BSES
RAJDHANI POWER LIMITED

Volume - I

Tender Notification for

RATE CONTRACT FOR SUPPLY OF NET METERS (1 PHASE,3 PHASE,LTCT & HT METERS)

CMC/BR/20-21/SV/RS/SN/876

Date : 25.02.2021

Due Date for Submission of Bids : 17.03.2021

BSES RAJDHANI POWER LTD (BRPL)
BSES Bhawan, Nehru Place, New Delhi-110019
Corporate Identification Number:
U74899DL2001PLC111527
Telephone Number: +91 11 49207235
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Website: www.bsesdelhi.com

BSES
RAJDHANI POWER LIMITED

SECTION - I

REQUEST FOR QUOTATION

Tender Notification : CMC/BR/20-21/SV/RS/SN/876

RATE CONTRACT FOR SUPPLY OF NET METERS(1 PHASE,3 PHASE,LTCT & HT METERS)

Date : 25.02.2021

BSES
RAJDHANI POWER LIMITED

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SECTION – I: REQUEST FOR QUOTATION

1.00 Event Information

BRPL invites Sealed tenders **RATE CONTRACT FOR SUPPLY OF NET METERS(1 PHASE,3 PHASE,LTCT & HT METERS)** . The bidder must qualify the technical requirements as specified in clause 2.0 stated below.The sealed envelopes shall be duly superscribed as — **"RATE CONTRACT FOR SUPPLY OF NET METERS(1 PHASE,3 PHASE,LTCT & HT METERS) VIDE TENDER NOTICE CMC/BR/20-21/SV/RS/SN/876 DUE FOR SUBMISSION ON DT. 17.03.2021", 1500 HRS.**

Sl. No.	Item Description	Specification	Requirement	Estimated Cost
			Total Qty. (Nos)	
BRPL,DELHI				
1	1-Ph Whole Current Net Meter (10A-60A, 240V, CI-1.0)	SECTION V	500	***35.68 Lacs***
2	3-Ph Whole Current Net Meter (20A-60A, 240V. CI-1.0)		600	
3	LT CT Net Meter (3P-4W, 240Volts, CL-0.5s)		200	
4	HT Net Meter (3P-4W, 63.5V, 5A, CL-0.5s)		200	

Note:

- **Quantity may vary to any extent of +/- 30% of above mentioned total quantity.**
- **The rates quoted shall remain valid for one year from the date of LOI/RC.**

1.02 The schedule of specifications with detail terms & conditions can be obtained from address given below against demand draft/Pay Order of **Rs.1180/-**, drawn in favour of **BSES RAJDHANI POWER LTD,** payable at New Delhi. The tender documents can be downloaded from the website **"www.bsesdelhi.com"**.

In case tender papers are downloaded from the above website, then the bidder has to enclose a demand draft covering the cost of bid documents as stated above in a separate envelope with suitable superscription — "Cost of Bid Documents: Tender **Notice Ref: CMC/BR/20-21/SV/RS/SN/876 ".**This envelope should accompany the Bid Documents.

1.00 Offers will be received upto **15:00 Hrs. on dt. 17.03.2021** as indicated earlier and will be opened at the address given below dt **17.03.2021 at 15:30 Hrs.** in the presence of authorized representatives of the bidders**.** The schedule of specifications with detail terms & conditions are enclosed. It is the sole responsibility of the bidder to ensure that the bid documents reach this office on or before the due date.

HEAD OF THE DEPARTMENT,
1st FLOOR, 'C' BLOCK,
CONTRACTS & MATERIALS DEPARTMENT,
BSES RAJDHANI POWER LTD,
BSES BHAWAN,
NEHRU PLACE, NEW DELHI-110019.

1.04 BRPL reserves the right to accept/reject any or all Tenders without assigning any reason thereof and alter the quantity of materials mentioned in the Tender documents at the time of placing purchase orders. Tender will be summarily rejected if:

(i). Earnest Money Deposit (EMD) @ 2% (Two percent) of the Tender value i.e **Rs 72,000/-** is not deposited in shape of Bank Draft in favour of BSES RAJDHANI POWER LTD, payable at New Delhi or Bank Guarantee executed on favour of BSES RAJDHANI POWER LTD.

(ii). The offer does not contain "FOR, NEW DELHI price indicating break-up towards all taxes & duties"

(iii). Complete Technical details are not enclosed.

(iv). Tender is received after due time due to any reason**.**

1.05 BRPL reserves the right to reject any or all bids or cancel/withdraw the invitation for bids without assigning any reason whatsoever and in such case no bidder/intending bidder shall have any claim arising out of such action.time of placing purchase orders.

2.0 Qualification Criteria:-

The prospective bidder must qualify all of the following requirements to be eligible to participate in the bidding. Bidders who meet following requirements will be considered as successful bidder and management has a right to disqualify those bidders who do not meet these requirements.

1. The bidder must be a meter manufacturer of static meter.
2. The bidder shall either themselves be manufacturers of the equipment offered or accredited representatives of such manufacturers in India or of their Principals abroad with whom they may be having collaboration **Such accreditation should be at least of one year preferably last year as on date of tender.** Authority letter from manufacturer shall be attached along with bid.
3. Relevant documents in support of the above must be furnished along with undertaking of the manufacturers. If these documents are not furnished along with the tenders the offer will be rejected summarily.
4. Bidder should have supplied minimum 1000 similar type of meters in last five years (From the date of technical bid opening) to Electricity Distribution Utility / Undertaking in India with electronic display and communication facility.
5. Offered meters should be in successful operation for minimum 2 years as on the date of opening of Bid.This should be supported by the copies of purchase orders and performance reports from the SEBs / Power utilities should be enclosed.
6. The bidder must possess valid ISO 9001:2000 certification for meter manufacturing and possess possess valid BIS Licence.
7. Firms who are debarred/blacklisted in other utilities in India will not be considered.
8. The Bidder should have average turnover of Rs.20 Crores in the last three financial years (i.e. 2017-18,18-19 & 19-20) **.** Bidder should submit report on financial standing such as profit and loss statement, balance sheets for the last three years as an supporting documents.
9. Bidder should have complete volume of type test reports as per IS 13779 (Including latest amendments if any) and magnet test as per CBIP-88 from any NABL accredited lab. The type test report should not be older than 5 years as on the date of opening of tender.
10. The manufacturer should have following facility to meet both quality and quantity requirement of supplies :

a) Computerized test bench: The manufacturer should have sufficient nos of Computerized test benches. The benches should have electronic supply, Isolated CT/ PT system and data should be directly stored in central server.

b) Seal tracking system: The manufacturer has to put both his own seal and BSES seal on the meter. He should have a seal tracking software to ensure tracking of seal and no duplication of seals and meter nos.

c) Meter Burn In system: In order to ensure the reliability of components and that there is no drift in meter accuracy with time ; the manufacturer should have burn in facility --- Running meter with load at elevated temperature.

d) Routine test data: During lot acceptance,all routine test data should be made available to inspector In fact as per BIS , STI all test data should be offered to inspector for verification.Routine test report should be packed with each meter.

e) Test benches : During the lot acceptance , BSES inspector can test up to 5% of offered quantity .The manufacturer should agree to provide all test facility to do so . Further he should allow BSES inspector to check shop floor process.The place of inspection should be clearly marked in tender and same should be well equipped .

f) Test equipments : Since the meters has lot of anti theft features , the manufacturer should have test set up too check the working of all anti theft features.Same should be available during lot inspection , otherwise inspector has a wright to withdraw inspection.

g) PCB assembly facility:- The PCB facility should have auto- pick n place machine, in- circuit testor, Protection against static charge/ dust etc. and process to ensure no corrosion of solden points/ tracks. Incase service is

taken from other vendor than bidder shall arrange inspection of facility. The bidder should be taking the service from the vendor since last two years and so far have procured & one million meter PCB from vendor.

The manufacturer should send the compliance of above mentioned parameters in technical offer and has to give an undertaking about ***No Objection*** to verify his manufacturing facility as a part of tender process. Further in relevance to above clauses vendor should submit details of facilities.

3.00 Bidding and Award Process

Bidders are requested to submit their questions regarding the RFQ or the bidding process after review of this RFQ. BSES RAJDHANI POWER LTD response to the questions raised by various bidders will be distributed to all participating bidders through an RFQ Update.

a.Time schedule of the bidding process

The bidders on this RFQ package should complete the following within the dates specified as under:

S. No.	Steps	Activity description	Due date
1	Technical Queries	▪ All Queries related to RFQ	On or before 17.03.2021
2	Technical Offer	• EMD of requisite amount • Non-refundable DD for Rs 1180/- in case tender documents downloaded from website • It include clause by clause commentary, GTP, Type test report from CPRI/NABL accredited independent test LAB (Not more than 5 year old), BIS report, Quality assurance plan, Deviation from the technical specifications,List of Plant and machinery, Testing facilities available at works and drawings, catalogues, manual etc. • Compliance of Qualification criterion (cl 2.0) and Documentary evidence in support of qualifying criterion as per format attached in Annexure V. • Acceptance of delivery, commercial terms and conditions. • Deviation from the General Conditions of the contract/commercial terms and condtions. • Original Tender documents duly stamped and signed on each page as token of acceptance	17.03.2021, At 1500 Hrs
3	Commercial Officer	• Price for Meter. • Break up regarding basic price and taxes as per format enclosed vide Annexure III A & B • Delivery commitment	17.03.2021, At 1500 Hrs
4	Samples (3 nos.of each type)	• **Submission of Sample with meter routine report as per bidder offer.** • **Samples will be submitted at BRPL Laboratory Near substation no .15 , sector – 7 , Pushpa Vihar , Saket ,New Delhi – 110017 on or before the due date.** • **Sample of optical cord to be submitted with meter – 2 nos.** • **Optical cord to be demonstrated for mechanical fixing & downloading.**	17.03.2021, At 1600 Hrs
5	Performance gaurantee quality system report	• As per RFQ	Only for successful bidders.
6	Opening of technical bid	• As per RFQ	17.03.2021, At 15:30 Hrs

This is a two part bid process.Bidders are to submit the bids a) Technical Bid b) Financial Bid. Both these parts should be furnished in separate sealed covers superscribing specification no. validity etc, with particulars as **Part-I Technical Particulars & Commercial Terms & Conditions** and **Part-II "Financial bid"** and these

sealed envelopes should again be placed in another sealed cover which shall be submitted before the due date & time specified.

