



**भारत हेवी इलेक्ट्रिकल्स लिमिटेड**  
**Bharat Heavy Electricals Limited**

(A Govt of India Undertaking)

Power Sector - Western Region, 345 Kingsway, Nagpur 440 001

Phone: 0712-3048600-604 Fax 0712-3048605



PUR-F 31/01  
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**PURCHASE ENQUIRY**

|           |   |            |
|-----------|---|------------|
| To<br>M/s | Our E-mail : <a href="mailto:smborkar@bhelpswr.co.in">smborkar@bhelpswr.co.in</a> |            |
|           | ENQUIRY No :  | X009 E     |
|           | ENQ.DATE  | 01.07.2010 |
|           | DUE DATE  | 22.07.2010 |

Dear sir,

Kindly submit your sealed quotation by Speed Post / Registered Post / Courier / Air Mail in **two bids viz. (1) Technical cum Commercial Bid & (2) Price Bid.** for the material indicated below confirming acceptance to the terms and conditions enclosed ,so as to reach our office on or before 3.00 PM on the due date. Quotation may be sent by Fax only if asked so by BHEL / with prior permission of BHEL.

| S. No | Description of Material   | Unit | Qty               | Delivery Schedule           | Material Required at (Destination)   |
|-------|---|------|-------------------|-----------------------------|--|
| 01    | SUPPLY OF PG TEST EQUIPMENT AS PER SPECIFICATION ENCLOSED IN ANNEXURE-I | NOs  | AS PER ANNEXURE-I | WITHIN 2 MONTH FROM PO DATE | 1 SET TO PSWR(HQ) AT NAGPUR<br>1 SET TO PSER(HQ) AT KOLKATA<br>1 SET TO PSNR(HQ) AT NOIDA<br>NOTE:-1 Set comprises of 1/3 of the total requirement of each item. |

**A) GENERAL TERMS AND CONDITIONS OF CONTRACT**

| Cl. No. | DESCRIPTION   |
|---------|---|
| 01      | Each tender should be send in a double cover, inner cover should be sealed with tenderer's distinctive seal and superscribed with correct Enquiry No. and Due Date. The outer cover should only bear the address of this office.<br>Tender should be free from CORRECTION AND ERASURES. Corrections, if any must be attested.<br>All amounts shall be indicated both in words as well as in figures. Where there is difference between amount in figures and words, amount quoted in words shall prevail. |
| 02      | Technical cum Commercial bid will be opened at 4.00 PM on Due Date. The Technical cum Commercial bid should accompany copy of documents like authorized dealership certificate, earlier supply order details of similar equipment and their performance feed back from customers, company profile and present status, product catalogue of the models offered, technical specifications of the product, commercial Terms & Conditions and other relevant documents etc.                                   |
| 03      | Price bid of technically accepted bidders only will be opened. No revision of prices will be entertained after Tenders are opened, unless mentioned in our enquiry / asked so by BHEL.  |
| 04      | Manufacturer's name, Trade Mark or Patent No. if any, shall be specified in the Technical cum Commercial Bid  |
| 05      | Please mention the relevant national / international standard code of the product quoted for in the Technical cum Commercial bid.   |
| 06      | The purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part or full without assigning any reason whatsoever.   |
| 07      | Late tenders (received after Due Date) will be rejected.  |
| 08      | Price quoted shall be valid for 60 days from the date of opening  |
| 09      | Price shall be quoted as per enclosed 'Price Format' only. Quotations not accompanying filled in 'Price Format' are likely to be rejected. Please fill in all the columns of all formats  |
| 10      | The price quoted should be as applicable to DGS & D (Govt. of India) and other Govt. Organizations. In case DGS & D rate / Running Contract is not existing, but a contract is in vogue with any BHEL Unit, reference of the same shall be furnished and same may be applicable to this contract.   |

