

Technical Specifications of Maskless Lithography Laser Writer**Bidder Eligibility Condition:**

The bidder/OEM should have supplied at least 5 similar items to IITs, NITs, IISERs, CSIR Labs or other Government organizations or abroad in the last 10 years, PO copies or installation certificates along with contact details of the end user need to be submitted as the proof of supply. IIT Madras reserves its right to verify the claims submitted by the bidder and the feedback from the previous customers will be part of technical evaluation.

| S. No | System Parameters | Specifications | Complied / Not Complied | Ref. Page No. |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------|
| 1 | System configuration | Grayscale laser lithography with 128 or more grayscale levels and the capacity to write features with a size of 0.3 microns or less | | |
| 2 | Environment chamber capacity (Should be in-built in the writing chamber) | Adjustable laminar air flow typically of 0.4 m/s Temperature stability ± 0.1 °C maintained in the writing chamber with inbuilt temperature controller. | | |
| 3 | Autofocus Resolution (Dynamical range ≥ 60 microns) | Pneumatic type - ≤ 125 nm Optical based - ≤ 65 nm | | |
| 4 | Writing LASER type Wavelength Power Power on surface during structure writing: | Diode LASER 405 nm ≥ 250 mW ≥ 10 mW | | |
| 5 | Writing features Write head 1 Minimum feature size (μm) Minimum lines and spaces (μm) Address Grid (nm) | ≤ 0.3 0.6 better 10 or better ≤ 60 | | |

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| | <p>Edge Roughness (3σ, nm)</p> <p>Critical dimension uniformity (3σ, nm)</p> <p>Write Speed [mm²/min]</p> <p>Write head 2</p> <p>Minimum feature size (μm)</p> <p>Minimum lines and spaces (μm)</p> <p>Address Grid (nm)</p> <p>Edge Roughness (3σ, nm)</p> <p>Critical dimension uniformity (3σ, nm)</p> <p>Write Speed [mm²/min]</p> | <p>≤ 65 or better</p> <p>≥ 3 or better</p> <p>≤ 1</p> <p>1.5 - 1.9</p> <p>30 - 60</p> <p>≤ 90</p> <p>≤ 140</p> <p>≥ 140 or better</p> | | |
| 6 | Overlay alignment accuracy | <p>250 nm for 5 x 5 mm² area</p> <p>500 nm for 100 x 100 mm² area</p> | | |
| 7 | <p>Stage</p> <p>a) Stage System</p> <p>b) Interferometer Resolution</p> <p>c) Vacuum chuck</p> | <p>Linear motors-based stage system, position control by interferometer</p> <p>≤ 15 nm</p> <p>Compatible to various semiconductor wafers</p> | | |
| 8 | Control System | <p>A proper workstation with a minimum of 32 GB RAM, 2TB HDD and i9 or equivalent CPU.</p> <p>Conversion software for DXF, CIF, GDSII and Gerber files, compatible Design software with perpetual license.</p> | | |
| 10 | <p>Substrate</p> <p>a) Write area</p> | Max: 200 mm x 200 mm | | |

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| | <p>b) Camera field of view</p> <p>c) Substrate alignment camera</p> <p>d) Holding capacity</p> <p>Maximum Size</p> <p>Minimum Size</p> <p>Thickness</p> | <p>Min: 5 mm x 5 mm</p> <p>≥ 5 mm x 10 mm</p> <p>Integrated camera for substrate alignment for automatic alignment</p> <p>225 mm x 225 mm</p> <p>5 mm x 5 mm or lower</p> <p>0.1 mm to 10 mm or higher</p> | | |
| 13 | Training and application support | <p>The firm shall provide training in operation, maintenance for employees/staffs/students at IIT and factory training for at least two employees. For at least a year following the installation of the equipment and accessories, the OEM or supplier will offer continual application assistance for any scientific query or process optimization of the intended structure.</p> | | |
| 14 | Warranty and Maintenance | <p>a) One year from the date of installation.</p> <p>b) CMC (service/parts/labour incl.) - 3 years after expiry of warranty period (to be quoted as optional)</p> | | |
| 15 | Installation Reference | At least 10 user list in India. Relevant documents should be enclosed. | | |

(Note: It is mandatory for the bidders to provide the compliance statement (comply/not comply) for the above points with document proof as required). If the compliance statement (comply/Not comply) is not furnished for the evaluation. Bidders will be disqualified.