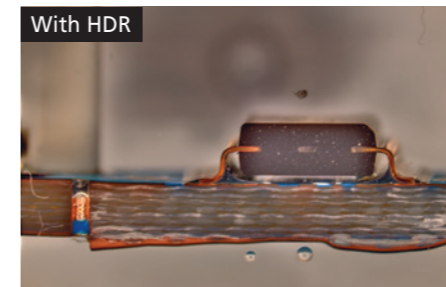
- Crosshairs
- Simple crosshairs
- Circle
- Grid
- Horizontal scale
- Vertical scale



NIS-Elements D/Ar/Br/F offer image acquisition, analysis, visualization and data sharing tools. The software has a fully customizable user interface and can be seamlessly integrated with Nikon microscopes and cameras.

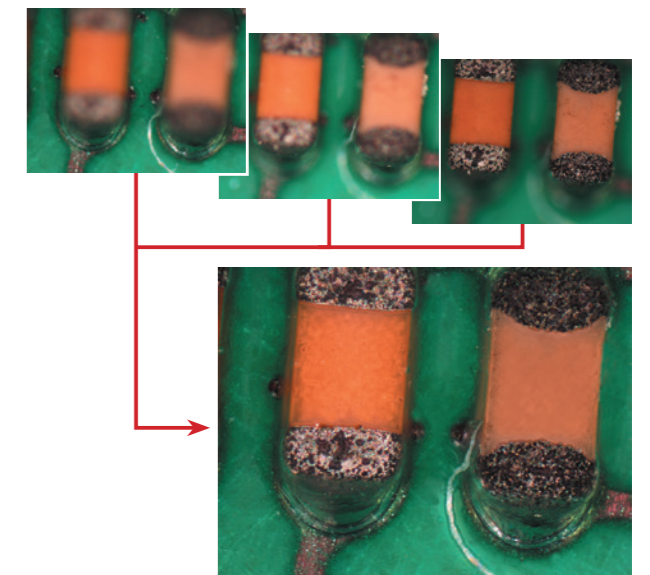
HDR (High Dynamic Range) image acquisition

HDR creates an image with appropriate brightness in both the dark and bright regions in a sample by combining multiple images acquired with different exposure settings. It is also possible to create HDR image using multiple captured images.



EDF (Extended Depth of Focus)

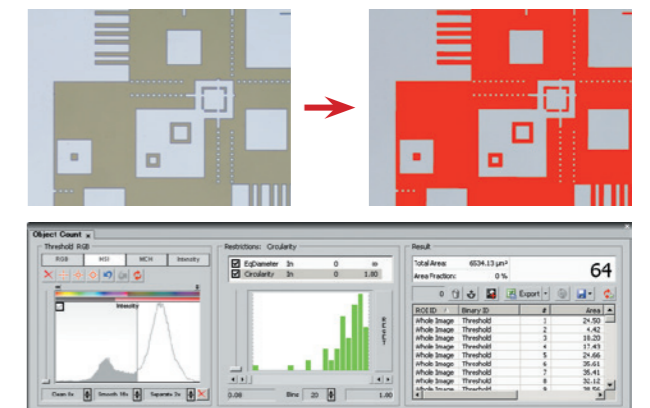
Creates a single, all-in-focus image from images of differing focus. Such images can now be created by simply turning the focus knob.



Selects the in-focus area and produces one all-in-focus image

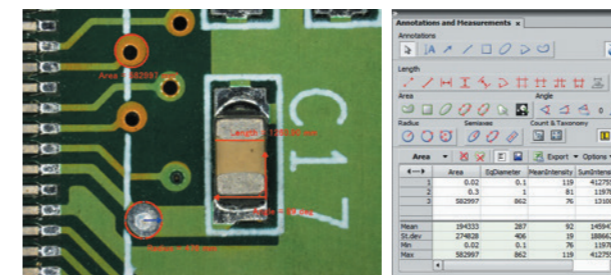
Auto measurement (Object Counting)

Performs binarization on images using previously set thresholds to measure the number, area, brightness, etc. of identified objects.



Manual measurement and image annotation

Manual measurement allows easy measurement of length and area by drawing lines or an object directly on the image. The results can be attached to the image, and also exported as text or to an Excel spreadsheet.



Objective Lenses

CFI60-2 / CFI60

Nikon's CFI60-2/CFI60 optical systems are highly evaluated for their unique concept of high NA combined with a long working distance. These lenses have been developed further and evolved achieving the apex in long working distance specifications, correct chromatic aberration, and an optimized lens weight.



