



NATIONAL INSTITUTE OF SOLAR ENERGY
(An autonomous Institute of Ministry of New & Renewable Energy)
GURGAON

National Institute of Solar Energy (NISE), an apex Solar Energy R&D Autonomous Institute of Ministry of New and Renewable Energy. NISE located on Gurgaon-Faridabad Road, Gwalpahari, Gurgaon, invites:-

- 1. Applications from suitable candidates for engagement as Senior Consultant (Finance) purely on short term contract basis.** The details of qualifications, experience, criteria etc. required and the procedure for submission of applications can be downloaded from the undermentioned websites. Application must reach within 21 days from the date of publication of this advertisement.
- 2. Sealed Tenders in two parts (Technical and Commercial separately) from:**
 - a) Original manufacturers/authorized suppliers for supply and installation of **Photovoltaic Simulator & Data Acquisition System with complete accessories.**
 - b) Reputed **Service Providers for Repair & Maintenance of three nos. of Environmental Chambers at the Institute.**
 - c) Original manufacturers/reputed vendors for **supply, installation and commissioning of Battery Bank conforming to IS: 1651 standard at NISE and buy back of the existing Battery Bank.**

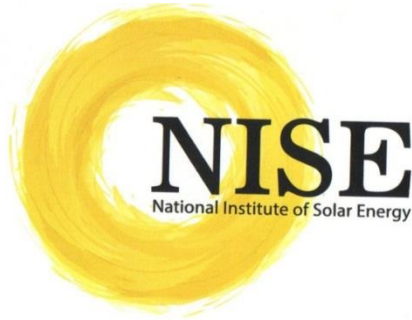
The tender document and detailed technical specifications along with tender terms and conditions may be downloaded from the website of Ministry of New & Renewable Energy or that of the Institute: www.mnre.gov.in or www.nise.res.in.

Sealed tenders may be submitted in two parts i.e. Part-I containing Technical Bid 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 as tender for “(name of the tender)” and addressed to: Dr. O.S. Sastry, Director General, National Institute of Solar Energy, Gurgaon – Faridabad Road, Gwal Pahari, Gurgaon 122003, Haryana, India. The bidders may submit their tenders by post or by dropping it in the tender drop box located at the reception counter of NISE Gurgaon. Closing time and date for receipt of tenders at NISE may be found on the Websites.

Tender DOCUMENT

For

*Supply & Installation of Photovoltaic Simulator &
Data Acquisition System with complete accessories*



NIT NO: 01/01(12)/2016/NISE-PV(LED)

Closing Date: 29/02/2016

At

NATIONAL INSTITUTE OF SOLAR ENERGY

19th Milestone, Institutional Area,

Gurgaon-Faridabad Road, Gwalpahari, Gurgaon, Haryana,

INDIA

Telefax No. : +91-124-2579207

File No: 01/01(12)/2016/NISE-PV(LED)

National Institute of Solar Energy
Faridabad-Gurgaon Road
Gwalpahari, Gurgaon-122003 Haryana

TENDER NOTICE

Subject:Supply & Installation of *Photovoltaic Simulator & Data Acquisition System* 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 *Photovoltaic Simulator & Data Acquisition System with complete accessories* at National Institute of Solar Energy, 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	01/01(12)/2016/NISE-PV(LED)
2	Scope of work	Supply, Installationand warranty for min 1 year, of <i>Photovoltaic Simulator & Data Acquisition System with complete accessories</i> at NISE.
3	Photovoltaic Simulator	AC Input: 1 Phase 240VAC, 50 Hz, and DC Output: Voc= 0-60V, Isc= 0-14A; Photovoltaic Simulator with complete accessories.
4.	Data Acquisition System	No of Channel for input communication= 40, Types= Standalone & Distributed remote measurement with PC or without PC; Data Acquisition System with complete accessories.

