

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

**Tender Document for SUPPLY &  
COMMISSIONING OF SCADA for NEEPCO WEST  
TRIPURA  
RFQ REF: HBSBOS024**

Technical Bid Opening Date: 12<sup>th</sup> November, 2014

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 along with EMD should be dropped in Tender drop box super scribed, “Wednesday” kept in reception area of BHEL – EDN, Bangalore.

**Contact Person at BHEL:**

- 1. Mr. H.B. Srinivasa : Sr.Manager (SC&PV-MM)  
Ph: 080-26988495, Mob: 09449869655**
- 2. Ms. Mrinalini Gupta: Sr.Engineer (SC&PV-MM)  
Ph: 080-26988198**

# REQUEST FOR QUOTATION

	<b>BHARAT HEAVY ELECTRICALS LIMITED</b> Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	RFQ NUMBER: <b>HBSBOS024</b>  RFQ DATE : 21.OCT.2014	Due Date <b>12.NOV.2014</b> Time: <b>13:00 HRS</b>  VENUE : <b>NEW ENGG. BLDG</b>
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.**

1. Bid has to be submitted as Two Part - in two sealed covers-Techno Commercial Bid(Part-1) & Price Bid (Part-II)- clearly written on each cover both put in a single sealed envelope super-scribed with RFQ No. and Due date.
2. Annexures B (Commercial Compliance) & B1 (Unpriced Bid) to be submitted along with Technical Bid (Part-I) & Annexure B2 to be submitted along with Price Bid (Part-II).
3. Kindly make a note that Taxes will be considered extra. Please quote only the Basic Rates.
4. Kindly quote on FOR BASIS to NEEPCO, WEST TRIPURA.
5. Delivery Date mentioned in RFQ is tentative. Actual Requirement is as below:  
  
 Supply: 8 Weeks from Drawing Approval.  
 Drawing Submission: 1 Week from PO Date.  
 I&C: 4 Weeks from Supply Date.

SI No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	PS0679044361 SCADA system for inv&main Control room comprising of Data loggers (RTUs) Main SCADA panel/PLC panel with software, complete all accessories and warranty(clause 10.0)  AS PER SPECS.PS-439-874 cl 4.0 R01 dtd. 08.10.14  Test Certificate	1	ST	1	31.DEC.2014
2	PS0679044370 Commissioning of SCADA system Ref R01 PS-439-874 dtd. 8.10.14 Cl.8.0	1	AU	1	31.DEC.2014

**Total Number of Items - 2**


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.

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](http://www.bhel.com)


For and On behalf of BHEL.

Page 1 OF 2

## REQUEST FOR QUOTATION

	<b>BHARAT HEAVY ELECTRICALS LIMITED</b> Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	RFQ NUMBER: HBSBOS024  RFQ DATE : 21.OCT.2014	<b>Due Date</b> <b>12.NOV.2014</b> <b>Time: 13:00 HRS</b>  VENUE : <b>NEW ENGG. BLDG</b>
MMI:PU:RF:003			
		(for all correspondence) Purchase Executive : SRINIVAS H B Phone : 26998452 Fax : 00918026989217 E-mail: srinivasahb@bheledn.co.in	
<p>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 <b>13.00</b> hours IST and will be opened on the same day at <b>13.30</b> hours at the venue mentioned above. <b>PLEASE DROP THE OFFER IN THE BOX PROVIDED AT RECEPTION.</b></p>			
<p>i). This is only RFQ not an order. ii). In all correspondence quote RFQ No. &amp; 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 .</p>			


For and On behalf of BHEL.


	<b>PURCHASE SPECIFICATION</b>  <b>INTEGRATED SCADA SYSTEM</b>	PS-439 -874
		REV NO: 01
		PAGE: 1 OF 15

**COPY RIGHT AND CONFIDENTIAL**

The information on this document is the property of Bharat Heavy Electricals Limited.  
It must not be used directly or indirectly in anyway detrimental to the interest to the company.

**Technical specification for**  
  
**Supply and commissioning of**  
  
**Integrated SCADA System for**  
  
**5.67 MW Solar Power Plant at NEEPCO TGBPP, Monarchak site, Tripura**

Revision details :R 01, 10/10/2014	Prepared	Approved	Date
Re-drafted	-	 V Radhakrishnan	16-June-2014

	<b>PURCHASE SPECIFICATION</b>	PS-439 -874
	<b>INTEGRATED SCADA SYSTEM</b>	REV NO: 01
		PAGE : 2 OF 15

## 1.0 Introduction

Bharat Heavy Electricals Limited (BHEL), Electronics Division, Bangalore is setting up a 5 MW Grid-connected SPV Power Plant at North Eastern Electricity Power Corporation (NEEPCO) site at Monarchak, Tripura.

This technical specification provides BHEL's requirements for supply and commissioning of a PC-based integrated SCADA system with remote monitoring features.

The SCADA system shall have features to log the parameters from

- (1) Solar array parameters from the String monitoring combiner boxes (totally 47 nos)
- (2) Weather monitoring equipment of Pyranometer, Anemometer and Temp sensors
- (3) Power conditioning units in the Four Inverter rooms and single Main control room
- (4) HT equipment comprising of 1500 KVA / 750 KVA transformers, VCB breaker panels located in each of the Four Inverter rooms and Single Main control room.

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.

### PLANT DESCRIPTION, SLD reference: Drawing no. 3 679 05 670, rev. 03


The plant will have a solar array field of 5.67 MW capacity electrically wired and interconnected in 45 nos of SMBs. In terms of electrical power capacity, the array comprises of (i) 4 nearly equal sub-arrays each of DC power of 1260 KW and (ii) One sub-array of DC power 630 KW.

The entire solar array is therefore split into sub-arrays as below:

Sub-array	SMB	No of SMBs	Remarks
Sub array 1 to 4: 1260 KW	5 nos x 2	40 nos	Each SMB has electrical inputs from 22 nos of series strings (22-input and 1-output) type
Sub-array 5: 630 KW	5 nos x 1	5 nos	

There are Four Inverter rooms, each houses the two nos of 630 KVA PCUs and 33 KV VCB panel. The 1500 KVA transformer (of ONAN-type) is located outside the Inverter room. The DC power from the solar array (1260 KW) located close to the inverter room shall be inverted by two inverters (or PCUs). The AC output of the two PCUs in a single Inverter room shall be combined and stepped up to 33 KV voltage level through a **SINGLE 1500 KVA, two LV-winding ONAN transformer** to obtain 1.26MW AC output at 33 KV level. This is routed through a 33 KV VCB circuit breaker to the Main Control room which is located at a distance of 0.5 Km through 33 KV, 3-core x 185 mm<sup>2</sup> Al conductor, XLPE insulated and armoured cable through underground trenching. The cabling from two PCUs to the single Transformer to 33 KV VCB is as below:

From	To	Cable	Approximate length
630 KW PCU of Inverter room	33 KV, 1500 KVA transformer	3-runs of 300 mm <sup>2</sup> per phase copper XLPE insulated and PVC sheathed cable	10m x 3 runs x 3 phases= 90 m per PCU
33 KV, 1500 KVA transformer	33 KV VCB panel in Inverter room	33 KV, 3-core, 185 mm <sup>2</sup> , Aluminium cable, XLPE insulated and armoured HT cable	20m per Inverter room
33 KV VCB panel	33 KV HT panel in Main control room	33 KV, 3-core, 185 mm <sup>2</sup> , Aluminium cable, XLPE insulated and armoured HT cable	Inverter room 1: 330m Inverter room 2: 370m Inverter room 3: 210m Inverter room 4: 280m

	<b>PURCHASE SPECIFICATION</b>	PS-439 -874
	<b>INTEGRATED SCADA SYSTEM</b>	REV NO: 01
		PAGE : <b>3 OF 15</b>

In addition, the Main control room houses a single 630 KW inverter and produces 630KW AC output at 33 KV level through a SINGLE 750 kVA, two LV-winding ONAN transformer. Hence the plant employs totally 9 x 630 KW PCUs to produce totally 5.67 MW at 33 KV level through 4 transformers of 1500 KVA capacity and 1 no transformer of 750 KVA capacity. The Main Control room houses the 33 KV HT Panel which combines all these 1260 KW outputs at 33 KV level (from the four Inverter rooms) and the single 630 KW output from the Single PCU / 750 KVA transformer. Hence in the Main control room totally 5.67 MW of AC output at 33 KV level is formed. The Main control room also houses the SCADA system with the Weather monitoring instruments of Pyranometer, Anemometer and Thermometers (for solar module and ambient temperatures).


The HT panel has two outgoer VCB panels and both are ON simultaneously for exporting the power. 3-core x 400mm<sup>2</sup> cable is used for taking output from the Outgoer-1 and connected through a GOS switch (33 KV, 400 A) assembled on a Four-pole structure. This line is then connected through a Metering cubicle (with CT and PT) to a 33KV ACSR line of DOG conductor.