Bidders are requested to submit the bid in one Original plus one copy in duplicate

The Part – I Eligibility and Technical Bid should not contain any cost information whatsoever. In case of Bids where the qualification requirements, technical suitability and other requirements are found to be inadequate, Part-II "Financial Bid' will be returned unopened.
b). Qualified bidders will be intimated after technical evaluation of all the bids is completed.

Part –II Financial Bid: This envelope will be opened after techno commercial evaluation and only of the qualified bidders. The date and time of same shall be intimated in due course to the qualified bidders.
Not withstanding anything stated above, the Purchaser reserves the right to assess biddrs capability to perfom the contrct, should the circumstances warrant such assessment in the overall interest of the purchaser. In this regard the decision of the purchaser is final.

Part –III : E- Bidding and Reverse Auction through SAP-SRM Module

Purchase reserves the right to use the reverse auction through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are techno-commercial qualified on the basis of tender requirements shall participate in reverse auction.

Not withstanding anything stated above, the Purchaser reserves the right to assess bidders capability to perform the contract, should the circumstances warrant such assessment in the overall interest of the purchaser. In this regard the decision of the purchaser is final.

4.00 Award Decision

Purchaser intends to award the business on a lowest bid basis, so suppliers are encouraged to bid competitively. The decision to place purchase order / letter of acceptance solely depends on purchaser on the cost competitiveness across multiple lots, quality, delivery and bidder's capacity, in addition to other factors that Purchaser may deem relevant.

The purchaser reserves all the rights to award the contract to one or more bidders so as to meet the delivery requirement or nullify the award decision without any reason.

BSES reserves the right to split the tender quantity amongst techno commercially qualified bidders on account of delivery requirement in tender,quantity under procurement etc.

Spilitting of tender quantity amongst more than one bidder shall be governed by below mentioned guidelines:

- If the quantity is to be split among 2 bidders, it will be done in the ratio of **70:30 on L1 price**.
- If the quantity is to be split among 3 bidders, it will be done in the ratio of **60:25:15 on L1 price**.
- In case quantity needs to be distributed and order splitting is required,distribution of quantity shall be maximum among three(3) bidders.

In the event of your bid being selected by purchaser (and / or its affiliates) and your subsequent DEFAULT on your bid; you will be required to pay purchaser (and / or its affiliates) an amount equal to the difference in your bid and the next lowest bid on the quantity declared in RFQ.

In case any supplier is found unsatisfactory during the delivery process, the award will be cancelled and BRPL reserves the right to award other suppliers who are found fit.

Qty Variation : The purchaser reserves the rights to vary the quantity by +/- 30% of the tender quantity.

Repeat Order : BRPL reserves the right to place repeat order at the same rates & terms and conditions as per this tender against additional requirement subject to mutual agreement between BRPL & supplier.

5.00 Market Integrity

We have a fair and competitive marketplace. The rules for bidders are outlined in the Terms & Conditions. Bidders must agree to these rules prior to participating.In addition to other remedies available, we reserves the

right to exclude a bidder from participating in future markets due to the bidder's violation of any of the rules or obligations contained in the Terms & Condition. Bidders who violate the marketplace rules or engage in behavior that disrupts the fair execution of the marketplace restricts a bidder to length of time, depending upon the seriousness of the violation. Examples of violations include, but are not limited to:

- Failure to honor prices submitted to the marketplace.
- Breach of the terms of the published in Request For Quotation.

6.00 Supplier Confidentiality

All information contained in this RFQ is confidential and may not be disclosed, published or advertised in any manner without written authorization from BSES RAJDHANI POWER LTD. This includes all bidding information submitted .All RFQ documents remain the property of BSES RAJDHANI POWER LTD and all suppliers are required to return these documents to BSES RAJDHANI POWER LTD upon request.

Suppliers who do not honor these confidentiality provisions will be excluded from participating in future bidding events.

7.0 Contact Information

All communication as regards this RFQ shall be made (i) in English, (ii) in writing and (iii) sent by mail, facsimile to

	Technical	Commercial
Contact Name	**Mr. Sheshadri Krishnapura**	**Mr. Robin.Sebastian**
Address	2nd Floor , B-Block, BSES Bhawan Nehru Place , New Delhi -111019	1st Floor , C-Block, BSES Bhawan Nehru Place , New Delhi -111019
Email Id	**Sheshadri.Krishnapura@relianceada.com**	**Robin.Sebastian@relianceada.com**

BSES
RAJDHANI POWER LIMITED

SECTION – II

INSTRUCTION TO BIDDERS (ITB)

RATE CONTRACT FOR SUPPLY OF NET METERS(1 PHASE,3 PHASE,LTCT & HT METERS)

CMC/BR/20-21/SV/RS/SN/876

Date : 25.02.2021

Due Date for Submission of Bids : 17.03.2021

A. GENERAL

1.0 BSES RAJDHANI POWER LTD, hereinafter referred to as the Purchaser"are desirous of implementing the various Systems Improvement/Repair & Maintenance works at their respective licensed area in Delhi The Purchaser has now floated this tender for procurement of different types of Meter's as notified earlier in this bid Document.

2.0 SCOPE OF WORK

The scope shall include Design, Manufacture,Testing at works conforming to the Technical Specifications enclosed along with Packing, Forwarding, Freight and Unloading and proper stacking at Purchaser's stores.

3.0 DISCLAIMER

3.01 This Document includes statements, which reflect various assumptions, which may or may not be correct. Each Bidder/Bidding Consortium should conduct its own estimation and analysis and should check the accuracy,reliability and completeness of the information in this Document and obtain independent advice from appropriate sources in their own interest.

3.02 Neither Purchaser nor its employees will have any liability whatsoever to any Bidder or any other person under the law or contract, the principles of restitution or unjust enrichment or otherwise for any loss, expense or damage whatsoever which may arise from or be incurred or suffered in connection with anything contained in this Document,any matter deemed to form part of this Document, provision of Services and any other information supplied by or on behalf of Purchaser or its employees, or otherwise a rising in anyway from the selection process for the Supply.

3.03 Though adequate care has been taken while issuing the Bid document,the Bidder should satisfy itself that Documents are complete in all respects. Intimation of any discrepancy shall be given to this office immediately.

3.04 This Document and the information contained herein are Strictly Confidential and are for the use of only the person(s) to whom it is issued. It may not be copied or distributed by the recipient to third parties (other than in confidence to the recipient's professional advisors).

4 COST OF BIDDING

The Bidder shall bear all cost associated with the preparation and submission of its Bid and Purchaser will in no case be responsible or liable for those costs. **Further the Purchaser has a right to get Sample Meter's tested by any reputed independent lab like CPRI/ERDA/NABL (approved by BRPL) at the cost of bidder.**

B. **BIDDING DOCUMENTS**

5.0 **BIDDING DOCUMENTS**

5.01 The Scope of Work, Bidding Procedures and Contract Terms are described in the Bidding Documents. In addition to the covering letter accompanying Bidding Documents, the Bidding Documents include:

Volume -I

(a) Request for Quotation (RFQ) - Section - I
(b) Instructions to Bidders (ITB) - Section – II
(c) General Conditions of Contract - Section -III
(d) Quantity and delivery requirement - Section –IV
(e) Technical Specifications (TS) - Section –V

Volume - II

(a) Acceptance form for Reverse Auction - Annexure –A
(b) Bid Form - Annexure –I
(c) Bid Format - Annexure -II
(d) Price Schedule - Annexure –III
(e) Commercial Terms & Conditions - Annexure -IV
(f) No Deviation Sheet - Annexure –V
(g) Qualification Criterion - Annexure –VI

5.02 The Bidder is expected to examine the Bidding Documents, including all Instructions, Forms,Term and Specifications. Failure to furnish all information required by the Bidding documents or submission of a Bid not substantially responsive to the Bidding Documents in every respect will may result in the rejection of the Bid.

6.00 **AMENDMENT OF BIDDING DOCUMENTS**

6.01 At any time prior to the deadline for submission of Bids,the Purchaser may for any reasons,whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the Bidding Documents by Amendment.

6.02 The Amendment shall be part of the Bidding Documents,pursuant to Clause 5.01,and it will be notified in writing by Fax/e-mail to all the Bidders who have received the Bidding Documents and confirmed their participation to Bid,and will be binding on them .

6.03 In order to afford prospective Bidders reasonable time in which to take the Amendment into account in preparing their Bids, the Purchaser may, at its discretion, extend the deadline for the submission of Bids.

C. **PREPARATION OF BIDS**

7.0 **LANGUAGE OF BID**

The Bid prepared by the Bidder,and all correspondence and documents relating to the Bid exchanged by the Bidder and the Purchaser,shall be written in the English Language.Any printed literature furnished by the Bidder may be written in another Language,provided that this literature is accompanied by an English translation, in which case,for purposes of interpretation of the Bid,the English translation shall govern.

8.0 **DOCUMENTS COMPRISING THE BID**

The Bid prepared and submitted by the Bidder shall comprise the following components:

(a) Bid Form ,Price & other Schedules (STRICTLY AS PER FORMAT)and Technical Data Sheets completed in accordance with Clause 9.0, 10.0, 11.0 and Technical Specification ;

(b) All the Bids must be accompanied with the required EMD as mentioned in the Section-I against each tender.