NA: Numerical Aperture BF: Brightfield DF: Darkfield POL: Polarizing S-POL: Simple Polarizing DIC: Differential Interference Contrast UV-FL: UV Fluorescence FL: EPI Fluorescence

	Model	Magnification	NA	WD (mm)	BF	DF	POL	S-POL	DIC	UV-FL	FL	
CFI60-2	T Plan EPI Plan (Achromat)	1x	0.03	3.8	✓	—	—	—	—	—	—	
		2.5x	0.075	6.5	✓	—	—	—	—	—	—	
	TU Plan Fluor EPI Universal Plan Fluor (Semi-apochromat)		5x	0.15	23.5	✓	—	—	✓	✓ A	✓	✓
			10x	0.3	17.5	✓	—	—	✓	✓ A	✓	✓
			20x	0.45	4.5	✓	—	—	✓	✓ A	✓	✓
			50x	0.8	1.0	✓	—	—	✓	✓ A	✓	✓
	TU Plan Apo EPI Universal Plan Apo (Apochromat)		50x	0.8	2.0	✓	—	—	✓	✓ A	—	✓
			100x	0.9	2.0	✓	—	—	✓	✓ A	—	✓
			150x	0.9	1.5	✓	—	—	✓	✓ A	—	✓
			100x	0.9	1.0	✓	—	—	✓	✓ A	✓	✓
	TU Plan Fluor EPI P Polarizing Universal Plan Fluor (Semi-apochromat)		5x	0.15	23.5	✓	—	✓	✓	✓ A	✓	✓
			10x	0.3	17.5	✓	—	✓	✓	✓ A	✓	✓
			20x	0.45	4.5	✓	—	✓	✓	✓ A	✓	✓
			50x	0.8	1.0	✓	—	✓	✓	✓ A	✓	✓
	TU Plan EPI ELWD Long Working Distance Universal Plan (Semi-apochromat)		20x	0.4	19.0	✓	—	—	✓	✓ B	—	✓
			50x	0.6	11.0	✓	—	—	✓	✓ B	—	✓
			100x	0.8	4.5	✓	—	—	✓	✓ B	—	✓
	T Plan EPI SLWD Super Long Working Distance Plan (Semi-apochromat)		10x	0.2	37.0	✓	—	—	—	—	—	✓
			20x	0.3	30.0	✓	—	—	—	—	—	✓
			50x	0.4	22.0	✓	—	—	—	—	—	✓
TU Plan Fluor BD Universal Plan Fluor (Semi-apochromat)		100x	0.6	10.0	✓	—	—	—	—	—	✓	
	TU Plan Apo BD Universal Plan Apo (Apochromat)		5x	0.15	18.0	✓	✓	—	✓	✓ A	✓	✓
			10x	0.3	15.0	✓	✓	—	✓	✓ A	✓	✓
			20x	0.45	4.5	✓	✓	—	✓	✓ A	✓	✓
CFI60	L Plan EPI CR LCD Substrate Inspection Plan (Achromat) *Offers valid while supplies last		50x	0.8	1.0	✓	✓	—	✓	✓ A	—	✓
			100x	0.9	2.0	✓	✓	—	✓	✓ A	—	✓
			150x	0.9	1.5	✓	✓	—	✓	✓ A	—	✓
			100x	0.9	1.0	✓	✓	—	✓	✓ A	—	✓
LE Plan EPI (Achromat)		20x	0.4	19.0	✓	✓	—	✓	✓ B	—	✓	
		50x	0.6	11.0	✓	✓	—	✓	✓ B	—	✓	
		100x	0.8	4.5	✓	✓	—	✓	✓ B	—	✓	
		5x	0.1	31	✓	—	—	—	—	—	✓	
		10x	0.25	13	✓	—	—	—	—	—	✓	
		20x	0.4	3.6	✓	—	—	—	—	—	✓	
LE Plan EPI (Achromat)		50x	0.75	0.5	✓	—	—	—	—	—	✓	
		100x	0.9	0.31	✓	—	—	—	—	—	✓	

✓ : Available / — : Not available *A: Set prism position at A / B: Set prism position at B

For Incorporation into Microscopes

Modular Focusing Units

IM-4, LV-IM/LV-IMA, LV-FM/LV-FMA

Suitable for incorporating into systems, these focusing units enable the mounting of a universal illuminator and a motorized nosepiece.