Likewise power from the Outgoer-2 is taken identically to the other 33 KV ACSR line. Both the 33 KV ACSR DOG lines run for one Km and terminated at the Main 33 KV switchyard. Both the 33 KV lines are terminated at the final 33 KV switchyard with individual GOS switch and Lightning arrester for both lines.

## **2.0 Pre-qualification criteria (PQC) for vendors**

Following PQC criteria is to be met by the vendors:

- 2.1** Vendor should have Service center in India – address and details of the same to be furnished.
- 2.2** The vendor shall have commissioning / service engineers placed in India for carrying out commissioning and after-sales service activities. Vendor shall provide confirmation on this.
- 2.3** Vendor should have supplied the SCADA software for at least one 3 MW size solar photovoltaic power plants (5MW and above). Evidence of supplies such as copies of PO or certificates of satisfactory working from clients shall be submitted along with technical offer.
- 2.4** 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.
- 2.5** BHEL will take up for approval of the vendors with M/s. NEEPCO and only price bids of NEEPCO-approved vendors will be opened. Vendor shall support BHEL for this process with the required information.


	<b>PURCHASE SPECIFICATION</b>	PS-439 -874
	<b>INTEGRATED SCADA SYSTEM</b>	REV NO: 01
		PAGE : 4 OF 15

**2.6 Pre-Qualification-Criteria (PQC) Checklist, to be filled-in by vendors:**

(a)	PQC cl no 2.1	Does the vendor have Service center	Yes / No
(b)		Address of service center in India:	
(c)	PQC cl no 2.2	Does the vendor have commissioning and service engineers placed in India for carrying out commissioning and after-sales service support?	Yes / No
(d)	PQC cl no 2.3	Have the evidence documents (PQC clause 2.3) of client certificates for supply of SCADA software for solar photovoltaic power plants in India been enclosed?	Yes / No
(e)	PQC cl no 2.4	Has the list of SCADA software supplies made during the last three years (with particulars as per PQC clause 2.4), 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**

	<b>PURCHASE SPECIFICATION</b>	PS-439 -874
	<b>INTEGRATED SCADA SYSTEM</b>	REV NO: 01
		PAGE : 5 OF 15

### 3.0 INSTRUCTIONS FOR BID SUBMISSION

3.1	<p>Offer shall be submitted in two-parts (Two part-bid). 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 (Name and address) on the envelope as per instructions provided in tender.</p>
3.2	<p>First-part shall be techno-commercial bid. Following details shall be furnished:</p> <ol style="list-style-type: none"> <li>1. Pre-qualification criteria checklist, duly filled-up with signature, seal and date, as provided under PQC section above.</li> <li>2. Enclosures for PQC checklist.</li> <li>3. Technical offer covering letter.</li> <li>4. Filled-up enclosures as per BHEL tender formats (meant for first-part technical bid).</li> <li>5. Clause-wise compliance shall be filled-up in the column provided in this specification, with signature and seal on every page.</li> <li>6. Detailed scope of supply / Bill of materials with quantity and spares maintained at site as per cl no 10.2</li> <li>7. Vendor shall provide calculations of Battery back-up starting from power consumed by the Data loggers and Main SCADA panel as per cl no 5. 10</li> <li>8. Product datasheet of the offered Data loggers and Main SCADA panels including diagrams showing Overall General Arrangement showing relevant views (plan, elevation, side views) with dimensional details of width, height and depth and overall weight.</li> <li>9. List of Mandatory spares as per cl no 10.1</li> <li>10. Product brochure of company.</li> <li>11. Overall mimic diagram in line with Single line diagram (SLD)</li> </ol>
3.3	Second-part shall be price bid with filled up enclosures as per BHEL tender format.
3.4	In addition to the above instructions, tender document provides detailed instructions for bid submission. Vendor shall submit the bid based on such tender instructions.

	<b>PURCHASE SPECIFICATION</b>	PS-439 -874
	<b>INTEGRATED SCADA SYSTEM</b>	REV NO: 01
		PAGE : 6 OF 15

#### 4.0 SCOPE OF SUPPLY:

Sl. No.	Item Description	Qty	Remarks
1	Supply of Integrated SCADA system comprising of Data loggers (RTUs) for Inverter rooms, Main SCADA panel / PLC panel with software, complete all accessories as per cl no 6.0 and warranty as per cl no. 10.0 of BHEL specification no. PS-439-874	1set	Offer shall be per set basis.
2	Commissioning of SCADA system	1 AU	

#### 5.0 TECHNICAL SPECIFICATIONS:

S.No.	Item Description	Vendor Confirmation/Remarks
5.1	<p>Data loggers with facility to log the parameters as per para 5.4 from:</p> <p>(1) string monitoring combiner boxes,  (2) weather monitoring equipment,  (3) power conditioning units and  (4) HT equipment viz. transformers, breaker panels etc.</p> <p>These data will be captured and converted in optical signals and transmitted to the Main SCADA panel in the Main control room.</p>	
5.2(a)	<p><b>Location of Data loggers and Main SCADA panel:</b></p> <p>(1) The Data loggers will be located in each of the Four nos of Inverter rooms with no air-conditioning for capturing data from the SMB  (2) The Main SCADA panel shall be located in air-conditioned area in the SCADA room of the centralized Main control room.</p>	
5.2(b)	<p>BHEL shall supply the following cables for SCADA communication:</p> <p>(a) <b>Optic fibre cable:</b> MLM Unitube armoured cable, 6 fibre, MONOTUBE, Make: FINOLEX CABLES for communication between the four Inverter rooms and Main control room.</p> <p>(b) Cable, 1.1kV grade, 1 pair x 0.5 mm<sup>2</sup>, annealed tinned copper drain wire, stranded, PVC type-A insulation, twisted pair, overall shielded with aluminium backed polyester film / mylar sheet, inner sheath of extruded PVC type ST1, Galvanized steel strip / round wire armoured as per IS, outer sheath of extruded FRLS PVC type ST1 conforming to IS: 1554 / part-1 with latest amendments up to date. Approximate outer diameter = 9 mm, Make: Polycab. This is for interconnection between SMBs / PCU / HT panel / ACDB panel and the Data loggerpanels.</p> <p><b>Please confirm suitability with your SCADA system / equipment.</b></p>	
5.3	<p><b>SCADA system shall provide for:</b></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>	



**PURCHASE SPECIFICATION**  
**INTEGRATED SCADA SYSTEM**

PS-439 -874

REV NO: 01

PAGE : 7 OF 15

	<p>(b) A desktop PC (control desk), provided with necessary software packages and remote monitoring features. 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 &amp; retrieval (local / remote), reporting of plant parameters in both tabular as well as graphical forms.</p>	
5.4	<p><b>Data signals for SCADA integration:</b></p> <p>(a) Following is the list of signals from the five major segments of the power plant. Integrated SCADA system shall have provisions to receive and process these data signals.</p> <p><b>1) String monitoring boxes in solar array field – 45 Nos</b></p> <p>(b) RS485 Modbus (RTU) cables from string monitoring (combiner) boxes of solar photovoltaic array field, whereby each box provides data signals viz. max 22 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>(c) A maximum of 5-6 numbers of such RS485 Modbus communication cables (2-core x 0.5 mm<sup>2</sup> copper shielded and armoured cable) will be drawn from solar array field to SCADA room. The same cable will be used for the daisy-chain grouping of string monitoring box RS485 Modbus (RTU) outputs.</p> <p><b>2) Weather monitoring equipment – 4 Nos</b></p> <p>Analog signals from the weather monitoring equipment of</p> <ul style="list-style-type: none"><li>- Pyranometer (4-20 mA output),</li><li>- Anemometer (Modbus RTU output) ,</li><li>- Module temperature and ambient temperature sensor.</li></ul> <p><b>3) SIGNALS FROM EACH OF THE FOUR INVERTER ROOMS:</b></p> <p>There are 4 inverter rooms each of which will have the following equipment from which signals will have to be captured. All the signals will be captured through a <b>DATA LOGGER</b> that will convert the signals to optical signals that will be transmitted to the main SCADA desk through optical fiber cable.</p> <p><b>(a) Power conditioning units (PCUs) 630 kW - 2 Nos in each Inverter room:</b></p> <p>One cable will be used for daisy-chain looping the two PCUs: RS 485 Modbus signals from the PCUs are as follows:</p> <ul style="list-style-type: none"><li>- DC solar voltage, current and power</li><li>- AC frequency, phase, Power factor</li><li>- Energy (VA-hour, W-hour, VAR-hour)</li><li>- Fault details with date</li><li>- Other event logs date/time</li><li>- ACB on/off</li></ul>	



**PURCHASE SPECIFICATION**  
**INTEGRATED SCADA SYSTEM**

PS-439 -874

REV NO: 01

PAGE : 8 OF 15

**(b) HT equipment (1500 kVA, 33 kV Transformer – 1 No., VCB panel – 1 No.)**

- Transformer oil temperature value: 1 cable, 4-20mA analog signal or RS485 Modbus output.
- Transformer winding temperature value: 1 cable, 4-20mA analog signal or RS485 Modbus (RTU) output.
- Transformer protection fault signals: Buchholz alarm, Low oil level alarm, PRD alarm, OTI alarm & WTI alarm: 5 cables, 0-24V potential free NO contact, Digital.
- HT Panel VCB On/Off status: 1 cable, 0-24V potential free NO contact, Digital.
- Numerical relay (Over current / Earth fault): 1 cable
- Differential relay protection: 1 Cable
- REF relay protection: 1 Cable
- Overflux relay protection: 1 Cable
- HT panel load managers (EM6400 or equivalent): 1 cable from 1 load manager, RS-485 Modbus
- 

**4) SIGNALS FROM MAIN CONTROL ROOM:**

The main control room will have 1 PCU – 630 kVA, Transformer – 750 kVA and HT panels and Single ACDB panel. The Main control room will house the data station panel / Main SCADA panel.

