

Ref No : PUR/IMP/GT/VSN/ADITYA/011/2013-14.

August 21, 2013.

Dear Sir/s,

The Director, Indian Institute of Astrophysics, Bangalore, invites Sealed Tenders Two bid system (Technical bid & Commercial bid) for the Import of **“Optics and Opto-mechanical components”** as per our specifications in ‘Annexure - B’. The terms and conditions may be noted from IIA Website and if you are in a position to quote for the supply in accordance with the requirements, please submit your quotation. The Tender documents and other details are available on IIA web site www.iiap.res.in/tenders.htm

The Tender bids must be in Foreign currency quote. Your completed Tender bids both Technical and Commercial bid (**2 Bid system**) must reach our office on or before 20/09/2013 by 15 00 hrs. The bids must be in a separate Sealed envelopes duly superscribed with the name of the supply and Due Date and all the envelopes kept in a bid envelopes mentioning the supply must reach this Office within the Due Date and time. The Technical bids (a) will be opened in the presence of bidders or their authorized representative of the Company by 15.30 hrs on 20/09/2013. The commercial bids will be opened only for those vendors quotes qualify in Technical evaluation, The opening of commercial bids date will be intimated later. Incomplete Bids are liable for rejection.

For any Technical clarifications you may contact during Office hours Sri Venkata Suresh Narra (Phone No.2254 1393) and for any commercial clarifications can contact Shri Y.K.Raja Iyengar, Purchase Officer (Phone No.2254 1244).

Thanking you,

Yours faithfully,

Y.K.Raja Iyengar
Purchase Officer

GLOBAL TENDER DOCUMENT No : PUR/IMP/GT/VSN/ADITYA/011/2013-2014.

DT : 21/08/2013.

TENDER FORM

FROM:

TO

THE DIRECTOR
Indian Institute of Astrophysics,
Bangalore - 560 034.

Sir,

I/We hereby offer to supply the Items/Equipment indicated below at the price hereunder quoted and agree to hold this office open till . I/We shall be bound to supply the items/Equipment hereby offered upon the issue of the Purchase Order communicating to the acceptance thereof on or before the expiry of the last mentioned date. You are at liberty to accept any one or more of the items such Items/Equipment. I/We not withstanding that the offer in this tender has not been accepted in whole, shall be bound to supply such items and such portion or portions of one or more of the items as may be specified in the said Purchase order communicating the acceptance.

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S No.	Description of the item(s)	Qty.	Unit	Rate	Dely. Period
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1. Optics and Optomechanical components as per the Specifications and quantity list attached in Annexure B .

(Two bid system, both Technical bid and commercial / price bid should be submitted separately)

Tender bids should be Foreign currency quote.

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Place at which the Delivery is required : Indian Institute of Astrophysics, Bangalore
-34

Date by which the supplies are required : 4 weeks from the date of order.

I/We have understood the items of the tender annexed to the invitation to the Tender and have thoroughly examined the specifications/drawing and / or pattern quoted or referred to herein and / are fully aware of the nature of the items/ Equipment required and my / our offer is to supply the items/ Equipment strictly in accordance with the requirements subject to the terms

and conditions contained in the Purchase order communicating the acceptance of this tender either in whole or in part.

Date :