(c) Power of attorney indicating that the person signing the bid have the authority to sign the Bid and thus the Bid is binding upon the Bidder during the full period of its validity, in accordance with clause 12.0.

9.0 **BID FORM**

9.01 The Bidder shall complete an "Original' and another one "Copy'of the Bid Form and the appropriate Price & Other Schedules and Technical Data Sheets.

9.02 **EMD**

Pursuant to Clause 8.0(b) above,the bidder shall furnish,as part of its bid, a EMD amounting to 2% of the total bid value(FOR Destination) i.e **Rs 72,000/**. The EMD is required to protect the Purchaser against the risk of Bidder's conduct which would warrant the security's forfeiture.

The EMD shall be denominated in the currency of the bid,and shall be in the following form :

(a) A bank guarantee issued by any scheduled bank strictly as per the form at enclosed and shall be valid for a period of thirty (30)days beyond the validity of the bid

(b) Bank Draft in favour of BSES RAJDHANI POWER LTD,payable at Delhi.

Unsuccessful bidders' EMD will be discharged or returned as promptly as possible but not later than thirty (30) days after the expiration of the period of bid validity.

The successful bidder's EMD will be discharged upon furnishing the performance security.The EMD may be forfeited :

(a) If the Bidder:

(i) withdraws its bid during the period of bid validity specified by the Bidder in the Bid Form ; or

(b) In the case of a successful Bidder, if the Bidder fails:

(i) to sign the Contract,or

(ii) to furnish the required performance security.

10.0 **BID PRICES**

10.01 Bidders shall quote for the entire Scope of Supply with a break-up of prices for individual items.The total Bid Price shall also cover all the Supplier's obligations mentioned in or reasonably to be inferred from the Bidding Documents in respect of Design, Supply,Transportation to site,all in accordance with the requirement of Bidding Documents The Bidder shall complete the appropriate Price Schedules included herein , stating the Unit Price for each item & total Price.

10.02 The prices offered shall be inclusive of all costs as well as Duties,Taxes and Levies paid or payable during execution of the supply work , breakup of price constituents, should be there.

Prices quoted by the Bidder shall be—Firm "and not subject to any price adjustment during the performance of the Contract. A Bid submitted with an adjustable price quotation will be treated as non -responsive and rejected.

11.0 **BID CURRENCIES**

Prices shall be quoted **in Indian Rupees (RS) Only.**

12.0 **PERIOD OF VALIDITY OF BIDS**

12.01 Bids shall remain valid for **120 days** post bid date.

12.02 Notwithstanding Clause12.01 above,the Purchaser may solicit the Bidder's consent to an extension of the Period of Bid Validity.The request and the responses thereto shall be made in writing by Fax/e-mail.

13.0 **ALERNATIVE BIDS**

Bidders shall submit Bids, which comply with the Bidding Documents. Alternative Bids will not be considered. The attention of Bidders is drawn to the provisions of Clause 22.03 & 22.04 regarding the rejection of Bids, which are not substantially responsive to the requirements of the Bidding Documents.

14.0 **FORMAT AND SIGNING OF BID**

14.01 The original Bid Form and accompanying documents(as specified in Clause9.0),clearly marked "Original Bid",plus one duplicate copy must be received by the Purchaser at the date, time and place specified pursuant to Clauses15.0 and 16.0. In the event of any discrepancy between the original and the copies,the original shall govern.

14.02 The original and copy of the Bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person or persons duly authorized to sign on behalf of the Bidder. Such authorization shall be indicated by written Power-of-Attorney accompanying the Bid.

14.03 The Bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

D. SUBMISSION OF BIDS

15.0 **SEALING AND MARKING OF BIDS**

15.01 Bid submission: One original & one duplicate Copy (hard copies) of all the Bid Documents shall be sealed and

submitted to the Purchaser before the closing time for submission of the bid.

15.02 The Technical Documents and the EMD shall be enclosed in a sealed envelope and the said envelope shall be superscribed with —**Technical & EMD**". The Financial bid shall be inside another sealed envelope with superscription — **Financial Bid** ".Both these envelopes shall be sealed inside another big envelope.All the envelopes should bear the Name and Address of the Bidder and marking for the Original and Copy.The envelopes should be superscribed with —**"Tender Notice No, Due date of submission, Tender opening date**.

15.03 The Bidder has the option of sending the Bids in person.Bids submitted by Telex/Telegram /Fax will not be accepted.No request from any Bidder to the Purchaser to collect the proposals from Airlines/Cargo Agents etc shall be entertained by the Purchaser.

15.04 **The Bidder, along with the bid documents has to submit two samples along with detailed GTP & Drawings. The sample should clearly indicate (i) Name of the bidder (ii)TenderNo.,(iii) Group & Item Sr.N o.etc. Samples will be submitted at BRPL Laboratory Near substation no .15 , sector – 7 , Pushpa Vihar , Saket ,New Delhi – 110017 on or before the due date of tender submission. The samples shall not be returned back to the bidder.**

16.0 DEADLINE FOR SUBMISSION OF BIDS

16.01 The original Bid,together with the required copies, must be received by the Purchaser at the address specified at **1500 Hrs on 17.03.2021**

16.02 The Purchaser may,at its discretion,extend the deadline for the submission of Bids by amending the Bidding Documents in accordance with Clause9.0,in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

17.0 ONE BID PER BIDDER

Each Bidder shall submit only one Bid either by itself, or as a partner in a Joint Venture. A Bidder who submits or participates in more than one Bid will cause all those Bids to be rejected.

18.0 LATE BIDS

Any Bid received by the Purchaser after the deadline for submission of Bids prescribed by the Purchaser,pursuant to Clause 16.0, will be declared "Late" and rejected and returned unopened to the Bidder.

19.0 MODIFICATIONS AND WITHDRAWAL OF BIDS

19.01 The Bidder is not allowed to modify or withdraw its Bid after the Bid's submission.

E. EVALUATION OF BID

20.0 PROCESS TO BE CONFIDENTIAL

Information relating to the examination,clarification,evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process. Any effort by a Bidder to influence the Purchaser's processing of Bids or award decisions may result in the rejection of the Bidder's Bid.

21.0 CLARIFICATION OF BIDS

To assist in the examination,evaluation and comparison of Bids,the Purchaser may,at its discretion,ask the bidder for a clarification of its Bid.All responses to requests for clarification shall be in writing and no change in the price or substance of the Bid shall be sought,offered or permitted.

22.0 PRELIMINARY EXAMINATION OF BIDS / RESPONSIVENESS

22.01 Purchaser will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the Bids are generally in order.

22.02 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price per item that is obtained by multiplying the unit price and quantity,the unit price shall prevail and the total price per item will be corrected.If there is a discrepancy between theTotal Amount and the sum of the total price per item , the sum of the total price per item shall prevail and the Total Amount will be corrected.

22.03 Prior to the detailed evaluation, Purchaser will determine the substantial responsiveness of each Bid to the Bidding Documents including production capability and acceptable quality of the Goods offered. A substantially responsive Bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviation.

22.04 Bid determined as not substantially responsive will be rejected by the Purchaser and/or the Purchaser and may not subsequently be made responsive by the Bidder by correction of the non -conformity.

23.0 **EVALUATION AND COMPARISON OF BIDS**

23.01 The evaluation of Bids shall be done based on the delivered cost competitiveness basis.

23.02 The evaluation of the Bids shall be a stage-wise procedure. The following stages are identified for evaluation purposes: In the first stage, the Bids would be subjected to a responsiveness check.TheTechnical Proposals and the Conditional ties of the Bidders would be evaluated.

Subsequently, the Financial Proposals along with Supplementary Financial Proposals, if any, of Bidders with Techno-commercially Acceptable Bids shall be considered for final evaluation .

23.03 The Purchaser's evaluation of a Bid will take into account,in addition to the Bid price,the following factors, in the manner and to the extent indicated in this Clause:

(a) Supply Schedule

(b) Deviations from Bidding Documents

Bidders shall base their Bid price on the terms and conditions specified in the Bidding Documents. The cost of all quantifiable deviations and omissions from the specification , terms and conditions specified in Bidding Documents shall be evaluated.The Purchaser will make its own assessment of the cost of any deviation for the purpose of ensuring fair comparison of Bids.

23.04 Any adjustments in price,which result from the above procedures,shall be added for the purposes of comparative evaluation only to arrive at an "Evaluated Bid Price".Bid Prices quoted by Bidders shall remain unaltered.

F. AWARD OF CONTRACT

24.0 **CONTACTING THE PURCHASER**

24.01 From the time of Bid submission to the time of contract award, if any Bidder wishes to contact the Purchaser on any matter related to the Bid, it should do so in writing.

24.02 Any effort by a Bidder to influence the Purchaser and/or in the Purchaser‘s decisions in respect of Bid evaluation, Bid comparison or Contract Award, will result in the rejection of the Bidder‘s Bid.

25.0 **THE PURCHASER ’S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS**

The Purchaser reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at anytime prior toaward of Contract,without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Purchaser‘s action.

26.0 **AWARD OF CONTRACT**

The Purchaser will award the Contract to the successful Bidder whose Bid has been Determined to be the

lowest-evaluated responsive Bid, provided further that the Bidder has been determined to be qualified to satisfactorily perform the Contract. Purchaser reserves the right to award order other bidders in the tender, provided it is required for progress of project & provided he agrees to come to the lowest rate.

27.0 **THE PURCHASER 'S RIGHT TO VARY QUANTITIES**

The Purchaser reserves the right to vary the quantity i.e.increase or decrease the numbers/quantities without any change in tems and conditions during the execution of the Order.

28.0 **LETTER OF INTENT/ NOTIFICATION OF AWARD**

The letter of intent/ Notification of Award shall be issued to the successful Bidder whose bids have been considered responsive, techno-commercially acceptable and evaluated to be the lowest (L1). The successful B idder shall be required to furnish a letter of acceptance with in 7 days of issue of the letter of intent /Notification of Award by Purchaser.

