Nikon

Step-and-Repeat System

NSR-2205i14E2



For 350 nm Device
Mass Production

Step-and-Repeat System NSR-2205i14E2

Main Features

• High Throughput

Thanks to the employment of new, highly enhanced illumination, along with a reduction in stepping and alignment time, the NSR-2205i14E2 features a high throughput of 103 wafers per hour (for 200 mm wafers).

• High Resolution and Modified Illumination for Mass Production

The NSR-2205i14E2 incorporates a projection lens with a peak N.A. of 0.63 which, in combination with modified illumination technology, enables resolution of 350 nm or better.
With Resolution Enhanced Technology (RET) and variable-N.A. reticle design, the system is equipped to handle a wide range of process parameters and diverse cutting-edge device mass-production process requirements, including rough and middle layers.

• Overall Alignment Accuracy

The i14E2's reticle interferometer system improves alignment accuracy, including chip rotation correction and staging accuracy. Thanks to enhanced baseline measurement and internal chip accuracy (chip magnification, chip rotation), overlay has been significantly improved.

• Refined Operation Interface

The operation has been enhanced through upgrades to the computer software. A user-friendly operational environment has been made possible through a workstation, large-size color monitor, multi-window display, and mouse and keyboard.
An extensive lineup of measurement evaluation and maintenance software provides the right answer for all your needs.

Options

• Support for Resolution Enhancement Technology (RET)

With RET an aperture can be opened in the illumination system between the illumination light source and the reticle to optimize the light distribution, thereby enhancing both peak resolution and DOF. This aperture is available in six designs — one conventional and five custom-specific types.

• Online and Automated Operation

Software conforms with SECS I and II protocols, and all NSR operations can be remotely controlled by a host computer.
Our advanced Lithography Information Control System (LINCS) delivers more effective automation than ever. Online production management and automation systems on host computers at individual user plants are interconnected with dedicated control computers and instrumentation, providing integrated management of lithography-related information and automated operation in a field-proven system.

• In-Line Use

Productivity has been improved with direct transfer from the upstream coater/developer, and setup time has been slashed.

• Flexible Alignment Systems

Three high-performance alignment systems are available — the standard LSA (Laser Step Alignment) and FIA (Field Image Alignment), and the optional LIA (Laser Interferometric Alignment) — to provide the optimum system for your process. With the FIA, phase-contrast FIA is possible. This enables the detection of alignment marks that have been eroded by chemical mechanical polishing.

Specifications

Resolution	≦ 350 nm
N.A.	0.63
Exposure light source	i-line (365 nm)
Reduction ratio	1:5
Exposure field	22 mm square to 17.9 (H) x 25.2 (V) mm
Overlay	$\|M\| + 3\sigma \leqq 40$ nm
Alignment system	LSA (standard), FIA (standard), LIA (optional)



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

The export of this product is controlled by Japanese Foreign Exchange and Foreign Trade Law and International export control regime. It shall not be exported without authorization from the appropriate governmental authorities.

Performance and equipment are subject to change without any notice or obligation on the part of the manufacturer. Products and brand names are trademarks or registered trademarks of their respective companies. April 2013
©2013 NIKON CORPORATION

http://www.nikon.co.jp/pec

NSR-2205i14E2 INSPECTION REPORT

Date : 2024, 05, 17

ITEM No	SYSTEM		
1	**M/C MAKER & MODEL**	NIKON	NSR-2205i14E2
2	**SEREAL No**	SERIAL	
3	**BASIC VERSION**	MCSV BASIC	3.46D
		OS SYSTEM	VMS7.3_1
4	**OPTION VERSION**	OCS OPTION	3.46
5	**MAINTENANCE SYSTEM**	MAIN SYSTEM	4.16
6	**BASE KIT NAME**	SYSTEM KIT	BASE8_105-0702A
		WL KIT	WLDR8_024-V550A
		RL KIT	RLDR8_011-V520A
7	**UNIT SOFT VER**	WAFER STAGE	ST-82V6.40
		ALIGNMENT	AL-83V6.20
		OPERATION PANEL	PA-82V6.50
		LENS CONTROLLER	LC-85V9.00
		WAFER LOADER	WR-24V5.40 , OF-22V4.90
		RETICLE LOADER	RL-11V5.40
8	**MAIN COMPUTER**	SYSTEM	DS-15
		DISK Drive	CD-rom, DDS4

