

Bharat Heavy Electricals Ltd
Electronics Division
Mysore Road, Bangalore – 560 026

**Tender Document for SUPPLY & I&C OF SMU,
WEATHER MONITORING & INTEGRATED
SCADA SYSTEM**

RFQ REF: HBS0000447

Technical Bid Opening Date: 29th May, 2013

This Tender Document Contains:

General Terms and Conditions, Technical Specification, Unpriced Bid Formats & Price Bid Formats

Note: Part – I: To be submitted in a separate sealed cover

Part – II: To be submitted in a separate sealed cover.

And Part-I & Part-II sealed covers should be put in outer envelope and super scribing the Name of work and Name & Address of the tenderer. Tender document should be dropped in Tender drop box super scribed “SC&PV-MM, Wednesday” kept in reception area of BHEL – EDN, Bangalore.

Contact Person at BHEL:

- 1. Mr. H.B. Srinivasa : Manager (SC&PV-MM)
Ph: 080-26988945, Mob: 09449869655**
- 2. Ms. Mrinalini Gupta: Engineer (SC&PV-MM)
Ph: 080-26988198, Mob: 07259176677**

REQUEST FOR QUOTATION

	BHARAT HEAVY ELECTRICALS LIMITED Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	RFQ NUMBER: HBS0000447 RFQ DATE : 10.MAY.2013	Due Date 29.MAY.2013 Time: 13:00 HRS VENUE : NEW ENGG. BLDG
MMI:PU:RF:003			

(for all correspondence)
Purchase Executive : SRINIVAS H B
Phone : 26998452
Fax : 00918026989217
E-mail: srinivasahb@bheledn.co.in

Please submit your lowest quotation subject to our terms and conditions attached for the material mentioned below. The quotation must be enclosed in a sealed envelope / Fax superscribed with RFQ no. and due date, should reach us on or before the due date by **13.00** hours IST and will be opened on the same day at **13.30** hours at the venue mentioned above. **PLEASE DROP THE OFFER IN THE BOX PROVIDED AT RECEPTION.**

RFQ Terms and Conditions for SMU, WEATHER MONITORING UNIT & SCADA

1. Bid has to be submitted as TWO PARTS - in two sealed covers-Techno Commercial Bid(Part-I) & Price Bid (Part-II)- clearly written on each cover both put into one cover super scribed with RFQ No. and Due date.

1A. Submit Enclosures- 1& 2 along with technical bid & Enclosure-3 along with Price bid.

1B. Submit Offer on "FREE ON ROAD" basis to BHEL-RANIPET.

1C. Pre-Qualification criteria read and noted.

2. DELIVERY: Delivery date mentioned in RFQ is tentative. Actual requirement is as given below:

Supply: 08 weeks from drawing approval. Drawings to be submitted in 1 week from LOI/ PO release.

C: 06 weeks from Supply

For I &

3A. PAYMENT TERMS:

For Supply: 75% of basic supply value + 100% taxes & duties with 30 days credit on receipt of material at BHEL-RANIPET. 15% on commissioning and certification. Balance 10% against PBG for 10% of basic supply value valid for 18 months from date of Supply or 12 months from the date of I&C whichever is earlier + 6 months claim period from BHEL Consortium bank.

For I&C: 100% against Commissioning and Certification.

For any other deviation in payment term the offer will be liable for rejection.

3B. Overall L1 of Supply (String Monitoring Box+ Weather Monitoring Equipment+ Integrated SCADA system+ Spare Item) + I&C of String Monitoring Box+ Weather Monitoring Equipment+ Integrated SCADA system + Post Warranty Breakdown Maintenance on "FOR" basis to BHEL-RANIPET will only be considered.

3C. The basic unit price quoted shall be inclusive of Supply, P&F & Insurance. Taxes like ED, CST/VAT to be quoted extra separately. However the order will be placed on "FREE ON ROAD" basis to BHEL-RANIPET. If Freight is quoted extra, original money receipt from Transporter has to be submitted for payment of freight. Insurance is in vendor's scope. BHEL is trying to get concession on Excise Duty under Supply of Solar Power Project. At the time of clearance of goods we may issue Exemption Certificate. In such case, ED will be exempted but not reimbursed. At present, please quote with applicable rate without concession of ED for comparison.

3D. C-form will be issued if applicable. Mention taxes clearly and state whether taxes are included or extra. Indicate the state from which supply takes place.

Wherever E1/E2 transactions are made, the CST will not be reimbursed. Preferably, all supplies are to be made from Supplier's address only (Material Dispatch).

4A. Pre Shipment Inspection will be carried out by BHEL for which test report shall be sent one week in advance.

4B. Penalty applicable: Penalty of 0.5% per week at the basic price of the good for undelivered quantity of supply portion, subject to a maximum of 10%. Pre Shipment Inspection Call Letter Date (Receipt of test report) will be treated as delivery for purpose of penalty for supply only. Any Deviation attracts Loading.

5. Warranty for a period of 18 months from date of Supply or 12 months from the date of I&C whichever is earlier as per Tech Spec.PS-439-822.

6. Road permit if applicable will be given by BHEL before Dispatch of ordered Items.

7. Do not indicate any TERMS & CONDITIONS in Price Bid. Only Financial Values shall be indicated.

For and On behalf of BHEL.

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Purchase Executive : SRINIVAS H B
 Phone : 26998452
 Fax : 00918026989217
 E-mail: srinivasahb@bheledn.co.in

Please submit your lowest quotation subject to our terms and conditions attached for the material mentioned below. The quotation must be enclosed in a sealed envelope / Fax superscribed with RFQ no. and due date, should reach us on or before the due date by **13.00** hours IST and will be opened on the same day at **13.30** hours at the venue mentioned above. **PLEASE DROP THE OFFER IN THE BOX PROVIDED AT RECEPTION.**

SI No.	Description	Qty	Unit	Delivery qty	Delivery Date
8. Enclose the Clause Wise Compliance / Confirmation with respect to BHEL Specification & Purchase Specification. 9. Deviation from RFQ Terms & Conditions may lead to the rejection of the offer. 10. BHEL reserves the right to conduct reverse auction. Procedure for the same will be informed by BHEL. Please send your acceptance for reverse auction. 11. The successful bidder will be getting Letter of intent (LOI) from BHEL, EDN, Bangalore. The regular PO/Payment will be issued by BHEL-Ranipet. 12. Kindly indicate the place/state from where the shipment will take place for assessment of taxation.					

SI No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	Post warranty breakdown maintenance as per BHEL spec PS-439-822	6	AU	6	31.JUL.2013
2	I&C of SMB, Weather monitoring, SCADA as per BHEL specification PS-439-822	1	AU	1	16.SEP.2013
3	PS0679031499 String monitor combiner box 16-in,1-out Supply of string monitoring (combiner) box 16-in,1-out with mounting fixture as per BHEL spec PS-439-822. Certificate as per BHEL Norms	62	ST	62	20.SEP.2013
4	PS0679031502 Weather monitoring equipment Supply of weather monitoring equipment with stand and mounting fixtures as per BHEL spec PS-439-822. Certificate as per BHEL Norms	1	ST	1	20.SEP.2013
5	PS0679031510 Integrated SCADA with Data loggers & PC Supply of integrated SCADA system comprising of data logger (PLC) panel, PC with accessories, SCADA software, remote monitoring features etc as per BHEL spec PS-439-822. Certificate as per BHEL Norms	1	ST	1	20.SEP.2013
6	PS0679031588 Spare items for string monitoring box Supply of spare items for string monitoring (combiner) box as per BHEL spec PS-439-822. Certificate as per BHEL Norms	1	ST	1	31.JUL.2013

Total Number of Items - 6


Please note that the tender will be opened in the presence of the bidders or his authorised representatives (maximum two per organisation) who choose to be present with authorisation letters. Refer annexure for the terms and conditions.