29.0 **PERFORMANCE BANK GUARANTEE**

The successful Bidder shall furnish the Performance Bank Guarantee for an amount of **10%** (Ten percent) of the Contract Price in accordance with the format provided. The Performance Bond shall be valid for a period of Sixty months **(60)** from the date of the commissioning or Sixty six months **(66)** from the last date of receipt of material (last consignment) at site/stores which ever is earlier plus 3 months towards claim period. Upon submission of the performance security, the EMD shall be released.

30.0 **CORRUPT OR FRADULENT PRACTICES**

30.01 The Purchaser requires that the Bidders observe the highest standard of ethics during the procurement and execution of the Project. In pursuance of this policy, the Purchaser:

(a) Defines, for the purposes of this provision , the terms set forth below as follows:

(i) "Corrupt practice" means behavior on the part of officials in the public or private sectors by which they improperly and unlawfully enrich themselves and/or those close to them ,or induce others to do so,by misusing the position in which they are placed, and it includes the offering, giving, receiving, orsoliciting of anything of value to influence the action of any such official in the procurement process or in contract execution;and

(ii) "Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or
the execution of a contract to the detriment of the Purchaser, and includes collusive practice among Bidders(prior to or after Bid submission) designed to establish Bid prices at artificial non -competitive levels and to deprive the Purchaser of the benefits of free and open competition .

(b) Will reject a proposal foraward if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question ;

(c) Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for,or in executing, a contract.

30.02 Furthermore, Bidders shall be aware of the provision stated in the General Conditions of Contract.

BSES
RAJDHANI POWER LIMITED

SECTION- III

GENERAL CONDITIONS OF CONTRACT (GCC)

RATE CONTRACT FOR SUPPLY OF NET METERS(1 PHASE,3 PHASE,LTCT & HT METERS)

CMC/BR/20-21/SV/RS/SN/876

Date : 25.02.2021

GENERAL TERMS AND CONDITION

1.0 General Instructions

1.01 All the Bids shall be prepared and submitted in accordance with these instructions.

1.02 Bidder shall bear all costs associated with the preparation and delivery of its Bid, and the Purchaser will in no case shall be responsible or liable for these costs.

1.03 The Bid should be submitted by the Bidder in whose name the bid document has been issued and under no circumstances it shall be transferred/sold to the other party.

1.04 The Purchaser reserves the right to request for any additional information and also reserves the right to reject the proposal of any Bidder, if in the opinion of the Purchaser, the data in support of RFQ requirement is incomplete.

1.05 The Bidder is expected to examine all instructions, forms, terms & conditions and specifications in the Bid Documents. Failure to furnish all information required in the Bid Documents or submission of a Bid not substantially responsive to the Bid Documents in every respect may result in rejection of the Bid. However, the Purchaser's decision in regard to the responsiveness and rejection of bids shall be final and binding without any obligation, financial or otherwise, on the Purchaser.

2.0 Definition Of Terms

2.01 "Purchaser" shall mean BSES RAJDHANI POWER LTD Limited, on whose behalf this bid enquiry is issued by its authorized representative / officers.

2.02 "Bidder" shall mean the firm who quotes against this bid enquiry issued by the Purchaser. "Supplier" or "Supplier" shall mean the successful Bidder and/or Bidders whose bid has been accepted by the Purchaser and on whom the "Letter of Acceptance" is placed by the Purchaser and shall include his heirs, legal representatives, successors and permitted assigns wherever the context so admits.

2.03 "Supply" and " shall mean the Scope of Contract as described.

2.04 "Specification" shall mean collectively all the terms and stipulations contained in those portions of this bid document known as RFQ, Commercial Terms & Condition, Instructions to Bidders, Technical Specifications and the Amendments, Revisions, Deletions or Additions, as may be made by the Purchaser from time to time.

2.05 "Letter of Acceptance" shall mean the official notice issued by the Purchaser notifying the Supplier that his proposal has been accepted and it shall include amendments thereto, if any, issued by the Purchaser. The "Letter of Acceptance" issued by the Purchaser shall be binding on the "Supplier" The date of Letter of Acceptance shall be taken as the effective date of the commencement of contract.

2.06 "Month" shall mean the calendar month and "Day" shall mean the calendar day.

2.07 "Codes and Standards" shall mean all the applicable codes and standards as indicated in the Specification.

2.08 "Offer Sheet" shall mean Bidder's firm offer submitted to BSES RAJDHANI POWER LTD in accordance with the specification.

2.09 "Contract" shall mean the "Letter of Acceptance" issued by the Purchaser.

2.10 "Contract Price" shall mean the price referred to in the "Letter of Acceptance".

2.11 "Contract Period" shall mean the period during which the "Contract" shall be executed as agreed between the Supplier and the Purchaser in the Contract inclusive of extended contract period for reason beyond the control of the Supplier and/or Purchaser due to force majeure.

2.12 "Acceptance" shall mean and deemed to include one or more of the following as will be stipulated in the specification:

a) The written acceptance of material by the inspector at suppliers works to ship the materials.

b) Acceptance of material at Purchaser site stores after its receipt and due inspection/ testing and release of material acceptance voucher.

c) Where the scope of the contract includes supplyg, acceptance shall mean issue of necessary equipment / material takeover receipt after installation & commissioning and final acceptance.

3.0 Contract Documents & Priority

3.01 Contract Documents: The terms and conditions of the contract shall consist solely of these RFQ conditions and the offer sheet.

3.02 Priority: Should there be any discrepancy between any term hereof and any term of the Offer Sheet, the terms of these RFQ shall prevail.

4.0 Scope Of Supply -General

4.01 The "Scope of Supply" shall be on the basis of Bidder's responsibility, completely covering the obligations, responsibility and supplies provided in this Bid enquiry whether implicit or explicit.

4.02 Bidder shall have to quote for the Bill of quantities as listed in Section – IV of this RFQ.

4.03 Quantity variation and additional requirement if any shall be communicated to successful bidder during project execution.

4.04 All relevant drawings, data and instruction manuals.

5.0 Quality Assurance and Inspection

5.01 Immediately on award of contract, the bidder shall prepare detailed quality assurance plan / test procedure identifying the various stages of manufacture, quality checks performed at each stage, raw material inspection and the Customer hold points. The document shall also furnish details of method of checking, inspection and acceptance standards / values and get the approval of Purchaser before proceeding with manufacturing. However, Purchaser shall have right to review the inspection reports, quality checks and results of suppliers in house inspection department which are not Customer hold points and the supplier shall comply with the remarks made by purchaser or his representative on such reviews with regards to further testing, rectification or rejection, etc.

5.02 Witness and Hold points are critical steps in manufacturing, inspection and testing where the supplier is obliged to notify the Purchaser in advance so that it may be witnessed by the Purchaser. Final inspection is a mandatory hold point. The supplier to proceed with the work past a hold point only after clearance by purchaser or a witness waiver letter from **BSES RAJDHANI POWER LTD.**

5.03 The performance of waiver of QA activity by Purchaser at any stage of manufacturing does not relieve the supplier of any obligation to perform in accordance with and meet all the requirements of the procurement documents and also all the codes & reference documents

mentioned in the procurement document nor shall it preclude subsequent rejection by the purchaser.

5.04 On completion of manufacturing the items can be dispatched only after issue of shipping release by the Purchaser.

5.05 All testing and inspection shall be done with out any extra cost.

5.06 Purchaser reserve the right to send any material out of the supply to any recognized laboratory for testing and the cost of testing shall be borne by the Purchaser. In case the material is found not in order with the technical requirement / specification, the charges along with any other penalty which may be levied is to be borne by the bidder. To avoid any complaint the supplier is advised to send his representative to the stores to see that the material sent for testing is being sealed in the presence of bidders representative.

5.07 Bidder has to sign quality agreement before supply of the material.

6.0 Packing, Packing List & Marking

6.01 **Packing:** Supplier shall pack or shall cause to be packed all Commodities in boxes and containers and otherwise in such a manner as shall be reasonably suitable for shipment by road or rail to BSES RAJDHANI POWER LTD without undue risk of damage in transit.

6.02 **Packing List:** The contents of each package shall be itemized on a detailed list showing the exact weight and the extreme outside dimensions (length, width and eight) of each container or box. One copy of the packing list shall be enclosed in each package delivered. There shall also be enclosed in one package a master packing list identifying each individual package, which is part of the shipment. On any packaging where it is not feasible to place the packing list inside the container, all pertinent information shall be stenciled on the outside and will thus constitute a packing list.

7.01 **Prices basis for supply of materials**

Bidder to quote their prices on Landed Cost Basis .

For Supply to BSES RAJDHANI POWER LTD Delhi the price shall be inclusive of packing, forwarding, Freight & Godds and Service Tax (GST).

The above supply prices shall also **include unloading** at site stores.
Transit and storage insurance will be arranged by BSES RAJDHANI POWER LTD, however bidder to furnish required details in advance for arranging the same by BSES RAJDHANI POWER LTD.

8.0 **Variation in taxes, duties & levies**:

8.01 The total order value shall be adjusted on account of any variations in Statutory Levies imposed by Competent Authorities by way of fresh notification(s) within the stipulated delivery period only. However, incase of reduction in taxes, duties and levies, the benefits of the same shall be passed on to BUYER.

8.02 No other Taxes, Duties & Levies other than those specified above will be payable by BUYER except in case of new Levies, Taxes & Duties imposed by the Competent Authorities by way of fresh notification(s) subsequent to the issue of PURCHASE ORDER but within the stipulated delivery period.

8.03 Notwithstanding what is stated above, changes in Taxes, Duties & Levies shall apply only to that portion of PURCHASE ORDER not executed on the date of notification by Competent Authority. Further, changes in taxes, Duties & Levies after due date of Delivery shall not affect PURCHASE ORDER Terms and value.

