



# Industrial Instruments General Catalogue

# 2014.10



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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 <b>NEW</b>	SMZ800N <b>NEW</b>	
Zoom Ratio	25 : 1	18 : 1	12.7 : 1	8 : 1
Zoom Range	0.63–15.75×	0.75–13.5×	0.63–8×	1–8×
Total Magnification*1 (Standard combination*2)	3.15–945×	3.75–810×	3.15–480×	5–480×
	(6.3–157.5×	(7.5–135×	(6.3–80×	(10–80×
W.D.*3	60mm	60mm	70mm	78mm
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	0.67–5×	0.8 –3.5×	0.7 –3×
		0.8 –3×	0.8–4×
Total Magnification*1 (Standard combination*2)	3.35–300×	4–70×	3.5–60×
	(6.7–50×	(8–35×	(7–30×
W.D.*3	115mm	100mm	77.5mm
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 Auxilliary Objective lens.



Nikon's Industrial Microscopes utilize the CFI60-2 optical systems, highly evaluated for its unique concept of high NA combined with long W.D.

Upright Microscopes (General model)

LV150N  
LV150NA  
LV150NL\*

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



LV150N

LV100ND  
LV100DA-U

Model offers various observation methods with reflected/transmitted illumination.



LV100ND

Observation Method	BF	DF	DIC	FL	POL	2-Beam
	EPI	✓	✓	✓	✓	✓
	DIA	✓	✓	✓	✓	✓
✓ : Available / — : Not available						
Illuminator	• Episcopic					
Stage	• 3×2 Stage (stroke 75×50mm) • 6×6 Stage (stroke 150×150mm) *See the "LV-N Series" brochure for other compatible stages.					

Observation Method	BF	DF	DIC	POL	FL	Ph-C	2-Beam
	EPI	✓	✓	✓	✓	—	✓
	DIA	✓	✓	✓	✓	—	—
✓ : Available / — : Not available							
Illuminator	• Episcopic / Diascopic						
Stage	• 3×2 Stage (stroke 75×50mm) • 6×4 Stage (stroke 150×100mm) *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  
\*Only BF, DIC, and S-POL are available for LV150NL

Upright Microscopes (Large-sized stage model)

L300N  
L300ND

Stage with stroke 350×300mm is available. Suitable for ø300mm wafer observation.



L300ND

L200N  
L200ND

Stage with stroke 200×200mm is available. Suitable for ø200mm wafer observation.



L200ND

Observation Method	BF	DF	DIC	S-POL	FL
	EPI	✓	✓	✓	✓
	DIA	✓*	—	—	—
*L300ND only ✓ : Available / — : Not available					
Illuminator	• L300N : Episcopic • L300ND : Episcopic / Diascopic				
Stage	• 14×12 Stage (stroke: 350×300mm)				

Observation Method	BF	DF	DIC	S-POL	FL
	EPI	✓	✓	✓	✓*
	DIA	✓*	—	—	—
*L200ND only ✓ : Available / — : Not available					
Illuminator	• L200N : Episcopic • L200ND : Episcopic / Diascopic				
Stage	• 8×8 Stage (stroke: 200×200mm)				

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

Inverted Metallurgical Microscopes

MA200

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



MA100  
MA100L

MA100 and MA100L are compact, inverted microscopes designed for brightfield and simple polarizing observations.



MA100L

Observation Method	BF	DF	DIC	S-POL	FL
	EPI	✓	✓	✓	✓
	DIA	✓	✓	✓	—
✓ : Available / — : Not available					
Illuminator	• Episcopic / Diascopic				
Stage	• MA2-SR Mechanical Stage (stroke 50×50mm) • MA-SR Rectangular 3-plate Stage (stroke 50×50mm) • MA-SP Plan Stage • Ti-SM Attachable Mechanical Stage CH (stroke 126×80mm)				

Observation Method	BF	DF	DIC	S-POL	FL
	EPI	✓	—	✓	—
	DIA	—	—	—	—
✓ : Available / — : Not available					
Illuminator	• Episcopic				
Stage	• MA-SR Rectangular 3-plate Stage (stroke 50×50mm) • MA-SP Plan Stage • Ti-SM Attachable Mechanical Stage CH (stroke 126×80mm)				

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

Polarizing Microscopes

LV100NPOL  
Ci POL

High quality polarizing microscopes with superb optical performance that accommodate various observation needs.