**BHARAT HEAVY ELECTRICALS LIMITED**  
**PS-WR:HQ:NAGPUR**

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|    |   |
|----|---|
| 11 | <b>SECURITY DEPOSIT:</b> The supplier shall have to furnish Security Deposit (Cash/DD/Bank Guarantee from a Scheduled Bank) if so specified in the tender under Special Terms & Conditions.   |
| 12 | <b>PACKING AND MARKING:</b> The supplier shall arrange for secure protective packing of the goods suitable for tropical conditions to avoid loss, damage, atmospheric action during handling and transit. The packing standards will comply with relevant national standard/carrier's conditions of packing or established practice. If any damage is sustained and the carrier or underwriter attributes it to improper packing, the seller shall be liable to replace the material or reimburse the value of the loss notwithstanding any transit insurance arranged by him or not. The following marking shall be made on each package in black bold letters. NAME & ADDRESS OF CONSIGNEE, DIMENSION OF PACKAGE, WEIGHT DETAILS : GROSS , TARE & NETT These markings should be stenciled or written in bold letters on the package. Should the package be small, suitable cards/metal tags giving these details may be tagged or nailed  |
| 13 | <b>INSPECTION:</b> Final inspection will be carried out the destination/site/Purchaser's works by the authorized inspecting Officer, if so specified in the tender under Special Terms & Conditions. Whenever preliminary or stage inspection is to be carried out at supplier's works the same is subject to final acceptance after receipt of the material at the destination/Purchaser's works and the decision of the purchaser shall be final. The propriety of goods shall not pass until final acceptance by the purchaser   |
| 14 | <b>REJECTION:</b> The seller shall intimate the purchaser in writing within 15 days (after being intimated about rejection of goods) regarding disposal action of the rejected material. If no advice is received within this time the purchaser shall be at liberty to return the material at the cost and risk of the seller after receiving the cost if any paid by the Purchaser including inward freight and other incidental charges. The Purchaser will not be responsible for the rejected material thereafter and no claim will rest on him.   |
| 15 | <b>Delivery:</b> Purchaser shall not be liable to receive and pay for any supply made after delivery date stipulated in the order unless the delivery date is formally extended by the purchaser. Wherever the terms of delivery of the order is other than F.O.R. destination, delivery date will be reckoned as the date of dispatch or the date of readiness after inspection of the material where the Purchaser has agreed for inspection or collection.   |
| 16 | <b>Test certificate:</b> The seller shall carry out such tests as prescribed by the purchaser / as required in accordance to the relevant national or international standards, in his works and/or and other places as stipulated in the order. Necessary test certificate shall be submitted with delivery of materials. The seller shall also provide at no extra cost the required number of catalogues, drawing and other manuals related to materials under this order.  |
| 17 | <b>TERMS OF PAYMENT:</b> Payment will normally be made within a month of receipt of material in good condition at destination. Any other payment terms have to be mutually agreed. The seller shall send dispatch documents, invoice etc. in such quantum and a manner as provided in the order.<br>(I) It is expressly understood that in the event of rejection of the materials for which payment has been made against document's through bank the Purchaser reserves the right to claim from the seller the amount paid and the incidental charged incurred in the same manner i.e. negotiating return dispatch documents, through Bank and the Seller shall honour such claim and retire the documents from the Bank.<br>(ii) Bank charges for any payment claimed through Bank shall be borne by the seller and the seller shall also agree to bear any demurrage or other charges arising out of any delay in retirements or documents from Bank due to delayed, insufficient incorrect information furnished.<br>(iii) The seller shall also ensure that the Carriers do not delay dispatch of the consignment once the carrier's receipt is obtained. |
| 18 | <b>GUARANTEE WARRANTY:</b> The materials shall be warranted for design material and workmanship and also for performance warranty as specially stipulated by the purchaser in the order in its annexure.  |
| 19 | <b>INSURANCE:</b> Wherever specifically agreed to and directed, the supplier will insure the goods for all transit risks upto delivery of the goods at the final destination. In all other cases supplier must furnish particulars of dispatch for each consignment immediately after the dispatch of goods. Failure to do this will make the supplier responsible for making good any loss, which otherwise might have been recovered from underwriters.   |

**BHARAT HEAVY ELECTRICALS LIMITED**  
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|    |   |
|----|---|
| 20 | <p><b>DELIVERY FAILURE, TERMINATION &amp; LIQUIDATED DAMAGE:</b> The parties hereto agree that the timely dispatch/delivery and completion of the other schedules as stipulated in order/contract shall be the essence of the Order/Contract. If the seller/contractor fails to complete the dispatch/ delivery and other schedules within the time period stipulated in the order/contract, or within any extension of time granted by the purchaser, it shall be lawful for the purchaser to recover damages for the breach of order/contract without prejudice to any other rights and/or remedies provided for, in order/contract and hereunder.</p> <p>The purchaser reserves the right to recover from the Seller/Contractor, as agreed liquidated damages and <b>not by way of penalty</b>, a sum equivalent to half percent {½% of the total contract price per week part thereof, subject to a maximum of ten percent @ 10%} of the total contract price excluding elements of taxes, duties and freight, if seller/contractor has failed to deliver any part of the goods within the period stipulated in the Order/Contract.</p> <p>The purchaser reserves the right to purchase from elsewhere on account of and at the risk and cost of the seller /contractor without notice to the seller /contractor of goods not so delivered or their equivalent , without canceling the order/contract in respect of the goods not yet due for delivery.</p> <p>The purchaser reserves the right to cancel the order/contract or a portion thereof for the goods not so delivered at the risk and cost of the seller/contractor and the seller/contractor shall be liable to the purchaser for any excess costs thereof.</p> |
| 21 | <p><b>RISK PURCHASE :</b> In the event the supplier has failed to deliver or dispatch whole of the goods or any part within the time stipulated or if the same were not available in his stock, the best and the nearest available substitute thereof may be purchased/arranged by purchaser from elsewhere at the risk and the cost of the seller. The purchaser at his option will be entitled to terminate the contract and seller shall be liable for any loss which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in clause 12 above.</p>  |
| 22 | <p><b>PREFERENTIAL DELIVERY :</b> It should be noted that if an Order is placed on a higher tenderer as a result of this invitation to tender, in preference to the lowest acceptable offer in consideration of the earlier delivery, the seller will be liable to pay the purchaser the difference between the contract rate and that of the lowest acceptable tender on the basis of final price F.O.R. destination including all elements of freight, sales tax, duties and other incidentals in case of failure to complete supplies in terms of such contract within the date of delivery specified in the tender and contract.</p>  |
| 23 | <p>Purchaser reserves its right to the Public Enterprises price preference facilities as admissible under the Govt. of India policy from time to time.</p>  |
| 24 | <p>This order or any part thereof shall not be sub-contracted without the purchaser's consent.</p>  |
| 25 | <p><b>METRIC SYSTEM:</b> Supplier is requested to indicate metric system measurements in all documents.</p>   |
| 26 | <p><b>INDEMNITY:</b> The Seller shall indemnify the Purchaser against any claim due to any breach of patent, negligence, defective material or injury to seller or his agent.</p>   |
| 27 | <p>In the event of any reduction in the price, due to change of Govt. duties after award to the work and before delivery commencement, purchaser is entitled to such reduction and may negotiate fresh price at its discretion.</p>   |
| 28 | <p><b>GENERAL:</b> The purchaser reserves the right to split up the tender and place orders for individual item on different suppliers and also increase or decrease the quantity.</p>  |
| 29 | <p><b>DISPUTES &amp; ARBITRATION:</b> All cases of disputes will be resolved according to the Indian Arbitration Act 1940</p>   |
| 30 | <p><b>FORCE MAJEUR:</b> Acts of God, Acts of Government, War, Sabotage, Riots, Civil commotion, Police action, Revolution, Natural Calamities, Epidemic and other similar causes over which the supplier has no control, will amount to Force Majeur. Delay attributable to Force Majeur will be condoned; however the onus of establishing the reason of delay lies with the Supplier.</p>   |
| 31 | <p>In case of any contradictions between General and special terms and conditions, the provisions in Special Terms &amp; Conditions will prevail.</p>   |

