



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,
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निविदा आमंत्रण / INVITATION TO TENDER

Date : 06.03.2020

Tender Due on : **23.04.2020 at 14.00 Hrs**

Tender opening on: **24.04.2020 at 10.30 Hrs**

Dear Sirs,

Sealed two-part tenders are invited from accredited manufacturers / suppliers / agents for the supply of the following equipment:

Sl. No.	Tender No.	Item Description	Qty/ Nos.	Cost of Tender (Rs.)
1.	2019007479	PARAMETRIC ANALYZER	01 No.	500+GST @12% (560/-)

Supply and Installation of Parametric Analyzer with the following specification:

Sr. No	Specification	Description	Quantity
1	Main frame	<ul style="list-style-type: none">Should have 8 or more slots and should allow up gradation to insert more numbers of SMUsintegrated PC with windows OS, one Remote Sense Ground Unit, LAN, GPIB, USB, RS-232, parallel port, hard disk, DVD/CD-RW	1
2	Ground Unit	One Built in Low noise Ground Unit should be provided with GND Voltage capability : <100 uV	1

The following specification of SMUs should be strictly followed for the High power and High resolution experiments. The necessary additional equipment should be provided to achieve the following specification or better.

3	High power Source Measure Unit With Power = 20W or higher	Source	Measure	2
		Maximum Voltage Range : +/- 200V (with Resolution of 10mV) or Higher	Maximum Voltage Range : +/-200V (with a resolution of 200μV) or Higher	
		Minimum Voltage Range : +/- 2V (with Resolution of 100uV) or Lower	Minimum Voltage Range : +/-2V with a resolution of 2μV or Lower	
		Best accuracy : 0.05% of reading value or better	Best accuracy : 0.05% of reading value or better	
		Maximum Current Range :	Maximum Current Range :	

		<table><tr><td>+/-1A (with a resolution of 1uA)or Higher</td><td>+/-1A (with a resolution of 1uA)or Higher</td></tr><tr><td>Minimum Current Range : +/-1nA (with a resolution of 10fA)or Lower</td><td>Minimum Current Range: +/-1nA (with a resolution of 10fA) or Lower</td></tr><tr><td>Best Accuracy : 0.01% of reading value or better</td><td>Best Accuracy : 0.01% of reading value or better</td></tr></table> <p>Necessary Output connectors should be provided for seamless measurements</p>	+/-1A (with a resolution of 1uA)or Higher	+/-1A (with a resolution of 1uA)or Higher	Minimum Current Range : +/-1nA (with a resolution of 10fA)or Lower	Minimum Current Range: +/-1nA (with a resolution of 10fA) or Lower	Best Accuracy : 0.01% of reading value or better	Best Accuracy : 0.01% of reading value or better									
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4	<p>High Resolution Source Measure Unit</p> <p>With Power = 2W or higher</p>	<table><tr><th>Source</th><th>Measure</th></tr><tr><td>Maximum Voltage Range : +/-100V with a resolution of 5mV or Higher</td><td>Maximum Voltage Range : +/-100V with a resolution of 100uV or Higher</td></tr><tr><td>Minimum Voltage Range : +/-0.5V with a resolution of 25µV or Lower</td><td>Minimum Voltage Range : +/-0.5V with a resolution of 0.5µV or Lower</td></tr><tr><td>Best accuracy : 0.05% of reading value or better</td><td>Best accuracy : 0.05% of reading value or better</td></tr><tr><td>MaximumCurrent Range : +/-100mA with a resolution of 5uA or Higher</td><td>MaximumCurrent Range : +/-100mA with a resolution of 100nA or Higher</td></tr><tr><td>MinimumCurrent Range : +/-1pA with a resolution of 1fA or Lower</td><td>MinimumCurrent Range: +/-1pA with a resolution of 100aA or Lower</td></tr><tr><td>Best Accuracy : 0.01% of reading value or better</td><td>Best Accuracy : 0.01% of reading value or better</td></tr></table>	Source	Measure	Maximum Voltage Range : +/-100V with a resolution of 5mV or Higher	Maximum Voltage Range : +/-100V with a resolution of 100uV or Higher	Minimum Voltage Range : +/-0.5V with a resolution of 25µV or Lower	Minimum Voltage Range : +/-0.5V with a resolution of 0.5µV or Lower	Best accuracy : 0.05% of reading value or better	Best accuracy : 0.05% of reading value or better	MaximumCurrent Range : +/-100mA with a resolution of 5uA or Higher	MaximumCurrent Range : +/-100mA with a resolution of 100nA or Higher	MinimumCurrent Range : +/-1pA with a resolution of 1fA or Lower	MinimumCurrent Range: +/-1pA with a resolution of 100aA or Lower	Best Accuracy : 0.01% of reading value or better	Best Accuracy : 0.01% of reading value or better	2
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5	<p>Ultrafast Pulse Measure Unit (PMU)</p>	<p>2channel - Pulse Measure unit(PMU):</p> <p>Should do transient measurement Single box Pulse Generation & Measurement capability High Speed Voltage Outputs with Pulse widths ranging from 150 ns to DC or better System should be able to generate +/- 40V amplitude pulse or higher. Sampling : 200 MSa/sec, 10 ns sampling rate or better System should have current measurement facility low current measure ranges: 1 uA to 10 mA or better</p> <p>For synchronize operation with PMU to improve the integrity and to switch between IV/CV and Pulse IV measurements necessary equipment with proper connector should be provided.</p>	1														
6	<p>Capacitance Voltage Unit</p>	<p>Frequency Range : 1KHz to 5MHz or higher DC Bias : +/- 25V or higher Resolution: 10mHz or better, so that very low frequency (<10Hz) measurements can be possible. (optional : To achieve resolution <10mHz extra component can be added) Signal Out range : 10mVrms to 100mVrms or higher with 1mVrms resolution Minimum Measurement Parameters : CP–G, CP–D, CS–RS, CS–D, R–jX, Z-theta Measurement configuration : Four-terminal pair, High POT, High CUR, Low POT, Low CUR sweep parameters DC bias voltage, frequency, AC voltage Sweep type : Linear, custom Sweep direction : Up sweep, down sweep</p> <p>There should not be buffering-delay during measurements</p>	1														