	IM-4	LV-IM/LV-IMA	LV-FM/LV-FMA
Type	Manual	Manual / Motorized	Manual / Motorized
Vertical stroke	30 mm	30/20 mm	30/20 mm



Compact Reflected Microscopes

CM Series

Ultra-compact reflected microscopes designed for integration into production lines to observe on monitors.



	CM-10A/CM-10L	CM-20A/CM-20L	CM-30A2/CM-30L2	CM-70L	CM-5A
Camera mount	C-mount				
Tube lens magnification	1x	0.5x	1x	0.4x/1x	—
Tube lens focal distance	200 mm	100 mm	200 mm	80/200 mm	—
Image Size (Diagonal Length)	11 mm			8 mm (1/2-inch); 11 mm (2/3-inch)	11 mm
Compatible objectives	A series: CF IC EPI Plan objectives L series: CFI60-2 / CFI60 EPI Plan objectives				Objectives for Nikon MM series
Illumination optical system	Koehler illumination (high-quality telecentric illumination)				
Attached surfaces	3		4	3	
Dimensions (WxDxH)	40x40x224.5 mm	40x40x125.5 mm	40x40x107.3 mm	40x117x156.1 mm	40x40x186.5 mm
Weight (approx)	440 g	290 g	400 g	690 g	410 g

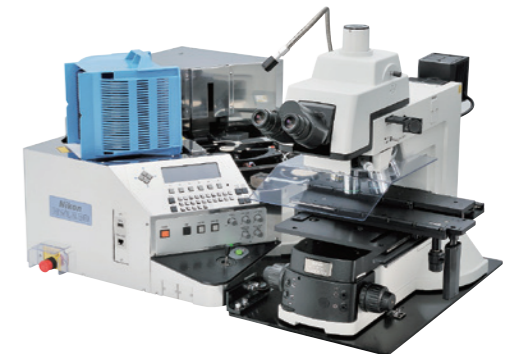
Wafer Loaders

NWL200 Series

Nikon's proprietary technology ensures reliable loading of ultra-thin 100 μm wafers. The NWL 200 series achieve highly reliable loading, suitable for inspection of next-generation semiconductors.

Wafer	Diameter	ø200 mm / ø150 mm
	Minimum thickness (standard)	300 μm
	Minimum thickness (option)	100 μm
Surface, back side macro inspection		✓

*Optional special wafer loader is also available. Please ask Nikon for detail.



Wide variety of stage strokes and magnifications are available for various customer requirements.

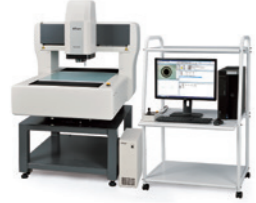
Main Body (Type / Stage Stroke)

Wide FOV Model

VMA

Model VMA-2520
VMA-4540
VMA-6555

Applications Electronic parts, resin molding parts, various mold parts, press parts, die cast parts, etc.




iNEXIV VMA-4540

Standard Model

VMZ-S

Model VMZ-S3020/VMZ-S4540/VMZ-S6555

Applications Semiconductor packages, high density PCB's, lead frames, MEMS, connectors, precision mechanical parts, etc.



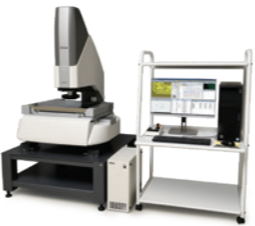
NEXIV VMZ-S3020 NEXIV VMZ-S4540

High-precision Model

VMZ-H

Model VMZ-H3030

Applications Micro boards (line width, height), next-generation semiconductor packages (WLP, bump height), precision molds, rewiring masks, MEMS masks, etc.



NEXIV VMZ-H3030


Model	Wide FOV			Standard			High-precision
	250x200 mm	450x400 mm	650x550 mm	300x200 mm	450x400 mm	650x550 mm	300x300 mm
Wide FOV Head	✓	✓	✓	✓	✓	✓	✓
Standard Head				✓	✓	✓	✓
High-Magnification Head				✓	✓	✓	✓
Z-axis Stroke	200 mm	200 mm	200 mm	200 mm	200 mm	200 mm	150 mm
Max. guaranteed loading capacity	15 kg	20 kg	30 kg	20 kg	40 kg	50 kg	30 kg
Maximum permissible error (EuX, MPE EuY, MPE)	2+8L/1000 μm	2+6L/1000 μm		1.2+4L/1000 μm			0.6+2L/1000 μm
Maximum permissible error (EuZ, MPE)	3+L/50 μm	3+L/100 μm		1.2+5L/1000 μm			0.9+L/150 μm

L = Length in mm

Zoom Heads


Type A

Wide FOV and long working distance enables comfortable operation. Laser AF and Touch Probe can be attached as optional accessories.
*Touch Probe is an option only for VMA series.