Thanking you,

Yours faithfully,  
For BHARAT HEAVY ELECTRICALS LTD.

Sr. Engineer (PURCHASE)

**B) SPECIAL TERMS AND CONDITIONS OF CONTRACT**

| CI No. | Description  |
|--------|--|
| 1      | <b>Evaluation of Total Price:</b> Offers will be evaluated based on total price of the item and also by considering the input credit of ED or CVD offered by the vendor (i.e. <b>total landed cost including taxes, duties and freight <u>minus</u> ED or CVD paid for the same</b> ). <b>Evaluation of DP and Pressure Transmitter would be done together, and all other item will be evaluated separately.</b>   |
| 2      | <b>Tender should be submitted in two parts (1) technical bid comprising product catalogue, copy of relevant Indian Standards and Commercial Terms and conditions as enclosed. And (2) Price bid in prescribed price format in a separate sealed envelope. (Split up of Basic rate, Excise Duty, Sales tax / VAT must be furnished in the price bid)</b><br><b>Tenders received as single bid indicating the prices will be rejected.</b>   |
| 3      | <b>Payment Terms: 90% BASIC+100% TAXES AND DUTIES AGAINST DISPATCH OF MATERIAL AT OUR BHEL NAGPUR OFFICE. BALANCE 10% AGAINST SUBMISSION OF PERFORMANCE BG EQUAL TO THE WARRANTY PERIOD AND AMOUNT.</b>  |
| 4      | Following details are to be furnished by you pertaining to your Bank Accounts where proceeds will be transferred through our Banker:<br><ol style="list-style-type: none"> <li>1. Name of the Company</li> <li>2. Name of Bank</li> <li>3. Name of Bank Branch &amp; Branch Code</li> <li>4. City</li> <li>5. Account Number</li> <li>6. Account type</li> <li>7. IFSC code of the Bank Branch</li> </ol> MICR Code of the Bank Branch<br><b>NOTE:- ABOVE DETAILS SHOULD BE DULY SIGNED AND CERTIFIED BY YOUR BANKER</b> |
| 5      | Bidder must confirm whether Excise Invoice or CVD invoices shall be given or not. In case bidder confirms that excise invoice or CVD invoices shall be given, then the evaluation of bid shall be on the basis landed cost to BHEL excluding Excise Duty or CVD invoices.  |
| 6      | <b>Physical and functional inspection would be done by BHEL at destination.</b>  |
| 7      | <b>NOTE: OCTROI AT DESTINATION WILL BE PAID BY BHEL.</b>   |

Sr. Engineer / PURCHASE

**BHARAT HEAVY ELECTRICALS LIMITED  
PSWR:HQ:NAGPUR**

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**TECHNO-COMMERCIAL TERMS & CONDITIONS: (PART OF TECHNICAL CUM COMMERCIAL BID)**