8.04 PURCHASE ORDER value shall not be subject to any variation on account of variation in Exchange rate(s).

9.0 **Taxes & Duties on raw materials & bought out components**:

9.01 Taxes & Duties on raw materials & bought out components are included in Order Value and are not subject to any escalation or variation for any reason whatsoever.

9.02 Taxes & Duties on raw materials & bought out components procured indigenously are included in Order Value and are not subject to any escalation or variation for any reason whatsoever.

10.0 **Terms of payment and billing**

10.01 For Supply of Equipments:

- 100% payment shall be made within 45 days from the date of receipt of material at store/ site against submission of 10 % performance bank guarantee. (Refer 12.01)

10.02 Bidder to submit the following documents against dispatch of each consignment:

i. Consignee copy of LR
ii. Supplier detailed invoice showing commodity description , quantity, unit price, total price and basis of delivery.
iii. Original certificate issued by BSES RAJDHANI POWER LTD confirming receipt of material at site and acceptance of the same.
iv. Dispatch clearance / inspection report in original issued by the inspection authority
v. Packing List.
vi. Test Reports

vii. Guarantee Certificate.

11.0 Price Validity

11.01 All bids submitted shall remain valid, firm and subject to unconditional acceptance by BSES RAJDHANI POWER LTD Delhi for 120 days post bid-date. For awarded suppliers, the prices shall remain valid and firm till contract completion.

12.0 Performance Guarantee

12.01 Supplier shall establish a performance bond in favor of BSES RAJDHANI POWER LTD in an amount not less than Ten percent (10%) of the total price of the Contract (the "Performance Bond"). The Performance Bond shall be valid for a period of Sixty months (60) from the date of the commissioning or Sixty six months (66) from the last date of receipt of material (last consignment) at site/stores which ever is earlier plus 3 months towards claim period. It shall be in accordance with one of the following terms:

(a) Depositing pay order /demand draft of the relevant amount directly with BSES RAJDHANI POWER LTD at the address listed above or as otherwise specified by BSES RAJDHANI POWER LTD, either of which shall constitute the Performance Bond hereunder; or

(b) Bank guarantee from any nationalized bank in favour of BSES RAJDHANI POWER LTD. The performance Bank guarantee shall be in the format as specified by BSES RAJDHANI POWER LTD.

13.0 Forfeiture

13.01 Each Performance Bond established under Clause 10.0 shall contain a statement that it shall be automatically and unconditionally forfeited without recourse and payable against the presentation by BSES RAJDHANI POWER LTD of this Performance Bond to the ICICI Bank at Mumbai, or to the relevant company/ correspondent bank referred to above, as the case may be, together with a simple statement that supplier has failed to comply with any term or condition set forth in the Contract.

13.02 Each Performance Bond established under will be automatically and unconditionally forfeited without recourse if BSES RAJDHANI POWER LTD in its sole discretion determines that supplier has failed to comply with any term or condition set forth in the contract.

14.0 Release

All Performance Bonds will be released without interest within seven (7) days from the last date up to which the Performance Bond has to be kept valid (as defined in Clause 10.0) except for the case set forth in Clause 21.0.

15.0 Guarantee Period

15.01 The bidder to Guarantee the Meter with Box supplied against any defect of failure, which arise due to faulty materials, workmanship or design for the entire defects liability period. The Defect liability period shall be 60 months from the date of commissioning or 66 months from the last date of delivery whichever is earlier. If during the Guarantee period any materials / items are found to be defective, these shall be replaced with New Meter with Box free of cost by the bidder at his own cost within 30 days from the date of receipt of intimation.The analysis of defective meter within Guarantee period shall be provided by meter OEM's to BRPL. OEM shall ensure to establish a system where he will visit BRPL premises, in every 15 days or on accumulation of 250 defective meter (whichever comes first) and provide the detailed analysis report of faulty meters .

16.0 Return, Replacement or Substitution.

BSES RAJDHANI POWER LTD shall give Supplier notice of any defective Commodity promptly after becoming aware thereof. BSES RAJDHANI POWER LTD may in its discretion elect to return defective Commodities to Supplier for replacement, free of charge to BSES RAJDHANI POWER LTD, or may reject such Commodities and purchase the same or similar Commodities from any third party. In the latter case BSES RAJDHANI POWER LTD shall furnish proof to Supplier of the cost of such substitute purchase. In either case, all costs of any replacement, substitution, shipping, labour and other related expenses incurred in connection with the return and replacement or for the substitute purchase of a Commodity hereunder should be for the account of Supplier. BSES RAJDHANI POWER LTD may set off such costs against any amounts

payable by BSES RAJDHANI POWER LTD to Supplier. Supplier shall reimburse BSES RAJDHANI POWER LTD for the amount, if any, by which the price of a substitute Commodity exceeds the price for such Commodity as quoted in the Bid.

17.0 Effective Date of Commencement of Contract:

17.01 The date of the issue of the Letter of Acceptance shall be treated as the effective date of the commencement of Contract.

18.0 Time – The Essence Of Contract

18.01 The time and the date of completion of the "Supply"" as stipulated in the Letter Of Acceptance / Purchase order issued to the Supplier shall be deemed to be the essence of the "Contract". The Supply has to be completed not later than the aforesaid Schedule and date of completion of supply .

19.0 The Laws and Jurisdiction of Contract:

19.01 The laws applicable to this Contract shall be the Laws in force in India.

19.02 All disputes arising in connection with the present Contract shall be settled amicably by mutual consultation failing which shall be finally settled as per the rules of Arbitration and Conciliation Act, 1996 at the discretion of Purchaser. The venue of arbitration shall be at Mumbai in India

20.0 Events of Default

20.01 Events of Default. Each of the following events or occurrences shall constitute an event of default ("Event of Default") under the Contract:

(a) Supplier fails or refuses to pay any amounts due under the Contract;

(b) Supplier fails or refuses to deliver Commodities conforming to this RFQ/ specifications, or fails to deliver Commodities within the period specified in P.O. or any extension thereof

(c) Supplier becomes insolvent or unable to pay its debts when due, or commits any act of bankruptcy, such as filing any petition in any bankruptcy, winding-up or reorganization proceeding, or acknowledges in writing its insolvency or inability to pay its debts; or the Supplier's creditors file any petition relating to bankruptcy of Supplier;

(d) Supplier otherwise fails or refuses to perform or observe any term or condition of the Contract and such failure is not remediable or, if remediable, continues for a period of 30 days after receipt by the Supplier of notice of such failure from BSES RAJDHANI POWER LTD

21.0 Consequences of Default.

(a) If an Event of Default shall occur and be continuing, BSES RAJDHANI POWER LTD may forthwith terminate the Contract by written notice.

(b) In the event of an Event of Default, BSES RAJDHANI POWER LTD may, without prejudice to any other right granted to it by law, or the Contract, take any or all of the following actions;

(i) present for payment to the relevant bank the Performance Bond;

(ii) purchase the same or similar Commodities from any third party; and/or recover any losses and/or additional expenses BSES RAJDHANI POWER LTD may incur as a result of Supplier's default.

22.0 Penalty for Delay

22.01 If supply of items / equipments is delayed beyond the supply schedule as stipulated in purchase order then the Supplier shall be liable to pay to the Purchaser as penalty for delay, a sum of 1% (one percent) of the contract price (Ex- works) for every week delay or part thereof for individual mile stone deliveries.

22.02 The total amount of penalty for delay under the contract will be subject to a maximum of ten percent (10%) of the contract price (ex works value)

22.03 The Purchaser may, without prejudice to any method of recovery, deduct the amount for such damages from any amount due or which may become due to the Supplier or from the Performance Bond or file a claim against the supplier.

23.0 Force Majeure

23.01 General
An "Event of Force Majeure" shall mean any event or circumstance not within the reasonable control directly or indirectly, of the Party affected, but only if and to the extent that:

(i) Such event or circumstance materially and adversely affects the ability of the affected Party to perform its obligations under this Contract, and the affected Party has taken all reasonable precautions,due care and reasonable alternative measures in order to prevent or avoid the effect of such event on the affected party's ability to perform its obligations under this Contract and to mitigate the consequences thereof.

(ii) For the avoidance of doubt, if such event or circumstance would not have materially and adversely affected the performance of the affected party had such affected party followed good industry practice, such event or circumstance shall not constitute force majeure.

(iii) Such event is not the direct or indirect result of the failure of such Party to perform any of its obligations under this Contract.

(iv) Such Party has given the other Party prompt notice describing such events, the effect thereof and the actions being taken in order to comply with above clause.

23.02 Specific Events of Force Majeure subject to the provisions of above clause, Events of Force Majeure shall include only the following to the extent that they or their consequences satisfy the above requirements :

(i) The following events and circumstances :

a) Effect of any natural element or other acts of God, including but not limited to storm, flood, earthquake, lightning, cyclone, landslides or other natural disasters.

b) Explosions or fires

(ii) War declared by the Government of India, provided that the ports at Mumbai are declared as a war zone.

(iii) Dangers of navigation, perils of the sea.

23.03 Notice of Events of Force Majeure If a force majeure event prevents a party from performing any obligations under the Contract in part or in full, that party shall:

i) Immediately notify the other party in writing of the force majeure events within 7(seven) working days of the occurrence of the force majeure event

ii) Be entitled to suspend performance of the obligation under the Contract which is affected by force majeure event for the duration of the force majeure event.

iii) Use all reasonable efforts to resume full performance of the obligation as soon as practicable

iv) Keep the other party informed of all such efforts to resume full performance of the obligation on a regular basis.

v) Provide prompt notice of the resumption of full performance or obligation to the other party.

