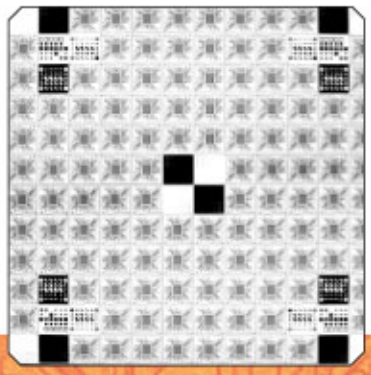
VPG 1600

The Ultimate High Volume Photomask Production Tool



HEIDELBERG INSTRUMENTS

VPG 1600

The new Volume Pattern Generator (VPG) line of large area lithography systems is a milestone in technological innovation and product development from Heidelberg Instruments, based on a patented vast exposure process parallelization. The VPG is a reliable and economical solution, ideal for high volume production of today's demanding photomasks in electronic packaging, color filters and other applications requiring high resolution features on large areas with excellent image quality and registration.

The VPG can be configured with various stage dimensions designed to accommodate substrate sizes of up to 1600 mm by 1400 mm, 1100 mm by 1100 mm and 800 mm by 800 mm. These systems can be equipped with air-bearing stage, semi or fully automatic feeder for substrate loading and a UV laser source with an output of up to 20 W. A small write grid ensures excellent edge roughness and stripe butting. The automatic calibration of stage positioning is achieved with great efficiency using the 2D Stage Map Correction.

The VPG can be configured with an automated write mode exchanging unit (Automatic Write Mode), providing always the best throughput and resolution for various applications. All industrial data formats are supported and data processing is done in parallel with the exposure, eliminating idle time. The incorporated metrology system enables self-calibration functions and various critical dimensions measurements.

The rigorous write environment requirements associated with this technology are realized by the advanced environmental chamber. Remaining variations are compensated through software corrections based on precise pressure, humidity and temperature measurements.

Key features and options

- Substrates up to 1600 x 1400 mm²
- Structures down to 1.0 µm
- Address grid down to 50 nm
- Multiple write modes
- Automatic write mode exchanger
- Metrology and alignment system
- Climate chamber
- Online data transfer
- Automatic loading system
- Multiple data input formats
- (DXF, CIF, GDSII, Gerber, STL)
- Stage map correction
- Edge detector unit
- Mura correction

Additionally, in order to accommodate production of photomasks required in the passive display industry, a Mura Correction option is utilized and achieved by software and hardware modifications.

Besides production of large area photomasks, for other maskless and direct write maskless lithography applications it is possible to incorporate a more extensive parallel exposure process which leads to a significantly higher throughput.

Specifications

Write Mode	I	II	III
Address Grid [nm]	50	100	200
Minimum Structure Size [µm]	1.0	2.0	4.0
Exposure Speed [mm²/minute]	1300	5000	17000
Edge Roughness [3σ, nm]	50	70	90
Uniformity [3σ, nm]	75	110	230
Stitching [3σ, nm]	60	100	170
Position Accuracy [3σ, nm]	200	300	450

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