ENQUIRY NO.X009 E

DT.01.07.10

DUE DATE: 22.07.2010

| SN        | DESCRIPTION OF T & C  | TERMS & CONDITIONS AS QUOTED IN THIS TENDER  |
|-----------|---|--|
| <b>01</b> | <b>DELIVERY TERMS</b>   | <b>F.O.R.DESTINATION</b>   |
| 02        | PLACE OF DELIVERY   | 1 SET TO PSWR(HQ) AT NAGPUR<br>1 SET TO PSER(HQ) AT KOLKATA<br>1 SET TO PSNR(HQ) AT NOIDA<br><b>NOTE:-1 Set comprises of 1/3 of the total requirement of each item.</b>                            |
| 03        | DELIVERY PERIOD FROM THE DATE OF ORDER  |  |
| <b>04</b> | <b>CURRENCY OF PAYMENT</b>  | <b>INR</b>   |
| 05        | PACKING & FORWARDING CHARGES  | INCLUDED@_____ % / EXTRA _____ % / NOT INCLUDED  |
| 06        | EXCISE DUTY ( % RATE)<br>Or CVD   | INCLUSIVE@_____ % / EXTRA _____ % AS APPLICABLE AT THE TIME OF DISPATCH / NOT APPLICABLE   |
| 07        | EXCISE INVOICE/ CVD INVOICES FOR CENVAT BENEFIT                                       | <input type="checkbox"/> <b>SHALL BE PROVIDED</b><br><br><input type="checkbox"/> <b>NOT PROVIDED</b>  |
| 08        | <b>CST / VAT WITHOUT CONCESSIONAL FORMS "C"/ "D" % RATE)</b>                          | INCLUSIVE@_____ %/EXTRA@_____ % AS APPLICABLE AT THE TIME OF DISPATCH / NOT APPLICABLE<br><b>(NO "C" OR "D" FORM WILL BE ISSUED BY BHEL)</b>   |
| 09        | FREIGHT CHARGES UP TO DESTINATION   | <b>EXTRA @_____ % / INCLUDED @_____ %</b>  |
| 10        | TRANSIT INSURANCE CHARGES   | BY BHEL. SUPPLIER HAS TO INTIMATE THE DISPATCH DETAILS TO BHEL'S UNDERWRITERS AS SOON AS THE MATERIAL DISPATCHED.  |
| 11        | ANY OTHER CHARGES (please specify here the nature of charge)                          | <b>(AMOUNT TO BE SPECIFIED IN THE PRICE FORMAT)</b>  |
| 12        | PAYMENT TERMS (Specify scope of Banker's Charges at both ends / Demand Draft Charges) | <b>90% BASIC+100% TAXES AND DUTIES AGAINST SUBMISSION OF DISPATCH DOCUMENTS DIRECTLY TO BHEL NAGPUR. BALANCE 10% AGAINST SUBMISSION OF PERFORMANCE BG EQUAL TO THE WARRANTY PERIOD AND AMOUNT.</b> |
| 13        | MODE OF DISPATCH  | BY ROAD / RAIL / SHIP / AIR / CARGO COURIER / SPECIAL MESSENGER / HAND DELIVERY  |
| 14        | NAME OF THE GOODS MANUFACTURER / PRINCIPALS   |  |
| 15        | TRADE NAME / MODEL NUMBER OF GOODS  |  |
| 16        | AUTHORIZED DEALERSHIP CERTIFICATE   | CERTIFICATE OF MANUFACTURER/PRINCIPALS: ENCLOSED / NOT ENCLOSED  |
| 17        | WARRANTY / GUARANTEE CONDITIONS   |  |
| 18        | PRODUCT CATALOGUE / WRITE UP  | ENCLOSED / NOT ENCLOSED  |
| 19        | CONTACT PERSON NAME   |  |
|           | CONTACT PERSON PH NUMBER  |  |
|           | CONTACT PERSON EMAIL  |  |

SIGNATURE & SEAL OF TENDERER

**Dully filled and signed this sheet should be sent as a part of technical bid .**

**PRICE FORMAT**

**BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR: WESTERN REGION:NAGPUR**

NAME OF THE TENDERER: \_\_\_\_\_

SELLER'S REF. No. \_\_\_\_\_ DATE : \_\_\_\_\_

ENQUIRY No.: X009 E

DATED: 01.07.10

**DUE DATE: 22.07.2010**

| S.N. | DESCRIPTION  | PRODUCT - 1 | PRODUCT-2 | PRODUCT-3 | PRODUCT-4 | PRODUCT-5 |
|------|--|-------------|-----------|-----------|-----------|-----------|
| A    | ITEM DESCRIPTION AS PER ENQUIRY<br>(PLEASE QUOTE THE BRAND NAME AND<br>MODEL NUMBER) |             |           |           |           |           |
| B    | QTY OFFERED  |             |           |           |           |           |
| C    | UNIT RATE  |             |           |           |           |           |
| D    | CURRENCY   |             |           |           |           |           |
| E    | DISCOUNT (%AGE & AMOUNT)   |             |           |           |           |           |
| F    | DISCOUNTED UNIT RATE   |             |           |           |           |           |
| G    | DISCOUNTED BASIC PRICE (G = B x F)   |             |           |           |           |           |
| H    | PACKING & FORWARDING CHARGES   |             |           |           |           |           |
| I    | EXCISE DUTY / CVD (PERCENTAGE AND<br>AMOUNT)   |             |           |           |           |           |
| J    | IMPORT DUTY (PERCENTAGE & AMOUNT)  |             |           |           |           |           |
| K    | CST / VAT WITHOUT C-FORM<br>(PERCENTAGE & AMOUNT)                                    |             |           |           |           |           |
| L    | FREIGHT UPTO DESTINATION   |             |           |           |           |           |
| M    | TRANSIT INSURANCE  | BY BHEL     | BY BHEL   | BY BHEL   | BY BHEL   | BY BHEL   |
| O    | <b>TOTAL PRICE AT DESTINATION ( SUM of<br/>'G' to 'O')</b>                           |             |           |           |           |           |

**NOTES:**

1. PLEASE USE ADDITIONAL SHEETS IF NECESSARY
2. FURNISH FURTHER BREAK UP OF PRICE IF NECESSARY

**SIGNATURE OF THE TENDERER WITH SEAL**

**PRICE FORMAT**

**BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR: WESTERN REGION:NAGPUR**

NAME OF THE TENDERER: \_\_\_\_\_

SELLER'S REF. No. \_\_\_\_\_ DATE : \_\_\_\_\_

ENQUIRY No.: X009 E

DATED: 01.07.10

**DUE DATE: 22.07.2010**

| S.N. | DESCRIPTION  | PRODUCT - 6 | PRODUCT-7 | PRODUCT-8 | PRODUCT-9 | PRODUCT-10 |
|------|--|-------------|-----------|-----------|-----------|------------|
| A    | ITEM DESCRIPTION AS PER ENQUIRY<br>(PLEASE QUOTE THE BRAND NAME AND<br>MODEL NUMBER) |             |           |           |           |            |
| B    | QTY OFFERED  |             |           |           |           |            |
| C    | UNIT RATE  |             |           |           |           |            |
| D    | CURRENCY   |             |           |           |           |            |
| E    | DISCOUNT (%AGE & AMOUNT)   |             |           |           |           |            |
| F    | DISCOUNTED UNIT RATE   |             |           |           |           |            |
| G    | DISCOUNTED BASIC PRICE (G = B x F)   |             |           |           |           |            |
| H    | PACKING & FORWARDING CHARGES   |             |           |           |           |            |
| I    | EXCISE DUTY / CVD (PERCENTAGE AND<br>AMOUNT)   |             |           |           |           |            |
| J    | IMPORT DUTY (PERCENTAGE & AMOUNT)  |             |           |           |           |            |
| K    | CST / VAT WITHOUT C-FORM<br>(PERCENTAGE & AMOUNT)                                    |             |           |           |           |            |
| L    | FREIGHT UPTO DESTINATION   |             |           |           |           |            |
| M    | TRANSIT INSURANCE  | BY BHEL     | BY BHEL   | BY BHEL   | BY BHEL   | BY BHEL    |
| O    | <b>TOTAL PRICE AT DESTINATION ( SUM of<br/>'G' to 'O')</b>                           |             |           |           |           |            |