Preference will be given to vendors who accepts our standard payment terms i.e.100% payment - 30 days after receipt of material at our works subject to acceptance.


For and On behalf of BHEL.

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		(for all correspondence) Purchase Executive : SRINIVAS H B Phone : 26998452 Fax : 00918026989217 E-mail: srinivasahb@bheledn.co.in	
Please submit your lowest quotation subject to our terms and conditions attached for the material mentioned below. The quotation must be enclosed in a sealed envelope / Fax superscribed with RFQ no.and due date, should reach us on or before the due date by 13.00 hours IST and will be opened on the same day at 13.30 hours at the venue mentioned above. PLEASE DROP THE OFFER IN THE BOX PROVIDED AT RECEPTION.			
Please specify Terms of delivery, Excise duty, sales tax, Ex-BHEL, Ex-works surcharge, Insurance,P&F, Freight and other taxes very clearly . For evaluation,exchange rate(TT selling rate of SBI) as on scheduled date of tender opening (Part-I bid incase of two part bid) shall be considered. The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected.The list of banned firms is available on BHEL web site www.bhel.com			
i). This is only RFQ not an order. ii). In all correspondence quote RFQ No. & due date. iii). In Quotation BHEL material code / RFQ Sl. No. should be mentioned clearly. iv). Quotation Envelope / Fax not superscribed with RFQ No.and due date is liable for rejection. v). Quotation should remain valid for a minimum peiod of 90 days from due date. vi). In case of non-receipt of Quotation or regret letter for 3 consecutive RFQs you are liable to be removed from our vendors list. vii). All Prices should be written in words and numbers. viii). Excise Chapter Heading should be mentioned for all items where VAT is applicable .			


For and On behalf of BHEL.

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	STRING MONITORING BOXES, WEATHER MONITORING EQUIPMENT AND INTEGRATED SCADA SYSTEM	REV NO: 00
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It must not be used directly or indirectly in anyway detrimental to the interest to the company

**Technical specification
For
Supply and commissioning of
String Monitoring Boxes, Weather Monitoring Equipment, Integrated SCADA System
for
5MWp Solar Photovoltaic Power Plant at BHEL, Ranipet, Tamilnadu**

Approved by :			
Revision details :R 00	Prepared	Approved	Date
	VRK	NHK	30-Apr-2013

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1.0 Introduction

Bharat Heavy Electricals Limited (BHEL), Electronics Division, Bangalore is setting up a 5 MWp Grid-connected SPV Power Plant at Boiler Auxiliary Plant, BHEL, Ranipet, Tamilnadu.


This technical specification provides BHEL requirements for supply and commissioning of string monitoring boxes (16-in, 1-out combiner boxes) for the solar photovoltaic array, weather monitoring equipment (pyranometer, anemometer, ambient temperature sensor and module temperature sensor), centralized data logger / PLC panel (data station) and a PC-based integrated SCADA system with remote monitoring features.

The SCADA system shall have features to log the parameters from (1) string monitoring combiner boxes, (2) weather monitoring equipment, (3) power conditioning units and (4) LT/HT equipment viz. transformers, breaker panels etc. The PC shall be supported with monitor, keyboard, mouse, Microsoft office software, SCADA software, providing for display of mimic diagrams, display of live parameter values, data storage, data monitoring & retrieval (local / remote), reporting of plant parameters in both tabular as well as graphical forms.

2.0 Pre-qualification criteria (PQC) for vendors

Vendor shall read the following criteria carefully and furnish the necessary details. For this, vendor shall fill up the check list under section 2.7 with signature, seal and date.

- 2.1 Vendor should have supplied string monitoring combiner boxes for MW size (5MW and above) solar photovoltaic power plants in India. A minimum quantity of 100 Nos should have been supplied. Evidence of supplies such as copies of purchase orders and/or certificates from clients shall be submitted along with technical offer.
- 2.2 Vendor shall also provide a list of supplies of string monitoring combiner boxes / array junction boxes / supplied for various solar photovoltaic power plants in India during the last three years. The list shall include details such as year of supply, client name, MW size of power plant, type of string monitoring box / array junction box, number of units etc. This list is only for reference. However, providing this list is mandatory as part of pre-qualification criteria.
- 2.3 Vendor should be an OEM with works in India. Address of the works in India shall be furnished by the vendor.
- 2.4 Vendor should have commissioning / service engineers placed in India for carrying out commissioning and after-sales service activities. Vendor shall provide confirmation on this. In case service centers are located in separate locations other than their works, vendor shall furnish the addresses.
- 2.5 Vendor should have supplied the SCADA software for MW size solar photovoltaic power plants (5MW and above). Evidence of supplies such as copies of purchase orders and/or certificates from clients shall be submitted along with technical offer.
- 2.6 Vendor shall also provide a list of supplies of SCADA software for various solar photovoltaic power plants in India during the last three years. The list shall include details such as year of supply, client name, MW size of power plant, type of SCADA software etc. This list is only for reference. However, providing this list is mandatory as part of pre-qualification criteria.


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2.7 Checklist for Pre-Qualification-Criteria:

(a)	PQC clause 2.1	Have the evidence documents – PO copies / client certificates - been enclosed? (For supply of string monitoring boxes for solar PV power plants in India as per PQC clause 2.1.)	Yes / No
(b)	PQC clause 2.2	Has the list of supply of string monitoring boxes and array junction boxes for the last three years, with particulars as per PQC clause 2.2, been enclosed?	Yes / No
(c)	PQC clause 2.3	Is the vendor an OEM?	Yes / No
(d)		Address of works in India:	
(e)	PQC clause 2.4	Does the vendor have commissioning and service engineers placed in India for carrying out commissioning and after-sales service support?	Yes / No
(f)		Locations of service centers in India:	
(g)	PQC clause 2.5	Have the evidence documents – PO copies / client certificates – been enclosed? (For supply of SCADA software for solar photovoltaic power plants in India as per PQC clause 2.5)?	Yes / No
(h)	PQC clause 2.6	Has the list of supply of the proposed SCADA software for the last three years, with particulars as per PQC clause 2.6, been enclosed?	Yes / No


Note: Failure to comply with PQC as per clause 2.0 as evidenced in the responses to the checklist above will result in rejection of bid.

Signature with seal and date

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3.0 Scope of supply

SL No	Item Description	Qty	Remarks
3.1	Supply of string monitoring (combiner) box, 16-input, 1-output, complete with CPU/microcontroller card and other necessary components as per clause 6.1	62 sets	Offer shall be per set basis.
3.2	Supply of weather monitoring equipment comprising of one each of pyranometer, anemometer, ambient temperature sensor, module temperature sensor as per clause 6.2	1 set	
3.3	Supply of integrated SCADA system comprising of data logger / PLC panel, PC with accessories, SCADA software, remote monitoring features etc as per clause 6.3	1 set	
3.4	Supply of spare items for string monitoring (combiner) box as below: Diode = 50 Nos, Fuse = 100 Nos, Fuse box (holder) = 50 Nos, SPD = 5 Nos	1 set	
3.5	Commissioning of string monitoring (combiner) box, weather monitor equipment and integrated SCADA system as per clause 8.0	1 AU	
3.6	Warranty Vendor shall provide warranty for 12 months from the date of commissioning or 18 months from the date of supply, whichever is earlier.	-	
3.7	Post-warranty breakdown maintenance on the basis of call from BHEL, during the two years period after the expiry of warranty period. A total of 6 calls shall be considered during this period. A single lump-sum price shall be indicated per breakdown maintenance call.	6 calls	Offer shall be per call basis

