



**Global Tender Document**

**GTE Approval No.: IISc-GTE-2023-257**

**Tender No.: CEH/SRO/2023/Global/0001**

**For**

**“Supply of Two Identical High-Speed Cameras”**

**Center of Excellence in Hypersonics  
Indian Institute of Science, Bangalore – 560012**

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# 1. Tender Notification

**Tender No.: CEH/SRO/2023/Global/0001**

Scope of Work	<b>Supply of Two Identical High-Speed Cameras</b>
Estimated Period of Work Completion	6 (six) Months
Name of the Client	Indian Institute of Science, Bangalore
Address of the Client	The Chairman Center of Excellence in Hypersonics Indian Institute of Science Bangalore - 560 012
Contact Person/Client Representative	Prof. Srisha Rao M V Associate Professor Department of Aerospace Engineering, IISc. Phone: 080-22932426 Email: srisharao@iisc.ac.in
Tender Fee	NIL
Last date and Time for online submission (uploading) of tender	14 <sup>th</sup> September 2023, 5.00 PM
Date and Time of opening of Tender	15 <sup>th</sup> September 2023, 11.00 AM

## 2. General Conditions

The Chairman, Center of Excellence in Hypersonics, Indian Institute of Science invites tenders in two bid (Technical and Financial) system from eligible global bidders, for **“Supply of Two Identical High-Speed Cameras”**.

2.1	Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of India or any State Government of Union of India. (authorized signatory should provide an undertaking). Tenders from Joint ventures are not acceptable.
2.2	All Bidders shall provide the required information accurately and enough as per details in Section 4: Eligibility Criteria
2.3	The rates quoted should reflect Shipping charges, CIP charges, taxes separately. However, bid evaluation will be done inclusive of all Taxes / Cess. / Royalty etc. The statutory levies as per Govt. guidelines will be deducted. The IISc reserves the right to accept / reject any or all the tenders without assigning any reasons.
2.4	The quotations should be on CIP-IISc Bangalore basis.
2.5	Any statutory increase in the taxes and duties subsequent to the bidder’s offer, if it takes place within the original contractual delivery date, will be borne by IISc, Bangalore, subject to the claim being supported by documentary evidence. However, if any decrease takes place, the advantage will have to be passed on to IISc, Bangalore. Any information furnished by the bidder found to be incorrect, either immediately or at a later date, would render the bidder liable to be debarred from the bidding process.
2.6	Conditional tenders will not be accepted and is liable for rejection.
2.7	Even though the Bidders meet the eligibility criteria, they are subject to be disqualified if they have: <ul style="list-style-type: none"> <li>– Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or</li> <li>– Record of poor performance such as abandoning the works, not properly completed the contract, inordinate delays in completion, litigation history, or financial failures etc.</li> <li>– Additionally, IISc shall have the absolute right to take the opinion of other departments/institutes for their opinion/experience about the bidder’s services/sales. Based on such input, IISc may decide about the rejection of a bid of such bidder(s).</li> </ul>
2.8	The Tender document can be downloaded from IISc website ( <a href="https://iisc.ac.in/all-tenders/">https://iisc.ac.in/all-tenders/</a> ) It may be noted that all subsequent notifications, changes and amendments on the project/document would be posted only on the same website. The bidders are advised to visit the IISc Portal and get familiarized with the procedure for submission of the tenders.
2.9	<b>Content of Tender documents</b> The bidders should go through the Tender Document and submit online response through IISc portal only
2.10	<b>Amendment of Tender documents</b> Before the deadline for submission of tenders, the IISc may modify the tender documents by issuing corrigendum / addendum. Such corrigendum/ addendum thus issued shall be part of the tender documents and shall be

