

Bharat Heavy Electricals Ltd

Electronics Division

Mysore Road, Bangalore-560026

Tender Document for Supply and I&C of String Monitoring Box for
GIPCL 75MW Solar PV project.

RFQ Ref:ANKBOS0019

Part-I Bid Opening Date:11-May-2018 (Friday)

Content

- A. Pre Qualification Criteria
- B. Technical Specification
- C. Instructions to Bidders with Annexures and General Commercial
Conditions of Contract.

Important Information:

Last Date and Time of Tender Submission: 11-May-2018 upto 13:00:00 Hrs.

Date and Time of Tender Opening: 11-May-2018 , 13:30:00 Hrs.

Contact Persons at BHEL-EDN, Bangalore:

- 1. Mr. Chendhil Kumar, Sr Deputy General Manager (SCPV-MM)
Ph:080-26998391 email: chendhil@bhel.in
- 2. Ms. Ankita Reja, Sr Engineer (SCPV-MM)
Ph:080-26989637 email: ankitareja@bhel.in

PQC for String Monitoring Box:

- 1) Vendor should have supplied minimum cumulative quantity of 200 Nos of SMBs of 16-in (minimum) / 1-out for solar PV power plants in India during the past three years with ref to the date of opening of Part-1 bid. As evidence to this, vendor shall enclose copies of purchase orders and the supply completion certificates from the respective clients.
- 2) During technical evaluation, Credentials of vendors will be submitted to M/s GIPCL for approval. Only the price bids of those vendors, **who are technically qualified and Approved by M/s GIPCL** before price bid opening, will be considered for further procurement processing.

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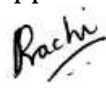
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PURCHASE SPECIFICATION

FOR

SUPPLY OF

STRING MONITORING BOXES

Revision details : R 00	Prepared  Varun Jain	Approved  Prachi Rao V	Date 13 -04-2018
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PURCHASE SPECIFICATION STRING MONITORING BOX (16-IN, 1-OUT)

PS 439-1193

REV. No. 00

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This technical specification provides BHEL requirements for supply and commissioning of String Monitoring Boxes (16-in, 1-out combiner) for the solar photovoltaic (SPV) projects.

1.0 Scope of supply:

SL No	Item Description	Quantity
1.	Supply of string monitoring box (SMB), 16-input, 1-output without Fiber Optic Converter	500 Nos.
2.	Supply of string monitoring box (SMB), 16-input, 1-output with Fiber Optic Converter	65 Nos.
3.	Supply of SMB front cover opening keys	100 Nos.
4	RS485 serial to fiber multi-mode media converter	65 Nos.
5.	Supply of Spares	
	I. Supply of 30 A fuse links	150 Nos.
	II. Supply of Surge Protection Device each type	20 Nos.
	III. Supply of DC-DC converter	10 Nos.
	IV. Supply of String Sensor Card along with communication card	15 Nos.
6.	Commissioning support for SMB communication to SCADA	565 Activity units

Note: The above spare quantities are to be supplied over and above the warranty requirements. Item-wise quantity and break-up prices shall be provided along with price bid.

2.0 Documents to be submitted along with technical bid without which offer is likely to be rejected.

- Type approval certificates, IP protection certificate & IK-07 (or better) mechanical impact resistance certificate.
- General arrangement of string monitoring (combiner) box, with overall dimensions, electrical scheme, bill of material, make/part number/rating of individual components, overall weight.
- Design

			PURCHASE SPECIFICATION STRING MONITORING BOX (16-IN, 1-OUT)	PS 439-1193
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COPYRIGHT 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 of the company.	9.	DC Disconnect Switch (manually operated load break switch)	400A (minimum), 1000V DC Load break switch that shall be used to disconnect both positive & negative sides simultaneously.	
	10.	Surge protection device (SPD) for power & communication circuit	1. For power circuit Type 1+2 SPD which shall be connected from positive and negative bus to earth to be considered. 2. The impulse capability of the SPD shall be minimum I_{imp} 6.25kA at 10/350 micro second wave. 3. During earth fault and failure of MOV, the SPD shall safely disconnect the healthy system. SPD shall have thermal disconnecter to interrupt the surge current arising from internal and external faults. 4. In order to avoid fire hazard due to possible DC arcing in SPD due to operation of thermal disconnecter, SPD shall be able to extinguish the arc. 5. For RS 485 communication circuit Type 1+2 communication SPD shall be provided.	