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4.0 Instructions to vendors on Bid submission

4.1	<p>Offer shall be submitted in two-parts (Two-part bid).</p> <p>Both parts shall be in separate sealed envelopes as per instructions in tender. The individual envelopes shall be enclosed in a common bigger envelope with markings (address, etc) on the envelope as per instructions provided in tender.</p>
4.2	<p>First-part shall be techno-commercial bid. Following details shall be furnished:</p> <ol style="list-style-type: none"> 1. Pre-qualification criteria checklist, duly filled-up with signature, seal and date, as provided under PQC section above. 2. Enclosures as per PQC clause and checklist. 3. Technical offer covering letter 4. Filled-up enclosures as per BHEL formats (meant for first-part) provided in tender. 5. Clause-wise compliance shall be filled-up in the column provided in this specification, with signature and seal on every page. 6. Company brochure with product profiles. 7. General Arrangement of string monitoring (combiner) box, with overall dimensions, bill of materials, make / part number / rating of individual components, overall weight, applicable standards 8. Product datasheet of monitoring / processor card used in the string monitoring combiner box with model number, specifications etc. 9. General Arrangement of mounting fixtures for ground mounting of string monitoring combiner box. 10. Product datasheets of weather monitoring equipments with model number, specifications etc. 11. General Arrangement of centralized data station panel comprising of data loggers / PLCs, with overall dimensions, bill of materials, make / part number / rating of individual components, overall weight, applicable standards. 12. Bill of materials for PC-based SCADA control desk with all peripherals and accessories. 13. Demonstrative screen shots showing mimic diagram, tables, trend graphs etc shall be submitted along with technical bid. 14. Overall schematic SCADA architecture showing the linkage between string monitoring, weather monitoring, PCUs, LT/HT equipment with data station panel and SCADA control desk. 15. Product datasheets of data loggers, PLCs and communication devices used in data station. 16. List of communication cables, with make, type and specs for BHEL to take procurement action. Quantity will be determined by BHEL. (Note: weather monitoring equipment cables in vendor scope) 17. Confirmation on supply of spares: diode, fuse, fuse box, SPD as per quantity required.
4.3	<p>Second-part shall be price bid with filled up enclosures as per BHEL formats provided in tender.</p>
4.4	<p>In addition to the above instructions, tender document provides detailed instructions for bid submission. Vendor shall submit the bid based on instructions in tender document.</p>

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5.0 Power plant configuration

A brief summary of the power plant and the SPV modules used therein is provided here below so as to enable the vendors to select and offer appropriate components, instruments and systems.


5.1 Overall summary of plant

The 5MWp solar photovoltaic power plant at BHEL, Ranipet, Tamilnadu has 10 nearly equal segments of solar photovoltaic array that employs BHEL make, mono-crystalline type, SPV modules. Each segment generates DC power of 500kWp, which is then inverted by a 3-phase grid-connected power conditioning unit of 500kW rating. At the ac output level, every two PCUs are combined to form a 1 MWp group using a three-winding transformer. Thus, at each 1MWp level, two PCUs are connected independently to the two LV windings of the transformer to get the combined 1MWp output on the HV side (11kV). An LT panel with supply indications, voltage metering and two motorized air-circuit breakers (ACB) of 1250A, 50kA is used between the PCU and the transformer LV winding. Thus, the plant employs 10 PCUs, 5 LT panels and 5 transformers, whereby the transformers are combined on the HV side to achieve the overall power output of 5MWp.

5.2 Parameters of solar photovoltaic modules

Details of BHEL-make SPV modules with mono-crystalline cells are as follows:

#	Module type	Pmax	Voc	Isc	Vmp	Imp	Remarks
1	L20220	230 +/- 20W	36V	8.5A	29V	7.94A	This will be for 4 x 500 kWp = 2 MWp 24 numbers of modules of this type will be connected in series per string.
2	L24270	280 +/- 20W	43V	8.5A	35V	8.0A	This will be for 6 x 500 kWp = 3 MWp 20 numbers of modules of this type will be connected in series per string.


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6.0 Technical specification of Power Conditioning Units


6.1 Supply of string monitoring box: 16-in, 1-out

A string consists of 24 SPV modules in series for L20220 type SPV modules. For the other type (L24270), a string consists of 20 modules in series. The plant employs 60 string monitoring combiner boxes with 16-input, 1 output. Apart from these, 2 boxes will be used as spares. Thus, a total of 62 boxes form part of this specification.


#	BHEL specification	Vendor compliance (Yes / No) In case of non-compliance or deviation, vendors shall record their comments
6.1.1	String monitoring box with 16-in, 1-out combiner type, degree of protection of IP65 or better, complete with following items:	
6.1.2	Thermoplastic polycarbonate enclosures (Hensel / HES or reputed equivalent as shall be approved by BHEL) or GRP enclosures (Schneider / Ensto or reputed equivalent as shall be approved by BHEL).	
6.1.3	Diodes (rating 25-35A) mounted on heat sinks. These shall be enclosed in separate box in order to avoid impact of heat on other sensitive electronic components of the system. Diodes shall be of Semikron or reputed equivalent as shall be approved by BHEL.	
6.1.4	Positive side, negative side fuses (15A) mounted on fuse holders. Fuse: Littlefuse / Bussmann / Ferraz or reputed equivalent as shall be approved by BHEL. Fuseholder: Wohner / Bussman / Ferraz or equivalent as shall be approved by BHEL.	
6.1.5	200A (minimum), 1000V load break switch that will be used to disconnect both positive and negative sides simultaneously. Make: ABB / Schneider / Socomec / Telergon or reputed equivalent as shall be approved by BHEL.	
6.1.6	Surge protection device (SPD): surge arrester type II, 1000V DC, Make: ABB / Phoenix contact / Schneider / Weidmuller / Citel or reputed equivalent as shall be approved by BHEL.	

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6.1.7	<p>String monitoring, processing & controller system for sensing and processing the string / box parameters viz.</p> <p>(a) Analog signals:</p> <ol style="list-style-type: none"> 1. String currents: 16 strings, 8.5A DC max each 2. Box voltage: 1000V DC max 3. Box temperature 4. SPV module temperature <p>(b) Digital signals:</p> <ol style="list-style-type: none"> 1. Load break switch status 2. SPD status 	
6.1.8	<p>Either shunt-based (or) CT/hall-effect sensor (LEM)-based mechanism for sensing string currents (Vendor shall indicate the proposed mechanism), together with</p> <ol style="list-style-type: none"> 1. Analog to digital converters for converting above current, voltage and temperature signals 2. CPU / Microcontroller for data processing and control 3. Any other accessories such as PLCs, interface cards / modules as applicable to the specific design 4. RS-485 MODBUS-RTU communication interface 	
6.1.9	Internal DC-DC converter based power supply. DC power shall be drawn from solar output.	
6.1.10	Pt1000 temperature sensor for box temperature of every box.	
6.1.11	One of the combiner boxes shall have module temperature sensor (Pt1000, adhesive based) that shall be fixed on the backside of the SPV module. Necessary cables, fixing arrangements, etc shall be included in scope of supply.	
6.1.12	Tinned copper bus bars of appropriate size. Especially for the cable connection of combined output, 50x5 mm size shall be used.	
6.1.13	Terminal blocks of Phoenix / Elmex or reputed equivalent as shall be approved by BHEL.	
6.1.14	Interconnecting cables (PVC insulated copper) of appropriate size as shall be approved by BHEL.	
6.1.15	Cable glands of thermoplastic polyamide of appropriate size to match the incoming cables of BHEL scope: 6-sq-mm, copper conductor, unarmoured, PVC insulation, PVC sheath as per IS:1554.	