5	Place of issue & submission of biddocument and address for communication # The Envelop should be super scribed as Tender for “Photovoltaic Simulator” and “Data Acquisition System” separately.	NATIONAL INSTITUTE OF SOLAR ENERGY Gurgaon-Faridabad Road, GwalPahari, Gurgaon, Haryana-122003, India
6	Availability of Tender Document	The Tender document can be downloaded from NISE or MNRE website: www.nise.res.in , www.mnre.gov.in
7	Last date & time of submission of bid	29/02/2016 by 12:00 Noon
8	Date & time of opening of Part – I (Technical Bids)	02/03/2016 at 03:00 PM
9	Date & time of opening of Part – II (Price-Bid)	Tentatively after 3 days of opening the technical bid
10	Earnest Money (Refundable)	Rs. 25,000/-
11	Time of supply	Maximum six week, after issue of P.O.
12	Validity of offer	The offer will remain valid for 4 months from the date of tender publication date
13	Validity of earnest money	The earnest money shall be submitted by the bidder in the form of CDR/FDR/BG from any bank operations in India pledged to the Director General NISE. This shall remain valid for 12 months from the date of submission of bids.

DETAILED TENDER NOTICE

Name of Work: Supply and Installation of *Photovoltaic Simulator & Data Acquisition System with complete accessories* at NISE.

1. 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.

2. Technical Specifications:

Specification of Photovoltaic Simulator

AC Input	1 Phase 240VAC, 50 Hz
DC Output	Open Circuit Voltage, V_{oc} : 0 – 60Vdc Short Circuit Current, I_{sc} : 0 – 14Adc
Maximum Power Point Tracking (MPPT) Speed	Should be Compatible with inverters or charge controller sweeping the MPP at up to 250 Hz.
Output isolation	± 1000 Vpk, positive or negative output to chassis ground, continuous
Output leakage	Output to chassis ground, DC : $> 100 \text{ M}\Omega$ Output to chassis ground, AC : $0.045 \text{ }\mu\text{F}$ typical
Accuracy	Voltage programming and readback: $\pm 0.2\%$ of full scale voltage Current programming and readback: $\pm 0.5\%$ of full scale current
Sampling resolution	Voltage and current are synchronously sampled by two independent 16-bit A/D converters at 200kS/s.
I-V Curve Resolution	1,024 points with interpolation
PV Array Parameters	Irradiance level: 0 to 1999 W/m ² Temperature value: -100°C to +100°C Voltage and power temperature coefficients: $\pm 1.99\%/^{\circ}\text{C}$
OVP Accuracy	0.2% of full scale voltage
OVP Resolution	0.002% of full scale voltage
Output noise	$< 2 \text{ V}_{pp}$ at full load.

Efficiency	87% typical at nominal line and max load
Stability	$\pm 0.05\%$ of set point after 30 minute warm-up and over 8 hours at fixed line, load and temperature, typical
Temperature Coefficient	System should be able to program temperature coefficient from +2% to -2%/oC
Dynamic simulation	<ol style="list-style-type: none"> 1. System should be able to import and replay (simulate) dynamic irradiance and temperature profiles for various conditions such as clear Sky, Partly cloudy or mostly cloudy conditions. 2. System should have ability to ramp the voltage, temperature or irradiance level over a programmed time interval from night to day or from a clear day to cloud cover.
Dynamic & Static Response Time	The system should be capable of dynamic simulation, new IV curves under different irradiance conditions can be automatically generated and updated given the IV curve of standard condition and irradiance profile at a step of 1 seconds.
Other Features	<ol style="list-style-type: none"> 1. The system should have ability to program I-V curves, it also should support loading of the I-V characteristics. It also should support custom input data including “multiple hump” characteristics to create complex I-V curves. Importing the IV characteristics from integrated solar panel database of solar panel IV curve data into the simulation software for various panels will be added advantage. 2. System should have ability to program irradiance level and temperature settings
Regulatory	Certified to UL/CSA 61010 and IEC/EN 61010-1 by a NRTL, CE Compliant
Expansion	The system should be upgraded higher power capacity in future. It should also support series & Parallel operation.
Interface	The system should provide Ethernet interface for remote control and programming
GUI	The PV simulator should provide the GUI software with laptop (i5 processor, 4 GB Ram, 1 TB hard disk) for programming various parameters required for simulating the required conditions of different irradiance levels, Voc, Isc etc
Operating Environment	<p>Temperature: 0 to 40 °C</p> <p>Humidity: up to 95 %</p>

