



राष्ट्रीय विज्ञान शिक्षा एवं अनुसंधान संस्थान, भुवनेश्वर  
(परमाणु उर्जा विभाग, भारत सरकार का एक स्वयं शासित संस्थान)  
**NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, BHUBANESWAR**  
(AN AUTONOMOUS INSTITUTE UNDER DEPT. OF ATOMIC ENERGY, GOVT. OF INDIA)

**NIT LIMITED NO. NC-000720-12-R&D-NIS-5.03-0100-16-17**

**LOCK-IN-AMPLIFIER**

**NATIONAL INSTITUTE OF SCIENCE EDUCATION & RESEARCH**  
**JATNI CAMPUS, P.O.: BHIMPUR-PADANPUR, VIA:-JATNI**  
**Khurdha-752050**

**Tender Notice No. NIT Limited NO. NC-000720-12-R&D-NIS-5.03-0100-16-17**

Sealed Tenders are invited on behalf of the Director, National Institute of Science Education and Research, Jatni from the manufacturers (Indian or Foreign) and their authorised reseller/Indian agent only for supply & installation of the following item:-

<b>Sl. No.</b>	<b>Name of the Items</b>	<b>Name of Department</b>	<b>Indent No.</b>	<b>Unit Qty.</b>	<b>EMD Amt. (Rs)</b>
01	LOCK-IN-AMPLIFIER	School of Physical Science	<b>NC-000720-12-R&amp;D-NIS-5.03-0100-16-17</b>	01 Nos	9000.00

**NB: PARTY REGISTERED WITH SSI/DGS&D/DAE AND FOREIGN PARTIES QUOTING DIRECTLY ARE EXEMPTED FROM PAYEE EMD.**

**EMD IN FORM OF DEMAND DRAFT SHOULD BE PREPARED IN FAVOUR OF FINANCE OFFICER, NISER AND PAYABLE AT JATNI.**

Detail Tender Document can also be downloaded from the NISER web-site address: [www.niser.ac.in](http://www.niser.ac.in) directly.

NISER reserves the right to accept or reject any or all the Tenders without assigning any reason.

**Terms & Conditions: -**  
As per attached sheet

**Yours faithfully,**

**Stores & Purchase Officer**

**PART – 1**  
**TERMS & CONDITIONS**  
**FOR SUPPLY AND INSTALLATION**  
**OF**  
**LOCK-IN-AMPLIFIER**  
**FOR**  
**NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, JATNI**

**PART – 1**  
**TERMS & CONDITIONS**

1. Sealed tenders are invited for supply and installation of **LOCK-IN-AMPLIFIER** in the National Institute of Science Education and Research. The tender document consists of the following two parts.

**Part-1: “TERMS & CONDITIONS” & “TECHNICAL BID” of the tender.**

**Part-2: “FINANCIAL BID” of the tender.**

2. The bidder must attach the at least 03 Purchase Order copy for Supply & Installation of above equipments during the last 01 financial years in State Government or Govt. of India Department(s) /Reputed Organisation(s) (in Nos. and Value). Please attach a list of clients.
3. The bids submitted by the vendors should be valid for a minimum period of 90 days from the date of the opening of tender and the prices should be valid till execution of purchase agreement.
4. The sealed envelope containing “The Bid” on prescribed tender document of the NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH should reach the Stores & Purchase Officer, National Institute of Science Education and Research, Jatni on or before **13.02.2017** up to **5:30 p.m.** otherwise the tender will not be accepted.
5. The sealed envelope of the bidders shall be opened on **14.02.2017** at **11:30 A.M.**
6. For further information/clarification in this respect, please contact with Dr. Subhankar Bedanta on e-mail [\*\*<sbedanta@niser.ac.in >\*\*](mailto:sbedanta@niser.ac.in). Only e-mail inquiries will be entertained.
7. The supply and installation of the above equipments shall be made by the vendor within 4 -6 weeks from the date of issue of the purchase order.
8. All the items to be supplied should be new, of good quality and standard and as per the technical specifications mentioned in technical bid document.
9. Discount: Any conditional discount will lead to the rejection of your tender.
10. The vendor will provide operational manuals, documents for peripherals, set of diagnostics to test all the sub-systems etc. along with the systems.
11. The installation of above equipments will be at the National Institute of Science Education and Research, Jatni.
12. The prices quoted in the technical/financial bid should be inclusive of power cables, interface cables, packing, forwarding, freight upto NISER, Jatni, transit insurance and installation charges at sites. Excise duty and trade tax if applicable should be quoted separately at the appropriate columns provided for them in the technical/financial bid (NATIONAL INSTITUTE OF SCIENCE