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6.1.16	Cable glands of nickel plated brass of single compression and appropriate size to match the outgoing cables of BHEL scope: 120-sq-mm, copper conductor, armoured, PVC insulation, PVC sheath as per IS:1554.	
6.1.17	All cable glands shall be located on the bottom side of the box to prevent any possibility of water ingress into the box.	
6.1.18	All metallic hardware such as nuts, bolts, screws, washers etc shall be of SS304 and appropriate size. Spring washers shall be zinc/epoxy coated.	
6.1.19	Cable lugs, ferrules, cable ties etc required for connecting the communication cables to the combiner boxes shall be in vendor scope. Note: supply of communication cables, as advised by vendor, will be in BHEL scope.	
6.1.20	Necessary earthing provisions and terminations.	
6.1.21	<p>Vendor shall supply suitable mounting arrangement for fixing the complete set of string monitoring boxes in the solar array field. This shall be a ground-mounted arrangement to mount the boxes on a separate concrete pedestal.</p> <ul style="list-style-type: none"> (a) Bottom side of the box shall be located at a minimum height of 0.6m above the ground level. (b) Items such as stand / legs, canopy etc shall be included in scope of supply. Legs shall be designed with suitable length to ensure adequate foundation. (c) All the components including the hardware that are required for the mounting shall be included in the scope of supply. (d) All hardware (nuts, bolts, washers etc) shall be of SS304. Spring washers shall be with Zn / epoxy coating finish. 	
6.1.22	Any other additional accessories as may be considered relevant and applicable for the operation of string monitoring (combiner) boxes shall be included in the scope and brought out in the offer.	

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6.2 Supply, installation and commissioning of weather monitoring equipment

#	BHEL specification	Vendor compliance (Yes / No) In case of non-compliance or deviation, vendors shall record their comments
6.2.1	<p>Vendor shall supply, install and commission the weather monitoring instruments viz. pyranometer, wind speed sensor and ambient temperature on the roof top of control room which is ~20m away from SCADA room. Necessary pedestal footing for erection of these equipment shall also be in vendor scope.</p> <p>As regards module temperature sensor, this is included as part of string monitoring box, as this will be fixed on the back side of a SPV module in the solar array field. See section on SMB above.</p>	
6.2.2	<p>Weather monitoring station on top of control room with instruments as follows:</p> <ol style="list-style-type: none"> Pyranometer (1 set): Kipp and Zonen make, model CMP11 with adjustable tilt CMP mounting kit. Wind speed sensor (1 set): 3-armed cup, with cable assembly, cable of adequate length, range 0.7-50 m/s, accuracy +/- 2% of FS, operating temperature range -30 to +70 deg. Metone (014A) / Lufft (8368.210) / or any other reputed make subject to approval by BHEL. Ambient temperature sensor (1 set): Pt100 mounted inside a six-plate radiation shield, communication cable of adequate length, temperature range: -50 to +50 deg C with accuracy +/- 0.1deg C. Metone / Lufft or any other reputed make subject to approval by BHEL. All necessary fixtures and accessories (poles, arms, plates, stand, hardware etc) required for mounting and erection of these shall also be in scope of vendor supply, in addition to pedestal footings. All cables with necessary length required for connecting weather monitoring equipment to the data station panel (data logger / PLC) in SCADA room shall be within scope of vendor supply. 	

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6.3 Integrated SCADA system

6.3.1	<p>Location in the control room</p> <p>The power plant has a centralized control room that has (a) a 3MW portion, where 6 PCUs are placed, (b) a 2MW portion, where 4 PCUs are placed and (c) an air-conditioned SCADA room that is placed between these two 3MW and 2MW portions.</p> <p>Integrated SCADA system shall be positioned in the air-conditioned SCADA room.</p>	
6.3.2	<p>SCADA system shall provide for:</p> <p>(a) a data station panel with necessary data loggers / PLCs and other accessories such as power supply etc to integrate the data signals as listed below, and</p> <p>(b) a desktop PC (control desk), provided with necessary software packages and remote monitoring features.</p>	
6.3.3	<p>Data signals for SCADA integration:</p> <p>Following is the list of signals from the four major segments of the power plant. Integrated SCADA system shall have provisions to receive and process these data signals.</p> <p>1) String monitoring boxes in solar array field – 60 Nos</p> <p>(a) RS485 Modbus (RTU) cables from string monitoring (combiner) boxes of solar photovoltaic array field, whereby each box provides data signals viz. max 16 string currents, 1 box voltage, 1 box temperature, 1 load break switch status, 1 SPD status. And, 1 SPV module temperature shall be from any one of the string monitoring boxes.</p> <p>(b) A maximum of 6-8 numbers of such RS485 Modbus communication cables will be drawn from solar array field to SCADA room, based on the daisy-chain grouping of string monitoring box RS485 Modbus (RTU) outputs.</p> <p>2) Weather monitoring equipment – 3 Nos</p> <p>Analog signals from the weather monitoring equipment viz. pyranometer, anemometer and ambient temperature sensor.</p> <p>3) Power conditioning units (PCUs) 500kW: 10 Nos</p> <p>RS485 modbus (RTU) signals from these PCUs comprising of DC /AC side /</p>	



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grid parameters such as current, voltage, frequency, phase, power factor, power (VA, Watt, Var), energy (VA-h, Watt-h, Var-h), fault details, other event logs with dates and times etc. Two cables will be employed, one looping 6 PCUs together and the other looping 4 PCUs using daisy-chain.

4) Power conditioning units (PCUs) 250kW: 4Nos

Note: These are additional PCUs that will be used within the same control room for BHEL R&D purposes. These will also be placed in the same control room (on 2MW side).

RS485 modbus (RTU) signals from these PCUs comprising of DC / AC side / grid parameters such as current, voltage, frequency, phase, power factor, power (VA, Watt, Var), energy (VA-h, Watt-h, Var-h), fault details, other event logs with dates and times etc. All four PCUs will be looped using daisy-chain to get a single communication cable output.

5) LT and HT equipment (Transformers, ACB panels, VCB panels, etc)

- a) Transformer oil temperature value: 5 cables, 4-20mA analog signal or RS485 Modbus output.
- b) Transformer winding temperature value: 5 cables, 4-20mA analog signal or RS485 Modbus (RTU) output.
- c) Transformer protection fault signals: Buchholz alarm, Low oil level alarm, PRD alarm, OTI alarm & WTI alarm: 25 cables, 0-24V potential free NO contact, Digital.
- d) LT Panel ACB On/Off status: 10 cables, 0-24V potential free NO contact, Digital.
- e) HT Panel VCB On/Off status: 7 cables, 0-24V potential free NO contact, Digital.
- f) Numerical relay (Over current / Earth fault): 1 cable from 7 terminals looped, RS-485 Modbus.
- g) Numerical relay (Under voltage / Overvoltage): 1 cable from 1 terminal, RS-485 Modbus.
- h) HT panel load managers (EM6400 or equivalent): 1 cable from 7 load managers looped, RS-485 Modbus.
- i) Auxiliary power consumption meter (EM6400 or equivalent): 1 cable from 1 terminal, RS-485 Modbus.
- j) Energy meter at the final output end of the power plant: 1 cable from 2 terminals (main meter, check meter), looped, RS-485 Modbus.