Data Acquisition System Specification

S.No.	Parameter	Range/Requirement
1	Types	<ul style="list-style-type: none"> I. Stand-alone and Distributed remote measurement with PC interface for monitoring & reporting II. Data Acquisition system should be able to collate data on a standalone basis without using the PC. III. The Stand-alone DAS must have memory of at least 2GB IV. Built in Real time clock V. On board user function keys to set up actions using the Event/Action function
2	No of Channel for Communication input	40
3	Display Types	2 x 7 Segment display
4	Measurement Interval for I/O module	100 mili Seconds per channels
5	Input configuration	Freely configurable
6	Types of Input	DC voltage, thermocouple, 3-wire RTD, DI (non-voltage contact, level (5 V logic))
7	Input Range	Analog Inputs for Analog Universal Input Modules: <ul style="list-style-type: none"> a. DC Voltage: ± 20, ± 60, ± 200 mV & ± 2, ± 6, ± 20, ± 100V with measurement Accuracy: $\pm 0.05\%$ of reading + 5 digits b. 4 to 20mA with Shunt Resistor d. Thermocouple: R, S, K, B, E, J, T, L, U, N, W etc. with measurement Accuracy: $\pm 0.05\%$ of reading + 1Deg.C e. A/D resolution: ± 20000 h. Provision for removal of channel modules freely.
8	Data Storage	In the CF Card with minimum of 2GB memory
9	Data Recovery	If a power failure occurs during recording, the data up to the failure should be restored upon recovery from the failure. The data after recovery should be recorded continuously to newly created files.
10	Communication Interface	100Base-TX/10Base-T (auto detect), Ethernet

11	Main Protocols (Ethernet Communication)	FTP, DHCP, SNMP, DNS, HTTP, Modbus/TCP, Ethernet/IP,SMTP
12	Filter Function	First -order lag filter should be set on each channel
Isolation/ Protection		
13	Insulation Resistance	20 M Ohms or more between input and ground at 500 VDC
14	Withstanding Voltage	Between input terminals : 2300 VACrms (50/60Hz), for one minute Between input terminals & ground : 3700 VACrms (50/60Hz), for one minute
15	Normal Mode Voltage	For DCV, TC, DI (level), 1.2 times the range rating or less (50/60 Hz, peak value including signals)
16	Normal mode rejection ratio (NMRR)	40 dB or more
17	Common mode voltage	Continuous 600 Vrms (50/60 Hz), reinforced (double) insulation
18	Common mode rejection ratio	120 dB or more
19	Common Mode Voltage between channels	250VACrms (50/60 Hz), reinforced (double) insulation
Other Features		
20	Expansion	System should be capable of expanding input channels in future using same hardware
21	Operating Temperature	-20 °C to 50 °C
22	Multispeed Recording	3 different sampling like current, voltage, and signals should be measured individually at different speed
23	Interface with power monitor	Instrument should have direct interface to power meter, power anyzers etc.
24	Monitoring Function	A. Data Acquisition system should be provided with Laptop (i5 processor, 4GB Ram, 1 TB hard disk) B. software pre-installed and configured for the following features 1. Real time monitoring, Data archiving, Historical viewing 2. Display in 5 display modes 3. Configuration of Hardware 4. MATH functions / Computation functions C. The Stand-alone system must support Built-in File Transfer Protocol to facilitate transfer of recorded data from its memory to the central computer at pre-defined times.

3. **EARNEST MONEY DEPOSIT (EMD)**

A sum of Rs. **25,000/-** should be submitted as Earnest Money Deposit (EMD) **along with the technical bid** in the form of **bank demand draft/Bank Guarantee** drawn in favor of “National Institute of Solar Energy” and payable at Gurgaon, Haryana”. The EMD of the accepted tender will be retained as Security Deposit and the EMD of other unsuccessful bidders would be returned.

4. **RATES:**

The rates should be quoted specifically on the following lines:

- a. Firm and final cost of the ***Photovoltaic Simulator & Data Acquisition System 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.

5. **DELIVERY PERIOD:** ***Photovoltaic Simulator & Data Acquisition System 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.

6. **INSPECTION:** The supplier should satisfy himself/herself that ***Photovoltaic Simulator & Data Acquisition System 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.

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

8. **GUARANTEE/WARRANTY:** Measuring instruments supplied should be covered by standard terms of warranty for a period of min12 months from the date of installation.

9. 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.

10. 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.

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

12. 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.

13. 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 "***Photovoltaic Simulator***" and "***Data Acquisition System***" separately and addressed to: Director General, National Institute of Solar Energy, Gurgaon – Faridabad Road, Gwal Pahari, Gurgaon 122003, Haryana, India.

- **Note: Suppliers / Manufacturers can submit bids for part / full supply of *Photovoltaic Simulator & Data Acquisition System* with complete accessories.**