	published online in IISc portal.
2.11	<p><b>Documents comprising the Tender</b></p> <p>The Technical Bid submitted by the Bidder shall contain the documents as follows:</p> <ol style="list-style-type: none"> <li>Proof of previous experience in similar work (as per eligibility criteria)</li> <li>Other documents citing aspects fulfilling eligibility criteria.</li> <li>Technical Compliance sheet in tabular form showing compliance to the technical specifications in Section 3</li> </ol> <p>The Financial Bid:</p> <ol style="list-style-type: none"> <li>Provide prices of individual items on per unit basis followed by total cost as per numbers.</li> <li>Price quoted shall be inclusive of all discounts.</li> <li>All prevailing duties, taxes, and other levies like CESS/Royalty payable by the contractor under the contract, or for any other cause, shall be included in the rates, prices and total Tender Price submitted by the Bidder.</li> </ol>
2.12	<p><b>Tender validity</b></p> <p>Tenders shall remain valid for a period not less than <b>180 days</b> after the deadline date for tender submission. A tender valid for a shorter period shall be rejected by the IISc as non-responsive. In exceptional circumstances, prior to expiry of the original time limit, IISc may request that the Bidders may extend the period of validity for a specified additional period. The request and the Bidders' responses shall be made in writing or by email.</p>
2.13	<p><b>Deadline for submission of the Tenders</b></p> <p>The Bidder shall submit a set of hard copies of all the documents in two separate covers sealed and marked as “ <b>Technical Bid</b>” and “ <b>Financial bid</b>” to IISc, on or before 14th September 2023.</p> <p>The IISc may extend the deadline for submission of tenders by issuing an amendment, in which case all rights and obligations of the IISc and the Bidders previously subject to the original deadline will then be subject to the new deadline.</p>
2.14	<p><b>Modification and Withdrawal of Tenders</b></p> <p>Bidder has all the time to modify and correct till last date and time for Bid submission, as published .</p> <p>The Bidder may withdraw his tender before the notified last date and time of tender submission. No Tender may be modified after the deadline for submission of tenders.</p>
2.15	<p><b>Clarification of Tenders</b></p> <p>To assist in the examination, evaluation, the IISc may, at its discretion, ask any Bidder for clarification of his/her Tender. The request for clarification and the response shall be in writing or by e-mail along with the section number, page number and subject of clarification, but no change in the price or substance of the Tender shall be sought, offered, or permitted.</p> <p>Any effort by the Bidder to influence the IISc in the Tender evaluation, or contract award decisions may result in the rejection of the Bidders' Tender.</p>
2.16	<p><b>Examination of Tenders and determination of responsiveness</b></p> <p>Prior to the detailed evaluation of Tenders, the IISc will determine whether each tender (a) meets the eligibility criteria, and (b) is substantially responsive to the requirements of the Tender documents.</p>

	<p>A substantially responsive tender is one which conforms to all the terms, conditions, and specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the tender documents, the IISc's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Tenders.</p> <p>If a tender is not substantially responsive, it will be rejected by the IISc, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.</p>
2.17	<p><b>Award criteria</b></p> <p>IISc will award the contract to the Bidder whose Tender has been determined to be substantially responsive to the tender documents and who has offered the lowest evaluated tender price. After technical evaluation the technically qualified bidders will be considered for opening of the financial bids provided that such bidder has been determined to be eligible in accordance with the provisions of this tender document and subsequent technical clarifications offered by the responsive bidders.</p>
2.18	<p><b>Right to accept any Tender and to reject any or all Tenders</b></p> <p>IISc reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the IISc's action.</p>
2.19	<p><b>Notification of award</b></p> <p>The Bidder whose Tender has been accepted will be notified of the award by the IISc prior to expiration of the Tender validity period by e-mail or confirmed by letter.</p>