23.04 Mitigation of Events of Force Majeure Each Party shall:

(i) Make all reasonable efforts to prevent and reduce to a minimum and mitigate the effect of any delay occasioned by an Event of Force Majeure including recourse to alternate methods of satisfying its obligations under the Contract;

(ii) Use its best efforts to ensure resumption of normal performance after the termination of any Event of Force Majeure and shall perform its obligations to the maximum extent practicable as agreed between the Parties; and

(iii) Keep the other Party informed at regular intervals of the circumstances concerning the event of Force Majeure, with best estimates as to its likely continuation and what measures or contingency planning it is taking to mitigate and or terminate the Event of Force Majeure.

23.05 Burden of Proof In the event that the Parties are unable in good faith to agree that a Force Majeure event has occurred to an affected party, the parties shall resolve their dispute in accordance with the provisions of this Agreement. The burden of proof as to whether or not a force majeure event has occurred shall be upon the party claiming that the force majeure event has occurred and that it is the affected party.

23.06 Termination for Certain Events of Force Majeure. If any obligation of any Party under the Contract is or is reasonably expected to be delayed or prevented by a Force Majeure event for a continuous period of more than 3 months, the Parties shall promptly discuss in good faith how to proceed with a view to reaching a solution on mutually agreed basis. If a solution on mutually agreed basis cannot be arrived at within a period of 30 days after the expiry of the period of three months, the Contract shall be terminated after the said period of 30 days and neither Party shall be liable to the other for any consequences arising on account of such termination.

23.07 Limitation of Force Majeure event. The Supplier shall not be relieved of any obligation under the Contract solely because cost of performance is increased, whether as a consequence of adverse economic consequences or otherwise.

23.08 Extension of Contract Period due to Force Majeure event The Contract period may be extended by mutual agreement of Parties by way of an adjustment on account of any period during which an obligation of either Party is suspended due to a Force Majeure event.

23.09 Effect of Events of Force Majeure. Except as otherwise provided herein or may further be agreed between the Parties, either Party shall be excused from performance and neither Party shall be construed to be in default in respect of any obligations hereunder, for so long as failure to perform such obligations shall be due to and event of Force Majeure."

24.0 Transfer And Sub-Letting

24.01 The Supplier shall not sublet, transfer, assign or otherwise part with the Contract or any part thereof, either directly or indirectly, without prior written permission of the Purchaser.

25.0 Recoveries

25.01 When ever under this contract any money is recoverable from and payable by the bidder, the purchaser shall be entitled to recover such sum by appropriating in part or in whole by detecting any sum due to which any time thereafter may become due from the supplier in this or any other contract. Should the sum be not sufficient to cover the full amount recoverable the bidder shall pay to the purchaser on demand the remaining balance.

26.0 Waiver

26.01 Failure to enforce any condition herein contained shall not operate as a waiver of the condition itself or any subsequent breach thereof.

27.0 Indemnification

27.01 Notwithstanding contrary to anything contained in this RFQ, Supplier shall at his costs and risks make good any loss or damage to the property of the Purchaser and/or the other Supplier engaged by the Purchaser and/or the employees of the Purchaser and/or employees of the other Supplier engaged by the Purchaser whatsoever arising out of the negligence of the Supplier while performing the obligations under this contract.

SECTION – IV:

QUANTITY AND DELIVERY REQUIREMENT

Sl. No.	Item Description	Specification	Requirement	Estimated Cost
			Total Qty. (Nos)	
BRPL,DELHI				
1	1-Ph Whole Current Net Meter (10A-60A, 240V, Cl-1.0)	SECTION V	500	*35.68 Lacs*
2	3-Ph Whole Current Net Meter (20A-60A, 240V. Cl-1.0)		600	
3	LT CT Net Meter (3P-4W, 240Volts, CL- 0.5s)		200	
4	HT Net Meter (3P-4W, 63.5V, 5A, CL-0.5s)		200	

Note : Delivery as per our requirement.

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RAJDHANI POWER LIMITED

SECTION – V:

TECHNICAL SPECIFICATION(TS)

RATE CONTRACT FOR SUPPLY OF NET METERS(1 PHASE,3 PHASE,LTCT & HT METERS)

CMC/BR/20-21/SV/RS/SN/876

Date : 25.02.2021

BSES
RAJDHANI POWER LIMITED

Volume - II

FORMATS

Tender Notification for

RATE CONTRACT FOR SUPPLY OF NET METERS(1 PHASE,3 PHASE,LTCT & HT METERS)

CMC/BR/20-21/SV/RS/SN/876

Date : 25.02.2021

Detailed Meter Specification: Sph-WCM–of Single phase NET Meter.

1.0 SCOPE

This specification covers the design, manufacture testing, supply and delivery of single phase 2 wire 10-60Amps Static Watt hour NET meters of class: 1.0 accuracy.

2.0 STANDARDS

IS: 13779, IEC 61052-11, IEC 61053-21, & CBIP Guide on Static Energy Meters- Specifications and Testing, along-with BRPL specifications. The meter shall be ISI marked (vendor shall be BIS certified) and conform to CEA Metering Regulation – 2006.

3.0 FUNCTIONAL SPECIFICATION

Sr. No.	Function /Feature	Technical Requirements
3.1	Voltage	Ref Voltage 240 volt (P-N), +20% to -40% Vref, however the meter should withstand the maximum system voltage.
3.2	Display	a) LCD (Six digits) b) Height: 10 mm X 5 mm min. c) Pin Type d) Viewing angle min. 160 degrees
3.3	Power factor range	Zero lag –unity- zero lead
3.4	Display parameters	a) Display parameters : LCD test, KWH, MD in KW **(import and export)**, Date & Time, Voltage, Current, Instantaneous Load. b) Display order shall be as per cl 8.0 of this specification. **NO PUSH BUTTON REQUIRED IN METER.**
3.5	Power Consumption	Less than 1 Watt & 8VA in Voltage circuit and 2 VA for Current circuit
3.6	Starting current	0.2 % of Ib
3.7	Frequency	50 Hz with + / - 5% variation
3.8	Test Output Device	Flashing LED visible from the front
3.9	Billing data	a) Meter serial number, Date and time, KWH, MD in KW, History of KWH, MD with occurrence detail for last 6 months along with TOD readings & meter shall log monthly ON/ Off hrs as history. b) All the above parameters (namely KWH, MD in KW) are meter readings. c) All these data shall be accessible for reading, recording and spot billing by downloading through optical port with MRI (Analogic & SANDS) & Laptop computers at site. d) Presently data is down loaded through PDS. Vendor has to ensure and extend full support required for data down loading using PDS.
3.10	MD Registration (KW)	a) Meter shall store MD in every 30 min. period along with date & time. At the end of every 30 min, new MD shall be computed & compared with previous MD and store whichever is higher and the same shall be displayed. It is preferred that MD is computed using separate counter rather by difference of initial and final energy counter.
3.11	Auto Reset of MD	Auto reset date for MD shall be indicated at the time of finalizing GTP. Default resetting date is 00:00 hrs, 1st of every month.

<table>
<tr><th>Sr. No.</th><th>Function /Feature</th><th>Technical Requirements</th></tr>
<tr><td>3.12</td><td>TOD metering</td><td>Meter shall be capable doing TOD metering for KWH, and MD in KW (for both import and export) with 6 time zones (programmable on site through CMRI). Following are the default T&D time zone.

<table>
<tr><th>Tariff</th><th>Timings</th><th>1st April-30 st Sep</th><th>1st Oct-31 March</th></tr>
<tr><td>1</td><td>00:00 to 3:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>2</td><td>03:00 to 09:00</td><td>Tnp</td><td>Tnp</td></tr>
<tr><td>3</td><td>09:00 to 13:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>4</td><td>13:00 to 17:00</td><td>Tp</td><td>Tp</td></tr>
<tr><td>5</td><td>17:00 to 21:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>6</td><td>21:00 to 24:00</td><td>Tp</td><td>Tp</td></tr>
</table>
Note: Tnp – TOD zone for non peak
Tn – TOD zone for normal
Tp - TOD zone for peak</td></tr>
<tr><td>3.13</td><td>Security feature</td><td>Programmable facility to restrict the access to the information recorded at different security level such as read communication, communication write etc</td></tr>
<tr><td>3.14</td><td>Memory</td><td>Non volatile memory independent of battery backup, memory should be retained up to 10 year in case of power failure</td></tr>
<tr><td>3.15</td><td>Software & communication compatibility</td><td>a) Optical port with RS 232 compatible to transfer the data locally through CMRI & remote through PSTN / Optical fiber / GSM / CDMA / RF / any other technology to the main computer. Also refer clause 9.0. RJ11 configuration is required for RS 232 port.

b) The Supplier shall supply Software required for CMRI (both for Analogic & SANDS make) & for the connectivity to AMR modules. The supplier shall also provide training for the use of software. The software should be compatible to Microsoft Windows systems. The software should have polling feature with optional selection of parameters to be downloaded for AMR application

c) The Supplier shall provide meter reading protocols.

e) Meter protocols will be either of following two types.
• Same as previous supplied meter to discom, minimum for 10000 Nos OR
• As per IEC 62056/ DLMS protocol. Other protocols shall not be acceptable.</td></tr>
<tr><td>3.16</td><td>Climatic conditions</td><td>a) Refer IS: 13779 for climatic conditions.

b) The meter should function satisfactorily in India with high end temperature as 60ºC and humidity up to 96%.</td></tr>
<tr><td>3.17</td><td>Battery</td><td>In case battery removal or total discharge same should not effect the working & memory of the meter.</td></tr>
<tr><td>3.18</td><td>Calibration</td><td>Modification in calibration shall not be possible at site by any means.</td></tr>
<tr><td>3.19</td><td>Communication port</td><td><u>Optical Port</u>:
• Optical sensor should have 1 foot cable, terminated on female type D connector and should be suitable for meter data download.
• It should have a life of 5 years</td></tr>
</table>

Sr. No.	Function /Feature	Technical Requirements
		• Both meter and sensor should have Mechanical arrangement, so as sensor can be fitted on meter without any tool and without any compromise on alignment and sensitivity. • The Pin configuration should be as per BSES standard, Refer configuration diagram - Annexure B. **Wired Port** • Wired port shall have provision for cover which can be sealed. • Both optical and wired port should work independently. • Failure of one port (including display) should not affect the other port down loading capabilities.