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6.3.4

Data station panel:

The data signals as listed above reach the SCADA room. These shall be integrated using a suitable data station panel. Accordingly, the panel shall have following features:

1. All necessary devices such as

(a) Data loggers / PLCs

Data loggers for logging (at software selectable logging intervals 0.1s to 24 hours) and storage of above data signals. Data loggers shall have minimum 10Hz sampling rate per channel, USB ports for independent data access, adequate flash memory, at least 64MB RAM, RS485, RS232 and Ethernet TCP/IP communication interfaces.

(or) Alternatively, suitable PLCs for respective analog signals, digital signals, RS485 MODBUS signals shall be used and integrated.

(b) Device servers, wherever required, as applicable, such as serial to Ethernet servers etc with appropriate number of ports.

(c) Ethernet I/O devices such as RTU microcontrollers, wherever required, as applicable, for processing the analog and digital signals, with appropriate number of input / output channels.

(d) Network switches such as Ethernet switches etc, wherever required, as applicable, with appropriate number of ports.

(e) Any other devices as may be necessary for the specific SCADA schematic design adopted by the vendor for accomplishing the objective of SCADA integration.

2. In case of mV-based analog signals (ex: pyranometer), amp-box shall be provided to avoid distortion of signals due to long cable distance from roof-top to SCADA room.

3. Power supply units

4. Other accessories such as DIN rails, terminal blocks, MCBs, surge arrestors, fuses etc as may be required for the system, based on the specific design.


5. Enclosure requirements:

(a) Frame, doors with CRCA sheet of 2mm thickness

(b) Gland plates with CRCA sheet of 3mm thickness

Gland plates to be fitted with cable glands. Holes shall be punched by the vendor according to this requirement.

(c) Cable lugs, hardware – nuts, bolts, washers, ferrules, cable ties

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	<p>etc for making cable interconnections to the panel shall be provided by the vendor.</p> <p>(d) Base frame of suitable ISMC channel.</p> <p>(e) Cable entry from bottom side and through glands in gland plates</p> <p>(f) Grouting provisions in base frame for fixing the panel on ground</p> <p>(g) Earthing provisions.</p> <p>(h) Painting colour shade RAL 7032 using seven tank process.</p> <p>(i) IP42 (indoor)</p> <p>Note: Alternately, polycarbonate enclosure may also be used, if it is appropriate meeting the design requirements, as shall be approved by BHEL.</p>	
6.3.5	<p>Desktop PC with control desk</p> <p>1) PC of reputed make (as shall be approved by BHEL) with minimum requirements as: Intel core i5, 4 GB RAM, 500 GB HDD, Windows 7 professional OEM license version, 21" monitor, keyboard, mouse, at least two USB ports and all other accessories as may be necessary for operation of SCADA system.</p> <p>2) A suitable control desk for housing the PC and placing the monitor, keyboard and mouse on top of control desk. Desk shall have sufficient space for the operator to use the system with convenience. BHEL approval shall be taken prior to procurement of the control desk.</p> <p>3) Inkjet printer of HP or reputed equivalent as shall be approved by BHEL.</p> <p>4) Office software loaded in the PC</p> <p>(a) Microsoft office 2010 or latest of OEM version to facilitate report preparation in word, excel, power point, etc.</p> <p>(b) Basic software packages such as adobe acrobat reader etc</p> <p>5) USB dongle license, as applicable</p> <p>6) In-built web server, as applicable, for configuration/ data logging/viewing</p> <p>7) SCADA software loaded in PC as per details below</p>	
6.3.6	<p>SCADA software</p> <p>SCADA software shall support the following features:</p> <p>1) Configuration and display of mimic diagrams on the screen:</p> <p>(a) SLD diagrams showing linkage from solar array through SMBs, PCUs, LT panels, Transformers, HT (VCB) panel incomers / outgoers, outdoor GOS switches at switchyard, energy meter at the export end of power plant.</p> <p>(b) On/Off status of ACB and VCB breakers shall be shown with colour</p>	



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	<p>indications (green, red etc).</p> <p>(c) Live display (at appropriate locations on screen / mimic diagram) of plant parameters such as energy exported (for the day – as at the time of display, cumulative for the year, total cumulative etc), peak power generated for the day, grid outage, weather parameters – solar irradiation (previous day cumulative and present day instantaneous and cumulative), wind velocity, ambient temperature, SPV module temperature, PCU heat sink temperature etc, as preferred by BHEL during interactive discussions with vendor.</p> <p>(d) Overall screen design with BHEL monogram, date, time, menus, screen titles etc shall be as per interactive discussions with BHEL.</p> <p>(e) Demonstrative screen shots showing mimic diagram, tables, trend graphs etc shall be submitted along with technical bid.</p> <p>2) Data logging at selected intervals, data storage, browsing, viewing, selecting, tabulation, report preparation, downloading, printing, etc for the following power plant parameters:</p> <p>(a) String parameters from 60 SMB boxes: 16 string currents per box, SMB box voltage, SMB box temperature, SPV module temperature (1 sample), status of load break switch, status of SPD, with SMB-wise identification, logged event date / time.</p> <p>(b) Weather parameters: Solar irradiation (W/sq-mm), wind speed, ambient temperature with logged date and time.</p> <p>(c) PCU parameters with logged date and time:</p> <ul style="list-style-type: none">- Input side DC parameters viz. current, voltage, power, energy.- Grid parameters: line voltages, phase, frequency- Output side AC parameters: R,Y,B voltages, currents, phase, frequency, power factor, power, energy export, energy import.- Faults – occurrence and clearance date and time.- Other events <p>(d) LT and HT parameters with logged date and time.</p> <ul style="list-style-type: none">- ACB on/off from 10 ACBs housed within LT panels- VCB on/off from 7 HT panels- Line protection parameters:<ul style="list-style-type: none">o Over current / Earth fault from 5 incomers and 2 outgoers (VCB panels)o Over voltage / Under voltage from the 11kV HT side- Transformer alarms: Buchholz, low oil level, pressure release device, oil temperature, winding temperature	
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	<ul style="list-style-type: none"> - Transformer oil and winding temperature values <p>3) Trend graphs for above parameters Graphs shall be configurable and selectable by user.</p> <p>4) Cumulative trend graphs (day / week / month / year wise, selectable)</p> <ul style="list-style-type: none"> - Solar irradiation - Energy generation <ul style="list-style-type: none"> o At PCU level (500kW) o HT panel incomer level (1 MW) o HT panel outgoer level (5MW) <p>5) Grid loss hours – daily and cumulative</p> <p>6) Reporting features</p> <ul style="list-style-type: none"> (a) Daily, monthly, yearly reports Solar irradiation, DC side / AC side parameters, Energy export / import, Grid outage hours, Equipment shutdown hours (PCU, Transformer, overall plant levels), Faults history etc (b) Quick e-mail reporting upon fault conditions such as earth fault, plant shutdown etc. <p>7) Remote monitoring features</p> <ul style="list-style-type: none"> (a) Software to support remote monitoring (b) Two user licenses shall be provided by the vendor for remote accessing of SCADA. Internet broadband connection with static IP address and router will be provided by BHEL. 	
6.3.7	UPS shall be provided for 3-4 hours of backup support to data logger panel and SCADA system.	