Signature and Seal of Supplier

Annexure - A

INSTRUCTIONS TO SUPPLIERS

1. Tenders should be sent in a sealed and superscribe with both Technical bid and commercial bid in separate envelopes with mention of Tender Number date and date of opening. Only one Tender should be sent in each envelope. Tender bids must reach our Office on or before : 20/09/2013 by 15: 00 hrs. The bids must be in a separate sealed envelopes duly superscribed with the name of the supply and Due Date and both envelopes kept in a envelopes mentioning the supply. The Technical bids (a) will be opened in the presence of bidders or their authorized representative of the Company by 15.30 hrs on 20/09/2013. The commercial bids will be opened only for those vendors quotes qualify in Technical evaluation. The opening of commercial bids date will be intimated later. Incomplete Bids are liable for rejection.
2. Late and Delayed tender will not considered at all.
3. Duties, Taxes where legally leviable and intended to be claimed should distinctly shown separately in the Tender.
4. a) Your quotation should be valid for 90-120 days from the date of opening of Tender.
b) Prices are required to be quoted according to the units indicated in the annexed tender form. When quotations are given in terms of units other than those specified in the Tender from, relationship between the two sets of units must be furnished.
5. a) All available Technical Literature(s), Catalogue(s) and other data in support of the specifications and details of the item(s) should be furnished along with the offer.
b) Approximate net and gross weight of the items offered shall be indicated in your offer. If dimensional details are available the same should indicated in your offer.
c) Air freight/sea freight charges up to IIA, Bangalore/ Bangalore Airport may be sent along with the offer.

d) Specifications:

Items / Equipment offered should strictly conform to our specifications. Deviation, if any should be clearly indicated by the Supplier in their quotation. The supplier should also indicate the Make / type No. of the stores offered and provide catalogue(s), Technical literature(s) and sample(s), wherever necessary along with the quotations. Test certificates wherever necessary should be forwarded along with the supplies. Whenever

options are called for in our specifications, the Supplier should address all such options. Wherever specifically mentioned by us, the Supplier could suggest changes to specifications with appropriate response for the same.

1. Corrections, if any, must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amounts quoted in words and figures, amount quoted in words shall prevail.
2. The supplier should supply along with the tender, the Banking information for payment or any other purpose.
3. A complete set of instruction and operation manual should be supplied.
4. Final performance should be guaranteed.

TERMS AND CONDITONS OF CONTRACT

1. DEFINITIONS:

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- a) The terms ‘Purchaser’ shall mean the Director, Indian Institute of Astrophysics, Bangalore - 560 034.
- b) The term ‘Supplier’ shall mean, the person, firm or company with whom or with which the order for the supply of Items / Equipment is placed.
- c) The terms ‘Purchase Order’ shall mean the communication signed on behalf of the Purchaser by an officer duly authorized intimating the acceptance on behalf the Purchaser on the terms and conditions mentioned or referred to in the said communications accepting the tender or offer of the supplier for supply of Items/Equipment.

2. PRICES:

The price may please be indicated on unit basis only.

Duty Exemption:

Please note that we may issue “Customs duty Exemption Certificate & Excise duty exemption certificate” under the Govt. of India notification No.51/96 & No.10/97 valid till 2016.

3. **GUARANTEE AND REPLACEMENT:**

The Supplier shall guarantee that the Items/Equipment supplied shall comply fully with the specifications laid down, for material workmanship and performance. The Guarantee should be for a period of one year minimum from the date of supply.

4. **PACKING, FORWARDING AND INSURANCE:**

The Contractor will be held responsible for the stores being sufficiently and properly packed for transport by air / Sea to withstand transit hazards ensure safe arrival at the destination. The packing and marking of packing shall be done by and at the expenses of the contractor. The Purchaser will not pay separately for transit insurance, all risks in transit being exclusively of the supplier and the Purchase shall pay only for such Items/Equipment as are actually received in good condition, in accordance with contract.

5. **TEST CERTIFICATE:**

Wherever required Test Certificate should be sent before dispatch of the items.

6. **ACCEPTANCE OF ITEMS / EQUIPMENT:**

a)It is expressly agreed that the acceptance of Items/Equipment, is subject to final approval by the Purchase, whose decision shall be final.

7. **DELIVERY PERIOD:**

Delivery is the essence of the contract. The supplier should adhered to delivery schedule as indicated in the Purchase order.

8. **EXTENTION OF DELIVERY TIME:**

As soon as it is apparent that Supplier dates cannot be adhered to, an application shall be sent by the Supplier to the Purchaser. If failure, on the part of the Supplier to deliver the Items/Equipment in proper time shall have arisen from any cause which the Purchaser may admit as reasonable ground for an extension of the time (and his decision shall be final he may allow such additional time as he considers it to be justified by the circumstances of the case). In case of Letter of Credit the banking charge for the LOC amendment will be on suppliers account.