EDUCATION AND RESEARCH is exempted from Excise Duty). In case of import the NISER will arrange the clearance from Kolkata Airport. All the expenses, like Import duty, Entry tax, and insurance will be added in your cost to calculate landed cost. (NISER is exempted from Custom Duty. The present rate is approx. 5.13%).

13. In case, excise duty and/or trade tax/sales tax are reduced or increased subsequently by the Government at the time of placement of the purchase order or delivery, then the same will be adjusted by either party on production of requisite proof.
14. Payment for the items to be supplied by the vendor against the purchase order shall be made by NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH as follows:-

**100% payment will be made within 45 days from the date of submission of all relevant documents required to release the payment.**

**The tenderers who are not agreeing to above payment terms, are requested not to submit their tender otherwise their EMD will be forfeited.**

15. The equipments will carry comprehensive warranty as asked in F.B. Warranty period will start from the date of successful installation of all the items at site.
16. Parties should specify the make and model of each Item along with all other details.
17. The tender must be submitted on the prescribed tender document issued by the NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH. Any other technical details required to supplement the information quoted in the prescribed tender document may please be attached separately. The information asked in the tender document should be given at the place provided for it in the tender document. The tenders in which information is not given at the place provided for it or not in the similar format given in the tender document may be rejected.
18. Printed conditions of the vendor submitted with the tender will not be binding on NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH.
19. The documents containing bids shall be free from cutting and erasures. However, alterations, if any, in the tender should be attested properly by the bidder, failing which the tender is liable to be rejected.
20. The tenders submitted by telex/telegrams/fax/email will not be considered. No further correspondence will be entertained on this matter.
21. NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH will not be responsible for any delay in obtaining the tender document by the vendor from NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH or submission of the completed tender document to NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH.
22. The registration number of the firm along with the CST/VAT No. allotted by the sales tax / trade tax authorities and I.T. registration number (P.A.N.) along with the place of registration should invariably be given along with the technical bid.
23. Tender not conforming to any or all the above terms and conditions will be rejected.
24. Incomplete tenders are liable to be rejected.

25. NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH reserves the right to increase/decrease the specified quantities of any item(s) given in the tender.
26. NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH reserves the right to reject any or all the tenders without assigning any reason whatsoever. NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH would not be under any obligation to give any clarifications to those vendors whose tenders have been rejected. The decision of Director, NISER is final and binding in case of any dispute arising out of this contract between both the parties.

(Deepak Srivastava)  
Stores & Purchase Officer

#### DECLARATION BY THE VENDOR

It is hereby declared that I/We the undersigned, have read and examined all the terms and conditions etc. of the tender document for which I/We have signed and submitted the tender under proper lawful Power of Attorney. It is also certified that all the terms and conditions of the tender document are fully acceptable to me/us and I/We will abide by the conditions from serial no. 1 to 27. This is also certified that I/We/our principal manufacturing firm have no objection in signing the purchase contract if the opportunity for the supply of the items against this tender is given to me/us.

Date:

Signature:

Address:

Name:

Designation:

On behalf of:

(Company Seal)

**To,**

The Finance Officer  
NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH  
Jatni Campus, P.O.- Jatni  
Khurda– 752050, Odisha

Ref: Tender ref. no.: \_\_\_\_\_ dated. \_\_\_\_\_

Sub: Refund of EMD

Dear Sir,

We have deposited EMD of Rs. \_\_\_\_\_/- vide D/D No. \_\_\_\_\_  
dated. \_\_\_\_\_ of \_\_\_\_\_ (name of the  
issuing Bank) against above mentioned tender. Since our tender has not being  
qualified, we request to release our EMD.

