

# PAS 5500/275D

## High Productivity i-Line Stepper

### Description

The PAS 5500/275D is an i-line stepper stretching resolution down to 0.28  $\mu\text{m}$  and beyond. It is built on the success of the proven PAS 5500/250C advanced i-line stepper.

The PAS 5500/275D features improved imaging achieved by applying the latest techniques in lens adjustment as well as improved overlay by including phase modulation in the system. In addition to that, Image Quality Control is included as standard. Leadership productivity is improved to more than 100 wph (ATP settings). The PAS 5500/275D uses an AERIAL illuminator, which provides flexible and automated NA/sigma combinations in both conventional and off-axis illumination modes while maintaining high intensities to enable economical mass production of leading-edge devices.

## Technical Specifications

Lens	
Wavelength:	365 nm
NA:	0.48–0.60 (variable)
Resolution:	≤ 0.28 μm
Field size, for reticle with pellicle	
• Diameter:	31.1 mm
• Max X:	22.0 mm
• Max Y:	27.4 mm
UDOF @ 0.28-μm with 10% CD Control (top-down)	
• Annular:	≥ 0.8 μm
Distortion:	≤ 40 nm
Overlay	
99.7% with 2 pt. global alignment	
• Single-machine:	≤ 40 nm
• Matched to PAS 5500/275:	≤ 80 nm
Production throughput	
200-mJ/cm <sup>2</sup> exposure dose	
• 150-mm wafers, 40 shots:	≥ 120 wph
• 200-mm wafers, 70 shots:	≥ 100 wph
AERIAL Illumination	
Conventional	
• Intensity:	≥ 2250 mW/cm <sup>2</sup> (@ NA 0.56)
• max:	≤ 0.8
• min:	≥ 0.35
• Uniformity:	≤ 1.4%
Annular	
• Intensity:	≤ 1900 mW/cm <sup>2</sup> (@ NA 0.60)
• out:	≤ 0.85
• in:	≤ 0.20
• out-in:	≥ 0.25
• Uniformity:	≤ 1.2%
Batch Streaming with ARMS	
Continuous-flow manufacturing.	

## Key Features and Benefits

Variable, High-NA i-line Lens

Production resolution down to 0.28  $\mu\text{m}$ .

Innovative 3.5-kW AERIAL Illuminator

Maximum throughput over partial coherence and annular range.

Continuously variable partial coherence and annular illumination using AERIAL Optics

Process latitude optimization for different process layers.

Software-controlled Lens NA and Illuminator

Flexible automated imaging optimization in production settings.

Focused Reticle Masking System

Maximizes available reticle area.

Direct Reticle-referenced, Through-The-Lens (TTL) Phase-grating Alignment

Optimum overlay and matching using alignment beam phase modulation.

Advanced High Speed Stage

Precision with high throughput.

