AUTOMATED MASK ALIGNER

SUSS MA100e Gen2 | MA150e Gen2

HIGHLY ACCURATE LITHOGRAPHY SOLUTION FOR HIGH-VOLUME PRODUCTION

The MA100/150e Gen2 platform is the industry standard for highly accurate lithography processes in very price sensitive markets. It is available as a 100 mm or 150 mm model. It combines high precision alignment and customized substrate handling for fragile, warped and transparent wafers with the reliability of a matured industry standard. With its high power, high resolution exposure optics the MA100/150e Gen2 stands out from the competition especially when looking at performance in thick film applications.

HIGH THROUGHPUT BY FAST WAFER PROCESSING

The linear handling system of the MA100/150e Gen2 is capable of transporting three wafers simultaneously, which results in an extremely fast cycle time of up to 145 wafers with automatic alignment (215 wph first mask). A sophisticated multi size toolset (2/3", 3/4", 4/6" chuck and mask holder) minimizes the time required for wafer size changeover.

HIGH YIELD BY OPTIMIZED EXPOSURE OPTICS

With a resolution down to 2.5 µm L/S at 20 µm exposure gap the SUSS Diffraction Reducing Exposure Optics is very well suited for lithography requirements in the MEMS, power semiconductor and LED production. On 100 mm wafers the UV400 optics with 350 W lamp house delivers an industry leading broadband intensity of 65 mW/cm². With MO Exposure Optics a light uniformity of < 2.5 % is achieved. Together with its highly accurate gap setting system this provides a superior CD control.

HIGH YIELD BY SUBMICRON ALINGMENT

The MA100/150e Gen2 is equipped with a motorized topside alignment system with an alignment accuracy of < ± 0.7 µm (DirectAlign). The bottomside alignment option (BSA) offers an alignment accuracy of < ± 1.5 µm between features on front and back side of the wafer. The alignment system of the MA100/150e Gen2 is tailored to the specific requirements of lithography steps late in the production process which frequently present very challenging alignment conditions.

HIGHLIGHTS

+ Leading edge pattern recognition for minimized operator assistance
+ High throughput of 145 wph by simultaneous wafer handling
+ Excellent CD uniformity through industry leading light uniformity and highly precise gap control

The system offers excellent optical performance which allows to find targets even on substrates presenting poor contrast as common on transparent or textured wafers.

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TECHNICAL DATA

WAFER/SUBSTRATE	
Substrate / wafer size	from 2“ up to 150 mm round substrates
Type of handling system	linear transport handling
Warped wafer capability	yes (may need optional tooling)
Throughput	> 145 wph (proximity) > 215 (first mask)

EXPOSURE SYSTEM	
Optics available	UV400, MO Exposure Optics
Resolution	> 0.7 µm L/S (vacuum contact, 100 mm) > 1.0 µm L/S (vacuum contact, 150 mm)
Standard intensity	65 mW/cm²
Intensity uniformity	± 2.5 % with MO Exposure Optics
Lamp sizes	350 W, 1000 W

ALIGNMENT SYSTEM	
Top Side Alignment (TSA)	accuracy < ±1.0 µm < ±0.7 µm (DirectAlign)
Bottom Side Alignment (BSA)	accuracy < ±1.5 µm
Alignment gap	up to 300 µm (TSA) up to 2500 µm (BSA)
Alignment target	integrated nozzle cleaning
Autoalignment system	Cognex VisionPro
Algorithm	PatMax

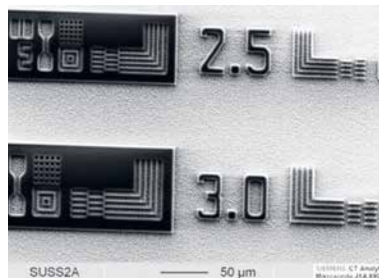
PERFORMANCE			
Optics Type	2"	4"	6"
Vacuum contact	0.7 µm	0.7 µm	1.0 µm
Hard contact	1.0 µm	1.5 µm	1.5 µm
Soft contact	2.0 µm	2.0 µm	2.5 µm
Proximity [20µm]	3.0 µm	3.0 µm	3.0 µm

Achievable resolution depends on contact quality, optics type, wafer size, wafer flatness, resist type, clean room class and, therefore, might vary for different processes (1 µm thick resist, lines & spaces)

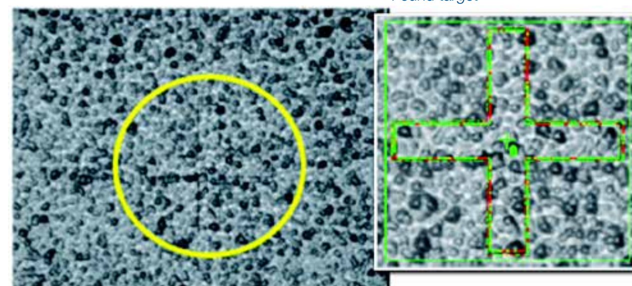
GRAPHICAL USER INTERFACE	
Windows 7	

UTILITIES	
max. UV-emission (in all operator accessible areas)	3 µW/cm²

PHYSICAL DINENSIONS	
Width x Depth	1684 mm x 1308 mm = 2.2 m²
Height	1725 mm
Weight	900 kg



2.5µm and 3µm lines and spaces on a sapphire wafer



Found target

Alignment scene of a blurred wafer target, used for LED applications. Pattern recognition is based on PatMax® software from Cognex.

Data, design and specification depend on individual process conditions and can vary according to equipment configurations. Not all specifications may be valid simultaneously. Illustrations, photos and specifications in this brochure are not legally binding. SUSS MicroTec reserves the right to change machine specifications without prior notice.

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