**NOTES:**

1. PLEASE USE ADDITIONAL SHEETS IF NECESSARY
2. FURNISH FURTHER BREAK UP OF PRICE IF NECESSARY

**SIGNATURE OF THE TENDERER WITH SEAL**





BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR-WESTERN REGION, NAGPUR-440001

**ANNEXURE-I**

**TECHNICAL SPECIFICATION FOR DP TRANSMITTER- ENQ NO.X009 E DT.01.07.2010**

| <b>Qty Required</b>   | <b>60</b>  | <b>15</b>   |
|---|--|---|
| Range Required  | 0-1.0 kg /cm <sup>2</sup>  | 0-2.5 kg /cm <sup>2</sup>   |
| Static Pressure   | 320 kg/cm <sup>2</sup>   | 320 kg/cm <sup>2</sup>  |
| Type  | SMART Type   |   |
| Adjustable range from   | 0-0.2 kg /cm <sup>2</sup> for full scale of<br>0-1.0 kg/cm <sup>2</sup>  | 0-1.0 kg /cm <sup>2</sup> for full scale<br>of 0-2.5 kg/cm <sup>2</sup> |
| 5 way SS Manifold valves ( non<br>integral) with 1/2" NPT Male to<br>be supplied  | 40 nos.  | 10 nos.   |
| Loop voltage  | 24V +/- 5V (DC)  |   |
| Local Display   | Not Required   |   |
| Output  | 4-20 mA  |   |
| Operating Temp  | 0-60 deg C   | 0-60 deg C  |
| Burst pressure  | 1.5 times static pressure  |   |
| Accuracy  | <b>+/- 0.05% of the range</b>  |   |
| Process connection  | 1/2" NPT male  |   |
| Process wetted parts  | 316L SST or equivalent   |   |
| Flange  | 316 SST or equivalent for<br>flange and adaptor bolts  |   |
| <ul style="list-style-type: none"> <li>Required One Universal hand held HART communicator to be supplied by vendor for the full lot</li> </ul>  |  |   |
| <ul style="list-style-type: none"> <li>Items are to be supplied in properly packed hard (minimum of fibre body) portable carrying cases<br/>(maximum 05 no per carrying case) for trouble free transportation from site to site.</li> </ul> |  |   |
| <ul style="list-style-type: none"> <li>The calibration certificate</li> </ul>   | Min 3 point calibration certificate, up & down, to be supplied by the vendor from any accredited lab such as NABL/UCAS/NIST or National Laboratories of any country. |   |

- i. **Dully sign this sheet and sent with the technical bid as a token of acceptance for Technical Specifications.**
- ii. **In case of any deviation, kindly mention.**

BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR-WESTERN REGION, NAGPUR-440001

**ANNEXURE-I**

**TECHNICAL SPECIFICATION FOR PRESSURE TRANSMITTER- ENQ NO.X009 E DT.01.07.2010**

| Range  | No of items required   | Type          |
|--|--|---------------|
| 0 to 780 mm Hg   | 90   | Absolute Type |
| 0 to 10 Kg/cm2   | 105  |               |
| 0 to 25 Kg/cm2   | 45   | GAUGE TYPE    |
| 0 to 100Kg/cm2   | 120  |               |
| 0 to 350 Kg/cm2  | 60   |               |
| Type   | Smart Type   |               |
| Supply voltage   | 24V +/- 5 Volts (DC)   |               |
| Out put  | 4-20 mA  |               |
| Accuracy:  | ± 0.1% of Full Scale or better   |               |
| Wetted material  | SS 316 or equivalent   |               |
| Operating Temp   | 0-60 deg C   |               |
| Local Display  | Not Required   |               |
| Zero & span adjustment   | 10% Full scale or better   |               |
| Proof/Bursting pressure  | twice the full scale   |               |
| Process connection   | ½" NPT Female  |               |
| Connection   | 2 wire with standard DIN plug (Male & Female) or equivalent with PT are to be supplied |               |
| <ul style="list-style-type: none"><li>• 280 nos Two way SS Manifold valves ( Inlet M20X1.5 mm Male, Other end to be connected to PT) to be supplied with main supply</li></ul>   |  |               |
| <ul style="list-style-type: none"><li>• Two universal hand held HART communicator to be supplied</li></ul>   |  |               |
| <ul style="list-style-type: none"><li>• Items are to be supplied in properly packed hard portable carrying cases (maximum 05 nos. per carrying case fitted with foam etc) for trouble free transportation from site to site.</li></ul> |  |               |
| <ul style="list-style-type: none"><li>• Min 3 point calibration certificate, up &amp; down, to be supplied by the vendor from any accredited lab such as NABL /UCAS/NIST or National Laboratories of any country.</li></ul>            |  |               |

- i. **Dully sign this sheet and sent with the technical bid as a token of acceptance for Technical Specifications.**
- ii. **In case of any deviation, kindly mention.**

BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR-WESTERN REGION, NAGPUR-440001

**ANNEXURE-I**

**TECHNICAL SPECIFICATION FOR PLATINIUM RESISTANCE THERMOMETER (HIGH RANGE)-  
ENQ NO.X009 E DT.01.07.2010**

|   |
|---|
| <b>TYPE PRT – 100</b>   |
| <b>Quantity Required: 300 Nos</b>   |
| <b>Features :</b>   |
| 1. MINERAL INSULATED PLATINIUM RESISTANCE THERMOMETER ( PT-100)   |
| 2. MEASURING RANGE: 0-660 DEG. CENT.  |
| 3. FOUR WIRE DESIGN PROVIDED WITH EXTENSION WIRE FROM ELEMENT TO HEAD OF PRT SHOULD BE OF PLATINIUM AND CONTINUOUS LEAD OF 2 METER LENGTH (SILVER COATED COPPER WIRE). THIS CONTINUOUS LEAD SHOULD BE MECHANICALLY PROTECTED WITH LIGHT WEIGHT SPIRAL COIL.                                   |
| 4. PROVIDED WITH 4-PIN INTEGRATED FEMALE CONNECTOR. (MATCHING MALE CONNECTOR TO BE SUPPLIED WITH EACH RTD SEPERATELY AS LOOSE ITEM). CONNECTOR SHOULD BE OF GOLD /SLIVER PLATED TYPE  |
| 5. PRT STEM TO BE PROVIDED WITH 6 MM OD SS-304 /INCONEL SHEATHING FOR PROTECTION.   |
| 6. IMMERSION LENGTH O F ELEMENT BELOW HEAD <b>400 MM.</b>   |
| 7. STEM TO BE PROVIDED WITH ADJUSTABLE M20 X 1.5 COUPLING WITH SUITABLE TEFLON FERRULE INSIDE   |
| 8. ACCURACY : 0.3 DEG C FOR FULL RANGE FOR 0-660 DEG C  |
| 9. PRT RESISTANCE TEMPERATURE COEFFICIENT AND ALL THE INHERENT ERROR SUCH AS SELF HEATING ETC TO SUIT ABOVE SPECIFIED ACCURACY REQUIREMENT  |
| <b>OTHER REQUIREMENTS :</b>   |
| 1. All sensors shall be supplied with calibration certificates from any accredited lab such as NABL/ UCAS/ NIST or National Laboratories of any country for entire range (5 fixed point i.e. TPW & freezing /melting points of Gallium, Tin, Zinc & Aluminium) for this accuracy requirement. |
| 2. RTDs should be packed ( 5- 10 no in each box) in Suitable rugged, shock proof and portable (hard top) carrying case  |
| 3. Three sets of O & M manual, TC, GC, certificates of newness, calibration certificates for each sensor from and ISO accredited lab have to be supplied by the party.  |
| 4. The supplier should stand guarantee for minimum one year for trouble free operation of all sensors at various sites.   |
| 5. Parties not meeting any of above requirement shall be outright rejected.   |
| 6. Inspection before dispatch at supplier's works. During this, calibration certificates shall be furnished.  |
| 7. Only authorized dealer/distributor of original manufacturer need send their quotations supported by valid authorization letter from principle confirming acceptance to all technical/commercial terms of purchase contract.  |
| 8. Sample for 4 pin male-female connector to be provided by purchaser after placement of final PO.  |
| 9. Sample approval from purchaser before final full lot of manufacture.   |

- i. **Dully sign this sheet and sent with the technical bid as a token of acceptance for Technical Specifications.**
- ii. **In case of any deviation, kindly mention.**

BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR-WESTERN REGION, NAGPUR-440001

**ANNEXURE-I**

**TECHNICAL SPECIFICATION FOR PLATINIUM RESISTANCE THERMOMETER (HIGH RANGE) - ENQ  
NO.X009 E DT.01.07.2010**

|  |
|--|
| 10) Detailed catalogue/Drawings must be furnished with offer for technical scrutiny.   |
| 11) Four digit Serial no. of each PRT to be punch marked at one place and also to be marked on a tag which will allocated by BHEL later ON   |
| 12) Inspection before dispatch at supplier's works. During this, calibration certificates shall be furnished.<br><b>The charges for calibration should be included in the offer.</b>   |
| 13) Detail calibration circuit, procedure and equipment used for calibration is to be supplied by the party.   |
| 14) Only authorized dealer/distributor of original manufacturer need send their quotations supported by valid authorization letter from principle confirming acceptance to all technical/commercial terms of purchase contract.  |
| 15) If BHEL feels, calibration of the sensors from time to time has to be carried out by the supplier. The cost of this have to be quoted additionally and this will be valid five years from the commissioning of the equipment. All suppliers must full fill this requirement. |
| 16) Proof earlier supply of PRT of maximum uncertainty 0.5 % of FSD to accompany the offer.  |
| 17) Sample for 4 pin female connector to be provided by purchaser after placement of final PO.   |
| 18) Sample approval from purchaser before final full lot of manufacture.   |
| 19) Detailed catalogue/Drawings must be furnished with offer for technical scrutiny.   |
| 20) Serial no. of each, individual PRT to be punch marked at one place at head and to be painted at one more place inside head.  |

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BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR-WESTERN REGION, NAGPUR-440001