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7.0 Testing and inspection

7.1	<p>Routine tests, as per relevant standards (IS, IEC etc), shall be carried out on the string monitoring (combiner) box and data station panel (with data loggers / PLCs) and all the tests shall be witnessed by BHEL. Vendor shall submit quality plan, indicating relevant IS/IEC standards, prior to inviting BHEL for inspection. Following shall be the minimum checks.</p> <ol style="list-style-type: none"> 1. Visual inspection check 2. Bill of materials check 3. Electrical continuity check 4. HV insulation tests 5. Heat run / burn-in tests 6. Functional checks <p>Test reports shall be submitted prior to dispatch of the system to the site.</p>	
7.2	<p>Acceptance tests on SCADA software</p> <p>(a) Prior to commissioning at the site, SCADA software shall be customized for the configuration of mimic diagrams, parameter tables, trend graphs, reports etc as finalized jointly through interactive discussions with BHEL. The same shall be approved prior to commissioning.</p> <p>(b) Further, during commissioning at the site, the SCADA software shall be demonstrated online for logging, storage, retrieval of plant parameters from SMBs, weather monitoring equipment, PCUs and LT/HT equipment.</p>	
7.3	<p>Test certificates / calibration certificates shall be submitted for following:</p> <ol style="list-style-type: none"> 1. String monitoring combiner boxes 2. Data loggers 3. PLCs 4. Pyranometer 5. Anemometer 6. Ambient temperature sensor 7. Module temperature sensor 8. Communication devices: converters, switches, i/o devices 	


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8.0 Commissioning scope

8.1	<p>BHEL scope of commissioning:</p> <ol style="list-style-type: none"> (1) Movement and mounting of string monitoring combiner boxes, weather monitoring equipment, data station with data logger panels, PC with control desk etc at the respective places in solar array field and control room. This includes all necessary civil works except for weather monitoring equipment. (2) Crimping and connection of the incoming and outgoing power cables of string monitoring combiner boxes. (3) Laying of power cables (provided by BHEL), including all necessary cable trenches, from string monitoring boxes to the PCUs in control room. (4) Laying of communication cables (provided by BHEL), including all necessary cable trenches, from string monitoring boxes to data station in control room. (5) Laying of communication cables (provided by BHEL) from all the PCUs to data station panel. (6) Laying of communication cables (provided by BHEL) from LT/HT equipment (transformers, ACB panels, VCB panels, Energy meters) to data station panel. (7) Laying of communication cables (provided by vendor) from weather monitoring equipment to data station panel. <p>Vendor scope of commissioning:</p> <ol style="list-style-type: none"> (a) Vendor shall make all the connections of communication cables that are laid by BHEL up to the entry point of string monitoring boxes, weather monitoring equipment, data station panel. The cables laid by BHEL will have only cut finish at the termination end. All further operations such as unsleeving, splicing, crimping, ferruling, routing, dressing and connecting to the respective terminals within the SMBs / weather equipment / data station panels shall be in the scope of vendor. All necessary cable lugs, ferrules, hardware etc for this purpose shall be in vendor scope of supply. All necessary tools for carrying out this commissioning shall be in vendor scope. (b) Installation and commissioning of weather monitoring equipment with all fixtures, attachments, pedestal footing, erection etc as described under clause 6.2. (c) Interconnection of PC (SCADA) with its peripherals and accessories on the console (control desk) using appropriate cables, accessories and hardware as provided by vendor. (d) Installation and configuration of operating system (Windows), SCADA 	
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	<p>software, Microsoft office and all other software on PC.</p> <p>(e) Installation and configuration of remote monitoring features in SCADA.</p> <p>(f) Customization, configuration and demonstration of following:</p> <ol style="list-style-type: none"> (1) SCADA screens showing plant-specific mimic diagrams, live display of parameter values, breaker On/Off displays, alarm indications, faults, events, etc based on interactive discussions with BHEL engineer at site. (2) Daily, weekly, monthly reports on plant performance, based on interactive discussions with BHEL engineer at site. (3) Trend graphs for plant monitoring and management reporting, based on interactive discussions with BHEL engineers at site. <p>(g) Service engineer shall be present at the site at the time of commissioning of the power plant. The engineer shall support the commissioning team of power conditioning units in the pre-commissioning checks, whereby input side of all PCUs will be checked for availability of expected current and voltage from string monitoring (combiner) boxes of the solar array field. The engineer shall support in trouble shooting and resolve in case of any problems.</p> <p>(h) Training to BHEL engineers on operation and maintenance of the string monitoring (combiner) boxes, weather monitoring equipment, data station panel (data loggers / PLCs) and SCADA software.</p>	
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9.0 Documents to be submitted after receipt of purchase order

9.1	<p>BHEL approval shall be obtained for implementation of the following sub-clauses within seven days from date of purchase order.</p> <ol style="list-style-type: none"> 1. Overall scheme showing flow and integration of communication signals from solar array field, power conditioning units, weather monitoring equipment and LT/HT stations through data station panel and SCADA system. Scheme shall show the data types (analog, digital, Modbus, etc) marked on the various communication channels. 2. General Arrangement of string monitoring (combiner) box, with detailed dimensions, bill of materials, make / part number / rating / quantity of individual components, overall weight, applicable standards. 3. Drawing of ground-mounted scheme for string monitoring (combiner) box with details of fixtures and hardware. 4. General Arrangement of data station panel (data loggers / PLCs and all other related accessories), with overall dimensions, bill of materials, make / part number / rating of individual components, overall weight, applicable standards. 5. Details of gland plates showing position / diameter of holes for data station panel. Gland details (size, make) shall be provided. 6. General arrangement of the PC-based SCADA system showing the various computer and peripheral devices, with interconnections. 7. Product catalogues / datasheets of string monitoring combiner boxes, enclosures of combiner boxes, load break switch, surge protection device, data loggers / PLCs, DC-DC converter, other power supplies, serial to Ethernet converters, other similar communication converters, switches, i/o devices, signal cables etc. 8. Details of SCADA software showing provisions for data handling, graphs and reports. 9. List of all communication cables with make, type and specifications. 	
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10.0 Documents to be submitted along with consignment

10.1	<p>Following documents shall be submitted at the time of dispatch:</p> <ol style="list-style-type: none"> 1. Test reports on string monitoring combiner boxes and data station panel. 2. Test reports / calibration reports on weather monitoring equipment. 3. Operations and maintenance manual for string monitoring combiner box, weather monitoring equipment, data station panel and SCADA software. 	
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TECHNICAL BID ENCLOSURE FOR COMPLIANCE OF QUOTE									
RFQ REF:HBS0000447 Dt.10.05.2013 DUE DATE(TECH BID) : 29.05.2013									
SI No.	DESCRIPTION	QTY	UNIT	QUOTED	TAXES (TO BE QUOTED EXTRA)				REMARKS (TAX)
					ED %	CST %	VAT %	SERVICE TAX %	
1	PS0679031499: Supply of String Monitoring Box as per Clause No.3.1 of Tech Specification PS-439-822	62	Sets	YES/NO				NA	EXTRA
2	PS0679031502: Supply of Weather Monitoring Equipment with stand as per Clause 3.2 of Tech Specification PS-439-822	1	Set	YES/NO				NA	EXTRA
3	PS0679031510: Supply of Intregated SCADA system with Data Loggers & PC as per Clause 3.3 of Tech Specification PS-439-822	1	Set	YES/NO				NA	EXTRA
4	PS0679031588: Supply of Spare items for String Monitoring Box as per Clause 3.4 of Tech Specification PS-439-822	1	Set	YES/NO				NA	EXTRA
5	I&C of SMB, Weather Monitoring & SCADA System	1	AU	YES/NO	NA	NA	NA		EXTRA
6	Post Warranty Breakdown Maintenance for SMB, Weather Monitoring & SCADA System	6	AU	YES/NO	NA	NA	NA		EXTRA

GENERAL NOTE :

1)PL INDICATE TAXES AS **EXTRA**: ED,VAT/CST,SERVICE TAX CLEARLY APPLICABLE AS ON DATE.