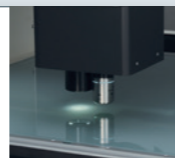
Type 1-4

Equipped with top, bottom, and oblique ring lights with adjustable angles. TTL (Through the Lens) Laser AF is a standard tool that can scan surfaces at 1000 points/second.



Type TZ

Equipped with 1-120x ultra high zoom ratio with 8 steps. Suitable for measurements of small targets up to several micrometers.




FOV	W(mm)×D(mm)	13.3	9.33	7.8	4.7	2.6	2.33	1.33	1.165	0.622	0.582	0.311	0.291	0.155	0.146	0.070	0.073	0.039	WD
		10.0	7.01	5.8	3.5	1.9	1.75	1.00	0.875	0.467	0.437	0.233	0.218	0.117	0.109	0.068	0.055	0.029	
Wide FOV Head	Type A	73.5 mm																	
Standard Head	Type 1	50 mm																	
	Type 2																		
	Type 3																		
High-Magnification Head	Type 4	30 mm																	
	Type TZ	9.8 mm																	


Equipped with brightfield and confocal optics, Confocal NEXIV series are capable of high-speed, high-resolution inspection of fine 3D shapes.

Main Body (Type / Stage Stroke)


VMF-K 3040



VMF-K 6555



VMF-K 6561



XY Stroke	300 x 400 mm	650 x 550 mm	650 x 610 mm
Z-axis Stroke	150 mm		
Standard head (Type-S)	1.5x / 3x / 7.5x		
High-Magnification head (Type-H)	15x / 30x		
45x High-magnification head	45x		
Accuracy guaranteed loading capacity	20 kg	30 kg	30 kg
Maximum permissible error (EuX, MPE EuY, MPE)	1.2 + 4 L/1000 μm		
Maximum permissible error (EuZ, MPE)	1 + L/1000 μm		

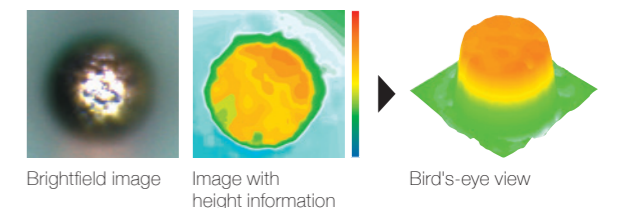
Applications Micro wiring patterns (top and bottom), bonding wires, probe cards, WLP, PLP, etc.

Zoom Heads

FOV*	W(mm)×D(mm)	7.81	3.91	1.95	1.56	1.27	0.98	0.78	0.63	0.52	0.39	0.26	0.20	0.10	0.099	0.049	WD
		5.85	2.93	1.47	1.17	0.95	0.73	0.59	0.47	0.39	0.29	0.19	0.15	0.078	0.074	0.037	
Standard head (Type-S)	1.5x	24 mm															
	3x	24 mm															
	7.5x	5 mm															
High-magnification head (Type-H)	15x	20 mm															
	30x	5 mm															
45x High-magnification head		5 mm															

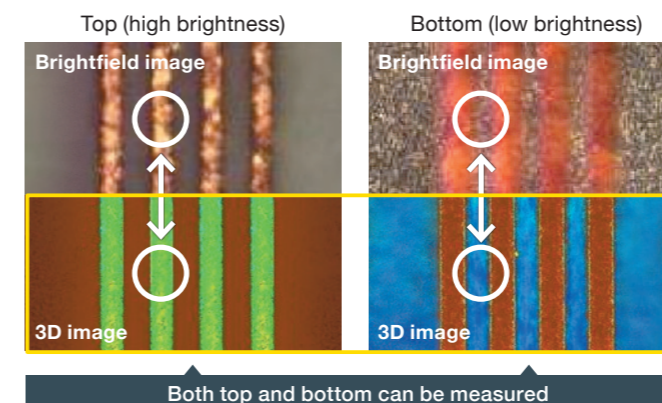
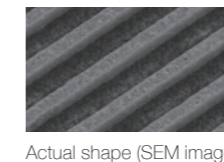
● Brightfield ● Confocal/Brightfield ● Confocal *The FOV of the bright field optics are indicated.