9. **PAYMENT:**

Preference will be given to the supplier whose payment terms is on Site Draft or Credit basis.

10. **SECURITY FOR PAYMENT:**

Successful Supplier will have to furnish in the form of a Bank Guarantee or any other form as called for by the Purchase towards any payments before supply of items/equipment. In case of payment through Letter of Credit the Banking charges outside India and inside India will be on suppliers account.

11. IIA reserves the right to reject any or all the Tenders without assigning any reason.

Purchase Officer
IIA, Bangalore - 34.

Annexure : B - Specifications and quantity details:

Table of Contents /index:

S.No	Name of the component	No.of Units required
1	Motorised rotational stage mounted on motorised translational stage	1
2	Motorised XYZ translational Stage	2
3	Motorised Filter wheel assembly	2
4	Rotational stage	1
5	Stabilised He-Ne laser source	2
6	Spatial Filter Assembly	2
7	Spherical Lenses	4

Technical specifications of the components with codes and standards if any:

1. Motorised rotational stage mounted on motorised translational stage:

a). Rotational stage:

Diameter of rotational stage	: $\geq 50\text{mm}$
Travel Range ($^{\circ}$)	: 360
Minimum Incremental Motion($^{\circ}$)	: 0.01
Uni-directional Repeatability ($^{\circ}$)	: 0.001
Bi-directional Repeatability ($^{\circ}$)	: 0.001
Absolute Accuracy ($^{\circ}$)	: $\leq \pm 0.001$
Wobble, (μrad)	: $\leq \pm 20$
Eccentricity, (μm)	: $\leq \pm 5$
Drive Mechanism	: Ground worm gear with self compensating preload / Suitable equivalent
Feedback mechanism	: Rotary encoder / Direct reading optical encoder / Suitable equivalent
Limit Switches	: Optical, (With disable option for continuous rotation) / Suitable equivalent
Controller Interfaces	: USB or Suitable
Load Capacity (vertical & Horizontal)	: $\geq 5\text{kg}$

b). Translational stage:

Travel Range	: 150mm
Backlash	: $\leq 5\mu\text{m}$.
Max. Vertical Load Capacity	: $\geq 10\text{Kg}$
Max. Horizontal Load Capacity	: $\geq 10\text{Kg}$
Home location Accuracy	: $\leq \pm 1 \mu\text{m}$
Min. Incremental Movement	: $1 \mu\text{m}$
Feed Back Mechanism	: Optical encoder /Suitable equivalent
Limit Switches	: Optical/ Ceramic Tapped electromechanical /Suitable equivalent
Controller Interface	: USB / Suitable one as per vendors choice.

Other Requirements:

- ⌞ Rotational stage should be provided with a adaptor with mount for mounting 2" optical mirror. Mirror mount should be provided with precised tip tilt adjustment mechanisms.
- ⌞ All the required motion controllers/drivers, software along with the cables of length 5meters should be provided.
- ⌞ All the required adaptors should be provided for integrating the rotational stage and translational stage as shown in figure-1, in section "**conceptual layout/drawings**" should be provided.
- ⌞ Both soft and hard copies of 2D drawings, 3D models and step files of the integrated rotational stage and translational stage along with all the adopters and connecting interfaces should be provided.

2. Motorised XYZ translational Stage

Specifications:

Travel Range	: 50mm ($\pm 25\text{mm}$) in all the three directions X,Y&Z.
Backlash	: $\leq 5\mu\text{m}$.
Max. Vertical Load Capacity	: $\geq 10\text{Kg}$ (for X& Y Stages) $\geq 10\text{Kg}$ (for Z Stage)
Max. Horizontal Load Capacity	: $\geq 10\text{Kg}$ (for all the three stages X,Y&Z)
Home location Accuracy	: $\leq \pm 1 \mu\text{m}$ (for all the three stages X,Y&Z)
Min. Incremental Movement	: $\pm 1 \mu\text{m}$ (for all the three stages X,Y&Z)
Feed Back Mechanism	: Optical encoder /Suitable equivalent
Limit Switches	: Optical/ Ceramic Tapped Electromechanical / Suitable equivalent
Controller Interface	: USB / Suitable one as per vendors choice.