### 3. Technical Specifications

#### Mandatory Specifications of High Speed Camera (Identical 2 Nos)

S.N.	Parameter (unit)	Specification
1.	Type	Color
2.	Sensor Type	CMOS
3.	Maximum Pixels of the Frame	1 Megapixel or higher
4.	Frame Rate at Max. Pixel Resolution	10000 fps (or higher) @ 1 Megapixel (or higher)
3.	Maximum Frame Rate at Min. Pixel Resolution	300000 or higher
4.	Minimum Exposure Time	1 $\mu$ s (standard) or lower
5.	No of bits per pixel (Dynamic Range)	12 bits /color channel = 36 bits in color mode
6.	Light Sensitivity: ISO	Color mode: 10000 or higher
7.	PIV mode	Straddle time 2 $\mu$ s - 0.75 $\mu$ s or lower
8.	Binning mode	Enabled
9.	Memory RAM	128 GB
10.	Internal Memory Drive for rapid storage during long recording	SSD Hard Drive
8.	Read out	10 Gbps High Speed Ethernet
9.	I/O controls	Trigger, Strobe, Fsync, Event, Timing (out), External Clock (In)
10.	Ethernet Bus/Coupling Hardware	To couple and synchronize multiple cameras
11.	Camera Control Software and SDK	Software to synchronize and control multiple cameras with SDK kit for Labview and Matlab
12.	Cables	Cables for I/O and ethernet cable for readout
13.	Lens compatibility	F Mount Nikon Lenses
14.	Hard cover carry case	Yes
15.	Power Connections	Compatibility with existing 220-240VAC@50Hz single-phase power supply.

## **Desirable Specifications**

<b>S.N.</b>	<b>Item</b>	<b>Specification</b>
1	Type (Color)	Provide separate bids for two identical Color and Monochrome Cameras
2	Binning Mode	Enabled Hardware/Software
3	Memory RAM	128 GB (at least greater than 70 GB preferable)
4	Internal Memory Drive for rapid storage during long recording	SSD Hard Drive – Provide the throughput rates to the internal drive

## **Standard Accessories**

<b>S.N.</b>	<b>Item</b>	<b>Specification</b>
1	Optical Zoom Lenses	Compatible high quality optical zoom lenses having maximum focal length of 200 mm, one for each camera
2	Flashlight	High intensity flashlight [can be multi-LED system with total output at least 50,000 Lumens/500 W] with controller and trigger system compatible with the camera controllers. One for each camera
3	Tripod and Mounts	Tripods and mounts for camera and flashlight
4	Additional Long Ethernet cables	Long ethernet cable [25 m] compatible with camera for long distance acquisition and control [4 nos]

## **Installation and Training**

1	The High Speed Cameras should be installed by a technical expert of either the manufacturer or their authorized Indian technician.
2	Complete training should be given on the operation, and maintenance of the high speed camera.
3	The technical expert of should be able to integrate the two cameras and complete the installation by demonstrating the capture of a high speed event in a shock tunnel using two identical high speed cameras to obtain a 3D-Visualization.

## **Warranty**

1	<p>Warranty conditions:</p> <ul style="list-style-type: none"> <li>Comprehensive Warranty covering all mandatory parts in this tender of at least 36 months from the date of complete onsite installation.</li> <li>The Bidders should clearly document warranty conditions in the tender document including accessories.</li> </ul>
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## **Optional Items**

1	Extended Warranty Package
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## **Delivery**

1	Within 6 months from the release of the Purchase Order
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## **Commercial Bid Price Break Up**

In the commercial bid, please provide the price of individual components, preferably in the following manner.

1. Cost of the high-speed camera per unit cost and total cost for 2 nos
2. Cost of optical zoom lenses per unit cost and total cost for 2 nos
3. Cost of Flashlight system per unit cost and total cost for 2 nos
4. Cost of tripod mounts for camera and flashlight per unit cost and total cost for 4 nos
5. Cost of additional long ethernet cables per unit cost and total cost for 4 nos
6. Optional items
7. Shipping Charges
8. CIP Charges

### 3. Eligibility Criteria

<b>Sl. No</b>	<b>Requirement</b>	<b>Compliance</b>
1	History of having supplied similar high speed camera systems to other Government organizations/Educational Institutes. A list of such purchases must be supplied.	Yes/No
2	The bidder must show through demonstration/video/publications, the capability to synchronize, control and acquire high speed images from multiple cameras and its application in flow visualization domain	Yes/No
3	Technically trained manpower who can install the multiple camera system onsite and provide a demonstration of the working system on a shock tunnel flow visualization	Yes/No
4	Technically trained manpower to provide training to end users at IISc	Yes/No