LV100NPOL

Observation Method	BF	POL
	EPI	✓
	DIA	✓
✓ : Available / — : Not available		
Illuminator	• Episcopic/ Diascopic	
Stage	• LV100NPOL : High precision rotating stage for polarizing observation • Ci POL : Rotating stage with stage clamp	

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

Multi-purpose Zoom Microscopes

AZ100  
AZ100M

Multizoom AZ100 and AZ100M combine the advantages of stereoscopic and metallographic microscopes.



AZ100

Observation Method	BF	DF	DIC	S-POL	FL
	EPI	✓	—	—	✓
	DIA	✓	✓	✓	—
✓ : Available / — : Not available					
Illuminator	• Episcopic/ Diascopic				
Stage	• 6×6 Stage (stroke 150×150mm) for episcopic • 6×4 Stage (stroke 150×100mm) for diascopic				

Digital Cameras for Microscopes

The new Stand-Alone Model is capable of high-definition image acquisition without a control unit, while the System Type allows for free assembly of camera heads and controllers.

**Microscope Camera**

**Stand-Alone Model**

DS-Ri2 **NEW**

Capable of expressing images as is, this microscope digital camera offers high resolution, color reproduction, and frame rate.

16.25 megapixel

Color

High-resolution

Frame Rate

45fps (1636×1088)

Max Recordable Pixels

4908×3264

**System Type (Camera Heads)**

High-Speed Color Camera Head

DS-Vi1

2.0 megapixel

Color

27fps (800×600 / L3 )

1600×1200

High-Definition Color Camera Head

DS-Fi2

5.0 megapixel

Color

High-resolution

21fps (1280×960 / L3 )

2560×1920

\*See the "Digital Sight series" catalog for other cameras.

**System Type (Control Units)**

**Stand-Alone Unit**

DS-L3

Equipped with a large touch panel monitor and a rich feature set, the DS-L3's ease of operation enables quick image acquisition without a PC or computer monitor.

Scene Mode

Optimal imaging parameters for each sample type and observation method can easily be set through the icons.

Wafer/IC

Metal, Ceramic/Plastic

Circuit board

Flat Panel Display

Variety of Tool Features

Multiple editing functions are available and can be saved onto images. Measurement data can be easily outputted as needed.

Measurement function

Point to line distance

Point to point distance

Circle distance

Angle

Circle (Diameter, Radius)

Area

Pitch distance

Position and size comparison functions

Scale indication

Cross-hairs

Grid

XY scale

XY measurement

Drawing functions

Count marking

Text input

Pen drawing (straight/curved)

**PC Controlled unit**

DS-U3

From displaying and acquiring live images to advanced image processing and analysis, the DS-U3 allows control of all functions from a PC and can be used for a wide range of applications.

Imaging software "NIS-Elements" series

Image Stitching

Stitches together images acquired from multiple fields of view to create one image.

EDF (Extended Depth of Focus)

Create a single, all-in-focus image from images of differing focus.

Digital Sight Series

Digital Microscopes

ShuttlePix P-400Rv

An all-new, one-of-a-kind digital microscope that can either be portable to accommodate any sample size or docked on a stand to take high-magnification images and perform various measurements.

**Motorized Focusing Stand + Touch Panel Monitor**

Through the intuitive operation of touching icons or using the screen stylus, precise image capturing and simple measurement are now possible.

**One-touch EDF**

EDF images can be easily acquired by selecting the start and end positions on the sample.

Handheld Set

The lightweight, ergonomic camera head allows for easy handling for all users.

**Simple Stand**

This all-in-one set features a battery operated zoom camera head and a compact simple reflection stand, both of which can be taken anywhere to capture high-resolution images.