Yours faithfully,

Signature of the Authorised Signatory  
(with Company Seal)

Our addressed is verified as below:

M/s. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Pin Code: \_\_\_\_\_

Phone No.: \_\_\_\_\_

**SUPPLY AND INSTALLATION  
OF  
LOCK-IN-AMPLIFIER  
FOR  
NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, JATNI  
TECHNICAL SPECIFICATION**

<b>S. No.</b>	<b>Item Specification</b>	<b>Offered specification with Make &amp; Model No. please specify any deviation if any. Please attach separate sheet if required</b>
(1)	(2)	(3)
	LOCK-IN-AMPLIFIER (NC-000720-12-R&D-NIS-5.03-0100-16-17)	
	Detail specification as per “ <i>Annexure-1</i> ” attached.	

## Specification for Lock-In Amplifiers

The lock-in amplifier should have capability to simultaneously displays the magnitude and phase of a signal,

### Signal Channel

Voltage inputs	Single-ended or differential
Sensitivity	2 nV to 1 V
Current input	$10^6$ or $10^8$ V/A
Input impedance	
Voltage input	$10\Omega$ to $25$ pF, AC or DC coupled
Current input	$1\Omega$ to $10k$ virtual ground
Gain accuracy	$\pm 1\%$ ( $\pm 0.2\%$ typ.)
Noise	$6\sqrt{\text{Hz}}$ nV/at 1 kHz
	$0.13\sqrt{\text{Hz}}$ pA/at 1 kHz ( $10^6$ V/A)
	$0.013\sqrt{\text{Hz}}$ atpA/100 Hz ( $10^8$ V/A)
Line filters	50/60 Hz and 100/120 Hz (Q=4)
CMRR	100 dB at 10 kHz, decreasing by 6 dB/oct above 10 kHz
Dynamic reserve	>100 dB (without prefilters)
Stability	<5 ppm/ $^{\circ}$ C

### Reference Channel

Frequency range	0.001 Hz to 102.4 kHz
Reference input	TTL or sine (400 mVpp min.)
Input impedance	$1\Omega$ , $25$ pF
Phase resolution	$0.01^{\circ}$ front panel, $0.008^{\circ}$ through computer interfaces
Absolute phase error	< $1^{\circ}$
Relative phase error	<0.001 $^{\circ}$
Orthogonality	$90^{\circ} \pm 0.001^{\circ}$
Phase noise	
Int. reference	Synthesized, <0.0001 $^{\circ}$ rms at 1 kHz
Ext. reference	0.005 $^{\circ}$ rms at 1 kHz, 100 ms, 12 dB/oct
Phase drift	<0.01 $^{\circ}$ / $^{\circ}$ C below 10 kHz, <0.1 $^{\circ}$ / $^{\circ}$ C, 10 kHz to 100 kHz
Harmonic detection	2F, 3F, ... nF to 102 kHz (n < 19,999)
Acquisition time	(2 cycles + 5 ms) or 40 ms, whichever is greater

### Demodulator

Stability	Digital outputs and display: no drift. Analog outputs: <5 ppm/ $^{\circ}$ C for all dynamic reserve settings.
Harmonic rejection	-90 dB
Time constants	$10\mu\text{s}$ to 30 ks (6, 12, 18, 24 dB/oct rolloff). Synchronous filters available below 200 Hz.

### Internal Oscillator

Range	1 mHz to 102 kHz
Accuracy	25 ppm/ $\mu\text{Hz}$ + 30
Frequency resolution	$4\frac{1}{2}$ digits or 0.1 mHz, whichever is greater
Distortion	-80 dBc (f < 10 kHz), -70 dBc (f > 10 kHz) @ 1 Vrms amplitude
Amplitude	$0.004\Omega$ to (25mV Vrms $\Omega$ output resolution), in 10k 50 impedance, $\Omega$ 50 mA maximum current into 50
Amplitude accuracy	1 %
Amplitude stability	50 ppm/ $^{\circ}$ C
Outputs	Sine, TTL (When using an external reference, both outputs are



phase locked to the external reference.)