Other Specification

Mainframe	High performance Industrial PC with performance processor, SSD Drives and Windows 10 OS, full HD, USB Ports, LAN, GPIB, etc
Software	Interactive windows based software should have Interactive Test Environment, User Library Tool, Configuration Utility, project preparation, External Control Interface and graphical user interface.
Sourcing functions	Common, Voltage Bias, Current Bias (VMU), Voltage Sweep, Current Sweep, Voltage Step, Current Step, Voltage List Sweep, Current List Sweep, Open, Pulsed I-V, Waveform
Measuring functions	Precision DC I-V SMU : Measure voltage, current, and time per SMU, Ultra-Fast I-V: Voltage and current (spot mean) simultaneously in Pulsed I-Vmode; voltage, current, and time digitized simultaneously in Waveform Capture mode. There should not be buffering-delay during measurements
Sampling Mode	Precision DC I-V or C-V: Linear sampling at fixed voltage, current, or frequency. Programmable hold time and interval time from 1ms to 1000s. Vendor has to supply a system which should not have buffering-delay during measurements.
	Ultra-Fast I-V: Simultaneous 10ns or lower to 1ms sampling of voltage and current on up to 8 channels with proper synchronization.
Data Analysis	Conversion, extraction and search functions
Switching option	Should support switch matrix and configuration to connect multiple channels via switching
Other Capabilities	<ul style="list-style-type: none">• System should have built in Capability to switch the measurements from IV to Pulsed IV from select menu without changing the connections on the DUT• System should have Kelvin connection at GND unit.• Provided software should have parameter extraction facility.• Should be able to connect with any probe station by suitable connecting cables.• Vendor should have repair, maintenance and up gradation facility in India.• Should produce authorization letter and service support confirmation letter from manufacturer.• Should produce compliance letter for all the specification along with the quote.• Vendor must have supplied similar equipments to at least 5 research/academic institutes• Suitable Maintenance kit with other optional items to support the measurements systems.
Working voltage	230V, 50Hz
Warranty :	3 Year standard
Optional Warranty :	Should quote extended warranty price after 3 years with 2 years AMC after warranty
Start-up assistance	required at Our Lab

Optional Items:

Specification of Probe Station:

Sl.No		Description	Quantity
1	Economic Probe Station	<ul style="list-style-type: none"> ➤ At least 150mm vacuum chuck ➤ Manual X,Y adjustment of chuck 100mm or more ➤ Manual theta adjustment of chuck ➤ Chuck Z axis adjustment 5mm or more ➤ Platen material: Magnetic stainless steel 	1set
2	DC Micro Head	<ul style="list-style-type: none"> ➤ Travel range X,Y and Z 10mm or more. ➤ Feature resolution 5um or better ➤ Fixed magnet base 	4set
3	Tube Holder Triaxial	➤ Tube Holder/1.5m or larger triax cable/triax male	4set
4	Probe Tip	➤ 10 um or lower tungsten tip	20
5	Stereo Microscope	<ul style="list-style-type: none"> ➤ EP 20X (or higher) ~ 2 pcs ➤ Total Mag :10X to 100X (or higher) ➤ Working distance : up to 100mm or more ➤ Should have Video Coupler ➤ LED light Ring with intensity adjustment 	1
6	CCD camera	<ul style="list-style-type: none"> ➤ 3.0M pixels or better CMOS sensor ➤ USB interface 	1
7	Vacuum Pump	<ul style="list-style-type: none"> ➤ Vacuum: to hold the samples (1cm ×1 cm die 8 cm ×8cm die) ➤ Low Noise and vibration 	1
8	Hot Chuck	<ul style="list-style-type: none"> ➤ 4" round chuck (square on request) or more ➤ Temperature range room to 600 °C or more ➤ Temperature resolution : 0.1°C or better ➤ Thermal sensor for temperature control ➤ Control system ➤ Temperature Control software 	1
9	Recirculation water cooling unit	➤ Suitable Recirculation water cooling unit should be provided	1
10	Anti-Vibration table	➤ Suitable Anti-Vibration table which can accommodate the above facility without disturbing the measurements.	1
11	Quite Air Compressor	<ul style="list-style-type: none"> ➤ Oil-free ➤ Quiet version (50dB) 	1
12	Shielding Box	<ul style="list-style-type: none"> ➤ Light and EMI shielded ➤ Light-tight feed through ➤ Front-open door ➤ Feed-through panel for test equipment ➤ Suitable Shielding Box which can accommodate the above facility ➤ 4X triax connector ➤ Adapters is option 	1
13	Others	➤ Maintenance kit (mandatory) with other optional items to support the measurements systems	
15	Warranty	<ul style="list-style-type: none"> ➤ 3Year or more standard warranty. ➤ Quote extended warranty price after 3 year with 2 years AMC as an optional items. 	

Commercial terms and Conditions Tender No. 201900747901 dated 06.03.2020

1. SPECIAL INSTRUCTIONS TO TENDERERS

- 1.1 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. 2019007479, Due on 23.04.2020"***. The second cover shall contain the prices superscribing in the cover ***"price bid-Tender No. 2019007479, Due on 23.04.2020"***. All the covers to be sealed and insert in another cover superscribing the ***"Tender No. 2019007479, Due on 23.04.2020"*** and submit immediately but not later than the due date and time mentioned against each tender. **If the tender is received after the due date and time, the same shall be summarily rejected.**
- 1.2 The cost of tender **Rs. 560/-** 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.***
- 1.3 **Payment:** Our normal payment term shall be E-Transfer against Sight Draft or 80% Letter of Credit against dispatch documents and balance 20% within 30 days after receipt, installation and acceptance of the item for imports and within 30 days after supply/installation and acceptance for indigenous respectively.
- 1.4 **The installation, commissioning & demonstration of equipment is 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.**
- 1.5 Delivery terms shall be Ex-works/F.O.B/F.C.A for imports & F.O.R, Valiamala for indigenous.
- 1.6 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.
- 1.7 All duties and taxes, if applicable shall be quoted separately.
- 1.8 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.
- 1.9 **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. 2,10,000/- (Rupees Two lakh and Ten Thousand only)** 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. EMD will be forfeited in case the vendor withdrawn from the quotation. The tender not accompanied with EMD shall be treated as invalid tender and summarily rejected. For direct offers from NSIC, MSMEs, etc. EMD is not applicable.
- 1.10 **Security Deposit:-** Interest free Security Deposit @ 10% of the basic value of Purchase Order shall be payable by successful vendor for satisfactory execution of the Purchase Order.
- 1.11 **Performance Bank Guarantee:** 10% of basic order value shall be submitted by the Vendor for Warranty obligation (36+2 Months).

- 1.12** These items are required for our research purpose, we are eligible for integrated Tax (rate) vide Govt. of India, ministry of Finance (Department of revenue) Notification No. 47/2017 dtd 14.11.2017 (Inter-State Supplies), 45/2017 dtd 14.11.2017 (Intra-State Supplies) hence, we should pay 5% GST/IGST only against production of a certificate to the supplier from the Head of the Institution certifying that said goods are required for research purpose only. Hence please quote accordingly.
- 1.13 Customs Duty:** We have been exempted from payment of Customs Duty vide Notification No. 51/96 dated 23.07.1996 and amended by notification no. 93/96 dated 11.12.1996 and 24/2007 dated 01.03.2007.
- 1.14 Liquidated Damages:** The period of completion indicated shall be the essence of the contract. In the event of delayed date of delivery & Installation, the liquidated damages @ 0.5% per week or part thereof subject to a maximum of 10% of the contract value shall be recovered. The delivery date / Completion date to be mentioned in PO is for delivery, customs clearance, inland transportation, installation and commissioning. That means the commissioning should be completed before the delivery date / Completion date.
- 1.15 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.
- 1.16 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
- 1.17** IIST reserves the right to either accept/reject any tender/s without assigning any reason/s whatsoever.
- 2. 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)
Dy. Registrar –Gr I
For and on behalf of Director, IIST