ITEM No	SYSTEM		
9	**UNIT STATUS**	ILLUMINATION	2.5 kW mercury lamp
			Shiric4
		WAFER STAGE	Air Stage
			8inch Pin chuck
		RETICLE ALIGNMENT	VRA
		Reticle Microscope	movble
		WAFER ALIGNMENT	LSA , FIA
		AUTO FOCUS	Multypoint
		FOCUS CALIBRATION	FC2
		WAFER LOADER	NC Pre2 (new type)
			Type3
			8inch Notch
			Pre1 Wafer centering sensor CCD Type
			2 Cassette
		Control rack side	Left
		RETICLE LOADER	6inch Library (10 + 10 + 10 slots)
			Robot type
		PPD	Yes
		CHAMBER	ASAHI (N4Z) , 2008.02 , R407C

NSR-2205i14E2 ACCEPTANCE TEST RESULTS

Date : 2024, 05, 17

No.	ITEM	SPEC	INSTALL	REMARK
1	RESOLUTION	≤ 0.35 μm	**OK**	
2	TFD	≤ 0.25 μm	**0.224um**	R2205MF (V8.09)
3	Astigmatism	≤ 0.20 μm	**0.152um**	R2205MF (V8.09)
4	Curvature	Within ±0.15 μm	**-0.021um**	R2205MF (V8.09)
5	INC	UR-LL: within ±0.20 μm UL-LR: within ±0.20 μm	**0.015um** **0.028um**	R2205MF (V8.09)
6	COMA	≤ 0.045 μm	**OK**	R2205CD (V4.17M)
7	AUTO FOCUS REPEATABILITY	MAX-MIN within ±0.2 μm	**0.130um**	
8	AUTO FOCUS CALIBRATION REPEATABILITY	3σ ≤ 100 nm	**25nm**	
9	AUTO FOCUS BEAM POSITION ACCURACY	Within ±200 μm	**OK**	
10	WAFER STAGE FLATNESS	(1) Within 2.0 μm	**1.113 um**	
11	LENS DISTORTION (Including Magnification error)	Within ±30nm	**Xmin:-0.024** **Xmax: 0.016** **Ymin:-0.026** **Ymax: 0.015**	R2205HDIS (V5.63A)
12	OPEN FLAME (MAX. EXPOSURE AREA)	22.0mm X 25.2mm	**OK**	R2205HB (V7.30)
13	RETICLE BLIND	0.4 to +0.8 mm	**0.5 to +0.65 mm**	R2205HB (V7.30)
14	LAMP POWER	≥ 1000 mW/cm²	**924mw/cm2**	
15	LAMP UNIFORMITY	Within ±1.5%	**0.68%**	
16	Reticle Rotation	|M| + 3σ ≤ 0.020 μm	**0.005um**	R2205HDIS (V5.63A)
17	LSA OVERLAY ACCURACY	|M| + 3σ ≤ 0.050 μm	**X: 0.041um** **Y: 0.031um**	R2205HA (V7.22)
18	FIA OVERLAY ACCURACY	|M| + 3σ ≤ 0.050 μm	**X: 0.033um** **Y: 0.022um**	R2205HA (V7.22)
19	ORTHOGONALITY	Within ±0.1 sec (±0.48 ppm)	**0.001 sec**	R2205HB (V7.30)
20	(STEP) STEPPING ACCURACY	3σ ≤ 25 nm	**X: 0.011um** **Y: 0.008um**	R2205HA (V7.22)
21	(BACK) STEPPING ACCURACY	3σ ≤ 35 nm	**X: 0.018um** **Y: 0.021um**	R2205HA (V7.22)
22	WAFER PREALIGNMENT REPEATABILITY	X, Y, θ: 3σ ≤ 15 μm Y-θ ≤ 15 μm	**X : 1.187** **Y : 2.903** **T : 2.957** **Y-T : 3.118**	
23	OPERATION TEST	(1) Success rate 100% (2) Success rate 100%	**OK** **OK**	

Nikon NSR-i14E2 Data Sheet

Max exposure area Reticle blind

date : 2024/ 05/ 09

Machine Type	NSR-2205I14E2	Serial No.	
Inspected By		User Id	