Other Requirements:

- ⇩ Z Stage should be a motorised lab jack or similar on which X and Y stages should be mounted.
- ⇩ All the required motion controllers/drivers, software along with the cables of length 5meters should be provided.
- ⇩ All the required adaptors should be provided for integrating X,Y & Z stages together.
- ⇩ Both soft and hard copies of 2D drawings, 3D models and step files of the integrated XYZ stage along with all the adaptors and connecting interfaces should be provided.

3. Motorised Filter Wheel Assembly

Specifications:

No.of Filter Slots Required	: ≥ 6
Diameter of Filter	: $\geq 25\text{mm}$
Thickness of filter	: $\leq 6.5\text{mm}$
Drive Mechanism	: Stepper motor driven or equivalent
Controller Interface	: USB or Equivalent

Other Requirements:

- ⇩ All the required motion controllers/drivers, software along with the cables of length 5meters should be provided.
- ⇩ All the required adaptors/connectors should be provided for mounting the filters in filter wheel assembly.
- ⇩ Both soft and hard copies of 2D drawings, 3D models and step files of filter wheel assembly along with all the adaptors/connectors and mounting interfaces should be provided.

4. Rotational Stage:

Specifications:

Travel Range ($^{\circ}$)	: 360
Minimum Incremental Motion	: ≤ 10 arcmin.
Backlash	: ≤ 1 arcmin.
Drive Mechanism	: Worm Gear or equivalent.
Max. Load capacity	: $\geq 10\text{kg}$

Other Requirements:

- ⇩ All the required adaptors/connectors should be provided for mounting the rotational stage on the optical bench as well as for mounting the optical components on the rotational stage should be provided.
- ⇩ Both soft and hard copies of 2D drawings, 3D models and step files of rotational stage along with all the adaptors/connectors and mounting interfaces should be provided.

5. Stabilised He-Ne Laser source

Specifications :

Wavelength	: 632.8nm
Power	: $\geq 1\text{mw}$
Beam Diameter ($1/e^2$)	: $\leq 1\text{mm}$ (at laser opening)
Beam Divergence($1/e^2$)	: $\leq 1.5\text{ mrad}$
Polarization	: Linear
Intensity Stability	: $\leq \pm 0.1\%$ over 1min $\leq \pm 0.2\%$ over 1hr $\leq \pm 0.5\%$ over 8 hrs

Other Requirements:

- ⇩ Laser should be provided with feedback control system along with the provision for the output power display/recorder.
- ⇩ Laser should be provided with high stable mount with precised tip, tilt and height adjustment provisions.
- ⇩ Required power supplies and cables of length 5meters should be provided.
- ⇩ Both soft and hard copies of 2D drawings, 3D models and step files of the laser in mounted condition along with all the adopters and connecting interfaces should be provided.

6. Spatial Filter Assembly:

Spatial Filter Mount Specifications

Degrees of Freedom	: XYZ $\theta_x\theta_y$
Range, XY [in. (mm)]	: ± 0.063 (± 1.6)
Range, Z [in. (mm)]	: ± 0.125 (± 3.2)
Range, θ_x, θ_y	: $\pm 5^\circ$
Sensitivity, XY (μm)	: 0.75
Sensitivity, Z (μm)	: 1
Sensitivity, θ_x, θ_y (arc sec)	: 3

Micro Scope Objective Specifications:

- 1).