**(a) Power conditioning units (PCUs) 630 kW: 1 No.**

RS 485 modbus signals from the PCUs are as follows:


- DC solar voltage, current and power
- AC frequency, phase, Power factor
- Energy (VA-hr, W-hr, VAR-hr)
- Fault details with date
- Other event logs date/time
- ACB on/off

**(b) HT eqpt (750 kVA, 33 kV Transformer – 1 No., Transformer oil temperature value: 1 cables, 4-20mA analog signal or RS485 Modbus output.**


- Transformer winding temperature value: 1 cable, 4-20mA analog signal or RS485 Modbus (RTU) output.
- Transformer protection fault signals: Buchholz alarm, Low oil level alarm, PRD alarm, OTI alarm & WTI alarm: 5 cables, 0-24V potential free NO contact, Digital.

**(c) 33 KV HT Panels**

- HT Panel VCB On/Off status: 10 cables, 0-24V potential free NO contact, Digital.
- Numerical relay( Under voltage/over voltage): 1 cable from 1 terminal, RS 485 Modbus
- Numerical relay (Over current / Earth fault): 1 cable from 8 terminals looped, RS-485 Modbus
- Differential relay protection: 1 Cable for Single 750 KVA transformer

	<b>PURCHASE SPECIFICATION</b>	PS-439 -874
	<b>INTEGRATED SCADA SYSTEM</b>	REV NO: 01
		PAGE : 9 OF 15

	<ul style="list-style-type: none"> <li>- REF relay for Single 750 KVA transformer</li> <li>- Auxiliary power consumption meter (9EM6400 or equivalent): 1 cable from 1 terminal, RS-485 Modbus</li> <li>- HT panel load managers (EM6400 or equivalent): 1 cable from 1 load manager, RS-485 Modbus.</li> <li>- Energy meter at the final output end of the power plant: 1 cable from 2 terminals, looped, RS-485 Modbus</li> </ul>	
5.5	<p><b>Data station panel (Main SCADA panel):</b></p> <p>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:</p> <ol style="list-style-type: none"> <li>1. All necessary devices such as <ol style="list-style-type: none"> <li>(a) Data loggers / PLCs <p>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.</p> </li> <li>(or) Alternatively, suitable PLCs for respective analog signals, digital signals, RS485 MODBUS signals shall be used and integrated.</li> <li>(b) Device servers, wherever required, as applicable, such as serial to Ethernet servers etc. with appropriate number of ports.</li> <li>(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.</li> <li>(d) Network switches such as Ethernet switches, etc., wherever required, as applicable, with appropriate number of ports.</li> <li>(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.</li> </ol> </li> <li>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.</li> <li>3. Power supply units</li> <li>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.</li> </ol> <p><b>5. Enclosure requirements:</b></p> <ol style="list-style-type: none"> <li>(a) Frame, doors with CRCA sheet of 2mm thickness</li> <li>(b) Gland plates with CRCA sheet of 3mm thickness <p>Gland plates to be fitted with cable glands. Holes shall be punched by the vendor according to this requirement.</p> </li> <li>(c) Cable lugs, hardware – nuts, bolts, washers, ferrules, cable ties for making cable interconnections to the panel shall be provided by the vendor.</li> <li>(d) Base frame of suitable ISMC channel</li> <li>(e) Cable entry from bottom side and through glands in gland plates</li> </ol>	

	<b>PURCHASE SPECIFICATION</b>	PS-439 -874
	<b>INTEGRATED SCADA SYSTEM</b>	REV NO: 01
		PAGE : <b>10 OF 15</b>

	<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><b>Note:</b> Alternately, polycarbonate enclosure may also be used, if it is appropriate meeting the design requirements, as shall be approved by BHEL.</p>	
5.6	<p><b>Desktop PC with control desk</b></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 style="padding-left: 20px;">(a) Microsoft office 2010 or latest of OEM version to facilitate report preparation in word, excel, power point, etc.</p> <p style="padding-left: 20px;">(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>	
5.7	<p>Numerical relays in the 33 KV VCB panels in the Inverter rooms and Main SCADA panel in Main control room shall produce output on RS-485 with Modbus RTU protocol.</p> <p>(i) Numerical relays in VCB panels in the Inverter rooms: MICOM P633</p> <p>(ii) Numerical relays in 33 KV HT panel in Main control room: MICOM P633, P122</p>	
5.8	<p><b>Surge protection devices for Data loggers and Main SCADA panel:</b></p> <p>Surge protection devices to be provided at the input of the Data loggers and Main SCADA panel to protect against surges through the communication cables.</p> <p><b>Vendor shall furnish details.</b></p>	
5.9	<p><b>SCADA software</b></p> <p>SCADA software shall support the following features:</p> <p>1) Configuration and display of mimic diagrams on the screen:</p> <p style="padding-left: 20px;">(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>	




**PURCHASE SPECIFICATION**  
**INTEGRATED SCADA SYSTEM**

PS-439 -874

REV NO: 01

PAGE : 11 OF 15


	<p>(b) On/Off status of ACB and VCB breakers shall be shown with colour indications (green, red, etc.),</p> <p>(c) Live display (at appropriate locations on screen / mimic diagram) of plant parameters such as</p> <ul style="list-style-type: none"><li>- Energy exported (for the day – as at the time of display, cumulative for the year, total cumulative, etc.),</li><li>- Peak power generated for the day,</li><li>- Grid outage,</li><li>- Weather parameters – solar irradiation (previous day cumulative and present day instantaneous and cumulative),</li><li>- Wind velocity, ambient temperature, SPV module temperature, PCU heat sink temperature, etc., as preferred by BHEL during interactive discussions with vendor.</li></ul> <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) <b>String parameters from 45 SMB boxes:</b> 22 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 (<math>W/m^2</math>), 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"><li>- Input side DC parameters viz. current, voltage, power, energy.</li><li>- Grid parameters: line voltages, phase, frequency</li><li>- Output side AC parameters: R-, Y-, B-phase voltages, currents, phase, frequency, power factor, power, energy export, energy import.</li><li>- Faults – occurrence and clearance date and time.</li><li>- Other events</li></ul> <p>(d) HT parameters with logged date and time.</p> <ul style="list-style-type: none"><li>- ACB on/off from ACBs housed within PCUs</li><li>- VCB on/off from 10 HT panels</li><li>- Line protection parameters:<ul style="list-style-type: none"><li>o Over current / Earth fault from 5 incomers and 2 outgoers (VCB panels)</li><li>o Over voltage / Under voltage from the 33kV HT side</li></ul></li><li>- Transformer alarms: Buchholz, low oil level, pressure release device, oil temperature, winding temperature</li><li>- Transformer oil and winding temperature values</li></ul> <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"><li>- Solar irradiation</li></ul>	
--	--	--

	<b>PURCHASE SPECIFICATION</b>  <b>INTEGRATED SCADA SYSTEM</b>	PS-439 -874
		REV NO: 01
		PAGE : 12 OF 15

	<ul style="list-style-type: none"> <li>- Energy generation <ul style="list-style-type: none"> <li>o At PCU level (630kW)</li> <li>o HT panel incomer level (1.26 MW)</li> <li>o HT panel outgoer level (5MW)</li> </ul> </li> <li>5) Grid loss hours – daily and cumulative</li> <li><b>6) REPORTING FEATURES:</b> <ul style="list-style-type: none"> <li><b>(a) Daily, monthly, yearly reports</b> Solar irradiation, DC side / AC side parameters, Energy export / import, Grid outage hours, Equipment shutdown hours (PCU, Transformer, overall plant levels), Faults history, any others as decided during interactive meetings after order placement.</li> <li>(b) Quick e-mail reporting upon fault conditions such as earth fault, plant shutdown etc.</li> </ul> </li> <li>7) Remote monitoring features <ul style="list-style-type: none"> <li>(a) Software to support remote monitoring</li> <li>(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.</li> </ul> </li> </ul>	
5.10(i)	<b>UPS</b> shall be provided in each of the Four Inverter rooms and a single UPS for the Main SCADA panel in the Main control room	
(ii)	<b>Battery capacity:</b> For minimum 2 hours of backup support to data logger panel and SCADA system.	
(iii)	BHEL will provide 230 volts / 415 volts AC required for the UPS operation.	
(iv)	<b>Battery back-up:</b> Vendor shall provide calculations of Battery back-up starting from power consumed by the Data loggers and Main SCADA panel.	

