

MASK ALIGNER



Conventional optical lithography uses an etched chrome photomask to transfer the required device design into a photo-resist coated substrate. The NGI uses a Karl Suss MJB4 mask aligner for this purpose.

Where a device design does not need to be constantly updated, a mask aligner can give considerable advantages in terms of process time and reliability allowing the processing of either single samples or full wafers in a single exposure depending on the tooling set-up.

Future developments in CVD growth of 2D materials mean that the MJB4 will play an important role in work to prove the viability of large scale 2D device manufacture.

Mask capability; 2in x 2in (50mm x 50mm) up to 5in x 5in (125mm x 125mm)

Sample capability; 4in wafer. Adaptors for 25mm x 25mm substrate and 10mm x 10mm substrate.

Max substrate thickness; 4mm

Max mask thickness; 0.19in (4.8mm)

Contact modes; soft, hard, vacuum, gap.

Overlay accuracy; $<0.5\mu\text{m}$ (dependant on alignment target design)

Stage Specifications

Movement range; X/Y $\pm 5\text{mm}$, $\theta \pm 5^\circ$

Resolution: X/Y 0.1mm, $\theta 4\text{E}-5^\circ$

Optical Specifications

Principle exposure source; as fitted, 500W Hg-Xe arc lamp giving DUV capability

Exposure uniformity; $\leq 3\%$

Maximum resolution (vacuum contact); $0.8\mu\text{m}$ (400nm), $0.5\mu\text{m}$ possible with 250nm illumination