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COPYRIGHT 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 of the company.			Power supply of serial to fiber media converter shall be provided by DC-DC converter which is already available inside SMB for powering of monitoring card. Data sheet of serial to fiber media converter shall be submitted by the bidder for BHEL approval during detailed engineering. In addition to above requirements, 65 nos. of RS485 serial to fiber multi-mode media converter shall also be supplied as loose supply for mounting in SCADA panels, by the bidder in the 1 st lot itself in case deliveries are staggered.	
	14.	Power supply	1. Internal DC-DC converter based power supply. 2. DC power shall be drawn from solar output.	
	15.	Box Temperature sensor	RTD type (Pt100) or Semiconductor type	
	16.	Bus Bars	Tinned copper bus bars of 60mm X 5	



PURCHASE SPECIFICATION STRING MONITORING BOX (16-IN, 1-OUT)

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22.	Cable glands	For Input cable: Thermoplastic polyamide with neoprene gasket / sleeve suitable for cable size- 32 nos For Output cable: Thermoplastic polyamide with neoprene gasket / sleeve or Nickel plated brass of double compression suitable for cable size- 1 nos For communication & earthing cables: Thermoplastic polyamide suitable for cable size- 4 nos
23.	Cable entry	Bottom side
24.	Earthing	Necessary earthing provisions and terminations shall be made available in SMB.
25.	Breathers	Max of 4 nos vent breathers of IP68 (min)

Any other additional accessories as may be considered relevant and applicable for the operation of string monitoring boxes shall be included in the scope and brought out in the offer.

4.0 Testing and inspection

1.	Acceptance tests, as per relevant standards (IS, IEC and other), shall be carried out on the string monitoring (combiner) box and all the tests shall be witnessed by BHEL. Vendor shall submit Quality Plan, indicating relevant IS/IEC standards, within one week from PO.
2.	Following shall be the minimum checks. 1. Visual, dimensional inspection and quantity check 2. Bill of materials check 3. Electrical continuity check 4. HV insulation tests 5. Heat run test 6. Functional checks for RS-4

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COPYRIGHT 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 of the company.	5.0 Scope of Commissioning Support				
	1	BHEL's scope of installation and commissioning: - Movement and erection of string monitoring combiner boxes at the respective places in solar array field, including execution of all necessary civil works and erection of mounting structures. - Laying of power cables (provided by BHEL), including formation of all necessary cable trenches, from string monitoring boxes to the PCUs in control room. - Laying of communication cables (provided by BHEL), including formation of all necessary cable trenches, from string monitoring boxes to SCADA panel in inverter room / control room. - Crimping and connection of the incoming and outgoing power cables of string monitoring combiner boxes. - Crimping and connection of the incoming and outgoing communication cable of string monitoring combiner boxes.			



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भारत हेवी इलेक्ट्रिकल्स लिमिटेड

Bharat Heavy Electricals Ltd.,
(A Government of India undertaking)
Electronics Division

PB 2606 , Mysore Road Bangalore , 560026 INDIA

SCPV: BOS: ITB - Rev 02

INSTRUCTIONS TO BIDDERS (ITB)

Bidders are requested to read the instructions carefully and submit their quotations covering all the points:

A. GENERAL INSTRUCTIONS:

1. Any Purchase Order resulting from this enquiry shall be governed by the Instructions to Bidders (document reference: SCPV: BOS: ITB – Rev 01), General Conditions of Contract (document reference: SCPV: BOS: GCC - Rev 01) and Special Conditions of Contract (document reference: SCPV: BOS: SCC: I - Rev 01/ SCPV: BOS: SCC: F - Rev 01), if

10. Business dealings with bidders will be suspended if they are found to have indulged in any malpractices / misconduct which are contrary to business ethics like bribery, corruption, fraud, pilferage, cartel formation, submission of fake/false/forged documents, poor quality, certificates, information to BHEL or if they tamper with tendering procedure affecting the ordering process or fail to execute a contract, or rejection of 3 consecutive supplies or if their firms / works are under strike / lockout for a long period.

B. GUIDELINES FOR PREPARATION OF OFFER:

1. Quotation shall be submitted in Single Part Bid, Two Part Bid or Three Part Bid, as called for in the tender:
 - **SINGLE PART BID:** Technical and Commercial Bid with prices along with price summary & filled in BHEL Standard Commercial terms and conditions in a single sealed envelope.
 - **TWO PART BID:** Unpriced offer i.e. "Techno-commercial Bid" with filled in BHEL Standard Commercial terms and conditions in a sealed envelope **along with the copy of the "Price Bid" without the prices** should be enclosed in one cover and the cover must be super scribed "**Techno-commercial offer** and Priced offer i.e. "Price Bid" containing price summary in a separate sealed envelope and must be super scribed "**Price Bid**". Both these envelopes shall be enclosed in a single sealed envelope super scribed with enquiry number, due date of tender and any other details as called for in the tender document.
 - **THREE PART BID:** Pre-qualification Bid (Part-I), Techno Commercial Bid with filled in BHEL Standard Commercial terms and conditions (Part-II), and Price Bid (Part-III). All three envelopes shall be enclosed in a single sealed envelope super scribed with enquiry number due date of tender and any other

