

# PAS 5500/100D

## i-Line Stepper

### Description

The PAS 5500/100D i-line stepper is designed for mass production at 0.4  $\mu\text{m}$  and achieves extremely high throughput while maintaining the utmost versatility with its variable Numerical Aperture (NA). This stepper extends i-line's capability for manufacturing multiple generations of sub-half-micron design rules by optimizing both depth of focus and resolution for critical process layers.

### Technical Specifications

Lens	
Wavelength:	365 nm
NA:	0.48—0.60 (variable)
Resolution:	0.40 $\mu\text{m}$
Field size, for reticle with pellicle	
• Diameter:	31.1 mm
• Max X:	22.0 mm
• Max Y:	27.4 mm
Usable depth of focus:	$\geq 1.1 \mu\text{m}$
•	
Distortion:	$\leq 60 \text{ nm}$
Overlay	
99.7% with 2 pt. Global Alignment:	$< 60 \text{ nm}$
Production Throughput	
With field-by-field leveling, 200-mJ/cm <sup>2</sup> dose and at specified overlay accuracy	
• 150-mm wafers, 40 shots:	$\geq 100 \text{ wph}$
• 200-mm wafers, 70 shots:	$\geq 72 \text{ wph}$
Illumination	
Intensity:	$\geq 900 \text{ mW/cm}^2$
Uniformity:	$\leq 1.5\%$
Variable coherence range:	$\sigma = 0.3—0.7$

## Key Features and Benefits

Automated Variable-NA i-Line Projection Lens

Lens technology allowing 0.40- $\mu\text{m}$  imaging.

Completely redesigned variable partial Coherence Illuminator

1.5-kW illuminator power results in 900  $\text{mW}/\text{cm}^2$  at wafer level.

Broadband Field-by-field Focus Leveling System

Leveling while moving from one site to another.

Advanced Light-weight Stage

High precision combined with high throughput.

Direct Reticle-Referenced, Through-The-Lens (TTL)

Phase-Grating Alignment.

Optimum overlay and matching.

Built-In CLASS 1 Laminar Airflow

Enhances interferometer stability, provides ultra-clean wafer environment.