The NEXIV VMF-K series can perform full-field height measurement using confocal optics as well as 2D measurement with brightfield images. Special samples that are difficult to detect with brightfield can be clearly calculated with confocal measurement.



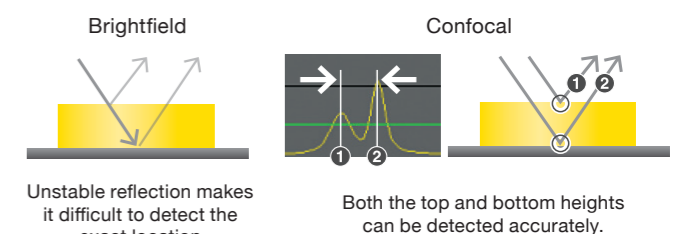
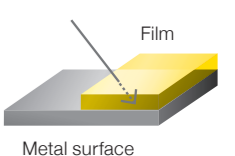
High contrast sample (copper wire on print board etc.)

Confocal observation accurately captures the shape, even for samples that are difficult to measure accurately in brightfield, due to effects such as halation.



Highly transparent and thin samples (metal surface films, semiconductor resists, etc.)

For transparent samples with unstable light reflection, confocal observation can accurately detect two points: the transparent surface and the metal surface.



Please refer to individual product brochures for further details.

Please refer to individual product brochures for further details.

Measuring Microscopes

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

		Basic Model MM-400N	Large-Stage Model MM-800N
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	—	✓
Max. Sample Height		150 mm	200 mm
Optical Head	Monocular	✓	—
	Binocular	✓	✓
X-Y-Z	2-axis	✓	✓
	3-axis	✓	✓
CCD		✓	✓
Obj. Magnification		1x/3x/5x/10x/20x/50x/100x	

✓ : Available / — : Not available

MM Type

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



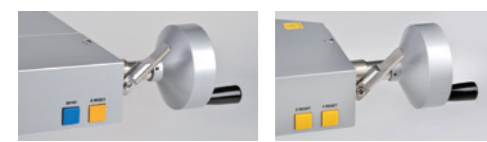
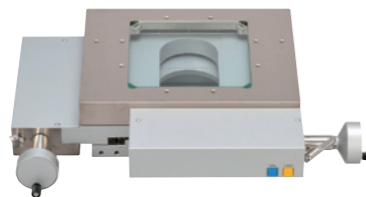
Universal Type

Offers a line-up compatible with dimensional measurement and various observation methods.



High-Precision Stages

The coarse/fine changeover lever and the RESET and SEND buttons are located near the X- and Y-axis knobs.



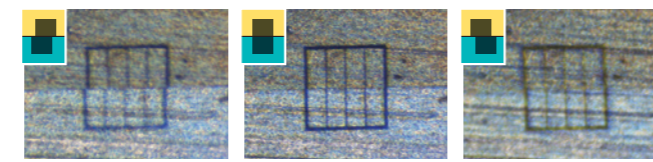
X-axis Knob

Y-axis Knob

Focusing Aid (FA)

The Split-Prism FA delivers sharp patterns to allow accurate focusing during Z-axis measurements.

FA patterns are clearly visible because they are split vertically.



Front Focus

Focused

Rear Focus



Please refer to individual product brochures for further details.

Profile Projectors

Nikon's profile projectors apply the principles of optics to the inspection of manufactured parts by projecting magnified silhouettes on a screen.

		Desktop Model V-12B	Large-Screen Model V-20B
Stage Size/ Loading Capacity	50x50 mm / 5 kg	✓	✓
	100x100 mm / 15 kg	✓	✓
	150x100 mm / 15 kg	✓	✓
	200x150 mm / 20 kg	✓	✓
	250x150 mm / 20 kg	✓	✓
Max. Sample Height		100 mm*2	150 mm
Screen		305 mm	500 mm
Image		Erect	Inverted
Projection Lens	Magnification	5x/10x/20x/25x/50x/100x/200x	5x/10x/20x/50x/100x
	FOV (with 10x lens)*1	30.5 mm	50 mm
Digital Protractor		✓	✓
Digital Counter		✓	✓

*1: Actual FOV = Effective diameter of screen / Lens magnification

*2: Maximum sample height is 70 mm when 200x150 mm stage is installed.