**ANNEXURE-I**

**TECHNICAL SPECIFICATION FOR THERMOCOUPLE- ENQ NO.X009 E DT.01.07.2010**

|   |
|---|
| <b>DETAILED SPECIFICATION :</b>   |
| <b>TYPE : K TYPE THERMOCOUPLE</b>   |
| <b>QUANTITY REQUIRED: 300 NOS.</b>  |
| <b>GENERAL REQUIREMENT</b>  |
| 1. MINERAL INSULATED K type thermocouple ( Ungrounded type)   |
| 2. MEASURING RANGE : 0-650 DEG. C   |
| 3. IMMERSION LENGTH OF ELEMENT BELOW HEAD <b>400</b> mm.  |
| 4. STEM TO BE PROVIDED WITH ADJUSTABLE M20 X 1.5 COUPLING WITH SUITABLE TEFLON FERRULE INSIDE   |
| 5. ACCURACY : +/- 3/8 % ( For 0-277deg C accuracy requirement is +/- 1.1 deg C and 277 deg C to 650 deg C the accuracy requirement is +/- 3/8 % ) |
| 6. TC STEM TO BE PROVIDED WITH 6 MM OD SS-304 SHEATHING FOR PROTECTION.   |
| 7. MEASURING JUNCTION ELEMENT should not be WELDED TO PROTECTION TUBE.  |
| 8. MINERAL INSULATION FOR MEASURING JUNCTION LEADS INSIDE PROTECTION TUBE.  |
| 9. THERMOCOUPLE TO BE PROVIDED WITH PROCELAIN CONNECTOR AND LIGHT WEIGHT METALLIC HEAD.   |
| 10. PORCELAIN INSULATED TERMINAL BLOCK  |

|   |
|---|
| <b>OTHER REQUIREMENTS :</b>   |
| 1. All sensors shall be supplied with calibration certificates from any accredited lab such as NABL /UCAS/NIST or National Laboratories of any country for entire range (at 0,300, 350,400 ,450,500 , 550, 600 ,650 Deg. Cent.) for this accuracy requirement . |
| 2. TCs should be packed ( 8-10 no in each box) in Suitable rugged, shock proof and portable (hard top) carrying case  |
| 3. Three sets of O & M manual, TC, GC, certificates of newness, calibration certificates for each sensor from and ISO accredited lab have to be supplied by the party.  |
| 4. The supplier should stand guarantee for minimum one year for trouble free operation of all sensors at various sites.   |
| 5. Parties not meeting any of above requirement shall be outright rejected.   |
| 6. Inspection before dispatch at supplier's works. During this, calibration certificates shall be furnished.  |
| 7. Only authorized dealer/distributor of original manufacturer need send their quotations supported by valid authorization letter from principle confirming acceptance to all technical/commercial terms of purchase contract.                                  |
| 8. Sample approval from purchaser before final full lot of manufacture.   |
| 9. Detailed catalogue/Drawings must be furnished with offer for technical scrutiny.   |
| 10. Four digit Serial no. of each TC to be punch marked at one place and also to be marked on a tag which will allocated by BHEL later ON   |

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BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR-WESTERN REGION, NAGPUR-440001

**ANNEXURE-I**

**TECHNICAL SPECIFICATION FOR POWER TRANSDUCER- ENQ NO.X009 E DT.01.07.2010**

| Qty required  | 60 Nos.  |  |
|---|--|--|
| TYPE OF SYSTEM  | SUITABLE FOR THREE PHASE-FOUR WIRE CIRCUITS  |  |
| TYPE OF MEASUREMENT   | FOR MEASUREMENT OF ACTIVE POWER in the <b>Power Factor range 0.75 Lead to 0.75 Lag</b> |  |
| OUTPUT RANGE  | 4 TO 20 milli AMPS   |  |
| Power supply  | Self Powered or 230V AC +/- 10%  |  |
| Accuracy  | +/- 0.2% OF Range  |  |
| Input VOLTAGE RANGE   | 110 V for 3Ph 3 Wire system  |  |
|   | 63.5 V for 3Ph 4 Wire system   |  |
| Input CURRENT RANGES  | 1Amp & 5 Amp   |  |
| Items are to be supplied in properly packed hard portable carrying cases (maximum 05 no per carrying case) for trouble free transportation from site to site. |  |  |
| The calibration certificate to be supplied by the vendor from any NABL or equivalent accredited lab   |  |  |

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BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR-WESTERN REGION, NAGPUR-440001

**ANNEXURE-I**

**TECHNICAL SPECIFICATION FOR DIGITAL AC POWER METER- ENQ NO.X009 E DT.01.07.2010**

| <b>"DIGITAL AC POWER METER"</b>   |  |
|---|--|
| <b>Specification</b>  | <b>Our requirement</b>   |
| <b>Quantity Required</b>  | <b>06 Nos.</b>   |
| Basic Accuracy  | 0.1% of Range or better (for pf $\geq$ 0.8)  |
| Frequency   | 45-55 HZ   |
| Wiring  | Single phase 2 wire, 3 phase 3 wire , 3 phase 4 wire   |
| No of input elements  | Minimum 3 isolated input for voltage and current   |
| Voltage Range of measurement  | 50-70V, 100-150V, 200-250V, 350-440V or nearby suitable ranges   |
| Max. continuous allowed Input   | 1.6 times of peak or higher  |
| Current Range of measurement  | 1A,5A,10A or equivalent  |
| Measurement parameters ( each for 3 phase)  | Voltage, current, active power, reactive power, apparent power, power factor, peak voltage, peak current                     |
| Effective Input Range   | 1% to 130% for both voltage & current, Display up to 140%  |
| Scaling   | Provision for CT & PT & Power coefficient Ratio  |
| Display types   | Digital  |
| Display   | TFT / LCD  |
| Facility Required   | Simultaneous digital display of at least three types from data mentioned above. Total three phase power must be displayable. |
| Interfaces  | Both ring and banana type current connector  |
|   | USB Port with supporting software  |
|   | LAN port   |
| General Specifications: -   | Rated Supply Voltage: 230VAC, 50/60Hz  |
| Ethernet Communications/LAN   | Must   |
| Type of connection for current / voltage Input  | Screw type and/or plug & lock type   |
| Vendor to supply all leads, clamps for all ranges to measure simultaneous 3 phase power |  |

