

## **TEHNICAL SPECIFICATION FOR DOUBLE CAVITY LASER – 1 Nos**

1. The system should be a single head, dual cavity laser delivering two pulses of green light (532nm) separated by user selectable pulse timing from nanoseconds to milliseconds. Both the heads should be enclosed in a single box with single electrical cable between the power supply and the Laser head.
2. System should have an internal delay generator to set the time delay between the first Laser pulse and second Laser pulse.
3. System should be capable of operating without the need to realign resonators or beam combining optics.
4. System should have an inbuilt manual optical energy attenuator.
5. System should have a single box power supply with integrated single water to air cooling unit capable of cooling the two Laser cavities. Cooling unit should have a software controlled pump for accurate coolant control and force fills the coolant lines.
6. System should have a single electric cable connection between the Laser head and power supply for ease of use. Cables and coolant lines should be able to remove from power supply end and optical head end.
7. Should have a **NITROGEN** SEALED HEAD for stability against the changes in the environment.
8. System should be capable of alignment free usage.
9. Should have plug and play heads. Should be able to re- connect the heads without the need of re-calibration. Power supply and Laser heads should be interchangeable between similar systems.
10. The coolant line and power lines should be color coded and should have “quick- connect” connectors for easy interlinking between the power supply and Laser head.
11. Should be capable of changing the DI water and DI cartridge easily.
12. System should be able to:
  - a. Fire only one laser or both.
  - b. Select internal flash lamp frequency
  - c. Vary energy of each Laser independently.
13. System should have an alignment mode for easy and safe alignment of external optics.
14. Should have a provision to attach universal light sheet optics directly to the Laser head.
15. All optics should be hard mounted for extreme resistant to misalignment.
16. Should have a vibration tested design for safe operation in wind tunnels without any problem.
17. System should be thermal recycled before shipping for better alignment stability
18. There should be an option to select 50 ohm or 1Mohm termination for external sync pulses.
19. Umbilical power cord from laser head to power supply unit should be at least 3 m long.
20. Should be able to trigger the flash lamps and q switch in the same frequency (15 Hz) in external mode (both flash lamp and Q Switch in external mode).

### **Detailed specifications**

1. Repetition rate (Hz) : 1 to 15 (adjustable)
2. Energy per pulse (mJ) : 200 mJ or more @ 532 nm x 2 pulses, 15 Hz
3. Pulse duration (ns) : ≤10 ns
4. Beam diameter (mm) : ≤ 7
5. Divergence (mrad) : ≤ 4 @ 532 nm
6. Spectral purity : ≥ 98 %
7. Near field spatial profile : Flat-top
8. Energy stability (% RMS) : < 2 @ 532 nm
9. Pointing stability (μrad) : ≤ ± 100 @ 532 nm
10. Flash Lamp lifetime : ≥100 million shots
11. Far field beam overlap (μrad) : within ± 100
12. Near field beam overlap (μm) : within ± 100
13. Power input : 230 VAC, 50 Hz
14. Operating ambient : 20 to 28°C
15. Storage ambient Temperature range : 5 to 50°C or wider
16. Coolant : Distilled/Deionized water
17. External trigger control : 5v TTL for both Q-switch and Flash lamp input.
18. Polarization : Vertical
19. Optical head dimensions : 500 x 160 x 150 mm (l x w x h) or smaller preferred
20. Laser head sealing : IP 66
21. Power supply sealing : IP 21
22. Laser Vibration compliance : ML – STD – 810 or Equivalent
23. Mounting Orientation : Laser should be able to mount in any direction

**Terms and conditions:**

**The Laser intended to be purchased is for integration with an equipment to be supplied by IIT Madras to ISRO Propulsion Complex, Mahendragiri, Tirunelveli District, Tamil Nadu.**

1. Supply should be made within 6 weeks of release of purchase order
2. Warranty service must be provided on-site at IIT Madras and ISRO Propulsion Complex, Mahendragiri, Tirunelveli District, Tamil Nadu for duration of warranty period.
3. Annual Maintenance contract should be applicable for ISRO Propulsion Complex, Mahendragiri, Tirunelveli District, Tamil Nadu
4. Vendors should provide continuous technical support and maintenance of equipment during warranty period.
5. The OEM or the vendor representing an OEM must have at least 3 years' experience in manufacturing/marketing laser equipment.
6. Vendors must have sufficient experience in supplying equipment to reputed organisations for research purpose. Experience of the end users will also be used as a criterion for the selection of bids that meet technical requirements. List of reputed end users inclusive of educational institutions in India (at least 3) to whom supplies made with client contact details should be furnished.
7. All equipment must be compatible with Indian electrical standards and codes.
8. Cost breakup for all modules included in the scope of supply is mandatory.
9. Non-OEM suppliers must submit a tender specific authorization from the OEM for supply to IIT Madras.
10. Vendors must provide detailed documentation for the equipment.

11. Vendors must provide training to our technical staff for using the equipment, free of cost.
12. Vendor must have permanent service representative stationed in India.

**OPTIONAL:**

1. Quote for 1st year and 2nd year AMC beyond warranty.

Optional item may be considered for finalisation of L1 Vendor if the optional items are chosen for purchase.