## 6.0 Accessories to be supplied:

- (i) UPS - 4 nos for the four Inverter room DATA loggers and 1 no for SCADA panel in Main control room as per clause no 5.10
- (ii) Desktop PC as per clause no 5.6
- (iii) SPDs for as per cl no 5.8


	<b>PURCHASE SPECIFICATION</b>	PS-439 -874
	<b>INTEGRATED SCADA SYSTEM</b>	REV NO: 01
		PAGE : 13 OF 15

## 7.0 Documents to be submitted after receipt of purchase order

7.1	<p>BHEL approval shall be obtained for implementation of the following sub-clauses within seven days from date of purchase order.</p> <p>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) marked on the various communication channels.</p> <p>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.</p> <p>Details of gland plates showing position / diameter of holes for data station panel. Gland details (size, make) shall be provided.</p> <p>General arrangement of the PC-based SCADA system showing the various computer and peripheral devices, with interconnections.</p> <p>Product catalogues / datasheets of Data loggers / PLCs, DC-DC converter, other power supplies, serial to Ethernet converters, other similar communication converters, switches, i/o devices, signal cables etc.</p> <p>Details of SCADA software showing provisions for data handling, graphs and reports.</p> <p>List of all communication cables with make, type and specifications.</p>	
-----	---	--


## 8.0 TESTING AND INSPECTION:

8.1	<p><b>Acceptance tests on SCADA software</b></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 and others as finalized jointly through interactive discussions with BHEL.</p> <p>(b) Vendor shall submit test reports and screen shots with regard for the above to get dispatch clearance.</p> <p>(i) 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>	
8.2	<p><b>Test certificates / calibration certificates</b> shall be submitted for following:</p> <ol style="list-style-type: none"> <li>1. Data loggers</li> <li>2. PLCs</li> <li>3. Communication devices: converters, switches, i/o devices</li> </ol>	

	<b>PURCHASE SPECIFICATION</b>	PS-439 -874
	<b>INTEGRATED SCADA SYSTEM</b>	REV NO: 01
		PAGE : 14 OF 15

## 9.0 INSTALLATION & COMMISSIONING ASSISTANCE:

9.1	<p><b>BHEL scope of commissioning:</b></p> <ol style="list-style-type: none"> <li>(1) All civil and installation work of SMBs, PCUs, HT panels and SCADA equipment panels shall be installed by BHEL in the respective Inverter rooms and Main control room.</li> <li>(2) Laying of communication cables (provided by BHEL), including all necessary cable trenches, from string monitoring boxes to data station in control room.</li> <li>(3) Laying of communication cables (provided by BHEL) from all the PCUs to data station panel.</li> <li>(4) Laying of communication cables (provided by BHEL) from LT/HT equipment (transformers, ACB panels, VCB panels and Energy meters) to data station panel.</li> <li>(5) Laying of communication cables (provided by vendor) from weather monitoring equipment to data station panel.</li> <li>(6) Laying of fiber optic cables from data loggers to SCADA panel in the Main control room is in the scope of BHEL</li> </ol> <p><b>Vendor scope of commissioning:</b></p> <ol style="list-style-type: none"> <li>(a) Vendor shall verify and 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.</li> <li>(b) Interconnection of PC (SCADA) with its peripherals and accessories on the console (control desk) using appropriate cables, accessories and hardware as provided by vendor.</li> <li>(c) Installation and configuration of operating system (Windows), SCADA software, Microsoft office and all other software on PC.</li> <li>(d) Installation and configuration of remote monitoring features in SCADA.</li> <li>(e) Customization, configuration and demonstration of following: <ol style="list-style-type: none"> <li>(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.</li> <li>(2) Daily, weekly, monthly reports on plant performance, based on interactive discussions with BHEL engineer at site.</li> <li>(3) Trend graphs for plant monitoring and management reporting, based on interactive discussions with BHEL engineers at site.</li> </ol> </li> <li>(f) Service engineer shall be present at the site at the time of commissioning of the power plant. The engineer shall support the</li> </ol>	
-----	---	--

	<b>PURCHASE SPECIFICATION</b>  <b>INTEGRATED SCADA SYSTEM</b>	PS-439 -874
		REV NO: 01
		PAGE : 15 OF 15

	<p>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>(g) Training to BHEL engineers on operation and maintenance of the Data station panel (data loggers / PLCs) and SCADA software.</p>	
--	---	--

### 10.0 WARRANTY:

10.1	<p>Equipment shall be warranted for a period of five years after commissioning, including failure parts replacement. The warranty shall be comprehensive and shall cover free repair and replacement of failed components, if any, during the five years period. The equipment shall be repaired within 10 days of receipt of complaint. The <b>MINIMUM</b> mandatory spares (10% or min 1 no) shall include:</p> <ul style="list-style-type: none"> <li>(a) Power supply modules</li> <li>(b) Controller cards</li> <li>(c) Input / output modules (Digital and Analog)</li> <li>(d) SPDs</li> </ul>	
10.2	<p>To ensure repair within the stipulated period, minimum spares shall be maintained at site and vendor shall list the same along with quantity for BHEL approval.</p>	

### 11.0 Documents to be submitted along with consignment

11.1	<p>Following documents shall be submitted at the time of dispatch:</p> <ol style="list-style-type: none"> <li>1. Test reports on Data station panel.</li> <li>2. Test reports / calibration reports on weather monitoring equipment.</li> <li>3. Operations and maintenance manual for Weather monitoring equipment, data station panel and SCADA software.</li> </ol>	
------	--	--

COMMERCIAL TERMS & CONDITIONS				
RFQ No.HBSBOS024 DATED : 21.10.2014 DUE DATE(TECH BID) : 12.11.2014				
Sl No.	Terms	BHEL Term	Confirmation	Deviation / Remarks
1	Bidding	(a) Bid has to be submitted as Two Part – in two sealed covers-Techno Commercial Bid(Part-1) & Price Bid (Part-II)- clearly written on each cover both put in a single sealed envelope super-scribed with RFQ No. and Due date.	Agree / Not agree	
		(b) Annexures B & B1 to be submitted along with technical bid (Part-1) & Annexure B2 to be submitted along with Price bid (Part-II).	Agree / Not agree	
		(c) Clause-wise compliance to BHEL Purchase specification along with all documents as called in Technical specification to be submitted along with technical bid(Part-1).	Agree / Not agree	
2	Price Basis	Firm i.e., from the date of PO to completion of supply if I&C is not applicable. If I&C is in supplier's scope, then the prices shall remain Firm till commissioning & handing-over of the complete system. (PVC clause not acceptable).	Agree / Not agree	
3	Terms of Delivery	Free On Road Basis to Project site : NEEPCO MONARCHAK, West Tripura	Agree / Not agree	
4	Delivery Period	(a) Supply : 08 Weeks from the Drawing Approval; Drawings to be submitted 1 week from PO/LOI.	Agree / Not agree	
		(b) I&C : 4 weeks from Supply Date.	Agree / Not agree	
5	Payment Term	(a)Supply : 80% payment of Supply Value + 100% Taxes shall be made with 45 days credit from the date of receipt of material at site. 10% on completion of I&C and certification. Balance 10% on execution of PBG valid for warranty period + 6 months claim period from any of the BHEL Consortium banks.	Agree / Not agree	
		(b)I&C :100% on completion of I&C and certification.	Agree / Not agree	
		( d )For any deviation in payment term, the offer will be liable for loading as per Clause 25A(ii) of Enquiry-General Terms & conditions (Doc Ref : SCPV/BOS/01-Rev 00)	Agree / Not agree	
6	Excise Duty	(a) To confirm whether applicable. If applicable, indicate prevailing rate of Excise duty.	Applicable / Not applicable	Prevailing rate of Excise duty : ..... %
		(b) BHEL is trying to avail Customs Duty & Excise duty exemption.Successful bidder shall support with all relevant documents.	Agree / Not agree	
7	Sales Tax	(a) To confirm whether applicable. If applicable, indicate prevailing rate of Sales Tax against Form C.	Applicable / Not applicable	Prevailing rate of Sales Tax : ..... %
		(b) For issue of form "C", vendor has to furnish "E1/E2" form.Please confirm that "E1/E2 Sale form" will be submitted.	Agree / Not agree	
8	Value Added Tax	Since it is inter-state movement of goods, VAT is not applicable. Only CST against form C is applicable	Applicable / Not applicable	
		OR Both are in the same State, VAT is applicable please indicate VAT applicable.	Applicable / Not applicable	Prevailing rate of VAT : ..... %