Power Projects, Export Projects, MNRE Concession or other similar projects wherein supplies are eligible for customs duty /Excise duty benefits, lists and quantities of such items and their values (CIF) has to be mentioned in the offer. Prices must be quoted taking into account of such benefits.

11. All quotations shall be free from corrections /overwriting. Corrections if any should be authenticated with signature and seal. Any typographical error, totalling mistakes, currency mistake, multiplication mistake, summing mistakes etc. observed in the price bids will be evaluated as per **Annexure VI** "Guidelines for dealing with Discrepancy in Words & Figures – quoted in price bid". BHEL decision will be final.

C. GUIDELINES FOR OFFER SUBMISSION:

1. Offers / Quotations must be dropped in tender box before 13.00 Hrs. on or before due date mentioned in RFQ. The offers are to be dropped in the proper slot of the Tender Box kept in our reception area with caption "CE, SC&PV, DEFENCE." Tenders are opened on 3 days in a week (Monday/Wednesday/Friday). Tender must be deposited in the slot corresponding to the day (Monday - Box no.4/Wednesday - Box no. 6 /Friday - Box no.8) while depositing the offer. **(This clause will not be applicable for e-tenders).**
2. E-Mail / Internet / EDI offers received in time shall be considered only when such offers are complete in all respects. In case of offers received through E-mail

4. In case of changes in scope and/ or technical specifications and/ or commercial terms & conditions by BHEL and it accounts for price implications from vendors, all techno-commercially acceptable bidders shall be asked by BHEL (after freezing the scope, technical specifications and commercial terms & conditions) to submit the impact of such changes on their price bid. Impact price will be applicable only for changes in technical specification / commercial conditions by BHEL. The impact price must be submitted on or before the cut-off date specified by BHEL and the original price bid and the price impact bid will be opened together at the time of price bid opening. Impact price means only for those items which have been impacted by addition / deletion / changes in the technical specifications or commercial conditions. The impact may be +/- incremental value of the currency in which originally quoted. The impact price bid to be submitted on the cut-off date, time & venue as specified by BHEL. The impact price bid shall be opened along with original price bid.
5. Un-opened bids (including price bids) will be returned to the respective bidders after release of PO and receipt of order acknowledgement from the successful bidder.
6. After receipt of Purchase Order, supplier should submit required documents like drawings, bill of materials, datasheets, catalogues, quality plan, test procedure, type test report , O & M Manuals and / or any other relevant documents as per Specification / Purchase Order, as and when required by BHEL / Customer.
7. Any deviation to the terms and conditions not mentioned in the quotation by supplier in response to this enquiry will not be considered, if put forth subsequently or after issue of Purchase Order, unless clarification is sought for by BHEL EDN and agreed upon in the Purchase Order.
8. Evaluation shall be on the basis of delivered cost (i.e. "Total Cost to BHEL"). As per RFQ terms.
"Total Cost to BHEL" shall include total basic

F. STANDARD PAYMENT TERMS OF BHEL-EDN**Purchase Orders for indigenous procurement****(a) SUPPLY WITH I&C/SUPERVISION:****Supply:**

- 1) 80% of basic Supply value + 100% of taxes, duties and freight charges will be paid with 45 days credit from the receipt of material at site or 15 days credit from the date of submission of complete set of documentation whichever is later.
- 2) 10% of basic supply value will be paid on completion of I&C against submission of supplementary invoice along with proof of completion of I&C along with I&C charges (if any).
- 3) Balance 10% (retention money) against submission of supplementary invoice along with PBG valid for Warranty Period+3 months Claim Period from BHEL Consortium Bank.

I&C/Supervision: 100% on completion of I&C/Supervision and certification line item wise on pro-rata basis.

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

(b) SUPPLY ONLY:

- 1) 100% of Basic value with taxes, duties and freight will be

G. LOADING FACTORS FOR PAYMENT TERMS & DELAYED DELIVERY:

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.