Super High Vertical Resolution Non-Contact 3D Surface Profilers

BW-D500 Series/  
BW-S500 Series

Nikon's proprietary scanning-type optical interference measurement technology achieves 1pm height resolution. Nikon offers variety application, lustrous surfaces, such as silicon wafer, glass and metallic deposition surfaces.

	High Speed Model BW-D500 Series	High Pixel Resolution Model BW-S500 Series			
Height Resolution (algorithm)	1pm				
Step Height Measurement Reproducibility	σ: 8nm (8μm Step height measurement)				
Number of Pixels	510×510	2,046×2,046	1,022×1,022		
Height Measurement Time	4 s (10μm scan)	38 s (10μm scan)	16 s (10μm scan)		
Field of view	< 2,015×2,015μm*	< 4,458×4,448μm*			

\* The range can be extended by changing the relay lens or by stitching.

Polished ceramic surface      Metal Etching Surface      Lens      Glass      Glossy paper

Please refer to individual product brochures for further details.

microscope.ru

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Please refer to individual product brochures for further details.

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Objective Lenses

CFI60-2 / CFI60 / CF&IC

Nikon's CFI60-2/CFI60/CF&IC optical systems are highly evaluated for its unique concept of high NA combined with long working distance. These lenses have further evolved to achieve the apex in long working distance, correct chromatic abserration, and optimized lens weight.

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

	Model	Magnification	NA	W.D. (mm)	BF	DF	POL	S-POL	DIC	UV-FL	FL
CFI60-2	T Plan EPI Plan (Semi-apochromat)	1x	0.03	3.8	✓	—	—	—	—	—	—
		2.5x	0.075	6.5	✓	—	—	—	—	—	—
		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 Fluor EPI Universal Plan Fluor (Semi-apochromat)	100x	0.9	1.0	✓	—	—	✓	✓ A	✓	✓
		50x	0.8	2.0	✓	—	—	✓	✓ A	—	✓
		100x	0.9	2.0	✓	—	—	✓	✓ A	—	✓
		150x	0.9	1.5	✓	—	—	✓	✓ A	—	✓
	TU Plan Apo EPI Universal Plan Apo (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 Fluor EPI P Polarizing Universal Plan Fluor (Semi-apochromat)	100x	0.9	1.0	✓	—	✓	✓	✓ A	✓	✓
		20x	0.4	19.0	✓	—	—	✓	✓ B	—	✓
		50x	0.6	11.0	✓	—	—	✓	✓ B	—	✓
		100x	0.8	4.5	✓	—	—	✓	✓ B	—	✓
	T Plan EPI ELWD Long Working Distance Universal Plan (Semi-apochromat)	10x	0.2	37.0	✓	—	—	—	—	—	✓
		20x	0.3	30.0	✓	—	—	—	—	—	✓
		50x	0.4	22.0	✓	—	—	—	—	—	✓
		100x	0.6	10.0	✓	—	—	—	—	—	✓
	TU Plan Fluor BD Universal Plan Fluor (Semi-apochromat)	5x	0.15	18.0	✓	✓	—	✓	✓ A	✓	✓
		10x	0.3	15.0	✓	✓	—	✓	✓ A	✓	✓
		20x	0.45	4.5	✓	✓	—	✓	✓ A	✓	✓
		50x	0.8	1.0	✓	✓	—	✓	✓ A	✓	✓
	TU Plan Apo BD Universal Plan Apo (Apochromat)	100x	0.9	1.0	✓	✓	—	✓	✓ A	✓	✓
		150x	0.9	1.5	✓	✓	—	✓	✓ A	—	✓
		50x	0.8	2.0	✓	✓	—	✓	✓ A	—	✓
		100x	0.9	2.0	✓	✓	—	✓	✓ A	—	✓
	TU Plan BD 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	—	✓
		100x	0.8	4.5	✓	✓	—	✓	✓ B	—	✓
CFI60	L Plan EPI (Achromat)	40x	0.65	1.0	✓	—	—	—	—	—	✓
		150x	0.95	0.3	✓	—	—	✓	✓ A	—	✓
	LU Plan Apo EPI / Universal Plan Apo (Apochromat)	100x	0.9	0.51	✓	✓	—	✓	✓ A	—	✓
		150x	0.9	0.42	✓	✓	—	✓	✓ A	—	✓
	L Plan EPI CR LCD Substrate Inspection Plan (Achromat) *Offers valid while supplies last	20x	0.45	10.9–10.0	✓	—	—	—	—	—	✓
		50x	0.7	3.9–3.0	✓	—	—	—	—	—	✓
CF&IC	CF IC EPI Plan Plan (achromat)	100x	0.85	1.2–0.85	✓	—	—	—	—	—	✓
		100x	0.85	1.3–0.95	✓	—	—	—	—	—	✓
		2.5x	0.075	8.8	✓	—	—	—	—	—	✓
		5x	0.13	22.5	✓	—	—	—	—	—	✓
		10x	0.3	16.5	✓	—	—	—	—	—	✓
		20x	0.46	3.1	✓	—	—	—	—	—	✓
	CF IC EPI Plan Apo Plan Apo (Apochromat)	50x	0.8	0.54	✓	—	—	—	—	—	✓
		100x	0.95	0.3	✓	—	—	—	—	—	✓
		50x	0.95	0.4	✓	—	—	—	—	—	✓
		100x	0.95	0.3	✓	—	—	—	—	—	✓
	CF IC EPI Plan ELWD Long Working Distance Plan (Achromat)	150x	0.95	0.2	✓	—	—	—	—	—	✓
		20x	0.4	11	✓	—	—	—	—	—	✓
		50x	0.55	8.7	✓	—	—	—	—	—	✓
		100x	0.8	2	✓	—	—	—	—	—	✓
	CF IC EPI Plan SLWD Super Long Working Distance Plan (Achromat)	10x	0.21	20.3	✓	—	—	—	—	—	✓
		20x	0.35	20.5	✓	—	—	—	—	—	✓
		50x	0.45	13.8	✓	—	—	—	—	—	✓
		100x	0.73	4.7	✓	—	—	—	—	—	✓
	CF IC EPI Plan TI DIC Plan	2.5x	0.075	10.3	✓	—	—	—	—	—	—
		5x	0.13	9.3	✓	—	—	—	—	—	—
	CF IC EPI Plan DI DIC Plan	10x	0.3	7.4	✓	—	—	—	—	—	—
		20x	0.4	4.7	✓	—	—	—	—	—	—
		50x	0.55	3.4	✓	—	—	—	—	—	—
		100x	0.7	2.0	✓	—	—	—	—	—	—