AUTHORISED SIGNATORY WITH SEAL

COMMERCIAL TERMS & CONDITIONS				
RFQ No.HSBOS024 DATED : 21.10.2014 DUE DATE(TECH BID) : 12.11.2014				
Sl No.	Terms	BHEL Term	Confirmation	Deviation / Remarks
9	<b>Octroi</b>	To confirm whether applicable, if applicable indicate current rate of Octroi.	Applicable / Not applicable	Octroi_____%
10	<b>Service Tax</b>	To confirm whether applicable, if applicable indicate current rate of Service Tax.	Applicable / Not applicable	Prevailing rate of Service Tax ..... %
		Furnish following : Service Tax Regn. No. Confirmation that Service Tax register is maintained.	Applicable / Not applicable	Service Tax Regn. No.....
11	<b>Freight</b>	If Freight is quoted extra, original money receipt from Transporter has to be submitted for payment of freight. Please indicate a lumpsum value for Freight charges in Price bid if quoted extra.	Agree / Not agree	
12	<b>Insurance</b>	Transit Insurance will be in vendor's scope.	Agree / Not agree	
13	<b>Evaluation of L1 vendor</b>	Over all L1 of Supply + I&C on "FOR" basis to site will only be considered.	Agree / Not agree	
14	<b>Warranty</b>	<b>Warranty for Supply</b> : 63 months from date of supply or 60 months from I&C whichever is earlier	Agree / Not agree	
15	<b>Pre Shipment Inspection</b>	Pre Shipment Inspection will be carried out by BHEL/Customer for which test report shall be sent one week in advance.	Agree / Not agree	
16	<b>Penalty</b>	(a) 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%. For Supply, Pre Shipment Inspection Call Letter Date (Receipt of test report) will be treated as delivery for purpose of penalty.	Agree / Not agree	
		( b )For any deviation in penalty term, the offer will be liable for loading as per Clause 25.B of Enquiry-General Terms & conditions (Doc Ref : SCPV/BOS/01-Rev 00)	Agree / Not agree	
17	<b>Road Permit</b>	Road permit if applicable will be given by BHEL before Dispatch of ordered Items	BHEL	
18	<b>Despatch Documents</b>	Complete set of despatch documents in 3 sets shall be forwarded to BHEL directly. Despatch documents include Commercial Invoice, Excise Invoice (if ED is applicable), Lorry receipt (L/R), Packing list, Warranty certificate, Insurance intimation letter, & Original Performance Bank Guarantee (Directly from issuing bank to BHEL). One set of Invoice, Packing list and L/R shall be faxed immediately after despatch to BHEL-EDN, Bangalore.	Agree / Not agree	
19	<b>Other terms &amp; conditions</b>	For any other Terms and Conditions, kindly refer to the enclosed Enquiry-General Terms & Conditions of BHEL (Doc Ref : SCPV/BOS/01-Rev 00)	Agree / Not agree	
20	<b>Reverse Auction</b>	BHEL reserves the right to conduct Reverse Auction. Procedure for the same will be informed by BHEL .	Agree / Not agree	
21	<b>Shipment</b>	Kindly indicate the State/Place from where the shipment will take place	State/Place	

AUTHORISED SIGNATORY WITH SEAL

TECHNICAL BID ENCLOSURE FOR COMPLIANCE OF QUOTE									
RFQ No.HBSBOS024 DATED : 21.10.2014 DUE DATE(TECH BID) : 12.11.2014									
Sl No.	DESCRIPTION	QTY	UNIT	QUOTED	TAXES				Remarks
					ED %	CST%	VAT %	SERVICE TAX %	
1	PS0679044361: Supply for SCADA System for Inverter & Main Control Room comprising of Data Loggers (RTUs), Main SCADA Panel/PLC Panel with software as per Clause No.4 of Tech Spec-PS-439-874	1	ST	YES/NO				NA	Taxes Extra
2	Commissioning of SCADA System as per Clause No.8 of BHEL Spec PS-439-874	1	AU	YES/NO	NA	NA	NA		Taxes Extra
3	**Freight Charge including Service Tax on Freight(12.36% on 25% of Freight Value)	LUMPSUM		YES/NO	NA	NA	NA	NA	Included/Extra
4	**Insurance	LUMPSUM		YES/NO	NA	NA	NA	NA	Included/Extra

NOTE: 1.YOUR QUOTED PRICES SHALL BE on "FREE ON ROAD" basis to NEEPCO MONARCHAK, West Tripura.

2.PL INDICATE TAXES : ED,VAT/CST,SERVICE TAX CLEARLY APPLICABLE AS ON DATE.

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

**4. FOR SL NOS 1 - 2, TAXES WILL BE CONSIDERED EXTRA.PLEASE QUOTE ONLY THE BASIC RATES.**

**5.\*\*INDICATE WHETHER FREIGHT CHARGE & INSURANCE CHARGE IS INCLUDED IN QUOTED RATE OR WILL BE CHARGED EXTRA.**

**IN ABSENCE OF CLARITY, QUOTED RATE WILL BE CONSIDERED AS INCLUSIVE OF FREIGHT & INSURANCE CHARGES.**

**6.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.**

**AUTHORISED SIGNATORY WITH SEAL**

PRICE BID ENCLOSURE									
RFQ No.HBSBOS024 DATED : 21.10.2014 DUE DATE(TECH BID) : 12.11.2014									
SI No.	DESCRIPTION	QTY	UNIT RATE (Rs.)	TOTAL RATE (UNIT RATE*QTY) (Rs.)	TAXES				Remarks
					ED %	CST%	VAT %	SERVICE TAX %	
1	PS0679044361: Supply for SCADA System for Inverter & Main Control Room comprising of Data Loggers (RTUs), Main SCADA Panel/PLC Panel with software as per Clause No.4 of Tech Spec-PS-439-874	1 ST						NA	TAXES EXTRA
	Unit Rate in Words Rs.								
2	Commissioning for SCADA as per Clause No.8 of BHEL Spec PS-439-874	1 AU			NA	NA	NA		TAXES EXTRA
	Unit Rate in Words Rs.								
3	Freight Charge including Service tax on Freight	Lumpsum							**Freight : Included/Extra
	Freight charge in Words Rs.								
4	Insurance	Lumpsum	Rs.						**Insurance : Included/Extra
	Insurance charge in words Rs.								

NOTE: 1.YOUR QUOTED PRICES SHALL BE on "FREE ON ROAD" basis to NEEPCO MONARCHAK, West Tripura.  
2.PL INDICATE TAXES : ED,VAT/CST,SERVICE TAX CLEARLY APPLICABLE AS ON DATE.  
3.USE THIS FORMAT FOR COMPLIANCE( REPRODUCING ON YOUR LETTER HEAD IS ACCEPTABLE).  
4. FOR SL NOS 1 - 2, TAXES WILL BE CONSIDERED EXTRA.PLEASE QUOTE ONLY THE BASIC RATES.  
5.\*\*INDICATE WHETHER FREIGHT CHARGE & INSURANCE CHARGE IS INCLUDED IN QUOTED RATE OR WILL BE CHARGED EXTRA.  
IN ABSENCE OF CLARITY, QUOTED RATE WILL BE CONSIDERED AS INCLUSIVE OF FREIGHT & INSURANCE CHARGES.  
6.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.

AUTHORISED SIGNATORY WITH SEAL

**Bharat Heavy Electricals Ltd.,**  
(A Government of India undertaking)  
**Electronics Division**  
PB No.2606, Mysore Road, Bangalore-560026, India

**Enquiry - General Terms & Conditions (Two part bid)**

**I. Enquiry / Request for Quotation (RFQ):**

- (a) Any Purchase Order resulting from this enquiry shall be governed by **these general terms and conditions listed below and special terms and conditions, if any, along with this enquiry** of Bharat Heavy Electricals Limited, Electronics Division, Bangalore-560026 (**hereinafter referred to as BHEL EDN**).
- (b) Any of the terms and conditions not acceptable to vendor, shall be explicitly mentioned in the quotation. Otherwise, it will be treated as that all terms and conditions of this enquiry are acceptable.
- (c) If counter terms and conditions are offered by vendor, BHEL EDN shall not be governed by such terms and conditions, unless it is agreed and incorporated in the Purchase Order of BHEL EDN.
- (d) Any deviation to the terms and conditions not mentioned in the quotation by vendor in response to this enquiry will not be considered, if put forth subsequently or after issue of order, unless clarification is sought for by BHEL EDN and agreed upon in the Purchase Order of BHEL EDN.
- (e) BHEL EDN reserves the right to adopt Reverse Auction for the enquiry sent, at its discretion.
- (f) BHEL EDN shall be at liberty to cancel the tender at any time, before ordering, without assigning any reason.
- (g) Any specific terms and conditions to be complied will be mentioned in RFQ.**

**II. General Terms and conditions:**

**1. TWO PART BID:** Quotation shall be submitted in two part bid i.e.

**(a) Techno-commercial i.e., Un-priced Bid (in one sealed envelope):**

Techno-commercial bid shall be submitted with complete description of the equipment, specification compliances to the enquired specification and all the commercial terms & conditions indicated in the **COMMERCIAL TERMS (ANNEXURE -A for Foreign Purchase and ANNEXURE-B for Indigenous Purchase)**. Any other enclosure, which the vendor wishes to submit like product catalogue, technical literature etc., may also be submitted in a sealed envelope super scribed clearly as **“TECHNO-COMMERCIAL BID” with RFQ No. and DUE DATE**. An un-priced copy of price bid (without price) as per **ANNEXURE A-1 for Foreign Purchase and ANNEXURE B-1 for Indigenous Purchase** shall also be enclosed with the techno-commercial bid for evaluation of commercial terms.