SI No	Deviation on	Nature of Deviation / Offered Terms	Loading %
1.	Payment Terms	For Purchase within India :-	
		1) Credit period less than 45 days	15
		* For Foreign Purchase :-	
		1) Payment through At Sight Letter of Credit	10
		2) Payment through Letter of Credit with usance credit of 45 days	5
		3) Sight Draft with credit period less than 45 days	5
2.	Penalty for Delayed Delivery	1) Non – Acceptance	10

- c. PBG should be sent directly by the bank to the dealing executive mentioned in the purchase order located at the address mentioned in the purchase order. PBG should be in the format indicated. **(Refer Annexure III)**. No deviation to these formats will be allowed.
- d. Confirmation from any of the BHEL consortium of banks or any of the Indian Public Sector Banks is essential for the acceptance of PBGs issued by foreign banks (located outside India).
- e. Expired BGs / PBGs will be returned only after expiry of the claim period or on completion of the contractual obligation.
- f. In case vendor does not accept for submission of PBG, the vendor is liable for rejection on commercial grounds.

I. DOCUMENTS (TRIPLICATE COPIES) REQUIRED AT THE TIME OF DISPATCH FOR PROCESSING OF BILL:

1. FOR INDIGENOUS SCOPE OF SUPPLY:

For Supply: Invoice in Triplicate, Lorry receipt (LR) copy, Packing List, PSI Call Letter Copy, Proof of delivery such as MRC (Material Receipt Certificate)/ original acknowledged LR, Insurance intimation Letter and Warranty Certificate. Note that document pertaining to Proof of delivery shall clearly mention number of boxes/panels etc which shall be in line with the Packing list.

For I&C: Supplementary Invoice in Triplicate with

6. Serial no. 1 to 5 will not be applicable wherever it is not possible to split the tendered quantity / items on account of customer contract requirement, or the items tendered are systems. Such information that tendered quantity will not be split will be indicated in the SCC.

K. INTEGRITY COMMITMENT IN THE TENDER PROCESS, AND EXECUTION OF CONTRACTS:

1. Commitment by BHEL:

BHEL commits to take all measures necessary to prevent corruption in connection with the Tender process and execution of the Contract. BHEL will, during the tender process, treat all bidder / suppliers in a transparent and fair manner, and with equity.

2. Commitment by Bidder(s)/ Contractor(s):

- a. The Bidder(s)/ Contractor(s) commit(s) to take all measures to prevent corruption and will not directly or indirectly try to influence any decision or benefit which he is not legally entitled to.
- b. The Bidder(s)/ Contractor(s) will not enter with other Bidder



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SCPV: BOS: GCC - Rev 02

GENERAL COMMERCIAL CONDITIONS FOR CONTRACT (GCC)

Applicable Conditions:

1. **Price Basis:** All prices shall be firm until the purchase order is executed / completed in all respects. No price variations / escalation shall be permitted unless otherwise such variations / escalations are provided for and agreed by BHEL in writing in the purchase order.
2. **Validity:** The offer will be valid for a period of 90 days from the date of technical bid opening date. Validity beyond 90 days, if required, will be specified in the SCC (special conditions of contract).
3. **Taxes & Duties:** Taxes as mentioned in the Contract Price or Price Schedule shall be paid to the Contractor subject to the Contractor complying with all the statutory requirements and furnishing the relevant documents including error free invoices containing detailed break-up of the taxes. Any duties, levies or taxes not mentioned in Contract Price or Price Schedule but applicable as per any statute(s) shall be deemed to be included in the Contract price and shall be to the account of the Contractor.
The Contractor shall bear and pay all the costs, liabilities, levies, interest, penalties in respect of non-compliances of any legal requirements as per various statutory provisions. The contractor shall keep the owner indemnified at all times from any

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.

Deviation for the delivery term is liable for rejection.

7. Penalty:

For delay in delivery: In the event of delay in agreed contractual

If it is found that L1 bidder has quoted higher in online sealed bid in comparison to envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender in the unit, it will be considered as fraud and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on www.bhel.com).

10. **Pre Shipment Inspection**

15. **Non-disclosure and Information Obligations: Vendor** shall provide with all necessary information pertaining to the goods as it could be of importance to BHEL. Vendor shall not reveal confidential information that may be divulged by BHEL to Vendor's employees not involved with the tender/ contract & its execution and delivery or to third parties, unless BHEL has agreed to this in writing beforehand. Vendor shall not be entitled to use the BHEL name in advertisements and other commercial publications without prior written permission from BHEL

formation and execution of the Contract shall continue to be the property of the disclosing party.

ANNEXURE - II
REQUEST FOR C FORM

NAME OF VENDOR :

VENDOR CODE ALLOTTED BY BHEL :

E mail id for c form correspondence :