2)USE THIS FORMAT FOR COMPLIANCE(REPRODUCING ON YOUR LETTER HEAD IS ACCEPTABLE).

3)**OVERALL L1 OF SUPPLY (String Monitoring Box+ Weather Monitoring Equipment+ Integrated SCADA system+ Spare Item) + I&C of String Monitoring Box+ Weather Monitoring Equipment+ Integrated SCADA system+ Post Warranty Breakdown Maintenance on "FOR" basis to BHEL-RANIPET will only be considered.**

4) **BHEL IS TRYING TO GET CONCESSION ON EXCISE DUTY UNDER SUPPLY OF SOLAR POWER PROJECT.AT THE TIME OF CLEARANCE OF GOODS WE MAY ISSUE EXEMPTION CERTIFICATE.IN SUCH CASE, ED WILL BE EXEMPTED BUT NOT REIMBURSED. At present, please quote with applicable rate without concession of ED for comparison.**

5)**The successful bidder will be getting Letter of intent (LOI) from BHEL, EDN, Bangalore. The regular PO/Payment will be issued by BHEL-Ranipet.**

6) Kindly indicate the place/state from where the shipment will take place for assessment of taxation.

AUTHORISED SIGNATORY WITH SEAL

RFQ TERMS & CONDITIONS COMPLIANCE			
RFQ REF:HBS0000447 Dt.10.05.2013 DUE DATE(TECH BID) : 29.05.2013			
SN IN RFQ	CONDITION AS PER RFQ	ACCEPTANCE/ COMPLIANCE	DEVIATION
1	Two Part Bid	YES/NO	
1A	Enclosure 1 & 2 along with Techno-commercial Bid & Enclosure 3 along with Price bid.	YES/NO	
1B	"FREE ON ROAD" basis to BHEL-RANIPET	YES/NO	
1C	Pre Qualification criteria read and noted	YES/NO	
2	DELIVERY DATE : Supply : 08 weeks from Drawing approval. Drawings to be submitted in 1 week from LOI/PO release. For I&C: 06 weeks from Supply	YES/NO	
3A	PAYMENT TERMS : For Supply: 75% of basic supply value + 100% taxes & duties with 30 days credit on receipt of material at BHEL-RANIPET. 15% on Commissioning and Certification. Balance 10% against PBG for 10% of basic supply value valid for 18 months from date of Supply or 12 months from the date of I&C + 6 months claim period from BHEL Consortium bank. For I&C : 100% against commissioning and certification. For any other deviation in payment term the offer will be liable for rejection.	YES/NO	
3B	Overall L1 of Supply (String Monitoring Box+ Weather Monitoring Equipment+ Integrated SCADA system+ Spare Items) + I&C of String Monitoring Box+ Weather Monitoring Equipment+ Integrated SCADA system+ Post Warranty Breakdown Maintenance"FOR" basis to BHEL-RANIPET will only be considered.	YES/NO	
3C	The basic unit price quoted shall be inclusive of Supply, P&F & Insurance. Taxes like ED, CST/VAT to be quoted extra separately .However the order will be placed on "FREE ON ROAD" basis to BHEL-RANIPET. If Freight is quoted extra, original money receipt from Transporter has to be submitted for payment of freight. Insurance is in vendor's scope. BHEL is trying to get concession on Excise Duty under Supply of Solar Power Project. At the time of clearance of goods we may issue Exemption Certificate. In such case, ED will be exempted but not reimbursed.At present, please quote with applicable rate without concession of ED for comparison.	YES/NO	
3D	C-form will be issued if applicable. Mention taxes clearly and state whether taxes are included or extra. Indicate the state from which supply takes place.	YES/NO	
4A	Pre Shipment Inspection will be carried out by BHEL for which test report shall be sent one week in advance.	YES/NO	
4B	PENALTY APPLICABLE: Penalty of 0.5% per week at the basic price of the good for undelivered quantity of supply portion, subject to a maximum of 10%. Pre Shipment Inspection Call Letter Date (Receipt of test report) will be treated as delivery for purpose of penalty for supply only. Any Deviation attracts Loading.	YES/NO	
5	WARRANTY:for a period of 18 months from date of Supply or 12 months from the date of I&C whichever is earlier as per Tech Spec. PS-439-822.	YES/NO	
6	Road permit if applicable will be given by BHEL before dispatch of ordered items.	NA	BHELSCOPE
7	Do not indicate any TERMS & CONDITIONS in price bid. Only financial values shall be indicated.	YES/NO	
8	Clause Wise Compliance / Confirmation with respect to BHEL Purchase Specification enclosed.	YES/NO	
9	Deviation from RFQ Terms & Conditions may lead to the rejection of the offer	YES/NO	
10	BHEL reserves the right to conduct Reverse Auction. Procedure for the same will be informed by BHEL. Please send your acceptance for reverse auction.	YES/NO	
11	The successful bidder will be getting Letter of intent (LOI) from BHEL, EDN, Bangalore. The regular PO/Payment will be issued by BHEL-Ranipet.	YES/NO	
12	Kindly indicate the place/state from where the shipment will take place for assessment of taxation.		

AUTHORISED SIGNATORY WITH SEAL

NOTE : INDICATE YES/NO CLEARLY IN THE FORMAT. OTHERWISE IT WILL BE TREATED AS DEVIATION FROM RFQ TERMS AND CONDITIONS.

USE THIS FORMAT FOR COMPLIANCE(REPRODUCING ON YOUR LETTER HEAD IS ACCEPTABLE).

PRICE BID ENCLOSURE									
RFQ REF:HBS0000447 Dt.10.05.2013 DUE DATE(TECH BID) : 29.05.2013									
SI No.	DESCRIPTION	QTY	UNIT	BASIC UNIT RATE (Rs.)	TAXES (TO BE QUOTED EXTRA)				REMARKS
					ED %	CST %	VAT %	SERVICE TAX %	
1	PS0679031499: Supply of String Monitoring Box as per Clause No.3.1 of Tech Specification PS-439-822	62	Sets					NA	EXTRA
	Unit Rate in Words								
2	PS0679031502: Supply of Weather Monitoring Equipment with stand as per Clause 3.2 of Tech Specification PS-439-822	1	Set					NA	EXTRA
	Unit Rate in Words								
3	PS0679031510: Supply of Intregated SCADA system with Data Loggers & PC as per Clause 3.3 of Tech Specification PS-439-822	1	Set		NA	NA	NA		EXTRA
	Unit Rate in Words								
4	PS0679031588: Supply of Spare items for String Monitoring Box as per Clause 3.4 of Tech Specification PS-439-822	1	Set		NA	NA	NA		EXTRA
	Unit Rate in Words								
5	I&C of SMB, Weather Monitoring & SCADA System	1	AU		NA	NA	NA		EXTRA
	Unit Rate in Words								
6	Post Warranty Breakdown Maintenance for SMB, Weather Monitoring & SCADA System	6	AU		NA	NA	NA		EXTRA
	Unit Rate in Words								
7	Freight Charge including Service Tax on Freight	LUMPSUM		Rs.					
	Lumpsum Charge in Words								
8	Insurance	LUMPSUM		Rs.					
	Insurance Charge in Words								

GENERAL NOTE :