**The vendor shall not give the price in the technical bid.**

Confirmation to BHEL specifications shall be indicated by the vendor in the respective columns provided in the purchase specification wherever applicable. Deviations to the specification / item description, if any shall be brought out clearly indicating **“DEVIATION TO BHEL SPECIFICATION”** without fail as a part of technical offer.

Compliance to Pre-qualification criteria (if applicable) shall also be enclosed with the Techno-commercial bid.

Manufacturer's name, their trade mark and brand, part number, alternate material to the one asked in enquiry, if any, should be mentioned in quotation and illustrative leaflets giving technical particulars etc. are to be attached to facilitate consideration and technical evaluation of the quotation. BHEL EDN material code number (as in enquiry) shall be indicated for each item quoted.

**(b) Price Bid (in one sealed envelope):**

Price bid should contain basic unit prices, discount if any, applicable taxes & duties, packing & forwarding charges (if applicable), Freight & insurances (if applicable), FOB charge (if applicable) etc., in a sealed envelope super scribed clearly as **“PRICE BID” with RFQ No. and DUE DATE**.

It is preferred to indicate the rates in both figures and words. In such case, if there is a difference / discrepancy

**Signature of tenderer / with seal**

between the rates in figures and words, guidelines as per Annexure H shall be followed. **Price bid shall be quoted as per ANNEXURE A-2 for Foreign Purchase and ANNEXURE B-2 for Indigenous Purchase.**

**(c) Tender Offer (above two envelopes inside another sealed envelope):**

Both these sealed envelopes [(a) Techno-commercial i.e., un-priced Bid and (b) Price Bid] shall be kept in a single sealed envelope and super scribed clearly with **RFQ No. and DUE DATE.**

2. The above sealed envelope (Tender) shall reach our office on or before the due date by 13:00 hrs. Quotations are to be dropped in the tender box marked for the OPENING ON respective days i.e., **MONDAY (BOX No.4)/ WEDNESDAY (BOX No.6)/ FRIDAY (BOX No.8)** kept at BHEL-EDN's Reception area of our works with caption "**CE, SC & PV, DEFENCE**". **Quotations also can be dispatched by Couriers / Registered post / FAX / e-mail to the Purchase Executive indicated in the RFQ at the risk of vendor / bidder.**

Quotation through courier / register post / fax / email when addressed to the specific fax number and email address given in the enquiry, to be sent well in advance to enable BHEL EDN purchase personnel to drop in the tender box before the scheduled opening date and time. Vendor is fully responsible for lack of secrecy on information of such quotations. Vendor shall confirm with the concerned purchase executive after sending the offer regarding such delivery mode to ensure participation. BHEL EDN is not responsible for any delay in receipt of quotation sent by vendor through post/fax/email.

Late Tenders i.e., Tenders received after due date & time will be rejected.

3. The rate quoted shall be in units stated in the enquiry. Where quotation is in terms of unit other than that in enquiry, relationship between the two units must be furnished in the quotation.
4. As far as possible, the quotations shall be free from corrections / overwriting. Corrections / overwriting, if any should be signed by authorized person with the company seal. Any typographical errors, totaling mistakes, currency mistakes, multiplication mistakes, summary mistakes observed in your priced bids, BHEL may consider whichever is beneficial to BHEL for evaluation. Vendor shall doubly ensure that the quote is correct and complete. The corrections / overwriting if any shall be signed with the seal.
5. Quotations are to be duly signed. Unsigned bids/offers are liable for rejection.
6. Tenders will be opened at **13:30 hrs** & the venue is New Engineering Building, 2<sup>nd</sup> floor, MM conference hall, BHEL EDN, Bangalore. All the tenderers or their authorized representatives (with authorization letter from their principals) may witness opening of techno-commercial bid on the due date.
7. After evaluation of techno-commercial bids, price bids of only those which are technically & commercially accepted, will be opened on a subsequent date, which will be intimated to the concerned in advance for witnessing of price bid opening.
8. The quantity in each item to be purchased may vary from quantity enquired according to the actual requirement at the time of placing the purchase order.

**9. DUN & BRADSTREET REPORT (for Foreign purchase):**

In case of foreign vendors, BHEL reserves the right to verify the Dun & Bradstreet report during techno-commercial scrutiny. Please mention DUN Number in **Techno-Commercial bid.**

**10. Payment of Agency Commission to Indian Agent (for Foreign purchase):**

- a. BHEL shall deal directly with foreign vendors, wherever required, for procurement of goods. However, if the foreign principal desires to avail of the services of an Indian agent, then the foreign principal should ensure compliance to regulatory guidelines - which require mandatory submission of an Agency Agreement.
- b. It shall be incumbent on the Indian agent and the foreign principal to adhere to the relevant guidelines of Government of India, issued from time to time.

**Signature of tenderer / with seal**

- c. The Agency Agreement should specify the precise relationship between the foreign OEM / foreign principal and their Indian agent and their mutual interest in the business. All services to be rendered by agent/ associate, whether of general nature or in relation to the particular contract, must be clearly stated by the foreign supplier/ Indian agent. Any payment, which the agent or associate receives in India or abroad from the OEM, whether as commission or as a general retainer fee should be brought on record in the Agreement and be made explicit in order to ensure compliance to laws of the country.
- d. Any agency commission to be paid by BHEL to the Indian agent shall be in Indian currency only.
- e. Tax deduction at source is applicable to the agency commission paid to the Indian agent as per the prevailing rules.
- f. In the absence of any agency agreement, BHEL shall not deal with any Indian agent (authorized representatives / associate / consultant, or by whatever name called) and shall deal directly with the foreign principal only for all correspondence and business purposes.
- g. The “Guidelines for Indian Agents of Foreign Suppliers” shall apply in all such cases.
- h. The supply and execution of the Purchase Order (including indigenous supplies/ service) shall be in the scope of the OEM/ foreign principal. The OEM/ foreign principal should submit their offer inclusive of all indigenous supplies/ services and evaluation will be based on ‘total cost to BHEL’. In case OEM/ foreign principal recommends placement of order(s) towards indigenous portion of supplies/ services on Indian supplier(s)/ agent on their behalf, the credentials/ capacity/ capability of the Indian supplier(s)/ agent to make the supplies/ services shall be checked by BHEL as per the extant guidelines of Supplier Evaluation, Approval & Review Procedure (SEARP), before opening of price bids. It will be the responsibility of the OEM/ foreign principal to get acquainted with the evaluation requirements of Indian supplier/ agent as per SEARP available on [www.bhel.com](http://www.bhel.com).

The responsibility for successful execution of the contract (including indigenous supplies/ services) lies with the OEM/ foreign principal. All bank guarantees to this effect shall be in the scope of the OEM/ foreign principal.

#### 11. Installation & Commissioning:

- (a) Scope will be as per Purchase Specification. I&C value should be quoted separately by bidders.
- (b) Wherever, Service Tax is applicable –
- (c)
  1. The Tenderers shall furnish the Service Tax Registration Number in their offer.
  2. If the Tenderer is not having Service Tax Registration Number, he shall submit an undertaking to the effect that,
    - a. in case he is awarded the contract, he shall register with Service Tax Authorities and furnish the Registration Number before commencement of work, OR
    - b. his turnover value is below the threshold limit prescribed by the Service Tax Act and in case he is awarded the contract, whenever his turnover crosses the threshold limit at any time during the execution of the contract, he shall forthwith register with Service Tax Authorities and furnish the Registration Number to BHEL. (This sub-clause is NOT applicable where the taxable turnover of the present tender is above the prescribed threshold limit).
  3. Any offer not complying with the above clauses is liable to be rejected.
  4. The above clauses apply even where the price quoted is “inclusive of taxes”.
  5. If the Service Tax Registration Number is not furnished to BHEL before the first bill is submitted (except as provided in Clause 2(b) above), the bills will not be passed (even if the price is “inclusive of taxes”).
  6. In case of contracts involving multiple bills, every bill (commencing with the 2<sup>nd</sup> bill) shall be accompanied with a declaration that the contractor has discharged his tax liability on the earlier bill (i) by paying the money to the Government (along with Challan details) or (ii) by utilization of Input Service Tax Credit available with him or (iii) being exempt as his turnover continues to be below the threshold limit. In the absence of such a declaration, the bill shall not be passed.
  7. In case of contracts involving a single bill, the bill shall be accompanied with an undertaking that the contractor shall discharge his tax liability on that bill as per law.