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

Near-infrared Objective Lenses

NIR / NIR-C

Achieves high transmission of 90% or more at visible range and 1,064 nm. Significantly improved machining accuracy at a small size with low power. Suitable for Semiconductor and LCD by laser repair.

	Model	Magnification	NA	W.D. (mm)	Wave Length (n.m)	Parfocal Distance (mm)
NIR & NIR-C	NIR-1 <sup>*</sup> Near-Infrared Plan	20x	0.40	25.0	1,064/532	95
		50x	0.42	20.0	1,064/532	95
	NIR-C-1 <sup>*</sup> Near-Infrared Plan (glass thickness correction range 0.3–1.1mm)	20x	0.40	24.0 <sup>2</sup>	1,064/532	95 <sup>3</sup>
		50x	0.42	19.0 <sup>2</sup>	1,064/532	95 <sup>3</sup>

\*1: Please ask us regarding transmission outside of vision range and 1064nm. \*2: W.D. is measured from the object surface with 1.1mm thick cover glass. \*3: Because of a shift in parfocal position when used in conjunction with cover-less objective lens, parfocal distance is corrected by correction rings and washers.

Please refer to individual product brochures for further details.

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	30mm	30/20mm	30/20mm



Dynamic Auto-Focus Unit

LV-DAF

Hybrid Auto-focus features a wide focus range and fast tracking ability. A wide range of observation methods are supported, including brightfield, darkfield, and DIC. Reflective and transparent samples can both be observed.

