

# PAS 5500/750F

## DUV Step and Scan

### Description

The PAS 5500/750F DUV Step-and-Scan system enables 130-nm mass production using mature 248-nm KrF technology. It combines the imaging power of the improved 0.7 NA 4x reduction lens with the latest multi-spot innovations in the leveling system and the AERIAL II illumination technology including QUASAR, multipole illumination and optional multiple exposure capability. The system is equipped with both TTL alignment and ATHENA for improved alignment accuracy on backend process layers, providing a long term single machine overlay of less than 25 nm.

Further reduction of overhead times in combination with enhancements in productivity on customer jobs provide a production throughput of 130 200-mm wph. The application of a 2 kHz 20W KrF laser with Variable Laser Frequency Control results in the lowest possible Cost of Operation.

## Technical Specifications

<b>Lens</b>	
Wavelength:	248 nm
NA:	0.5–0.7 (variable)
Resolution:	≤ 130 nm
Field size, for reticle with pellicle	
• Max X:	26.0 mm
• Max Y:	33.0 mm
CD Uniformity @ 0.13- $\mu$ m L/SCD Uniformity @ 0.13- $\mu$ m isolated lines	
• BF:	≤ 10 nm
• Over 0.4- $\mu$ m defocus:	≤ 15 nm
CD Uniformity @ 0.13- $\mu$ m isolated lines	
• BF:	≤ 10 nm
• Over 0.4- $\mu$ m defocus:	≤ 25 nm
Distortion (Dynamic):	≤ 20 nm
<b>Overlay</b>	
Single-machine:	≤ 25 nm
Matched-machine:	≤ 40 nm
<b>AERIAL Illumination</b>	
Annular	
• Intensity:	≥ 2400 mW/cm <sup>2</sup> (@ NA Max)
• $\sigma$ out:	0.35–0.88
• $\sigma$ in:	0.10–0.58
• Integrated slit uniformity:	≤ 0.8%
QUASAR	
•	
•	
•	
<b>Production Throughput</b>	
50-mJ/cm <sup>2</sup> exposure dose	
• 200-mm wafers, 46 shots:	≥ 130 wph
<b>Lasers</b>	
Type:	Cymer ELS6600, Gigaphoton KES-G2OK
Power:	20 W
Frequency:	Continuously variable up to 2 kHz
Beam Delivery:	≤ 20-m remote capability

## Key Features and Benefits

Variable, 0.7 NA Deep UV Projection Lens

Production resolution down to 130 nm.

Step and Scan

Large field size, better CD control and lower lens aberrations.

AERIAL II Illumination with QUASAR and Optional Multiple Exposure Capability

Provides the ultimate flexibility in illumination modes at maximum throughput.

PAS 5500 Step-and-Scan Body

Commonality with i-line and 193-nm Step-and-Scan tools for economic mix-and-match.

8-Spot Level Sensor

Improved focus and leveling under production conditions.

ATHENA Advanced Alignment

Increased alignment accuracy process latitude.

Includes 2kHz 20W KrF Laser Technology with Variable Laser Frequency Control

The perfect combination of high laser power for high throughput and efficient use of laser pulses for the lowest possible laser Cost of Operation.