



**SATYENDRA NATH BOSE NATIONAL CENTRE FOR BASIC SCIENCES**

[Funded by the Department of Science & Technology, Government of India]

BLOCK JD, SECTOR III, SALT LAKE, KOLKATA- 700 098

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EMAIL: santosh@bose.res.in

Ref.no. SNB/ENQ/SM(Astro)/Telescope/13-14/1171/WP

29.10.2013.

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Dear Sir,

Sealed quotations are hereby invited for the following items in two parts (Technical and Commercial bids). One large envelope containing two smaller envelopes containing Part A: Technical Bid and Part B: Commercial Bid need to be submitted separately –

Two smaller envelopes should be super-scribed “**Technical Bid**”/“**Commercial Bid**” as the case may be.

S/N	PARTICULARS	Qty
1.	14” Optical Tube Assembly (OTA)	01 no.
2.	Robotic Telescope Mount [ See below for detailed technical details. For any technical query please contact <i>Dr. Soumen Mondal</i> through email at: <a href="mailto:soumen.mondal@bose.res.in">soumen.mondal@bose.res.in</a> or Phone Nos. mentioned above.]	01 no.

Note: Attached herewith “**Annexure I**” (as check list) to be duly filled in by the bidder and should be submitted with the Technical Bid only. Offer received without any of the relevant information / certificate / document asked as per “Annexure I” from sl. nos. 01 to 20 may not be considered.

The Centre reserves the right to accept or reject offer of the tenderer. The Centre's decision shall be final and binding on the tenderer. Attached documents should be duly marked.

**Technical bid** should contain complete technical information literature/working manual of the quoted item, & authorization certificate of the manufacturer. **Price Bid** - In case of imported item CIF/CIP Kolkata airport price should be mentioned and for indigenous item FOR price up to S. N. Bose Centre may be quoted.

Note:-

- 1) The price should be inclusive of delivery and installation charges.
- 2) Validity should be for 90 days from the date of opening.
- 3) Minimum One year onsite standard warranty is requisite from the date of installation.
- 4) Vendor should specify maintenance procedure and after sales service.
- 5) Payment is subject to after delivery and satisfactory installation.
- 6) Delivery period should be mentioned in the quotation.
- 7) Our ref. no. should be mentioned on top of the quotation envelope.
- 8) The above information must reach this office by **18<sup>th</sup> November' 2013**, To, The Assistant Registrar (Purchase), S.N.Bose National Centre for Basic Sciences, Block – JD, Sector – III, Salt Lake, Kolkata – 700 098.

Thanking you,  
Yours faithfully,

S. K. Singh  
AR(Purchase)

## Technical Specifications

<b>Optical Tube Assembly of the Telescope</b>	
Primary mirror size (clear aperture)	14 inch
Telescope type	Cassegrain
Effective F-ratio number	7 or more
Unvignetted field of view(FOV) at the focal plane	>60 mm
Operating wavelength	350 - 1000 nm
Back focus from the instrument mounting flange	> 250 mm
Mirror material	Standard low-expansion material, e.g. Precision Annealed Pyrex, Astro-sital etc.
Anti-reflection CAR coating	Broadband AR coating (400-700 nm)
Weight (including manual/electronic focuser and dovetail)	< 50 Kg
Cooling	Computer controlled cooling
Electronic focus control	Electronic focus control by moving secondary mirror or other focusing mechanism is desirable.
Optical design file of the telescope	Optical design file in Zemax or optical prescription data is required for instrument design and procurement.
Accessories	Please mention the list of accessories to be supplied with the OTA.

<b>Robotic Mount</b>	
Mount type	Equatorial Fork mount
Structure	Tripod
Unguided Tracking accuracy	~ 1 arcsecond per 15 minute without auto-guider
Absolute Pointing accuracy	< 15" RMS all over sky
Encoder Resolution	~ 0.03"
Latitude range for celestial objects	0 – 90 <sup>0</sup>
Telescope slew rate	4-6 <sup>0</sup> /sec, both axes
Tracking	Sidereal /Non-sidereal/Custom
Payload capacity (without counter weights)	> 80 Kg  We have a plan to use also a large diameter (~ 20") optical tube assembly with this mount. In addition, a modern low resolution spectrograph and CCD imaging camera will be used. As a baseline we therefore require about 80 kg payload at a suitable center of gravity from the mounting flange that could be adjusted by the counter weight.

Cabling and meridian flip	Internal routing and auto meridian-flip are required
Power	220-240 V, 50 Hz
Mount Weight	< 50 Kg
Robotic Mount control and software	<ol style="list-style-type: none"> <li>1. User friendly, fully automated computer control in all sub-systems is required. Hand controlling of mount is also required. The software should be able to communicate with other software (dome or CCD) through Internet network (TCP/IP) or RS 232 port.</li> <li>2. The software should be compatible with Windows/Linux/Mac to interface with standard telescope operating software like MAXIM DL, ASCOM, CCD-Autopilot etc.</li> <li>3. Full documentation of the software is required.</li> <li>4. The software should include moderate sized sky-catalog for the graphical pointing.</li> </ol>
<b>Environmental conditions of the site</b>	
Location of the observing place	86.7 <sup>0</sup> E, 23.6 <sup>0</sup> N; Altitude: 600 m from MSL
Operating temperature	5 - 40 <sup>0</sup> C
Relative humidity	20 - 99.5 %
Wind	< 3 m/s
Peak Gust	< 15 m/s
Temperature variation during the night	15 <sup>0</sup> C