Detection System	Split Projection System/ Contrast Detection System
AF Light Source	Near Infrared LED (λ=770nm)
Focal Time	within 0.7 sec (Obj. lens: 20x, Distance from focal position: 200μm)
Observation	Brightfield, Darkfield, Polarizing, DIC



Compact Reflected Microscopes

CM Series

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



	CM-5A	CM-10A/CM-10L	CM-20A/CM-20L	CM-30A/CM-30L
Camera Mount	C-mount (ENG-mount possible with option)			
Tube Lens Magnification	—	1x	0.5x	1x
Compatible Objectives	A series: CF IC EPI Plan objectives / L series: CFI60-2/ CFI60 EPI Plan objectives			
Illumination Optical System	Koehler illumination (high-quality telecentric illumination)			
Attachment Surfaces	3			4

Wafer Loaders

NWL200 Series

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

Wafer	Diameter	ø200mm / ø150mm / ø125mm
	Thickness (standard)	300μm
	Thickness (option)	300–100μm
Surface, back side macro inspection		✓



Please refer to individual product brochures for further details.

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

**Wide FOV Type**  
**VMA**  
Model VMA-6555 Series  
VMA-4540 Series  
VMA-2520 Series

**Standard Type**  
**VMR / VMZ-R**  
Model VMR: VMR-1515/VMR-10080/VMR-12072  
VMZ-R: VMZ-R3020/VMZ-R4540/VMZ-R6555

**High Accuracy Type**  
**VMR-H**  
Model VMR-H3030

Type	Wide FOV			Standard						High Accuracy
XY Stroke (mm)	250x200	450x400	650x550	150x150	300x200	450x400	650x550	1000x800	1200x720	300x300
Wide FOV Head	✓	✓	✓		✓	✓	✓			
Standard Head				✓	✓	✓	✓	✓	✓	✓
High-Magnification Head				✓	✓	✓	✓	✓	✓	✓
Z-axis Stroke (mm)	200	200	200	150	200	200	200	150	150	150
Max. guaranteed loading capacity (kg)	15	20	30	20	20	40	50	40	40	30
Max. permissible errors (μm) Eux, MPE:	2+8L/1000	2+6L/1000	2+6L/1000	1.5+4L/1000	1.2+4L/1000	1.2+4L/1000	1.2+4L/1000	2+4L/1000	2.2+4L/1000	0.6+2L/1000
Max. permissible errors in Z axis (μm) Ez, MPE:	3+L/50	3+L/100	3+L/100	1.5+L/150	1.2+5L/1000	1.2+5L/1000	1.2+5L/1000	1.5+L/150	1.5+L/150	0.9+L/150

L = Length in mm \*1: with Laser AF or Touch Probing

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

Simultaneous wide-area height measurements with confocal optics and 2D measurement with 15× brightfield zoom optics.

**Wide FOV Type**  
**VMA**  
Model VMA-6555 Series  
VMA-4540 Series  
VMA-2520 Series

**Standard Type**  
**VMR / VMZ-R**  
Model VMR: VMR-1515/VMR-10080/VMR-12072  
VMZ-R: VMZ-R3020/VMZ-R4540/VMZ-R6555

**High Accuracy Type**  
**VMR-H**  
Model VMR-H3030

Type	Wide FOV			Standard						High Accuracy
XY Stroke (mm)	250x200	450x400	650x550	150x150	300x200	450x400	650x550	1000x800	1200x720	300x300
Wide FOV Head	✓	✓	✓		✓	✓	✓			
Standard Head				✓	✓	✓	✓	✓	✓	✓
High-Magnification Head				✓	✓	✓	✓	✓	✓	✓
Z-axis Stroke (mm)	200	200	200	150	200	200	200	150	150	150
Max. guaranteed loading capacity (kg)	15	20	30	20	20	40	50	40	40	30
Max. permissible errors (μm) Eux, MPE:	2+8L/1000	2+6L/1000	2+6L/1000	1.5+4L/1000	1.2+4L/1000	1.2+4L/1000	1.2+4L/1000	2+4L/1000	2.2+4L/1000	0.6+2L/1000
Max. permissible errors in Z axis (μm) Ez, MPE:	3+L/50	3+L/100	3+L/100	1.5+L/150	1.2+5L/1000	1.2+5L/1000	1.2+5L/1000	1.5+L/150	1.5+L/150	0.9+L/150

