

वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्  
Council of Scientific & Industrial Research  
राष्ट्रीय वांतरिक्ष प्रयोगशालाएं  
National Aerospace Laboratories



CSIR - NAL Estd. 1959  
ISO 9001 : 2015  
Certified Organization

INVITATION FOR TENDERS

Tender No. NAL/PUR/STTD/387/21-Y

Dated: 03/01/2022

CSIR - National Aerospace Laboratories (NAL), Bengaluru, Republic of India, is one of the premier research laboratories under aegis of Council of Scientific and Industrial Research (CSIR), an autonomous body under the Department of Scientific and Industrial Research, Government of India, New Delhi. CSIR-NAL is a Science and Knowledge based Research, Development and Consulting Organisation. It is internationally known for its excellence in Scientific Research in Aerospace Engineering.

The Director, CSIR-NAL invites online quotation for procurement of the following item(s) for day to day research work.

Sl. No.	Description of Item(s)	Unit	Quantity
1	Integrated Power Amplifier with Shaker and Force Sensor (Please refer annexure for detailed specification)	Nos	04

Single / Double Bid	Single	Tender Type	Open
Bid Security (EMD) (in INR)	Bid Security Declaration should be enclosed with quotation	Bid submission end date	24-Jan-2022 10.00 Hrs
Performance Security	3% of Purchase Order Value	Bid opening date	25-Jan-2022 11.00 Hrs

01. Tender Documents may be downloaded from Central Public Procurement Portal <https://www.etenders.gov.in>. Aspiring Bidders' who have not registered in e-procurement can register free of cost before participating through the website <https://www.etenders.gov.in>. Bidders are advised to go through instructions provided at 'Instructions for Online Bid Submission'.
02. Tenderers can access tender documents on the website (for searching in the NIC site <https://www.etenders.gov.in>, kindly go to Tender Search option, select tender type and select 'Council of Scientific and Industrial Research', in organisation tab and select NAL-Bengaluru-CSIR in department type. Thereafter, Click on "Search" button to view all CSIR-NAL, Bengaluru tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website <https://www.etenders.gov.in> as per the schedule given in the next page.

पी बी सं. 1779, एचएएल एयरपोर्ट रोड, कोडिहल्ली, बेंगलुरु - 560 017, भारत,  
P B No 1779, HAL Airport Road, Kodihalli, Bengaluru - 560 017, INDIA  
फोन / Phone : ( का./ Off ) : +91 - 80 - 2508 6040 - 45, फैक्स / FAX : +91-80-2526 9611



<http://www.nal.res.in>



[purchasek@nal.res.in](mailto:purchasek@nal.res.in)



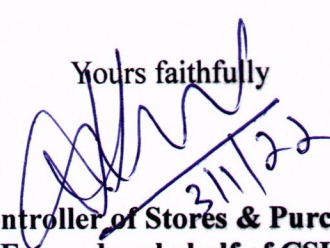


## CSIR-National Aerospace Laboratories, Bengaluru-560 017, INDIA

03. Either the Indian Agent on behalf of the Foreign principal or the Foreign principal can bid directly in a tender but **not** both. However, the offer of the Indian Agent should also accompany the authorisation letter from their principal. To maintain sanctity of tendering system, one Indian Agent **cannot** represent two different Foreign principals in one tender.
04. Unsolicited / conditional / unsigned Quotations/Quotations received after the due date and time shall be summarily rejected. The Bidder shall comply the terms and conditions of the tender, failing which, the offer shall be liable for rejection.
05. The bids failing to comply with the following clauses will be summarily rejected.
  - a. The Bidders proposing to supply finished products directly/indirectly from vendors' of countries sharing the land border with India should submit copy of registration done with the Ministry of Home Affairs and Ministry of External Affairs.
  - b. If the products supplied are not from vendors of countries sharing land border with India, the Bidders' have to enclose a declaration to that effect.
06. Bidders are requested to refer to the instructions regarding Procurement Policies for "Make in India", issued by Ministry of Commerce and Industry, Department of Industrial Policy and Promotion dated. 28-May-2018, and 4-Jun-2020 and guidelines as and when issued.
07. The prospective bidders are requested to refer to the Standard Terms and Conditions available on NAL Internet ([www.nal.res.in](http://www.nal.res.in)) under the icon Tender-Purchase before formulating and submitting their bids
08. The Director, CSIR- National Aerospace Laboratories, Bengaluru reserves the right to accept any or all the tenders either in part or in full or to split the order without assigning any reasons there for.

