



ArF Immersion Scanner

# NSR-S631E

Proven Solutions Through Evolution



# Super High Accuracy and Throughput with Improved Overlay Accuracy and Productivity

The NSR-S631E ArF immersion scanner was developed for high-volume manufacturing of devices at the 7 nm process node (capable of handling multiple patterning) by further enhancing the accuracy and productivity of the NSR-S630D, which applies the proven *Streamalign* platform. Through the use of a new type of projection lens, as well as improved alignment system mark detection and measurement, the S631E realizes super high accuracy of below 2.3 nm MMO and extremely high throughput of more than 270 WPH (96 shots), contributing to stable volume manufacturing at cutting-edge production lines.

# NSR-S631E

## Performance

Resolution	$\leq 38$ nm
NA	1.35
Exposure light source	ArF excimer laser (193 nm wavelength)
Reduction ratio	1:4
Maximum exposure field	26 mm × 33 mm
Overlay	SMO*1: $\leq 1.7$ nm, MMO*2: $\leq 2.3$ nm
Throughput	$\geq 250$ wafers/hour (96 shots), $\geq 270$ wafers/hour (96 shots, optional)

\*1 Single Machine Overlay: machine-to-self overlay accuracy (NSR-S631E#1 to S631E#1)

\*2 Mix and Match Overlay: machine-to-machine overlay accuracy (NSR-S631E#1 to NSR-S631E#2)

## Key Features of the *Streamalign* Platform

### • Bird's Eye Control

#### Enabling superior yield

- Hybrid encoder/interferometer system for wafer stage position measurements delivers optimal stage performance.
- Use of 2D encoders for reticle stage position measurements delivers measurements of the stages that are insensitive to air fluctuations.
- Dramatically improves accuracy and stability.
- Provides superior focus control.
- Improved overlay capabilities of 1.7 nm or less

### • Stream Alignment

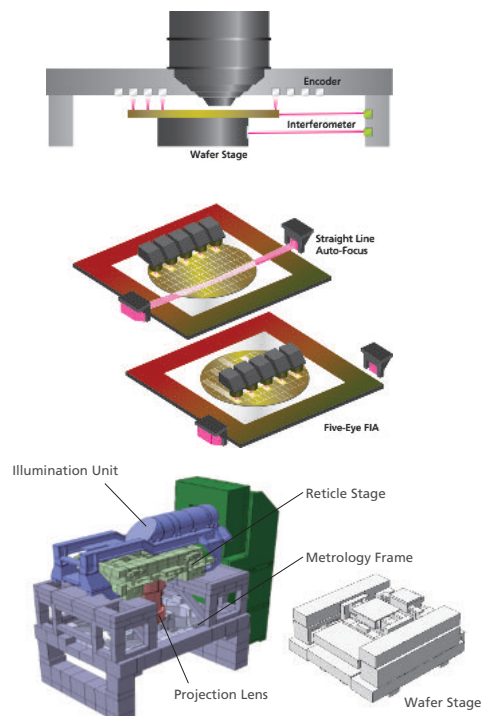
#### Enabling optimal affordability

- Straight Line Auto-Focus generates dense map of the wafer surface to enhance focus control (using a wide AF beam span).
- Enables increased alignment sites with minimal productivity impact using Five-Eye FIA.
- Greatly reduces wafer overhead time.
- Throughput capabilities of 270 WPH or more

### • Modular<sup>2</sup> Structure

#### Enabling rapid production ramps

- Modular design enables efficient installations and simplifies maintenance.
- Provides optimal uptime with modular design and replacement of individual components.
- Extendible platform enables multigenerational use.



**CLASS 1 LASER PRODUCT**



**WARNING**

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

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