UV direct laser writer for maskless lithography

The PicoMaster is a versatile UV Laser Writer with ultra high precision components, specifically designed to give the user the highest degree of freedom to create micro structures in photo sensitive layers. The rasterizing principle of the machine ensures proper and constant exposure over the whole surface. Scanning the 4” substrate at high speed and stepping the laser head with a software adjustable pitch.

PicoMaster 200

- Stand alone system
- < 300 nm features
- High quality tool & high quality output

- Compact table top design
- < 300 nm features
- 375 nm source available for more demanding applications
- Highest resolution in the market with 405 nm laser
- Minimal maintenance costs
- Compact optical module: use a spare optical unit for revolutionary machine downtime reduction
- User-friendly operation

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### UV direct laser writer for maskless lithography

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<th><strong>Mechanical properties</strong></th>
<th><strong>PicoMaster 100</strong></th>
<th><strong>PicoMaster 200</strong></th>
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</thead>
<tbody>
<tr>
<td>Vacuum pump integrated</td>
<td>✔</td>
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<tr>
<td>Max substrates size</td>
<td>4 x 4”</td>
<td>8 x 8”</td>
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<tr>
<td>Control PC integrated</td>
<td>✔</td>
<td></td>
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<td>Touchscreen controller</td>
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#### Stroke Scan & Step
- Max. 115 mm
- Max. 230 mm

#### Scan axis
- Air bearings
- Air bearings

#### Repeatability
- < 40 nm
- < 20 nm

#### Resolution
- 2 nm
- 2 nm

#### Scan speed
- Max. 300 mm/s
- Max. 450 mm/s

#### Straightness axis
- < 0.5 µm over 105 mm
- < 1 µm over 230 mm

#### Substrate thickness
- 0 - 4 mm manual adjustment.
- 0 - 4 mm manual adjustment.

#### Substrate size
- Min. 5 x 5 mm, max. 110 x 110 mm.
- Min. 5 x 5 mm, max. 220 x 220 mm.

#### Exposable area
- Max. 105 x 105 mm (speed depended).
- Max. 215 x 215 mm (speed depended).

### Optical properties

#### Laser
- 405 nm, GaN laser diode.
- 405 nm, GaN laser diode.

#### Selectable spot sizes
- 280 nm optional 490 nm or 880 nm FWHM.
- 280 nm optional 490 nm or 880 nm FWHM.

#### NA
- 0.85
- 0.85

#### Intensity
- Max. 5 mW in the spot.
- Max. 5 mW in the spot.

#### Grayscale control
- 4096 levels
- 4096 levels

#### Autofocus
- 800 Hz bandwidth red laser controlled ± 0.15 mm height variation with auto height tracking.
- 800 Hz bandwidth red laser controlled ± 0.15 mm height variation with auto height tracking.

#### Focus offset
- Adjustable by software control.
- Adjustable by software control.

#### Data rate
- Standard 10 Mhz.
- Standard 10 Mhz.

### Performance specifications

#### CD
- Min 0.3 µm
- Min 0.3 µm

1 Critical Dimension of the PicoMaster strongly depends on process parameters, such as resist types and layer thickness.

#### Intensity uniformity
- < 0.5 %
- < 0.5 %

#### Address grid
- Standard: 20 nm in scan direction and programmable in step direction.
- Standard: 40 nm in scan direction and programmable in step direction.