Magnification	: 5X
Numerical Aperture	: 0.1
Wavelength	: 400-700nm

- 2).
Magnification : 10X
Numerical Aperture : 0.25
Wavelength : 400-700nm
- 3).
Magnification : 20X
Numerical Aperture : 0.4
Wavelength : 400-700nm
- 4).
Magnification : 40X
Numerical Aperture : 0.65
Wavelength : 400-700nm
- 5).
Magnification : 60X
Numerical Aperture : 0.85
Wavelength : 400-700nm

Pinhole set Specifications

A set of pinholes with diameters as follows: $1\pm 0.5\mu\text{m}$, $5\pm 0.75\mu\text{m}$, $10\pm 1\mu\text{m}$, $15\pm 1.5\mu\text{m}$, $20\pm 2.0\mu\text{m}$, $25\pm 2.5\mu\text{m}$, $30\pm 3.0\mu\text{m}$, $40\pm 4.0\mu\text{m}$, $50\pm 5.0\mu\text{m}$, $75\pm 5.0\mu\text{m}$, $100\pm 5.0\mu\text{m}$, are required.

Other Requirements:

- ⇧ All the required adapters for the complete assembly including microscope objectives set and pin hole set should be provided
- ⇧ Pinhole assembly should be black coated and there should be no reflecting elements in the pinhole assembly.
- ⇧ Objective should be achromatic infinity corrected and the lenses should be AR coated.
- ⇧ Both soft and hard copies of 2D drawings, 3D models and step files of complete Spatial filter Assembly along with all the adapters and connectors should be provided.

7. Spherical Lenses:

Type-1 Specifications (2No's):

Lens Type	: Spherical
Lens Shape	: Bi-Convex
Effective Focal Length	: 125 mm
Diameter	: 1.00 in. (25.4 mm)
Antireflection Coating	: AR.14 (430-700 nm)
Lens Material	: Grade A BK 7
Surface Quality	: 20-10 scratch-dig or better

Wavelength Range	: 400 to 700 nm
Diameter Tolerance	: ± 0.1 mm
T _e	: 3.0 mm
Focal length tolerance	: ± 1 %
Clear Aperture	: \geq central 90% of diameter
Centration, Spherical Lenses	: ≤ 3 arc min
Surface Accuracy, Irregularity	: $\lambda/4$ ($\lambda=632.8$ nm)

Type-2 Specifications (2No's):

Lens Type	: Spherical
Lens Shape	: Bi-Convex
Effective Focal Length	: 200 mm
Diameter	: 1.00 in. (25.4 mm)
Antireflection Coating	: AR.14 (430-700 nm)
Lens Material	: Grade A BK 7
Surface Quality	: 20-10 scratch-dig or better
Wavelength Range	: 400 to 700 nm
Diameter Tolerance	: ± 0.1 mm
T _e	: 3.0 mm
Focal length tolerance	: ± 1 %
Clear Aperture	: \geq central 90% of diameter
Centration, Spherical Lenses	: ≤ 3 arc min
Surface Accuracy, Irregularity	: $\lambda/4$ ($\lambda=632.8$ nm)

Other requirements:

- ⌞ All lenses should be provided with the suitable lens holders, with provisions for tip, tilt adjustments.
- ⌞ Lens holders should be black coated and there should be no reflecting elements in the holders.

Eligibility criteria of vendor:

The vendor must have knowledge, experience and infrastructure for the design and fabrication of optical elements as well as motorised optomechanical stages and associated motion controllers, drivers and software. Also give names of the Customers / Institutions.

Expected deliverables:

As Mentioned in "**Table of Contents**"

Environmental conditions:

- ⌞ All the mechanical components should be black coated and should be compatible with ISO4 clean room standards or vacuum (10^{-3} mbar) compatible..
- ⌞ Operating conditions:15-30°C and ISO4 clean room environment or vacuum (10^{-3} mbar) environment.
- ⌞ All the cables should be Teflon insulated (preferably).

Inspection, test and acceptance criteria:

Standard test results should be provided.

Expected Time Schedule

2 weeks – 4 weeks

Conceptual layout/drawings :.

Figure-1: conceptual layout of rotational stage mounted on the translational stage