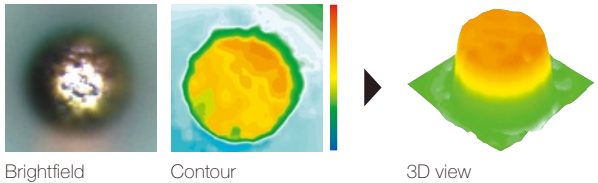
L = Length in mm \*1: with Laser AF or Touch Probing

**Zoom Heads**

FOV	W(mm)×D(mm)	8 6	4 3	2.0 1.5	1.6 1.2	1.26 0.95	1.00 0.75	0.8 0.6	0.63 0.47	0.53 0.40	0.4 0.3	0.30 0.23	0.27 0.20	0.20 0.15	0.11 0.08	0.100 0.074	0.05 0.04	W.D.
Type S	1.5×	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	24mm
	3×		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	24mm
	7.5×			●	●	●	●	●	●	●	●	●	●	●	●	●	●	5mm
Type H	15×				●	●	●	●	●	●	●	●	●	●	●	●	●	20mm
	30×					●	●	●	●	●	●	●	●	●	●	●	●	5mm

● Confocal Optics ● Brightfield Optics ● Both brightfield and 3D images are available

Confocal NEXIV incorporates confocal optics for fast and accurate evaluation of fine three-dimensional geometries. Confocal Optics are designed for wide FOV height measurement.



**High Contrast and Multileveled Sample (PCBs)**  
Brightfield observation can sometimes be difficult due to blurred lines along sample structure. These lines can be clearly observed and measured using Confocal optics.

**Brightfield Image**

**Confocal Image**

**Top detected**

**Bottom detected**

**Thin Transparent Samples (Metal Surface Film / Semiconductor Resist)**  
Top layers of both thin transparent film and metal surface can be easily detected using Confocal optics.




**Brightfield Image**  
  
Difficult to detect thin layer films

**Confocal Image**  
  
Top and bottom layers are accurately detected



Measuring Microscopes

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


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

\*For simple video head only

✓ : Available / — : Not available


**MM Type**

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



**Universal Type**

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



Newly Developed High-Precision Stages

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

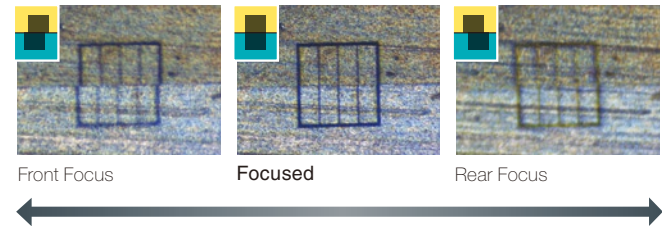


X-axis Knob

Y-axis Knob

Focusing Aid (FA)

The newly developed 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

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		Large-Screen Model V-24B	
					
Stage Size/ Loading Capacity	50×50mm / 5kg	✓	✓	—	
	100×100mm / 15kg	✓	✓	—	
	150×100mm / 15kg	✓	✓	—	
	200×150mm / 20kg	✓	✓	—	
	250×150mm / 20kg	✓	✓	—	
	225×100mm / 30kg	—	—	✓	
	225×100mm / 30kg	—	—	✓	
Max. Workpiece Height		100mm*2	150mm	250mm	
Screen		305mm	500mm	600mm	
Image		Erect	Inverted	Inverted	
Projection Lens	Magnification	5×/10×/20×/25×/50×/100×/200×	5×/10×/20×/50×/100×	5×/10×/20×/50×/100×	
	FOV (with 10× lens)*1	30.5mm	50mm	60mm	
Digital Protractor		✓	✓	—	
Digital Counter		✓	✓	✓(External)	

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


\*2: Maximum sample height is 70mm when 200×150mm stage is installed.

