Department of Physics, University of Kerala, Kariavattom,

Thiruvananthapuram, Kerala, India – 695 581, Ph: 91 471 2308920

PHY/SARD/03/17   30.06.2017

<u>**E-Tender Notice**</u>

Department of Physics, University of Kerala, Kariavattom, invites tenders for the purchase of Impedance Analyzer with following specifications.

Last date and time for submission of tender online	: 20/07/2017 5:00 PM
Last date and time for submission of tender offline	: 20/07/2017 5:00 PM
Date and time of opening of tender	: 24/07/2017 11:00 AM
Hard copies of the sealed tenders to be submitted to the office of	**Co-coordinator, KSCSTE SARD, Department of Physics, University of Kerala, Kariavattom** **e-mail: gsubodh@gmail.com**
For technical details contact	**Dr. Sibi K. S. Assistant Professor, Department of Physics, University of Kerala, Thiruvananthapuram, Ph. No. 9496716356** E-Mail: kssibi1@gmail.com

<u>**For further details logon to www.etenders.kerala.gov.in**</u>

TECHNICAL SPECIFICATIONS

Description	Specification
Generator	**Voltage Mode / Current Mode**
AC Amplitude ≤10MHz	0 to 3V rms / 0 to 60mA rms or better
AC Amplitude >10MHz	0 to 1V rms / 0 to 20mA rms or better
Max AC Resolution	5mV / 100µA or better
DC Bias Range	±40V / ±100mA or better
Max DC Resolution	10mV / 200µA or better
Output Impedance	50Ω ± 1% / >200KΩ at <1KHz
Frequency Range	10µHz to 32MHz or better
Frequency Resolution	0.015ppm or better
Frequency Accuracy	0.1% or better
Sweep Types	Frequency (log or linear), ac/dc voltage, ac/dc current
Measurement Range	
Inductance	100nH to 1KH or better
Capacitance	1pF to 10mF or better
Resistance	10mΩ to 100MΩ or better
Accuracy	0.1% or better
Resolution	5 digits or better

Input System	Voltage (x2) / Current
Number of Channels	3 independent analyzers operating in parallel
Ranges	30mV,300mV,3V / 6µA,60µA,600µA, 6mA,60mA
Max Resolution	1µV / 200pA or better
Full Scale Peak	±5V / ±100mA
Inputs Protected To	±46V / ±250mA
Input Impedance	
Hi to Shield Impedance	1MΩ, <35pF / ≥600µA range, 1Ω
Shield to Ground Impedance	10KΩ, 330pF / <600µA range, 50Ω
Results	
Variable	Frequency, AC Amplitude, DC Bias
Measured Parameters	Voltage gain, phase, real, imaginary, Z, R, X, Y, G, B, V, I, group delay, C, L, Q, D
General	
Computer for Interfacing	GPIB or Ethernet
Mains Voltage	230V/50Hz
UPS	A suitable UPS for the impedance analyser and computer should be quoted.
Desktop Computer	
Operating system	Windows 10
Processor	Intel core i3
Memory	4 GB DBR3 RAM

Hard disk	1 TB HDD
Any Other Item: Also quote any other items like measurement cables, etc. which are required for the installation and continuous operation of Impedance Analyzer.	
Log Sweep :No. of points / decade :1000	
The instrument should have provision to operate easily through front panel & also using computer using specialized software.	

Software Capability Required:

Software should have the following capabilities:

1. Capability to apply and measure- DC voltage and current along with AC sine wave.
2. Able to sweep frequency, amplitude in both current and voltage mode.
3. Able to sweep DC voltage and current.
4. Gain, Phase measurements are possible along with display of these parameters on Bode & Complex plane.
5. Z^*, Y^*, ε^*, C^*, tan delta, DC bias, temperature can be measured and displayed against any of these parameters on Bode & Complex plane.
6. Equivalent circuit / modelling techniques for detailed analysis of results.
7. Software should have comprehensive synchronized control on instrument and temperature controller data acquisition.

Note: One common software should have the capability to operate & control both impedance analyzer & the temperature controller in case of measurement in high / low temperatures.

Warranty: Not less than Three years

General Conditions:

1. The tender shall be submitted in the two bid viz. Technical Bid and Financial Bid. Only those qualified in technical bid will be eligible for participating in financial bid. A presentation regarding the technical specification and item to be supplied shall be done before the technical evaluation committee if requested.

2. The bidder should be a manufacturer or their dealer specifically authorized by the manufacturer to quote on their behalf for this tender as per Manufacturer Authorization From and Indian agents of foreign principals, if any, who must have designed, manufactured, tested and supplied the equipment(s) similar to the type specified in the "Technical Specification". Such equipment must be of the most recent series/models incorporating the latest improvements in design. The models should be in successful operation for at least one year as on date of Bid Opening.

3. **Compliance Statement**: Along with the technical details provide a tabular column indicating whether the equipment quoted by you meets the specifications by indicating 'YES' or 'NO'. If 'YES', support the claim by providing original brochures. **Venders should provide clear brochures/data sheets about the equipment and its working. Also include adequate proof for the claim regarding the performance.**

4. **Reference:** Names of Institutes with contact person and telephone/ email where similar equipment supplied by you in India [Preferably South India] shall be mentioned in the bid.

5. Incomplete & conditional tenders and tenders received after the due date will be summarily rejected without assigning any reasons thereof.

6. The price should be inclusive of all taxes, duties, transportation, insurance, installation etc. Nothing extra will be paid in addition to the quoted rate. Any amount in Indian rupees for installation, commission, labour, spares, service etc shall be entered in item 2 of BoQ.

7. Payment Terms: 90% payment shall be made through irrevocable LC on presentation of complete and clear shipping documents and balance 10% of the amount shall be released after the receipt, installation commissioning and acceptance of the equipment.

8. Validity of tender: Tender submitted shall remain valid at least for 120 days from the date of opening the tender. Validity beyond 120 days, from the date of opening of the tender shall be by mutual consent.

9. Delivery and installation: Proposed delivery schedule should be mentioned clearly. Delivery , transport from airport, installation and training should be made at the Department of Physics, University of Kerala, Kariavattom campus, Trivandrum without extra cost. University of Kerala will provide customs duty exemption certificates (DSIR Certificate) if required.

10. Service facility: Supplier should mention their details of service setup and manpower in Thiruvananthapuram who are responsible for after sales support.

11. The model number, make, and a printed literature of the product shall submit positively.

12. In case of any dispute, the decision of the University authority shall be final and binding on the bidders.

13. The undersigned reserves the right to reject any or all of the tenders received without assigning any reason thereof.

14. The quoted item should be under **comprehensive warranty for 3 years** or more.

15. If any component is found to be defective during the warranty period, the vendor has to replace the defective item immediately at their own cost.

<u>Documents to be Uploaded</u>

1. Signed Compliance Matrix
2. Detailed Technical Brochure
3. Under taking of support for next 10 Years
4. BoQ

Sd/-

Co-coordinator,

KSCSTE SARD,

Department of Physics,

University of Kerala,

Kariavattom