12. **TOTAL COST TO BHEL:** Purchase order will be placed on the lowest quotation (L1) only among the technically & commercially accepted quotations. Lowest quotation (L1) is determined on the basis of the total cost to BHEL. Loading Factors for deviation to BHEL Commercial terms and conditions will be considered.

Signature of tenderer / with seal

For Foreign offers, the Exchange rate (TT selling rate of SBI) shall be taken as under.

Single part bids	Date of Tender opening
Two/Three part bid	Date of Part-1 bid opening
Reverse Auction	Date of Part-1 bid opening

If the relevant day happens to be a bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

- (1) If Freight is quoted extra, original money receipt from Transporter shall be submitted for payment of Freight charges.
- (2) C-form : For issue of form "C", vendor has to furnish "E1/E2" form.

## **12. FIRM PRICE:**

Rates quoted should be firm from the date of offer, till completion of supply. No enhancement in the rates and changes in the techno-commercial terms will be allowed once the quotation is accepted and order is placed.

If Installation & Commissioning is in vendor's scope, then the price shall remain FIRM till commissioning & handing over of the complete system.

## **13. TERMS OF PAYMENT:**

**1.SUPPLY FOR FOREIGN PURCHASE :** Payment will be made against "SIGHT DRAFT" on presentation of documents to our bankers . Payment through LC is also made subject to loading factors as per Clause 25 (A). For LC payment bank charges within India will be borne by BHEL and outside India will be to vendor's account.

The payment terms are as follows:

### **SIGHT DRAFT PAYMENT (direct payment):**

#### **SUPPLY :**

(a) **I&C not included in vendor's scope** : 90% payment of Supply value + 100% Taxes shall be made with 45 days credit from the date of receipt of material at site. Balance 10% on execution of PBG valid for warranty period + 6 months claim period from any of the BHEL Consortium banks.

(b) **Supply & I&C in vendor's scope** : 80% payment of Supply value + 100% Taxes shall be made with 45 days credit from the date of receipt of material at site. 10% on completion of I&C and certification line item wise on pro-rata basis. Balance 10% on execution of PBG valid for warranty period + 6 months claim period from any of the BHEL Consortium banks..

### **(B) FOR INDIGENOUS PURCHASE (DIRECT PAYMENT):**

#### **1. For Supply :**

(a) **I&C not included in vendor's scope** : 90% payment of basic Supply value + 100% Taxes and duties shall be made with 45 days credit from the date of receipt of material at site. Balance 10% on execution of PBG valid for warranty period + 6 months claim period from any of the BHEL Consortium banks. PBG value shall be 10% of basic supply PO value.

(b) **Supply and I&C in vendor' scope** : 80% payment of basic Supply value + 100% Taxes and duties shall be made with 45 days credit from the date of receipt of material at site. 10% on completion of I&C and certification line item wise on pro-rata basis. Balance 10% on execution of PBG valid for warranty period + 6 months claim period from any of the BHEL Consortium banks. PBG value shall be 10% of basic supply PO value.

**2. For I&C:** 100% on completion of I&C and certification line item wise on pro-rata basis.

**3.Civil Works :** 90% on completion of activity milestone and certification line item wise from site-in charge. Balance 10% against PBG for 10% of basic Civil value valid warranty period + 6 months claim period from any of the BHEL Consortium banks. PBG value shall be 10% of basic civil PO value.

**4. O&M :** 100% O&M charges are payable as per RFQ terms against report certified by BHEL.

If PBG cannot not be submitted, vendors can also accept for the final 10% payment, payable after the warranty period + 6 months of claim period against supplementary invoice subject to the completion of commissioning (if applicable) as PBG is linked to

**Signature of tenderer / with seal**

Warranty period.

For any deviation in payment term, the offer will be loaded as per Clause 25.00.

**5. ADVANCE PAYMENT: Quotations with “Advance payment/Inland LC” shall be rejected.**

**14. PENALTY:**

Failure to supply within the delivery time as per purchase order will make the vendor liable to an unconditional penalty of 0.5 % (half percent) per week at the basic price of the goods for the undelivered quantity, subject to a maximum of 10%.

Supply : Date of issue of pre -shipment inspection/ call letter with supporting documents like test reports/conformance to test carried by the vendor will be treated as date of dispatch for the purpose of penalty calculation wherever Pre-Inspection is carried out.

For all other activities, the actual date of completion of activity as certified by concerned site-incharge will be considered for the purpose of penalty calculation.

**15. PBG:**

Performance Bank Guarantee (PBG) to be submitted on non-judicial stamp paper as per the BHEL prescribed format given in **ANNEXURE-E for Foreign Purchase and Annexure-F for Indigenous Purchase** for 10% of the total supply value obtained from any BHEL member (consortium) banks indicated in **ANNEXURE-G**.

**The Bank Guarantee shall be submitted directly to the concerned Purchase Executive by the issuing Bank with their forwarding letter.** BHEL will verify independently with the bank to establish the authenticity. Alternately, standby LC issued from approved banker can also be considered.

**16. TERMS OF DELIVERY:**

**(a)FOR IMPORTED PURCHASE:**

Price offered shall be for goods packed and delivered **FOB** Seaport,/FCA International Airport including packing, forwarding, Handling, Ancillary charges like processing of Sight Draft, negotiation charges of bank, Export declaration, Certificate of origin etc.

Packing shall be Air/Sea worthy, best suitable for trans-shipment and to take care of transit damages. If containerized, no. of containers & size of container shall be mentioned. Packing weight (gross & net) Packing dimensions shall be given prior to shipment to ascertain whether the consignment can be carried on standard cargo in contract or as ODC.

Wooden packing material for all the foreign consignments should be treated as per ISPM-15 & **Fumigation / Phytosanitary certificate** to be submitted to the freight forwarders/ BHEL along with the invoice, B/L, packing list etc.

Vendors shall indicate the name of International Airport/Seaport. Approved Airports are as per **Annexure-C**. The consignment shall be handed over to BHEL approved freight forwarder as mentioned in PO.

**(b) FOR INDIGENOUS PURCHASE:**

Equipment shall be delivered on “FOR SITE” basis, inclusive of freight, packing, insurance & forwarding charges.

Packing shall be Road / Rail / Air / Sea worthy, best suitable for transshipment and to take care of transit damages.

Smaller consignments can be dispatched through Courier services/ RPP with the prior approval of the purchasing Executive.

**17. DELIVERY REQUIREMENT:**

Delivery date mentioned in RFQ is tentative. Actual requirement is as per RFQ terms & conditions.

**18. VALIDITY:**

Quotation should remain valid for a period of **90 days** from the date of technical bid opening.

**19. POST-ORDER REQUISITES:**

- a. Vendor shall give an Order Acknowledgement indicating the delivery date within one week of receipt of PO.
- b. Pre-shipment inspection at vendor’s works, if required, will be carried out by BHEL/Customer. Required assistance will have to be provided by the vendor at the time of pre-shipment inspection.
- c. Test certificates, Calibration certificates and warranty certificates as stipulated at the time of ordering shall be furnished.

**Signature of tenderer / with seal**

- d. Items shall be dispatched by Air worthy /Sea worthy/ Road worthy packing. Any damage and later rejection, due to poor / improper packing shall be to vendor's account.
- e. Any damage/rejection should be made good or replaced immediately without any extra cost to BHEL such as freight, duties, taxes etc. The liability is restricted to the value of the order.
- f. Wherever commissioning is involved, it shall be carried out by the vendor's qualified engineers. Scope of work includes installation, commissioning and start-up trials till satisfactory performance level is reached as certified by BHEL.
- g. BHEL will not be responsible for any loss, damage or injuries to vendor's personnel sustained during installation / commissioning / start-up trials. Vendor shall ensure compliance with all statutory requisites as laid down by local bodies, state & Central Government. Vendor shall indemnify BHEL for all damages/ losses to various personnel during their presence in BHEL's premises for whatever purpose.
- h. Suitable markings & damage control indicating devices shall be provided where applicable.
- i. Equipment shall comply with the standard requirements of ISO 14001 & OHSAS 18001.

**20. RISK PURCHASE:**

The purchaser at his discretion may also make purchase of the materials NOT supplied in time at the RISK & COST of the supplier. In this event, it will be obligatory on the part of the supplier who fails to supply the goods in time to make good to BHEL any loss due to such risk purchase.

**21. GENERAL TERMS AND CONDITIONS GOVERNING REVERSE AUCTION (RA):**

- (a) BHEL reserves the right to go for Reverse Auction (RA) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation in RA.  
Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA.
- (b) In case BHEL decides to go for Reverse Auction, only those bidders who have given their acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit "online sealed bid" in the Reverse Auction. Non-submission of "online sealed bid" by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue."
- (c) **Kindly refer to Annexure D for Terms & Conditions of Reverse Auction.**
- (d) Vendor shall confirm acceptance for RA in **ANNEXURE A/B**.