Note: **Regarding definition of MD, Power OFF, TOD, Load survey, meter output for field testing – also refer CBIP Guide on Static Energy Meters- Specifications along-with BRPL specifications.**

4.0 CONSTRUCTIONAL SPECIFICATIONS

Sr. No.	Parameters	Technical Requirements
4.1	Body of Meter	a) Top transparent and base opaque material polycarbonate of LEXAN 143A/943AA or equivalent grade having properties of UV stabilized. b) Front cover & base should be ultrasonically welded. c) **Top cover Open** :- The meter shall have top cover opening detection mechanism. The top cover opening event shall be indicated display continuously in auto scroll mode with kWh or through additional LED and shall be logged in memory. The detection and logging mechanism shall work even when meter is not energized. In case of indication of display, meter display shall get reset in 150 days. Logic shall be defined. d) Mounting Arrangement: One of the three mounting hole arrangement (P1, P2, P3) as per the drawing. Refer drawing in Annexure A.
4.2	Terminal Block	Made of polycarbonate/ PBT and having properties of **V0 inflammability level or equivalent**, brass current terminals with flat-base screws. • Typical Minimum CSA of BRASS --- 2.5 Amp / Sqmm. • Brass Composition – 62:36:02, Extruded material, Environment protected. • Terminal screw – typically M6, two nos/ per wire Terminal cable entry hole should be suitable for 25Sqmm PVC cable. Typically brass terminal should start from 5mm (minimum) from front face. *The Shunt, if used, shall be fixed securely so as same should not vary with time, installation, event or transport.*
4.3	Terminal cover	Transparent terminal cover with provision of sealing through sealing screw. It should be extended type, with two cable entry holes suitable for 2X25 Al. armoured cable. Preferably with mechanism so as T-Cover should not be lifted once fixed on wall/ base plate. The entry wall should be minimum 50mm away from T block cable entry surface. Finally T cover should be easy to use.
4.4	Diagram of	Diagram of external connections to be shown on terminal cover

Sr. No.	Parameters	Technical Requirements
	connections	
4.5	Marking on name plates	Meter should have clearly visible, indelible and distinctly name plate marked in accordance with IS & BSES specifications. Prior approval of name plate design to be taken before product supply.
4.6	Meter Sealing	As per IS 13779 and CEA Metering Regulation 2006, Supplier will fix its seal on meter. In addition, supplier shall affix buyer seal(s) on side of Meter body as advised by buyer and record should be forwarded to Buyer. **Supplier seal type**: Minimum one seal as Hologram type, numbered with hologram transfer on tamper proof paper seal. Seal should not be just Hologram sticker (100% hologram).
4.7	Guarantee / Warranty	5 Years.
4.8	Insulation	A meter shall withstand an insulation test of 4 KV and impulse test at 8 KV
4.9	Resistance of heat and fire	The terminal block and Meter case shall have safety against the spread of fire. They shall not be ignited by thermal overload of live parts in contact with them as per the relevant IS 13779.

5.0 TAMPER & ANTI-FRAUD DETECTION/EVIDENCE FEATURES

5.1 Tamper Conditions:

The meter shall not get affected by any remote control device & shall continue recording energy under any one or combinations of the following conditions:

Sr. No.	Tamper condition
5.1.1	I/C & O/G Interchanged
5.1.2	Phase & Neutral Interchanged
5.1.3	I/C Neutral Disconnected, O/G Neutral & Load Connected To Earth.
5.1.4	I/C Neutral Disconnected, O/G Neutral Connected To Earth Through Resistor & Load Connected To Earth.
5.1.5	I/C Neutral connected, O/G Neutral Connected To Earth Through Resistor & Load Connected To Earth.
5.1.6	I/C (Phase & Neutral) Interchanged, Load Connected To Earth.
5.1.7	I/C & O/G (Phase or Neutral) Disconnected, Load Connected To Earth.
5.1.8	Under all type of DC/AC magnetic field strength

5.2 Influence Parameters

The meter shall work satisfactorily with guaranteed accuracy limit under the presence of the following influence quantities as per IEC: 1036 and CBIP Technical Report No: 88 with latest amendment:

a) External magnetic field *
b) Electromagnetic field induction,
c) Radio frequency interference,
d) Vibration etc,
e) Waveform 10% of 3rd harmonics,
f) Voltage variation,
g) Electro magnetic H.F. Field,
h) D.C. immunity test,

External magnetic field * Test will be done as per IS for AC abnormal field and at 0.5Tesla for DC magnetic field. BSES reserve the right to formulate any other test method to check magnetic immunity/ logging of meter. Meter with magnetic logging provision will be preferred.

5.3 Tamper logging:-

5.3.1 Low Voltage Logging –Event shall be logged in memory along with Occurrence and restoration event data. Threshold should be below 180Volts. Manufacture to define how meter will behave below 120 V.

5.3.2 Protection against HV spark: Meter shall continue to record energy or log the event, incase it is disturbed externally using a spark gun/ ignition coil. Up to 35 KV meter should be immune.

5.3.3 External Magnetic tampers: Meter should log on the events of attempt of tampering by external magnetic field as mentioned in the relevant IS.

The Meter shall record as per actual load once the external abnormal magnetic field is removed. In such conditions the Meter shall log the event for presence of abnormal external magnetic field and its restoration.

5.3.4 Transactions:- Other than RTC and TOU zone timing, no other parameter should be programmable/ resettable in field. Regarding RTC and TOU, all transactions should be logged.

Note - No defraud and deficiency metering in export mode.

Event Logging:- The meter should log all the following events:-

1. Selection of 'Neutral CT' :- 20 events
2. Selection of 'one wire power' :- 20 events
3. Events Top cover opening :- 20 events including 1st occurrence
4. Magnetic event :- 20 events
5. Abnormal external field/ ESD :- 20 events
6. Low voltage (Below 180V) :- 20 events
7. Power on/ off hours :- 20 events

- The events count mentioned is recommended.

The vendor will provide s/w to download all these data. The CMRI s/w shall work both on SANDS & Analogic CMRI. The event shall be logged with V.I and cumulative KWh energy register value.

6.0 COMPONENT SPECIFICATIONS

Sr No	Component Function	Requirement	Makes and Origin
6.1	Current Transformers	The Meters should be with the current transformers as measuring elements. The current transformer should withstand for the clauses under 5.2.h	The current transformer should withstand for the clauses under 5.2.h
6.2	Measurement or computing chips	The Measurement or computing chips used in the Meter should be with the Surface mount type along with the ASICs.	Any branded make- to be specified by meter manufacturer before hand
6.3	Memory chips	The memory chips should not be affected by the external parameters like sparking, high voltage spikes or electrostatic discharges.	Any branded make- to be specified by meter manufacturer before hand
6.4	Display modules	a) The display modules should be well	

Sr No	Component Function	Requirement	Makes and Origin
		protected from the external UV radiations. b) The display visibility should be sufficient to read the Meter mounted at height of 0.5 meter as well as at the height of 2 meters (refer 3.2.d for Viewing angle). c) The construction of the modules should be such that the displayed quantity should not disturbed with the life of display (PIN Type). d) It should be trans-reflective HTN or STN type industrial grade with extended temperature range min 70 ºC.	Truly semiconductor, Tianma/ Haijing Electronics, China
6.5	Optical port	Optical port should be used to transfer the meter data to meter reading instrument. The mechanical construction of the port should be such to facilitate the data transfer easily.	Everlight, Osram, Agillent, NFC
6.6	Power Supply	The power supply should be with the capabilities as per the relevant standards. The power supply unit of the meter should not be affected in case the maximum voltage of the system appears to the terminals due to faults or due to wrong connections.	It should take care of clause 3.1 and 3.5
6.7	Electronic components	The active & passive components should be of the surface mount type & are to be handled & soldered by the state of art assembly processes. LED	USA: National Semiconductors, Atmel, Phillips, Texas Instruments Japan: Hitachi, Oki, AVX or Ricoh Korea: Samsung EPCOS,Vishay Everlight, Agillent
6.9	Mechanical parts	a) The internal electrical components should be of electrolytic copper & should be protected from corrosion, rust etc. b) The other mechanical components should be protected from rust, corrosion etc. by suitable plating/painting methods.	
6.10	Battery	Lithium with guaranteed shelf life of 10 years & capacity life of 15 years. Litium thioyl Chloride will be preferred.	Tekcell, SAFT, Varta
6.11	RTC & Micro controller	The accuracy of RTC shall be as per relevant IEC / IS standards	Any branded make- to be specified by meter manufacturer before hand
6.12	P.C.B.	Glass Epoxy, fire resistance grade FR4, with minimum thickness 1.6 mm	(BBT test is must)

Note: 1) All the components shall have "Minimum Life" more than the 10 years.
2) Incase vendor want to use other make components; same shall be approved by BSES before use.
3) Even for existing supplier – fresh approval is needed for all deviations.

7.0 GENERAL REQUIREMENTS

7.1 On the meter name-plate:

a) meter serial number should be of 8 digits

b) Size of the digit of the meter serial number should be minimum 5mm X 3mm.

c) bar code should be printed next to / below / above the meter serial number

d) BIS registration mark (ISI mark)

Identification on rating plate for Net Meter: - NET METER

7.2 Meter Sr. Nos. to be printed in black on the name plate, instead of embossing.

7.3 Buyer's Serial Number sticker should be fixed on window glass from inside or on Meter front cover of minimum digit size 6 mm X 3 mm. Sticker should have uniqueness property so as same cannot be duplicated.

