TWINSCAN NXE:3300B

Description

ASML's TWINSCAN NXE platform is the industry's first production platform for extreme ultraviolet lithography (EUVL). The NXE:3300B is the successor to the NXE:3100, offering 22 nm resolution with conventional illumination and 18 nm with off-axis illumination as well as improved overlay and higher productivity.

The NXE Step-and-Scan systems use 13.5 nm EUV light, generated by a tin-based plasma source. The systems feature all-reflective 4x reduction lens assemblies from Carl Zeiss SMT with a numerical aperture (NA) of 0.33 and a maximum exposure field of 26 mm by 33 mm.

For the NXE:3300B, conventional illumination at 0.9 sigma will be standard, while a commercial option will offer 6 additional discrete settings for off-axis illumination which maintain high productivity.

Technical Specifications

NA	0.33
Resolution	≤ 22 nm
	(≤ 18 nm with off-axis illumination)
Overlay	
• Dedicated chuck	≤ 3 nm
• Matched-machine (to TWINSCAN NXT)	≤ 5 nm
Productivity	≥ 125 wph

Key Features and Benefits

Building on the proven TWINSCAN XT and TWINSCAN NXT platforms, the NXE main body contains dual wafer stages. In the NXE platform, these use magnetic levitation. A high maximum wafer scanning speed allows optimal use of the source intensity over the largest possible range of resist sensitivities and exposure doses. This maximizes throughput. Both the reticle and wafer stages have active servo control over all six degrees of freedom.

Wafer alignment is carried out in the measurement position with target detection using SMASH alignment sensors and ASML's proven phase-grating alignment technique.
The wafer's surface is measured and mapped before exposure using a level sensor coupled to 6-axis laser interferometry.

The through-the-lens (TTL) Reticle Blue Align aligns the reticle directly to the wafer stage in the exposure position using the exposure wavelength (13.5 nm). Using this wavelength eliminates the need for chromatic calibrations and improves reticle alignment stability.

To support the short 13.5 nm wavelength, the optics and stages have to operate under vacuum conditions. Load locks for the wafers and reticle allow NXE systems to be seamlessly integrated with wafer track and reticle equipment. In addition, the NXE platform is compatible with SEMI standard EUV reticle pods.