

Technical Specifications

I. Vibration Insensitive Laser interferometer for precision optical testing

Sr. No.	Parameter	Specification
1.	General Requirements	
1.1	Item description	Laser interferometer for precision optical testing
1.2	Optical configuration	Laser-based Fizeau common path interferometer
1.3	Measurement Technique	a) Vibration isolated condition: Phase Shifting method b) Vibration non isolated condition: Spatial carrier fringe analysis technique
1.4	Measurement Capability	Measurement of surface form of reflective optics, and transmitted wavefront of refractive optics to surface accuracies better than $\lambda/20$ PV and $\lambda/100$ RMS (@ $\lambda= 632.8\text{nm}$). The interferometer shall be suitable for long cavity and double path measurements in case of uncoated optics testing containing multiple optical elements.
1.5	Mounting configuration	Both horizontal and vertical
1.6	Quantity	1 No.
2.	System Requirements	
2.1	Data acquisition modes	Temporal phase shifting technique and Spatial carrier fringe analysis technique
2.2	Alignment system	Twin spot with dedicated alignment monitor
2.3	Output beam diameter	4 inch
2.4	Zoom	Digital 1-10X
2.5	Remote control	Hand held remote control for focus and zoom
2.6	Transmission optics mount	Bayonet mount compatible to standard transmission& reference flat/sphere
3.	Laser Requirements:	
3.1	Laser source and class	Helium Neon Laser, class IIIa
3.2	Wavelength	633 nm

3.3	Laser output power	>2mw
3.4	Coherence length	>100 m
3.5	Frequency stabilization	<0.0001 nm
4.	Camera Requirements	
4.1	Camera resolution	1200 x 1200 pixels, 10-bit digitization
4.2	Frame Rate	50 Hz
5.	Performance requirements	
5.1	RMS simple repeatability	<0.06nm (2 σ)
5.2	RMS wavefront repeatability	<1nm (mean + 2 σ)
5.3	Fringe resolution	250 fringes
6.	Computer Hardware & Software Requirements	
6.1	PC requirements	<ul style="list-style-type: none"> • State-of-the-art computer workstation with interferometric analyses software preinstalled. It shall have • Processor: Intel Multi Core • Disk Storage=1 TB • RAM=32 GB • Operating system: Windows 10 or latest, 64 bit • Monitors: Dual, 22" main and 22" Live video with high resolution TFT display • CD Drive: DVD R/W Combo drive • Wireless Keyboard & Mouse • USB Connectivity • All Hardware interfaces pre-installed for complete interferometer data acquisition.
6.2	Software Features	<ul style="list-style-type: none"> • Fringe unwrapping software • Polynomial sets for analysis (zernike, seidel) • Geometric and Diffraction Analysis (PSF & MTF) • Complex Data Masking, Manipulation & Control with unlimited Mask groups • Fiducials and other Interferometer References • Reference Generation, Addition, Subtraction, Averaging, etc.
6.3	Measurements	<ul style="list-style-type: none"> • Wavefront, Wedge, Angle, Prisms, 3-Flat Test, Homogeneity, Two Sphere Test and Corner Cube Test (single pass and double pass test with mask rotation provision).
6.4	Data exchange	<ul style="list-style-type: none"> • MATLAB, EXCEL, CODE V, Lab VIEW, and IDL with import and export options

		<ul style="list-style-type: none"> • Software compatibility with other standard interferometers in market to be provided.
7.	Operational Requirements	
7.1	Power	230±10 Volts, 50±5 Hz
7.2	Operating Temperature	15°C to 30°C
7.3	Storage temperature	0 °C to 40°C
8.	Installation, Demonstration and Acceptance	
8.1	Installation, commissioning and demonstration as per the technical specifications of the equipment to be carried out at LEOS	
8.2	Performance demonstration on a high quality optical flat of surface accuracy $\lambda/10$ (PV) & $\lambda/50$ (RMS) to be carried out and interferometric test to be done with consistent measurement repeatability.	
8.3	All the technically suitable vendors are required to comply all the above required specifications.	
8.4	Equipment acceptance should be done upon successful installation and demonstration.	
9.	List of Spares	
9.1	A complete list of critical spares required for trouble-free operation of the equipment for a period of three years to be provided by the vendor.	
10.	Warranty	
10.1	Vendor shall provide the warranty of the equipment for a period of two years.	

II. Essential accessories: 4-inch transmission sphere

The following accessory to be provided along with the item

- Transmission sphere 4-inch F/1.5 (Quantity=1 no), PV= $\lambda/20$ PV @ $\lambda=633$ nm, Reference surface (front surface) reflectivity=4%

III. Essential accessories: 4-inch transmission flat

The following accessory to be provided along with the item

- Transmission flat 4-inch (Quantity=1 no), PV= $\lambda/20$ PV @ $\lambda=633$ nm, Reference surface (front surface) reflectivity=4%

IV. Optional accessories/spares 1

Vendor shall suggest the required Optional accessories/spares. Specifications to be provided by vendor.

V. Optional accessories/spares 2

Vendor shall suggest the required Optional accessories/spares. Specifications to be provided by vendor.

VI. Optional accessories/spares 3

Vendor shall suggest the required Optional accessories/spares. Specifications to be provided by vendor.

VII. Optional accessories/spares 4

Vendor shall suggest the required Optional accessories/spares. Specifications to be provided by vendor.

VIII. Optional accessories/spares 5

Vendor shall suggest the required Optional accessories/spares. Specifications to be provided by vendor.

IX. Optional accessories/spares 6

Vendor shall suggest the required Optional accessories/spares. Specifications to be provided by vendor.

X. Extended warranty(optional)

Vendor shall spell out and provide quote for extended warranty for a period of one year after completion of standard two-year warranty.

XI. AMSC charges(optional)

Vendor shall provide indicative non comprehensive AMSC for a period of one year prices post warranty/extended warranty. Vendor shall also provide AMSC terms and conditions.

XII. Deliverables

The deliverables shall be the following

- 1. The interferometric system including interferometer mainframe, PC and software with installation, commissioning and demonstration at LEOS (All items under Sr. No. I)**
- 2. Warranty certificate.**
- 3. Technical documentation (in English)**
- 4. Essential Accessories (Items under Sr No. II and III as decided by LEOS during PO placement)**
- 5. Optional Accessories/spares (Items under Sr No. IV to IX as decided by LEOS during PO placement).**

Important Note: Choice of purchase of Optional accessories/spares, extended warranty and AMSC will be decided by LEOS at the time of order placement. The final decision on this is at the discretion of LEOS.

XIII. Delivery period

1. Delivery period is 6 months from the date of receipt of purchase order.
2. Installation, commissioning and training to be completed within one month from the date of item delivery at LEOS stores.

XIV. Quotation Format

1. It is a TWO PART Public Tender where vendors have to submit technical and price bids separately. Revealing of price in technical bid will lead to disqualification of the bid.
2. The technical bid shall contain the technical specifications, compliance/noncompliance, justifications for compliance/non-compliance against the technical requirements, technical data sheets and any other technical information related to the offer made by the vendor.