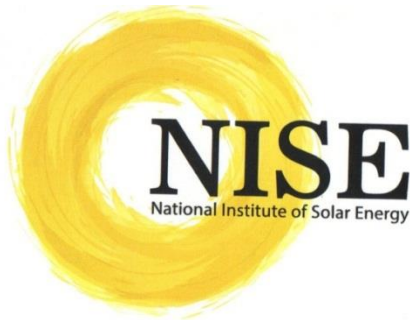


TENDER DOCUMENT

For

*Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe,
Oscilloscope with complete accessories*



NIT NO: 3/02/001/NISE-PVTF

Closing Date: 16/01/2017

At

NATIONAL INSTITUTE OF SOLAR ENERGY

19th Milestone, Institutional Area,

Gurgaon-Faridabad Road, Gwalpahari, Gurgaon, Haryana,

INDIA

Telefax No. : +91-124-2573095

National Institute of Solar Energy

Faridabad-Gurgaon Road
Gwalpahari, Gurgaon-122003 Haryana

TENDER NOTICE

Subject: Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe, Oscilloscope with complete accessories at National Institute of Solar Energy, Gurgaon.

On behalf Office of Director General, National Institute of Solar Energy sealed tenders are invited from reputed agencies in two parts (Technical and Commercial separately) for ***Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe, Oscilloscope with complete accessories*** at National Institute of Solar Energy, 19th mile stone, Gwal Pahari, Gurgaon, Haryana, India. The important dates and information are given below in the table:

Tender Details

| Sl.No. | Description | Details |
|--------|---|---|
| 1 | Notice Inviting Bid (NIT) No | <u>3/02/001/NISE-PVTF</u> |
| 2 | Scope of work | Supply, Installation, commissioning and warranty of minimum 1 year for Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe, Oscilloscope with complete accessories at National Institute of Solar Energy, Gurgaon at NISE. |
| 3 | Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe, Oscilloscope with complete accessories at National Institute of Solar Energy, Gurgaon <i>with complete accessories</i> | As per technical specification |
| 4 | Place of issue & submission of | NATIONAL INSTITUTE OF SOLAR ENERGY |

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| | bid document and address for communication # The Envelop should be super scribed as Tender for “Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe, Oscilloscope with complete accessories at National Institute of Solar Energy, Gurgaon ” | Gurgaon-Faridabad Road, Gwal Pahari, Gurgaon,Haryana-122003, India |
| 5 | Availability of Tender Document | The Tender document can be downloaded from NISE website: www.nise.res.in |
| 6 | Last date & time of submission of bid | 16/01/2017 at 12.00PM |
| 7 | Bid Opening Date and Time | 16/01/2017 at 03.00PM |
| 8 | Earnest Money (Refundable) | 50,000 (Bank Guarantee / DD) |
| 9 | Time of supply | Maximum six week, after issue of P.O. |
| 10 | Validity of offer | The offer will remain valid for 4 months from the date of tender publication date |
| 11 | Validity of earnest money | 1 year |

DETAILED TENDER NOTICE

Name of Work: Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe, Oscilloscope with complete accessories at National Institute of Solar Energy, Gurgaon

ELIGIBILITY CRITERIA

1.1 The original manufacturers or their authorized suppliers who have past experience of manufacturing, or authorized Indian supplier. A list of clients should be enclosed.