Thanking you,

Yours faithfully

  
31/1/22  
Controller of Stores & Purchase  
For and on behalf of CSIR



**Specifications for the Integrated power amplifier with shaker and force sensor****Quantity: 04 No.s**

Sl. No.	Description	Specification
<b>I</b>	<b>Shaker Performance</b>	
1	Output Force, sine pk Natural Air Cooling	30 ± 5 N
2	Output Force, random RMS Natural Air Cooling	22 ± 5 N
3	Output Force, shock pk	≥ 65 N
4	Stroke Length	
	Continuous pk-pk	≥ 13 mm
	Between Stops	± 1% of continuous pk-pk stroke
5	Frequency Range	DC-5 kHz
6	Acceleration	
	No load	≥ 60 g pk
	0.1 lb (0.045 kg) load	≥ 30 g pk
	1 lb (0.454 kg) load	≥ 6.4 g pk
	2 lb (0.907 kg) load [max payload]	≥ 3.3 g pk
7	Maximum Current	≤ 8 A
8	DC Resistance, armature nominal	≤ 0.37 Ω
	<b>Physical characteristics</b>	
1	Armature Mass, nominal	≤ 0.05 kg, non-mechanical contact type
2	Suspension Stiffness, nominal	≤ 2.63 N/mm
3	Input Connector	BNC jack
4	Output Connector	Mini binding post
5	Table Mounting	10-32 thread
6	Dimensions (H x W x D), nominal	≈ 140mm x 170mm x 100 mm
7	Weight	≈ 3 kg
<b>II</b>	<b>Amplifier Performance</b>	
1	Efficiency	92%
2	Input Voltage, RMS	0-1 VAC
3	Input Voltage (absolute maximum), RMS	1.9 VAC
4	Input Power	12-28 VDC
5	Output Power	≤ 60 W
6	Distortion, typical	< 0.02%
7	Cooling	Convection
8	Discrete Gain Stages, nominal	Muted, 10 dB, 18 dB, 24 dB
9	Warning Indication	Clipping and over temperature
10	Shutdown Protection	Over temperature and over current
<b>III</b>	Compatible ICP type Impedance head for the proposed shaker	
<b>IV</b>	Suitable ICP type Force Sensor	

### **BID-SECURING DECLARATION FORM**

Date: \_\_\_\_\_

Bid No. \_\_\_\_\_

To (insert complete name and address of the purchaser)

I/We. The undersigned, declare that:

I/We understand that, according to your conditions, bids must be supported by a Bid Securing Declaration.

I/We accept that I/We may be disqualified from bidding for any contract with you for a period of one year from the date of notification if I am /We are in a breach of any obligation under the bid conditions, because I/We

(a)	have withdrawn/modified/amended, impairs or derogates from the tender, my/our Bid during the period of bid validity specified in the form of Bid; or
(b)	having been notified of the acceptance of our Bid by the purchaser during the period of bid validity
	(i) fail or refuse to execute the contract, if required, or
	(ii) fail or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders.

I/We understand this Bid Securing Declaration shall cease to be valid if I am/we are not the successful Bidder, upon the earlier of (i) the receipt of your notification of the name of the successful Bidder; or (ii) thirty days after the expiration of the validity of my/our Bid.

Signed: (insert signature of person whose name and capacity are shown)  
in the capacity of (insert legal capacity of person signing the Bid Securing Declaration).

Name: (insert complete name of person signing the Bid Securing Declaration)

Duly authorized to sign the bid for an on behalf of: (insert complete name of Bidder)

Dated on \_\_\_\_\_ day of \_\_\_\_\_ (insert date of signing)

Corporate Seal (where appropriate)

Note:

1. In case of a Joint Venture, the Bid Securing Declaration must be in the name of all partners to the Joint Venture that submits the bid.
2. Bid Security declaration must be signed in by the Proprietor/CEO/MD or equivalent level of Officer of the company.