

Lithography

Semi-Automated Mask Alignment System

EVG® 610

Technical Data

- Substrate / Wafer dimensions up to 100 / 150 / 200 mm round or square up to 10 mm thickness
- Max. mask size up to 5" / 7" / 9"
- Top-side alignment $\leq \pm 0.5 \mu\text{m}$
Bottom-side & IR alignment $\leq \pm 2 \mu\text{m}$
- Soft-, hard-, vacuum contact and proximity exposure
- Resolution contact mode $\leq 0.7 \mu\text{m}$
- Resolution proximity @ $20 \mu\text{m}$ gap $\leq 3.4 \mu\text{m}$

Features

- Automated wedge compensation sequence
- Motorized and recipe controlled exposure gap
- Minimized system footprint and facility requirements
- Remote tech support
- Step-by-step process guidance
- Perfect multi-user concept (unlimited number of user accounts and recipes, assignable access rights, different user interface languages)

Options

- LED exposure optics
- Bond, IR alignment
- Nanoimprint lithography (NIL)
- Table top or anti-vibration table

Contact

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EV Group has been working with research facilities for more than 35 years, providing optimum systems for their unique requirements. Our dedicated R&D tools provide superior technology combined with maximum flexibility, enabling universities, research institutions and technology development partners to scale processes across multiple research projects and applications. The EVG610 is a compact and universal R&D mask alignment system supporting a variety of lithography processes, such as vacuum-, hard-, soft- and proximity exposure mode with recipe controlled gap. Additional capabilities include bond alignment, nanoimprint lithography (NIL) and micro contact printing. The system offers quick processing and re-tooling for changing user requirements with a conversion time of less than one minute. Its advanced multi-user concept can be adapted from beginners to expert level, thus making it ideal for universities, R&D and small-volume-production applications.

Exposure Optics

EVG's latest enhancement for exposure optics is an LED lamp setup. Low energy consumption and long lifetime are among the UV-LED light source's biggest advantages, as no warm-up or cool-down phase is required. In addition, LEDs need to be powered only during the exposure and the technology eliminates the obligation for typical facilities (exhaust, cooling gases), mechanical filter or regular mercury arc lamp changes. Exposure spectrum setup is easily and practically done in the user software interface. This ideal combination will not only minimize your running and maintenance costs but also add value in regards to the operator safety and environmental friendliness.



EVG® 610

Semi-automated Mask Alignment System

EVG® 610 Mask / Bond / NIL Alignment Series



Mask - Substrate - Wafer Dimensions

Mask Size	up to 5" / 7" / 9"
Substrate / Wafer Size	up to 100 / 150 / 200 mm
Wafer Thickness	up to 10 mm

Top-Side Microscope

Movement Range	150 mm	200 mm
X	32 - 150 mm	32 - 200 mm
Y	-75/+30 mm	-100/+30 mm
Optional: Flat objectives for enhanced travel range, dark field objectives with ring lights for improved contrast		

Exposure Optics

Wavelength Range	NUV: 350 - 450 nm DUV: down to 200 nm (opt)	
Exposure Source	Mercury Lamp 350 W, 500 W UV LED Lamp house	
Uniformity	150 mm	200 mm
	≤ 3%	≤ 4%
Filter Changing Unit	Mercury Lamp: mechanical LED Light Source: SW tunable	

Minimum Feature Size to Pattern on Hg / LED Lamphouse (NUV setup)

Substrate / Wafer Size	100 mm	150 mm	200 mm
Vacuum Contact Mode	≤0.7 μm	≤0.8 μm	≤1.0 μm
Soft Contact	≤2.0 μm	≤2.2 μm	≤2.4 μm
Proximity Mode @ 20 μm Gap	≤3.4 μm	≤3.6 μm	≤3.8 μm

Utilities

Vacuum	< 150 mbar
Compressed Air	6 bar
Nitrogen	optional: 2 or 6 bar
Exhaust - Mercury Lamp house	required
Exhaust - LED Lamp house	not required

System Control (SW & User Interface)

Operation System: Microsoft Windows
File Sharing and SW Backup Solution
Unlimited Storage of Recipes, Parameters stored in Process Recipe
Multi-Language User GUI & Support: EN opt.: CN, DE, FR, IT, JP, KR
Real-Time Remote Access, Diagnostics and Troubleshooting

Alignment Modes

Top Side Alignment Accuracy	≤ ± 0.5 μm
Bottom Side Alignment Accuracy	≤ ± 2.0 μm
IR Alignment	≤ ± 2.0 μm

Bottom-Side Microscope

Movement Range	150 mm	200 mm
X	30 - 100 mm	30 - 100 mm
Y	± 12 mm	± 12 mm
Optional: Flat objectives for enhanced travel range, dark field objectives with ring lights for improved contrast		

Exposure Modes

Contact	soft, hard, vacuum (adjustable)
Proximity Exposure Gap	1 - 1000 μm
Gap Setting Accuracy	1 μm
Modes	constant power CP (Hg/LED) constant dose CD (Hg/LED) constant time CT (Hg/LED) constant intensity CI (LED)
Options	interval, flood, sector exposure

Optional features | Bond Alignment & NIL

Bond Alignment Accuracy	≤ ± 2.0 μm
Soft NIL Alignment Accuracy	≤ ± 2.0 μm
NIL Soft Stamp Resolution	≤ 50 nm pattern resolution

Alignment Stage

MA movement range	BA movement range
X: ≥ ± 5 mm	X: ≥ ± 5 mm
Y: ≥ ± 5 mm	Y: ≥ ± 5 mm
Rotation: ≥ ± 5.0°	Rotation: ≥ ± 5.0°
Resolution	0.1 μm
Contact Force	adjustable 5 N - 80 N
Wedge Compensation	fully automatic, adjustable

Dimensions / Footprint

Footprint	0.55 m ²
Height	1.01 m
Weight table top	~ 250 kg

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