1. Technical Specifications:

1. Impulse Voltage Generator

| Technical parameter | |
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| Purpose | To test Solid insulation of the Solar PV module to withstand over-voltages caused by lightning surges and switching transients of Low-Voltage Equipment's |
| Voltage Range Refer IEC 61730-2 | At least 500V- 12kV DC (Programmable) Tolerance in peak Voltage $\pm 3\%$ |
| Standard Impulse wave shape | Front time: 1.2 μ S Time to half-value: 50 μ S |
| Tolerance of Time Parameters | Front time: $\pm 30\%$ Time to half-value: $\pm 20\%$ |
| Impulse Voltage Test | Should be Capable of Producing at least three consecutive pulses |
| Interval Between Pulses: | At least 1sec |
| Output Impedance: | Not higher than 500 Ω |
| Polarity | It Should generate Positive, Negative and alternate pulses |
| Test Specimen Dimensions/ Capacitor Range : | Small Sample: 18cm * 16 cm*3cm (approx.) , Large Sample: 2m*1.2m*4cm (approx.), Value of capacitor Range should be compatible for all size PV modules from smaller to larger size as mentioned.(in dry conditions) |
| Display | Test parameters should display on the screen |
| Program Console and Storage | Laptop with good configuration compatible (I 7, Data storage 1 TB, Ram 4 GB) with the Equipment should be provided. Software to Program and Monitor the test along with data-logging. Remote control is achieved via USB/GPIB/Ethernet, RS 232/RS 485/IEEE 488.1 and Provision for storage of Raw data. |
| Port | 5V or 10V High speed Analog trigger port for Oscilloscope. |
| Electricity Supply | Single phase 230V $\pm 10\%$, 50Hz $\pm 5\%$ or Three Phase: 400V $\pm 10\%$, 50Hz $\pm 5\%$ |
| Test leads : | Suitable Terminals for conducting the Test in the specified ranges of voltage should be provided. |
| Safety and Protection Devices | Test Leads Short Circuit Protection: Warning Alarm, Interlock In case of Dielectric Breakdown of the specimen, Grounding Points and warning labels indicate the Severity, Over voltage Protection. |
| Calibration Traceability | All equipment supplied should be traceable, from national international accredited laboratory standards. |
| Warranty | The Supplier should provide warranty of At least 2 year and additional spare parts shall be included. |

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| Extended Warranty (optional) | Extended Warranty for another two years |
| Onsite Functionality Test and Training | Turnkey Installation & Operation, Maintenance Training must be given at NISE Campus. A satisfactory Test run for Demonstration should be given to NISE |

2. High Voltage probe:

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| Measurement Devices | HIGH VOLTAGE PROBE |
| Maximum input DC or RMS voltage | 20 KV |
| Nominal Length | 3 M |
| Attenuation | 1000X |
| RISE TIME (typ) | 4.0 ns |
| Loading | 100 M ohm / 3.0 pf |
| Compensation Range (pf) | 7 to 49 |

3. Measuring Systems:

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| Measurement Devices | Oscilloscope/Digital Recorders |
| Purpose: | To Verify the Impulse Waveform, produce from impulse tester as per IEC 61730-2. |
| Test Voltage Measurement | For the purpose of measurement, the maximum amplitude of this curve is chosen as the peak value defining the value of the test voltage. |
| No. of Analog channel Channels | At least 2 are Provided or more |
| Rated Resolution | A rated of 2^{-8} (0.4% of the full-scale deflection) or better is |

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| | required for tests where the impulse parameters are evaluated | |
| Sampling rate | At least 2.5 G Sa/s on all channel | |
| Raw data | The digital recorder shall allow storage of the raw data at least until the test is accepted. | |
| Input impedance: | Not less than 1MΩ with no more than 50pF in parallel | |
| Uncertainty of measurement | 2% in the peak voltage measurement of full standard lightning impulse | |
| Operating conditions: | Ambient temperature: 10°C to 45°C ±5 °C | Ambient relative humidity: 10% to 85% ±5% |
| Warranty | At least 2 Years with calibration certificate from any national / international laboratory, | |
| Record Length | 10 M points per channel or higher | |
| Rise Time | ≤ 1 ns | |
| Trigger Hold Off Range | 20ns to 8s | |
| Frequency range | UPTO 500 MHz | |
| Time Base Accuracy | ±10 ppm | |
| Standard Accessories | High voltage probe should be provided up to 15 kv (1No.) or higher, PC Software. Probes 4 No. | |
| Analog Waveform Capture Rate | ≥ 200,000 Wfms/Sec | |
| I/O Ports | USB2.0 HS Host Port,10/100/1000 Mbp/s LAN Port, USB2.0 Device Port, XGS Video Port | |

4. Dielectric withstand tester

| Apparatus/Equipment | High voltage tester |
|---|--|
| Applicable Standards: | IEC 61557, IEC 61010, IEC 60664-1 |
| Rated output Voltage range: | UP To 10kVDC |
| Tolerance of Rated output Voltage range | Shall not be more than 10% of the relative indicative value. |