✓ : Available / — : Not available

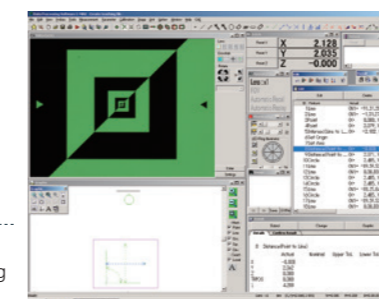
Data Processing Systems for Measuring Microscopes and Profile Projectors

Data Processing Software

E-MAX



Provides the user with various advanced measurements and processing functions. Automated edge detection with sub-pixel processing enables more precise and repeatable measurements.



Connected with profile projector, data processing functions only

Please refer to individual product brochures for further details.

Data Processor

DP-E1A



Effectively used with a measuring microscope / profile projector, it quickly calculates and processes measurement data. Feature Oriented Operation of the DP-E1A allows the user to conduct measurements with the graphics, providing a seamless measuring environment.

Coords: Mecha [mm]	
001-P	X
002-P	Y
003-LPP	Z
004-L	X
005-L	Y
006-ILL	Z
007-C	Circle 3/3
	X = 6.8005
	Y = -23.2831
	D = 8.0353
	R = 4.0177

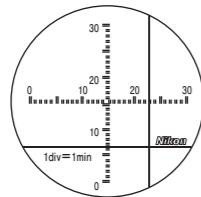
Connected with profile projector, retrofit counter and DP units are required.

Autocollimators

Autocollimator is an easy-to-use but precise metrology instrument for angularity, parallelism, perpendicularity, straightness of precision components machine guide-way and many other applications.

Brightfield Type

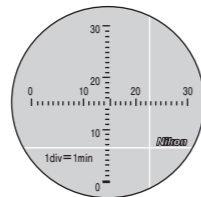
6B-LED



Utilizes hallmark Nikon optics to illuminate surface details.

Darkfield Type

6D-LED



Optimal for measuring small, flat mirrors.



Observation method	6B-LED: Brightfield, 6D-LED: Darkfield
Readout system	Adjustment in viewfield and reading on micrometer
Measuring range	30 minutes of arc (both vertical and horizontal axes)
Minimum range	0.5 seconds of arc

DIGIMICRO

With built-in photoelectric digital length measuring systems, DIGIMICRO offers flawless contact measurements of dimension, thickness, and depth.



Main unit	MF-1001	MF-501	MH-15M
Measuring range	0-100 mm	0-50 mm	0-15 mm
Accuracy (20°C)	3 μm	1 μm	0.7 μm
Measuring force	Downward 1.13 to 1.62N (variable to about 0.29N) Lateral 0.64 to 1.23N	Downward 1.23 to 1.81N (variable to about 0.44N) Lateral 0.64 to 1.23N	Upward 0.25N Downward 0.64N Lateral 0.44N (lifting release included)
Operating temperature	0 to +40°C		

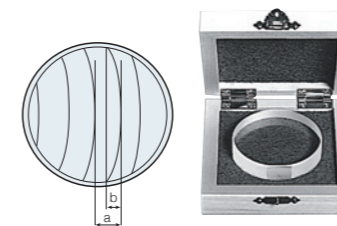
Please refer to individual product brochures for further details.

Optical Flat / Optical Parallel / Standard 300 mm Scale

Optical Flat

The optical flat is used to check the flatness level of a surface provided with mirror-smooth finish.

Flatness level can be measured by observing interference fringes by placing the optical flat in contact with the sample.



Diameter	Glass (ø60 mm)	Glass (ø130 mm)
Thickness	15 mm	27 mm
Flatness	0.1 μm	0.1 μm

Optical Parallel

Both planes of the optical parallel have been precisely finished flat and parallel.

It is used to check the flatness and parallel levels of a sample by observing interference fringes by placing the optical parallel in contact with the sample.



Diameter	30 mm
Thickness	12 mm / 12.12 mm / 12.25 mm / 12.37 mm
Flatness	within 0.1 μm
Parallelism	within 0.2 μm

*Optical flats and parallels with greater precision are available by custom orders.

Standard 300mm Scale

Gauges stage travel accuracy up to 300 mm. Both 10 mm-interval sensor patterns and calibrations are provided. Made of the glass with low coefficient of thermal expansion, for minimizing thermal influence.

*Within 1 μm against compensation values.



Please refer to individual product brochures for further details.

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

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