✓ : Available / — : Not available

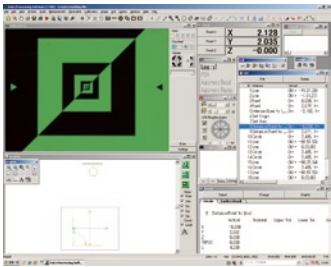
Data Processing Systems for Measuring Microscopes and Profile Projectors

**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.



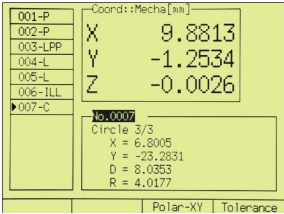
Connected with profile projector, data processing functions only

**Data Processor**

**DP-E1**



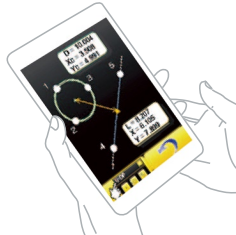
Effectively used with a measuring microscope /profile projector, it quickly calculates and processes measurement data. Feature Oriented Operation of the DP-E1 allows the user to conduct measurements with the graphics, providing a seamless measuring environment.




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

**Metrology Software**

**U-DP**



The browsered geometric dimensioning software can be effortlessly connected via Ethernet or Wifi to electronic devices. Interactive navigation enables immediate operation, while the simple screen layout enables easy measurement results confirmation.



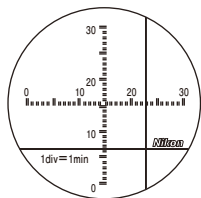
**[Operating environment]**  
OS: Windows®XP, Windows®7  
Required memory: 2GB (min.)  
Recommended browsers: Windows® Internet Explorer Ver6.0.2.9 or later

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

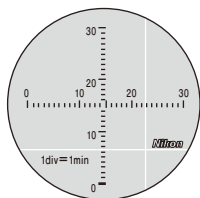
6B-LED



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

Plane Mirror C

Both sides are perfectly parallel, permitting its use as a reference for non-reflective surface. Also useful for measuring extremely small angles where a smaller mirror is desirable.



\*Wooden case provided.

Outer Diameter	30mm
Thickness	12mm
Parallelism	2 seconds of arc

LED Illuminator AC-L1

LED illumination unit for retrofitting onto Autocollimator 6B/6D illumination unit.



Power Source	AA batteries×2, AC adaptor
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DIGIMICRO

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

Mainunit MF-1001 + Counter MFC-101A + Stand MS-21



Mainunit MF-501 + Counter TC-101A + Stand MS-11C

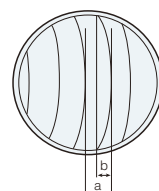


Main Unit	MF-1001	MF-501	MH-15M
Measuring Range	0–100mm	0–50mm	0–15mm
Accuracy (20°C)	3µm	1µm	0.7µm
Measuring Force	Downward direction 1.225 to 1.813N (variable to about 0.441N), lateral 0.637 to 1.225N	Downward direction 1.127 to 1.617N (variable to about 0.294N), lateral 0.637 to 1.225N	Upward direction 0.245N, downward 0.637N, lateral 0.441N *With lifting release
Operating Temperature	0 to 40°C		

Optical Flat / Optical Parallel / Standard 300mm 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 workpiece.



Diameter	Glass (ø60mm)	Glass (ø130mm)
Thickness	15mm	27mm
Flatness	0.1µm	0.1µm

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 workpiece by observing interference fringes by placing the optical parallel in contact with the workpiece.



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

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

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.

\*Within 1µm against compensation values.





**Specifications and equipment are subject to change without any notice or obligation on the part of the manufacturer. September 2014 ©2014 NIKON CORPORATION**

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

• Monitor images are simulated. Company names and product names in this brochure are their registered trademarks or trademarks.



**WARNING**

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

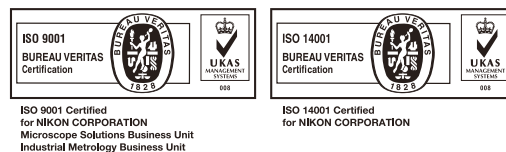


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