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| Modes of Operation: | Programmable Ramp, Step |
| Rate of applying voltage: | 100 V/s |
| Measurement Parameters: | |
| Insulation resistance: | Kilo ohm to Tera ohm |
| Accuracy in Insulation resistance: | ±10% or better |
| Leakage Current: | mA to nA |
| Accuracy in Leakage Current | ±10% or better |
| Capacitance: | micro Farad to Nano farad |
| Accuracy in Capacitance | ±10% or better |
| Dielectric Absorption Ratio (DAR): | Shall be provided |
| Polarization Index: | Shall be provided |
| Timer: | A programmable timer to set the desired test duration |
| Control Software and Storage of data | Provision of Real-time data logging of leakage current, insulation resistance and capacitance; capable of storing the data in internal memory. Software enable to monitor, store and plot the results. |
| Power Supply | 1-ph 230, 50Hz/ Rechargeable Battery |
| Disconnection of short circuit | In case of battery driven tester then the battery warranty shall be specified for 2 years. |
| PC Communication Interface | IR Port/RS-232 /Ethernet/ GPIB/ RS485/ USB. |
| Safety Protection | Warning Symbols, Marking, Operation Instructions/ Grounding point, Shock-Proof Body Casing. No hazardous touch voltages shall appear during the measurements. A safety interlock to avoid any hazard to the operator. |
| Accessories: | 10 KV Crocodile clip 02 NOS (Black and red) , 10 KV Test leads 02 NOS (Black and red) , Data Cable. |
| Onsite Test-run and Training Warranty | Onsite Test-run Should be performed before handing the Product and Orientation of the Equipment. . At least one year Warranty |
| Extended Warranty (optional) | Extended Warranty for another two years |
| Calibration Certificate | NABL Traceable Calibration Certificate should be provided covering all the test parameters. |

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| Operating conditions | (0 to 50°C) ± 5 °C ,(90% RH) ±, 5 % |
| Operational Manual | The operational manual shall provided |

5. EARNEST MONEY DEPOSIT (EMD)

Earnest money should be deposit in form of DD/ Bank Guarantee.

6. RATES:

The rates should be quoted specifically on the following lines:

- a. Firm and final cost of the **Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe, Oscilloscope with complete accessories** as per the above specifications and features along with costs of the installation charges as per the above specifications and features, should be provided.
- b. Taxes and freight etc. if any applicable should be indicated separately and clearly.

7. DELIVERY PERIOD: Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe, Oscilloscope with complete accessories should be delivered in a single consignment at the site/consignee within 6 to 8 weeks from the date of issue of confirmed supply order.

8. INSPECTION: The supplier should satisfy himself/herself that **Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe, Oscilloscope with complete accessories** at NISE is as per the above specifications and features along with options, accessories, conform to the specifications by carrying out complete pre-inspection of each component before dispatch.

9. CONSIGNEE: Director (SPV)/ Store Keeper, National Institute of Solar Energy, Ministry of New and Renewable Energy, Gwal Pahari, Gurgaon, 122003 Haryana, India.

10. GUARANTEE/WARRANTY: Measuring instruments supplied should be covered by standard terms of warranty as specified in technical specification from the date of installation.

11. PENALTY:

- i. The supplier shall supply the stores in accordance with the particulars as expressly specified at the time/times and at the place/places only.
- ii. The time for and the date of the stores stipulated shall be deemed to be the essence of the supply/work order.
- iii. If for any reasons the contractor is unable to adhere to the contract delivery dates, he may seek extension in delivery/completion dates well in time by sending a request in writing in this regard to the office issuing the contract/supply order. The purchaser reserves the right to allow the extension of delivery period subject to such conditions as he may think fit. However, the decision of the purchaser shall be final and binding.

12. DISPUTES: In case of any dispute the decision of the Director General, National Institute of Solar Energy will be final and binding on both parties. Further dispute, if any will be settled in the Court of Law at New Delhi jurisdiction only.

13. VALIDITY: The Tenders should be valid for 180 days from the date of opening.

14. REJECTION: Incomplete, conditional, fax, late tenders and tenders without EMD will be rejected summarily. Director General, National Institute of Solar Energy reserves the right to reject any or all the tenders at his discretion without assigning any reason thereafter.

15. SUBMISSION OF TENDERS : Sealed tenders are to be submitted in two parts i.e. **Part-I containing Technical competence/literature along with Demand Draft for EMD, and Part-II containing only commercial invoice in a separate sealed envelope, super scribed as commercial bid.** Both the technical and commercial envelopes should be kept in large size sealed envelope super-scribed **Supply & Installation of Impulse voltage tester, Dielectric withstand tester, HV Voltage probe, Oscilloscope with complete accessories** at NISE with the last date of receipt on **16/01/2017 at 12:00 PM** and addressed to: Director (SPV), National Institute of Solar Energy, Gurgaon – Faridabad Road, Gwal Pahari, Gurgaon 122003, Haryana, India.