



भारत सरकार/ GOVERNMENT OF INDIA  
अंतरिक्ष विभाग/ DEPARTMENT OF SPACE  
भारतीय अंतरिक्ष विज्ञान एवं प्रौद्योगिकी संस्थान/INDIAN INSTITUTE OF SPACE SCIENCE & TECHNOLOGY  
क्रय एवं भंडार विभाग / PURCHASE & STORES DEPARTMENT  
वलियमला पीओ., तिरुवनंतपुरम 695 547/ VALIAMALA P.O, THIRUVANANTHAPURAM 695 547,  
केरल, भारत/ KERALA, INDIA  
Ph No.:0471-2568451/ Tele Fax:0471-2568406/ e-mail : pso@iist.ac.in

**निविदा आमंत्रण / INVITATION TO TENDER**

**Date : 18.07.2016**

Tender Due on : **05.09.2016 at 14.00 Hrs**  
Tender opening on: **06.09.2016 at 10.30 Hrs**

Dear Sirs,

**Separate Sealed TWO PART tenders** are invited from accredited manufacturers / suppliers / agents for the supply of the following equipments:

Sl. No.	Tender No.	Item Description	Qty/ Nos.	Cost of Tender (Rs.)																											
1.	2016003320	<div><div>HIGH SPEED CAMERA</div><div>Specifications :</div><table><tr><th>Sl. No.</th><th>Title</th><th>Requirement</th></tr><tr><td>1</td><td>Color</td><td>Monochrome</td></tr><tr><td>2</td><td>Spectral wavelength of camera</td><td>Visible spectrum and infrared (400–1000 nm) (image sensor spectral response graph should be attached)</td></tr><tr><td>3</td><td>Bit depth (bits)</td><td>Minimum 12 bits</td></tr><tr><td>4</td><td>Frame rate (fps)</td><td>Minimum 12000 fps at minimum 1 Megapixel and up to 300000 fps at 8000 pixels. Minimum frame rate 100 fps at 1 Megapixel and reduced resolution should also be achievable</td></tr><tr><td>5</td><td>Exposure time (s)</td><td>Minimum 1 μs</td></tr><tr><td>6</td><td>Onboard memory</td><td>Minimum 16 GB</td></tr><tr><td>7</td><td>Physical CMOS sensor size</td><td>Min 400 mm<sup>2</sup></td></tr><tr><td>8</td><td>Pixel size</td><td>Min 20 μm × 20 μm</td></tr></table></div>	Sl. No.	Title	Requirement	1	Color	Monochrome	2	Spectral wavelength of camera	Visible spectrum and infrared (400–1000 nm) (image sensor spectral response graph should be attached)	3	Bit depth (bits)	Minimum 12 bits	4	Frame rate (fps)	Minimum 12000 fps at minimum 1 Megapixel and up to 300000 fps at 8000 pixels. Minimum frame rate 100 fps at 1 Megapixel and reduced resolution should also be achievable	5	Exposure time (s)	Minimum 1 μs	6	Onboard memory	Minimum 16 GB	7	Physical CMOS sensor size	Min 400 mm <sup>2</sup>	8	Pixel size	Min 20 μm × 20 μm	1 No.	500+VAT @5% (525/-)
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7	Physical CMOS sensor size	Min 400 mm <sup>2</sup>																													
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		9	Full well capacity,	Greater than 25000 e-		
		10	Dark current	Less than 40e- @ 20°C		
		11	Fill factor	Minimum 50%		
		12	dynamic range	Greater than 55 dB		
		13	Quantum efficiency	Greater than 45% @ 580 nm		
		14	ISO 12232	Around 25000		
		15	Trigger inputs	Switch closure/ 5 V TTL signal/ software trigger		
		16	Trigger delay	Less than or equal to 100 ns resolution for both input and output trigger		
		17	Synchronization of multiple camera	Provision for multiple camera synchronization or external equipment and IRIG phase lock for multiple camera synchronization with external time source		
		18	Operating parameters	Temperature: 0–40°C Maximum Humidity: greater than 80%		
		19	Lens mount	F mount and C mount		
		20	Ethernet Data communication	1 GB/10 GB		
		21	Lens system	Lens objective F-mount, 80-200 mm, F 2.8, compatible to the camera, spectral wavelength: 400–1000 nm		
		22	Tripod	Professional Heavy weight tripod suitable for high speed camera, 12kg load capacity, compatible with the camera		
		23	Transit case	Required and it should be compatible with the camera		
		24	Software	Capable of controlling the camera parameters such as resolution, trigger delay, exposure time, live viewing the region of interest, data transfer from camera to computer, basic image operation and motion analysis		
		25	Installation and demonstration	At IIST		