## Displays

Channel	4½ -digit LED display with 40-segment LED bar graph. X, R, X-noise, Aux 1 or Aux 2. The display can also be any of these quantities divided by Aux 1 or Aux 2.
Channel 2 (SR830)	4½ -digit LED display with 40-segment LED bar graph. Y, Y-noise, Aux 3 or Aux 4. The display can also be any of these quantities divided by Aux 3 or Aux 4.
Offset	X, Y, R can be offset up to ±105 % of full scale.
Expand	X, Y, R can be expanded by 10
Reference	4½ -digit LED display

## Inputs and Outputs

CH1 output	±10 V output of X, R, X-noise, Aux 1 or Aux 2. Updated at 512 Hz.
CH2 output (SR830)	±10 V output of Y, Y-noise, Aux 3 or Aux 4. Updated at 512 Hz.
X, Y outputs (rear panel)	In-phase and quadrature components (±10 V), updated at 256 kHz
Aux. A/D inputs	4 BNC inputs, ±10 V, 1 mV resolution, sampled at 512 Hz
Aux. D/A outputs	4 BNC outputs, ±10 V, 1 mV resolution
Sine Out	Internal oscillator analog output
TTL Out	Internal oscillator TTL output
Data buffer	The SR810 has an 8k point buffer. The SR830 has two 16k point buffers. Data is recorded at rates to 512 Hz and read through the computer interfaces.
Trigger In (TTL)	Trigger synchronizes data recording
Remote pre-amp	Provides power to the optional SR550, SR552 and SR554 preamplifiers

## General

Interfaces	IEEE-488.2 and RS-232 interfaces standard. All instrument functions can be controlled and read through IEEE-488.2 or RS-232 interfaces.
Power	40 W, 100/120/220/240 VAC, 50/60 Hz
Dimensions	17"x5x.1925".5" (WHL)
Weight	23 lbs.
Warranty	Three year parts and labor on defects in materials and workmanship

**Note: - Parties must mention make & model no. of the equipment offered by them, with detailed specification (on separate sheet). Otherwise their tender will not be accepted.**

**FINANCIAL BID**  
**FOR SUPPLY AND INSTALLATION OF**  
**LOCK-IN-AMPLIFIER**  
**FOR**  
**NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH,**  
**JATNI**

Sl. No.	Systems	Approx. Qty.	Unit Price including all taxes, freight, Insurance and Entry Tax (delivered at NISER, Jatni Campus) service charges, installation and warranty charges in INR
(1)	(2)	(3)	(4)
01	<b>LOCK-IN-AMPLIFIER</b>	01 Nos	
	<b>NC-000720-12-R&amp;D-NIS-5.03-0100-16-17</b> Detailed specification as per technical bid		
	<b>Price with 3 year comprehensive warranty</b>		

Date:

Address:

(Company Seal)

Signature:

Name:

Designation:

On behalf of:

**NATIONAL INSTITUTE OF SCIENCE EDUCATION & RESEARCH  
JATNI CAMPUS, P.O.: BHIMPUR-PADANPUR, VIA:-JATNI  
KHURDA-752 050**

**Tender Notice No. NIT Limited No. NC-000720-12-R&D-NIS-5.03-0100-16-17**

**CHECK LIST**

Your bid should accompany with following documents. Please enclose the required document and put (√) mark in the check list where ever applicable.

<b>Sl. No.</b>	<b>Description of Documents</b>	<b>Enclosure</b>
1.	EMD	Yes / No
2.	Acceptance of Declaration by the Vendor enclosed with terms & conditions	Yes / No
3.	Duly filled EMD refundable sheet (if EMD is there)	Yes / No
4.	At least 03 Purchase Order copy for Supply & Installation of above equipments during the last 01 financial years in State Government or Govt. of India Department(s) /Reputed Organisation(s) (in Nos. and Value). Please attach a list of clients.	Yes / No
5.	Trade Tax / Sales Tax Registration no. with Place	Yes / No
6.	Income Tax Registration no. with place	Yes / No
7.	Detailed technical description of the item	Yes / No
8.	Detailed filled Financial Bid	Yes / No
9.	Authorisation letter in letter head duly signed by the authorised signatory for allowing your representative to attend the tender opening meeting.	Yes / No

Signature of the Authorised Signatory with Date  
(with Company Seal)