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BHARAT HEAVY ELECTRICALS LIMITED  
POWER SECTOR-WESTERN REGION, NAGPUR-440001

**ANNEXURE-I**

**TECHNICAL SPECIFICATION FOR DIGITAL AC POWER METER- ENQ NO.X009 E DT.01.07.2010**

|               |   |
|---------------|---|
| Calibration   | Calibration certificate with better than +/- 0.1 % uncertainty of the reading is to be supplied by the vendor from any accredited lab such as NABL /UCAS/NIST or National Laboratories of any country for the all range. Additional specific calibration at 60V,70V,100V,110V for 0-5 Amp and pf 0.8 lag, 0.9 lag and unity will required . |
| Carrying Case | Items are to be supplied in properly packed hard portable carrying cases for trouble free transportation from site to site.   |

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**ANNEXURE-I**

**TECHNICAL SPECIFICATION FOR CABLE FOR PRESSURE TRANSMITTER- ENQ NO.X009 E DT.01.07.2010**

**Cable set ( Each Mounted on a rollable spool)**

| <b>Cable Suitable to PRT : Qty. Required- 900 nos</b>  |
|--|
| 1. The specified cable to be of length 50 meters and rolled in a spool of suitable dimension for easy rolling and unrolling during use.  |
| 2. 4 Core copper Lead wire   |
| 3. Each core consisting of seven copper strands (twisted) each of 0.2mm dia (7X 0.2mm). All strand should be silver plated(Resistance of each conductor should be within tolerance of IS 434)  |
| 4. Each core to be insulated individually with Teflon and twisted. . Minimum insulation thickness 0.3mm Insulation thickness, insulation Resistance and high voltage tests on cable shall be as per heavy duty 650/1100 volt grade cable of above IS |
| 5. Overall Teflon Sheath with round section O.D. NOT LESS THAN 4 MM.   |
| 6. Colour code of cores : 1. Red 2. White 3. Blue 4. Green   |
| 7. Overall colour : Parrot Green   |
| 8. Sample of 1 meter length cable meeting above specifications to be furnished before placement of order for approval.   |
| 9. Inspection of full lot before purchaser's representative shall be done before delivery at suppliers work. Facilities to be check copper cross sectional area, cable resistance and insulation resistance etc. shall be arranged by the suppliers. |

| <b>CHROMEL-ALUMEL extension Cable for K type TC: Qty. Required-450 nos</b>  |
|---|
| 1. The specified cable to be of length 50 meters and rolled in a spool of suitable dimension for easy rolling and unrolling during use.   |
| 2. 2 Core Chromal Alumal cable KX type as per ANSI 96.1.  |
| 3. Both the cores (i.e. Chromal & Alumal) of multistrand 7/0.2mm.   |
| 4. Each conductor Teflon insulated. Then pair twisted together.   |
| 5. Twisted pair to be screened with Mylar Aluminum Tap in contact throughout with a bare, annealed, tinned copper drain wire (of size 0.8 mm dia) so as to reject EM & ES interference. |
| 6. Overall Teflon Sheath with round section O.D. NOT LESS THAN 4 MM.  |
| 7. Gas, Steam & Water tight insulation.   |
| 8. Thickness of both core & sheath insulation to be as per relevant IS code.  |
| 9. Colour code as follows :   |
| Chromal wire : Yellow   |
| Alumal Wire : Red   |
| Overall Sheath :Yellow  |

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POWER SECTOR-WESTERN REGION, NAGPUR-440001

**ANNEXURE-I**

**TECHNICAL SPECIFICATION FOR CABLE FOR PRESSURE TRANSMITTER- ENQ NO.X009 E DT.01.07.2010**

|   |
|---|
| 10. Sample of 1 meter length cable meeting above specifications to be furnished before placement of order for approval.   |
| 11. Inspection of full lot before purchaser's representative shall be done before delivery at suppliers work. Facilities to be check copper cross sectional area, cable resistance and insulation resistance etc. shall be arranged by the suppliers. |

|   |
|---|
| <b><u>Cable for Pressure Transmitter : Qty. Required-600 nos</u></b>  |
|   |
| 1. The specified cable to be of length 50 meters and rolled in a spool of suitable dimension for easy rolling and unrolling during use.   |
| 2. 2 Core Copper-lead wire  |
| 3. Both the cores of multistrand 7/0.2mm, silver plated   |
| 4. Each conductor Teflon insulated. Then pair twisted together. Min insulation thickness: 0.25mm  |
| 5. Overall Teflon Sheath with round section O.D. NOT LESS THAN 3 MM.  |
| 6. Gas, Steam & Water tight insulation.   |
| 7. Colour code as follows :   |
| 8. Individual Core: Red & Black   |
| 9. Overall Sheath colour: Light Blue  |
| 10. Conductor resistance, and insulation resistance shall be arranged by supplier   |
| 11. Sample of 1 meter length cable meeting above specifications to be furnished before placement of order for approval.   |
| 12. Inspection of full lot before purchaser's representative shall do delivery at suppliers work. Facilities to be check copper cross sectional area, cable resistance and insulation resistance etc. shall be arranged by the suppliers. |

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