### Compliance Sheet for High Speed Camera.

<b>Sr. No</b>	<b>Specification</b>	<b>Compliance</b>
<b>1.</b>	Colour	
<b>2.</b>	Spectra Wavelength of Camera	
<b>3.</b>	Bit depth (bits)	
<b>4.</b>	Frame Rate (fps)	
<b>5.</b>	Exposure time (s)	
<b>6.</b>	Onboard Memory	
<b>7.</b>	Physical CMOS sensor size	
<b>8.</b>	Pixel size	
<b>9.</b>	Full well capacity	
<b>10.</b>	Dark Current	
<b>11.</b>	Fill factor	
<b>12.</b>	Dynamic Range	
<b>13.</b>	Quantum efficiency	
<b>14.</b>	ISO 12232	
<b>15.</b>	Trigger inputs	
<b>16.</b>	Trigger Delay	
<b>17.</b>	Synchronization of multiple camera	
<b>18.</b>	Operating Parameters	
<b>19.</b>	Lens Mount	
<b>20.</b>	Ethernet Data Communication	
<b>21.</b>	Lens System	
<b>22.</b>	Tripod	
<b>23.</b>	Transit case	
<b>24.</b>	Software	
<b>25.</b>	Installation and demonstration.	

**Commercial terms and Conditions Tender No. 2016003320 dated 18.07.2016**

**1. General Requirements:**

- 1.1 Detailed Catalogue/ Data Sheet of the quoted item.
- 1.2 Clientele List
- 1.3 Performance Letter from the Clients.
- 1.4 ***Detailed Compliance Sheets for High Speed Camera is to be attached along with Technical Bids for evaluation. Without detailed Compliance sheet, your offer shall summarily reject.***

**2. SPECIAL INSTRUCTIONS TO TENDERERS**

- 2.1 **The bidder is required to submit quotation for the entire scope in TWO PART viz, Technical and commercial bid and price bid separately. The first cover shall contain the technical and commercial details along with the format of price quotation without the price superscribing in the cover “Technical and Commercial-Tender No. 2016003320 Due on 05.09.2016. The second cover shall contain the prices superscribing in the cover price bid- Tender No. 2016003320 Due on 05.09.2016. All the covers to be sealed and insert in another cover superscribing the Tender No. 2016003320 Due on 05.09.2016 and submit immediately but not later than the due date mentioned against each tender. If the tender is received after the due date and time, the same shall be summarily rejected.**
- 2.2 The cost of tender stated against each tender shall be submitted ***along with Technical & Commercial bid by Demand Draft*** drawn in favour of the Sr. Accounts Officer, IIST and payable at State Bank of India, Valiamala Trivandrum-695 547. ***In case the Demand Draft is not enclosed with the quotation, the bid shall be summarily rejected.***
- 2.3 **Test certificate:** Wherever required, test certificates should be essential.
- 2.4 **Payment:** Our normal payment term shall be E-Transfer / within 30 days after supply/installation and acceptance for imports and indigenous respectively.
- 2.5 The installation and commissioning of equipment to be done at our campus, Valiamala, Thiruvananthapuram-695 547. All pre-requisites such as foundation drawing, grouting and any consumables needed for carrying out the installation, if applicable, shall be separately mentioned in the technical bid.
- 2.6 Delivery terms shall be Ex-works/FOB/FCA for imports and FOR, Valiamala for indigenous.