**22. REGRET LETTER:** In case any vendor is unable to quote, vendor shall send a regret letter.

**23.** Any dispute arising out of this, shall be referred to the sole arbitration of Head of Dept. Materials Management of group concerned, BHEL EDN or any other officer nominated by him and his award shall be final and binding on the parties. The venue of the arbitration in all cases shall be Bangalore, India.

**24.** Any legal suit in respect of this enquiry lies in the court of Jurisdiction of Bangalore (India) only.

**25. LOADING FACTORS:**

Loading factors as detailed below will be added to the quoted price (basic) to evaluate the lowest quote for non compliance of BHEL standard commercial term.

**A (i). For non compliance of standard Terms of payment (For Foreign Purchase Orders)**

Sl. No.	BHEL standard term	If you quote	Loading factor in % for non-compliance
1	80% against "SIGHT DRAFT" + 20% after commissioning and against PBG(where both commissioning & PBG are applicable)	Payment through Letter of Credit (LC)	10%

**In general, if the quote is through L/C, it shall be opened 30 days prior to dispatch and valid for 3 months.**

Signature of tenderer / with seal

***A(ii).For non compliance of standard Terms of payment (For Indigenous Purchase Orders)***

Sl. No.	BHEL standard term	If you quote	Loading factor in % for non-compliance
1	As per RFQ Terms	Any other Payment term	10%

***B.For non compliance of standard Terms of Penalty***

Sl. No.	BHEL standard term	If you quote	Loading factor for non-compliance
1	Penalty of 0.5% per week subject to max. of 10% on the basic value of the items not supplied /delayed	Other than the above.	Loading Factor 10%-Quoted Max %

**26. Non Compliance of Warranty terms** : Offers not complying with Warranty terms as per RFQ Terms is liable for rejection.

**ANNEXURE- C*****LIST OF INTERNATIONAL AIRPORTS***

<b>Sl. No</b>	<b>Country</b>	<b>Air Ports</b>
1	Austria	Vienna, Linz, Graz
2	Australia	Sydney, Melbourne, Perth
3	Belgium	Antwerp, Brussels
4	Canada	Toronto, Montreal
5	China	Shanghai
6	Cyprus	Lamaca
7	Czech Republic	Prague (Via Frankfurt)
8	Denmark	Copenhagen
9	Egypt	Cairo
10	Finland	Helsinki
11	France	Paris (Rossy), Lyon
12	Germany	Darmstadt, Manheim, Nurnberg, Hamburg, Stuttgart, Munich, Koln, Dusseldorf & Hannover, Frankfurt, Berlin
13	Hong Kong	Hong Kong
14	Italy	Rome, Milan, Turin, Bologna, Florence
15	Ireland	Dublin
16	Israel	Telaviv
17	Japan	Tokyo, Osaka
18	Malaysia	Kuala lumpur, Penang
19	Netherlands	Amsterdam, Rotterdam
20	New Zealand	Auckland
21	Norway	Oslo
22	Oman	Muscat
23	Philippines	Manila
24	Romania	Bucharest
25	Russia	Moscow
26	Saudi Arabia	Riyad
27	Singapore	Singapore
28	Slovakia	Bartislowa
29	South Africa	Johannesburg, Durban
30	South Korea	Kimpo
31	Spain	Barcelona
32	Sweden	Stockholm, Gothenburg, Milano
33	Switzerland	Basle, Zurich, Geneva
34	Taiwan	Taipei
35	U.A.E.	Dubai
36	U.K.	Landon (Heathrow), Newcastle, Oxford, Cheltham, Bristol, Welling borough, Birmingham, East Midland, Manchester, Leeds, Glasgow.
37	U.S.A.	New York, Chicago, San Francisco, Los Angeles, Atlanta
38	Ukraine	Kiev

**Annexure - D****Terms & Conditions of Reverse Auction**

Against this enquiry for the subject item/ system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

- (1) For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
- (2) Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessarily submit 'online sealed bid' in the Reverse Auction. Non-submission of 'online sealed bid' by the bidder for any of the eligible items for which techno-commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
- (3) BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
- (4) In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
- (5) Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
- (6) Bidders have to fax the Compliance form (annexure IV ) before start of Reverse auction. Without this, the bidder will not be eligible to participate in the event.
- (7) In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
- (8) Reverse auction will be conducted on scheduled date & time.
- (9) At the end of Reverse Auction event, the lowest bidder value will be known on auction portal.
- (10) The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (Annexure VII) as provided on case-to-case basis to Service provider within two working days of Auction without fail.
- (11) In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL"s standard practice.
- (12) Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using the Login IDs and passwords given to them by the service provider before reverse auction event. Bidders should acquaint themselves of the „Business Rules of Reverse Auction", which will be communicated before the Reverse Auction.
- (13) If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines*, shall be initiated by BHEL and the results of the RA scrapped/ aborted.
- (14) The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
- (15) In case BHEL decides to go for reverse auction, the H1 bidder(s) (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

**Signature of tenderer / with seal**

**ANNEXURE-E****PERFORMANCE BANK GUARANTEE  
(FOR FOREIGN PURCHASE ORDERS)  
BANK NAME AND ADDRESS**

Bharat Heavy Electricals Limited (BHEL),  
Electronics Division,  
PB No. 2606,  
Mysore Road,  
BANGALORE- 560 026  
INDIA  
Dear Sirs,

**Ref: CONTRACT PERFORMANCE GUARANTEE.**

WHEREAS you have entered into a contract reference No PO NO. \_\_\_\_\_ with M/s \_\_\_\_\_ having its registered office at \_\_\_\_\_ for the supply of \_\_\_\_\_ as detailed in your purchase order No. \_\_\_\_\_ which is hereinafter referred to as "the said contract" and WHEREAS M/s \_\_\_\_\_ has undertaken to produce a Bank Guarantee for 10% ( Ten Percent ) of \_\_\_\_\_ the contract price amounting to \_\_\_\_\_ ( \_\_\_\_\_ ) to secure its obligations to Electronics Division, BHEL having its registered office at New Delhi for the performance of the contract including the warranty of the equipment supplied, We \_\_\_\_\_ Bank \_\_\_\_\_ hereby expressly, irrevocably and unreservedly undertake and guarantee as principal obligors on behalf of M/s \_\_\_\_\_ that in the event Bharat Heavy Electricals Ltd. (B.H.E.L.) declares to us in writing that M/s \_\_\_\_\_ has not fulfilled any obligation according to the contractual obligation of the said contract, to pay you on demand and without demur to Bharat Heavy Electricals Ltd., Electronics Division , Mysore Road, P.B.No. 2606, Bangalore-560 026, India an amount of \_\_\_\_\_ (in words \_\_\_\_\_ ) subject to as may be determined below:

- 1) Notwithstanding any right M/s. \_\_\_\_\_ may have directly against you or any disputes raised by M/s \_\_\_\_\_, Your written demand shall be conclusive evidence to us that repayment is due under the terms of the said contract and shall be binding on us.
- 2) We shall not be discharged or released from this undertaking and Guarantee by any arrangements, variations made between you and M/s. \_\_\_\_\_ with or without our consent and Knowledge or by any alterations in the obligations of M/s. \_\_\_\_\_ by any forbearance whether as to payment, time, performance or otherwise.
- 3) This guarantee shall remain valid until the end of twenty-four weeks after the close of the warranty period or until the same is reported by BHEL to us whichever is earlier.
- 4) We agree and undertake not to revoke this guarantee during its validity unless discharged in writing by you subject to the provision of clause (7) below.
- 5) This guarantee shall be a continuing guarantee subject to the foregoing and shall not be discharged by any change in the constitution of the Bank or M/s. \_\_\_\_\_.
- 6) This guarantee shall be governed by and constructed in accordance with the Laws of India.
- 7) At any time \_\_\_\_\_ Bank may render this guarantee null and void by paying to Bharat Heavy Electricals Ltd. the full amount being \_\_\_\_\_ (in words \_\_\_\_\_ )

**Note:**

- (1) To be executed in 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

Signature of tenderer / with seal

**ANNEXURE - F****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/Nationalized 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 / authorized 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

**Signature of tenderer / with seal**

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 authorized 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.

Signature of tenderer / with seal

**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 CHARTEREDBANK
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

The above list is tentative and is subject to change from time to time.  
The Purchase Executive shall be contacted for confirmation of the same.

### **DISCREPANCY IN WORDS & FIGURES – QUOTED IN PRICE BID**

Following guidelines will be followed in case of discrepancy in words & figures-quoted in price bid:

- (a) If, in the price structure quoted for the required goods/services/works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of the purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly.
- (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- (c) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.
- (d) If there is such discrepancy in an offer, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the purchaser, the bid is liable to be ignored.

**Signature of tenderer / with seal**