- 1)PL INDICATE TAXES AS EXTRA: ED,VAT/CST,SERVICE TAX CLEARLY APPLICABLE AS ON DATE.
- 2)USE THIS FORMAT FOR COMPLIANCE(REPRODUCING ON YOUR LETTER HEAD IS ACCEPTABLE).
- 3)INDICATE WHETHER FREIGHT CHARGE & INSURANCE IS INCLUDED IN QUOTED RATE OR WILL BE CHARGED EXTRA. IN ABSENCE OF CLARITY, QUOTED RATE WILL BE CONSIDERED AS INCLUSIVE OF FREIGHT CHARGES.
- 4)SERVICE TAX ON FREIGHT APPLICABLE IS 3.09% OF TOTAL FREIGHT.
- 5)OVERALL L1 OF SUPPLY (String Monitoring Box+ Weather Monitoring Equipment+ Integrated SCADA system+ Spare Item) + I&C of String Monitoring Box+ Weather Monitoring Equipment+ Integrated SCADA system+ Post Warranty Breakdown Maintenance on "FOR" basis to BHEL-RANIPET will only be considered.
- 6)INSURANCE IS IN VENDOR'S SCOPE.
- 7) BHEL IS TRYING TO GET CONCESSION ON EXCISE DUTY UNDER SUPPLY OF SOLAR POWER PROJECT.AT THE TIME OF CLEARANCE OF GOODS WE MAY ISSUE EXEMPTION CERTIFICATE.IN SUCH CASE, ED WILL BE EXEMPTED BUT NOT REIMBURSED. At present, please quote with applicable rate without concession of ED for comparison.
- 8)The successful bidder will be getting Letter of intent (LOI) from BHEL, EDN, Bangalore. The regular PO/Payment will be issued by BHEL-Ranipet.
- 9) Kindly indicate the place/state from where the shipment will take place for assessment of taxation.

AUTHORISED SIGNATORY WITH SEAL

PERFORMANCE BANK GUARANTEE
(FOR INDIGENOUS PURCHASE ORDERS)

THIS DEED OF GUARANTEE made and executed on the _____ day of _____ (year), by the _____ (Bank), registered under the Companies Act 1956/Nationalised Bank constituted under the Banking Companies (acquisition and transfer of undertakings) Act constituted under the State Bank of India Act / Subsidiary Banks Act, having its registered / head office at

_____ represented herein by its Branch Manager / authorised representative Sri. _____ & Sri. _____ (Hereinafter called 'guarantor ' which term shall mean and include its successors and assigns)

IN FAVOUR OF BHARAT HEAVY ELECTRICALS LIMITED

_____ (Buyer's Name), a company registered under the companies Act, 1956 having its registered office at BHEL House at Siri Fort , New Delhi-100 049 and its Electronics Division at Mysore road, Bangalore-26 (hereinafter referred to as the 'Company' Which term shall include its successors and assigns):

Whereas the company has placed an order on _____ (State the name of the company / firm and its address) (hereinafter referred to as the 'Supplier' which term shall mean and include its liquidators, successors and assign) for the supply of system under order / Contract No _____ Dt _____.

AND WHEREAS the supplier has agreed to supply the materials and carryout the works as detailed and in accordance with the terms set out in the said order/contract.

AND WHEREAS the company is not required to pay to the supplier a sum of Rupees _____ being the 10% of the value of the goods supplied / Works performed / Services rendered under the said order / contract between the supplier and the company, till the company is satisfied with the mechanical Warranties and the performance standards stipulated in the said order / contract between the company and the supplier has been duly fulfilled, except against a Bank Guarantee for the said sum of Rs _____ in favour of the company by reputed Bank, in which case the company has agreed to make payment to the supplier of the said sum of Rupees _____ being (...%) of the value of the goods supplied / Works performed / Services rendered under the agreement between the supplier and the company and the Guarantor has at the request of the supplier, agreed to furnish this Guarantee subject to the terms and conditions stated below:

NOW THIS DEED WITNESSES THAT IN pursuance of the above said agreement, the guarantor hereby agrees and covenants With company is as follows :-

- 1) That during the period this contract of Guarantee remains effectual, the guarantor shall be liable in respect of the amount due and owing to the company in respect of the payments to the extent of Rs _____ (in words)

_____ against any loss or damage caused to or suffered by the company by reasons of any breach of the terms of the said order / contract / Agreement by the supplier.

- 2) The Guarantor hereby undertakes to pay the amounts due and payable under this guarantee without any demur, merely on demand from the company intimating that the amount claimed is due by way of loss or damage caused to or suffered or would be caused or suffered by the supplier of any terms contained in the said order / contract. Any such demand made on the guarantor shall be conclusive as regards the amount due and payable by the Guarantor irrespective of the fact whether the Contractor / supplier admits or denies.
- 3) The Guarantor further agrees that the agreement herein contained shall remain in force and effect till all the supplies to be made / Works to be performed / Services to be rendered under the said order / contract / agreement are completed to the entire satisfaction of the company or till company certifies that the terms and conditions of the said order / contract / agreement have been fully and properly carried out by the said supplier and accordingly discharges the Guarantee. Unless a demand or claim under this guarantee is made on the guarantor in writing on or before the expiry of claim period indicated in clause 6 below , the guarantor shall be discharged from all the liability under this guarantee thereafter.
- 4) The guarantor further agrees with the company that the company shall have the fullest liberty without the consent of the guarantor and without effecting in any manner the obligations of the guarantor hereunder to vary any of the terms of the said order / contract / agreement or extend the time of performance by the said supplier from time to time or refrain from exercising the power exercisable by the company against the said supplier or to forebear or omit to enforce any of the terms and conditions relating to the said order / contract / agreement, and the guarantor shall not be relieved of its liability in whole or in part , by reason of any act, commission or forbearance on the part of the company or by reason of any such variation, or extension being granted to the said supplier or by reason of any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving the guarantor.
- 5) The guarantor undertakes not to revoke this guarantee during its currency except with the previous consent of the company in writing.
- 6) Notwithstanding anything herein above contained, the liability of the guarantor under these presents is restricted to Rs_____. The guarantee shall be in force till its expiry on _____ unless a demand is made on the guarantor within SIX months from the date of expiry, all the liability of the guarantor under this guarantee shall stand fully discharged. The decision of the claimant in regard to breach of contract is final and binding on the Bank.

IN WITNESS whereof, the guarantor, acting through it authorised representative has executed this deed of Guarantee on the day, month and year first above written.

(Seal of the Bank to be affixed)

WITNESS

- 1.
- 2.

Note:

- (1) To be executed in INR 100 Non-Judicial stamp paper by any authorized Indian Bank.
- (2) To be submitted directly by banker to concerned executive in purchase dept., Please give BHEL address to banker.
- (3) Do not enclose with Bank document.
- (4) Any Modification & omissions to this are not permitted

BHEL MEMBER BANKS (CONSORTIUM BANKS)

PBG SHALL BE ISSUED FROM THE FOLLOWING BANKS OR THEIR BRANCH OFFICES ONLY

1	STATE BANK OF INDIA
2	PUNJAB NATIONAL BANK
3	HDFC BANK
4	SYNDICATE BANK
5	CANARA BANK
6	INDIAN BANK
7	ST. BANK OF HYDERABAD
8	ICICI BANK
9	STANDARD CHARTERED BANK
10	UCO BANK
11	KOTAK MAHINDRA
12	ORIENTAL BANK OF COMMERCE
13	STATE BANK OF TRAVANCORE
14	CENTRAL BANK
15	IDBI BANK
16	FEDERAL BANK
17	HSBC LTD
18	DEUTSCHE BANK
19	CORPORATION BANK
20	CITI BANK
21	BANK OF BARODA
22	ABN AMRO BANK
23	UNITED BANK OF INDIA
24	VIJAYA BANK
25	UNION BANK OF INDIA
26	PUNJAB & SIND BANK
27	ANDHRA BANK
28	BANK OF INDIA
29	AXIS BANK