- 2.7 For import cargoes, the purchase order shall be drawn directly to the foreign supplier through agents in India. We have our own freight forwarder and customs clearance at Trivandrum shall be done by us.
- 2.8 All duties and taxes, if applicable shall be quoted separately.
- 2.10 Accreditation documents such as current income tax/sales tax clearance certificate, clientele list with previous experience in the similar lines of supply must be provided with documentary evidence), Performance Certificate, authorization for import, after sales support in India etc. shall be explained in detail with proof.
- 2.11 **Guarantee & Replacement:**
- a) The contractor shall guarantee that the stores supplied shall comply fully with the specifications laid down, for material, workmanship and performance.
  - b) For a period of twelve (12) months after the acceptance of the stores, if any defects are discovered therein or any defects therein found to have developed under proper use, arising from faulty stores design or workmanship, contractor shall remedy such defects at his own cost provided he is called upon to do so within a period of 14 months from the date of acceptance thereof by the Purchaser who shall state in writing in what respect the stores or any part thereof are faulty.
- 2.12 **Earnest Money Deposit (EMD):-** Interest free EMD to ensure the earnestness of the vendor in the participation of the procurement process to the tune of **Rs.80,000/-** by Demand Draft drawn in favour of the Sr. Accounts Officer, IIST, Valiamala, Trivandrum may be enclosed with Technical & Commercial bid sealed cover. The EMD will be refunded to the unsuccessful tenderers within 30 days after placement of Purchase Order.
- 2.13 **Security Deposit:-** Interest free Security Deposit @ 10% of the value of Purchase Order shall be payable by successful vendor for satisfactory execution of the Purchase Order.
- 2.14 **Performance Bank Guarantee** equivalent to 10% of order value shall be submitted by the Vendor for Warranty obligation.
- 2.15 **Liquidated Damages:** The period of completion indicated shall be the essence of the contract. In the event of delayed date of completion, the liquidated damages @ 0.5% per week or part thereof subject to a maximum of 10% of the contract value shall be recovered.
- 2.16 **Force Majeure:** During the continuance of the contract, should a part or whole of the items covered by this contract be delayed in delivery due to reasons of force majeure condition which shall include lockouts, strikes, riots, civil commotions, fire, flood, windstorm, explosion, labour disturbance, act of any Govt. or any agency, judicial action, sabotage act of civil disobedience, act of public enemy, technical failure,

accidents, acts of God and war, stoppage of deliveries by Govt. etc, each party undertakes to advise the other as soon as it becomes a way of the circumstance of such force majeure, so that action under the provisions of this contract can be mutually reviewed and agreed upon between contractor and IIST. If the force majeure condition extended over a period of six months, both the parties of the contract shall mutually discussed and arrived at an agreement for the continuation/ termination of the contract forthwith.

- 2.17 **Arbitration:** Dispute if any shall be settled mutually, failing which, it will be referred to a one-man arbitrator appointed by Director, IIST in accordance with the Arbitration and Conciliation Act, 1996 and any alteration/modifications thereof, whose decision shall be final and binding on both the parties
- 2.18 **After Sales Service Support:** The stock availability of spares and consumables for a minimum period of 5 years for up keeping the equipment shall be guaranteed to avoid obsolescence of systems.
- 2.19 **AMC:** The charges towards Annual Maintenance Contract (Comprehensive/Non- Comprehensive) beyond the normal warranty period may be quoted separately as option.
- 2.20 IIST reserves the right to either accept/reject any tender/s without assigning any reason/s whatsoever.
- 2.21 **Separate quotations shall be submitted for each tender along with the tender fee by demand draft.**
3. **Terms & Conditions of Tender Form No. DOS PM:20, Form No. DOS PM:22 & Form No. DOS PM:23 as per attachment.**

Sd/-  
(M.B Subash Chandran)  
Sr. Purchase & Stores Officer  
For and on behalf of Director, IIST