7.4 The supplier should seal the meter cover. The Buyer shall approve the method of sealing.

7.5 Deliverable with Meters.

1. Individual meter accuracy test report.
2. Extended Terminal cover (refer 4.3)
3. Consolidated report of routine test report & seal & initial reading record.

7.6 Box number, Meter serial number, type, rating should be mentioned on cases / cartons.

7.7 Meters shall be suitably packed with environmental friendly material in order to avoid damage or disturbance during transit or handling and to prevent in grace of moisture/dust.

7.8 Meter shall have manufacturing month and year in the memory and should be downloadable.

7.11 The bidder shall maintain a web site where routine test results of all meter supplied against these tender will be maintained and will be accessible to buyer/ buyer representative.

8.0 DISPLAY SEQUENCE FOR THE PARAMETERS

1	**Cumulative kWh (import and export)**	30 Sec
2	**Meter Sr. No.(8 digits)**	5 Sec
3	**Date**	5 Sec
4	**Real time**	5 Sec
5	**Current month MD (import and export)**	5 Sec
6	**Instantaneous Voltage**	5 Sec
7	**Instantaneous Current**	5 Sec
8	**Instantaneous Load KW**	10 Sec

- On occurrence of any abnormality, it should appear on the display like top cover open, battery low or NVM failed.

9.0 ADDITIONAL FEATURES (optional) :-

9.1 Mid night data):

- The meter should record midnight Cumulative KWh reading for load survey days.

9.2 Temperature (optional):

- The meter should have capability to measure inside temperature and can log high temperature Events.

9.3 Load survey (optional):

- Load survey for 60 days for voltage and load..
- Average load survey of voltage for a month

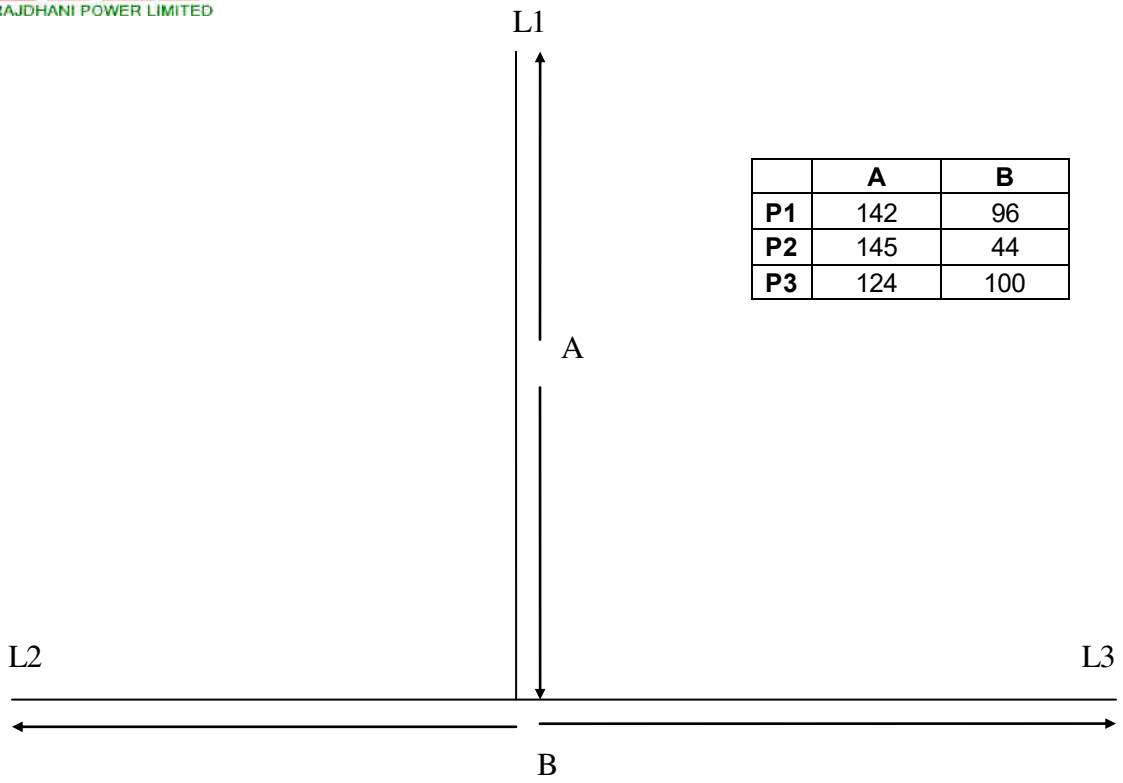
9.4 Low Power factor recording (optional):

- The meter shall have feature to record low power factor as a separate event.
- Logic: Load > 10% of rated, pf range --- 0.2 to 0.5, duration 15 minutes.

9.5 Abnormal Power Off: In case meter micro observes a power off even though AC supply is available, the event is called as "Abnormal power off". Meter shall able to detect and log such event. The logic need to be discussed and agreed before hand.

Note: Preference will be given to those who provide optional feature(s), with out any extra cost.

Mounting Arrangement



	A	B
P1	142	96
P2	145	44
P3	124	100

Note:

- Mounting hole positions are as shown above and indicated by L1, L2, L3.
- Mounting Position should follow either P1 or P2 or P3.
- Distance as indicated by A, B is in mm.
- The top mount- if it is having sliding position, it should be as per dimension at the time of delivery.
- L2- L3 is preferred to be inside the T-cover.

The detailed meter specification No. : 3ph-WCM-13N

Three Phase Whole current Meter

CONTENTS

1.0 SCOPE

This specification covers the design, manufacture, testing and supply of Three-phase Four-wire Static LT Whole Current NET Energy Meters of Accuracy Class 1.0, 20-100 A, 3 x 240 volts for measurement of energy for power factor range from zero lag-unity-zero lead.

2.0 STANDARDS

IS: 13779, IEC 61052-11, IEC 61053-21, & CBIP Technical report no.304 and its latest amendments, CBIP Guide on Static Energy Meters- Specifications and Testing, along-with BRPL specifications. The meter shall be ISI marked (vendor shall be BIS certified) and conform to CEA Metering Regulation – 2006.

3.0 TECHNICAL SPECIFICATION

Sr. No.	Parameters	Technical Requirements
3.1	Voltage	Reference Voltage 240 volt (P-N), +20% to -40% Vref. However the meter should withstand the maximum system voltage.
3.2	Display	a) LCD (Seven digits) b) Height: 10 mm X 5 mm min. c) Pin Type d) Viewing angle min. 120 degrees
3.3	Display parameters	a) Display parameters: LCD test, date & time, cumulative KWH, cumulative KVAH & RKVAH, MD in KW & KVA **(import and export),** PF, V, I and Neutral current (All the energies are without decimal.) b) Display order shall be as per Annexure-1
3.4	Power factor range	Zero lag –unity- zero lead
3.5	Power Consumption	Less than 1 Watt & 4VA per phase in voltage circuit, 2 VA in current circuit
3.6	Starting current	0.2 % of I_b
3.7	Frequency	50 Hz with (+ or -) 5% variation
3.8	Test Output Device	***Flashing LED visible from the front for testing of all three energy in field also.***
3.9	Billing data	a) Meter serial number, Date and time, KWH, KVAH, RKVAH, MD in KW and KVA, No. of tamper counts, tamper occurrence with date & time, tamper restoration date & time with snap shots. History of KWH, KVAH, RKVAH & MD with occurrence details for last 6 months along with TOD readings. b) All the above parameters (namely KWH, KVAH, RKVAH, MD in KW and KVA) are meter readings. c) All these data shall be accessible for reading, recording and spot billing by downloading through optical port with MRI (both Analogic & SANDS) or Laptop computers at site.
3.10	MD Registration	a) Meter shall store MD in every 30 min. period along with date & time. At the end of every 30 min, new MD shall be compared with previous MD and store whichever is higher and the same shall be displayed. It will be preferred that MD is computed using separate counter rather by difference of initial and final energy counter.
3.11	Auto Reset of MD	Auto reset date for MD shall be indicated at the time of finalizing GTP. Default re-setting date is 00:00 hrs, 1st of every month.
3.12	TOD metering	Meter shall be capable of doing TOD metering for KWH, KVARH, KVAH and MD in KW and KVA with 6 time zones (programmable on site through CMRI) **for both import and export mode**. Following are the default TODs:-

<table>
<tr><th>Sr. No.</th><th>Parameters</th><th>Technical Requirements</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Tariff</th><th>Timings</th><th>1st April-30 st Sep</th><th>1st Oct-31 March</th></tr>
<tr><td>1</td><td>00:00 to 3:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>2</td><td>03:00 to 09:00</td><td>Tnp</td><td>Tnp</td></tr>
<tr><td>3</td><td>09:00 to 13:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>4</td><td>13:00 to 17:00</td><td>Tp</td><td>Tp</td></tr>
<tr><td>5</td><td>17:00 to 21:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>6</td><td>21:00 to 24:00</td><td>Tp</td><td>Tp</td></tr>
</table>

<u>Note:</u> Tnp – TOD zone for non peak
Tn – TOD zone for normal
Tp - TOD zone for peak
Initially meter shall be supplied with six zones, seasonal provision and three tariff.</td></tr>
<tr><td>3.13</td><td>Load survey</td><td>30 min integration period, load profile of KW, KVA (both import and export), voltage and current, for min. 60 days</td></tr>
<tr><td>3.14</td><td>Time required for data uploading/ downloading meter data-</td><td>Meter data consisting of all parameters and complete load survey for all parameters (Refer 3.13) shall be read by CMRI (both Analogic & SANDS) and downloaded on desktop PC in minimum possible time (not more then 5 minutes). Time for uploading and down loading, using both port., shall be indicated at the time of finalizing GTP.</td></tr>
<tr><td>3.15</td><td>Diagnostic feature</td><td>Self diagnostic for time, calendar, RTC battery all display segments and NVM.</td></tr>
<tr><td>3.16</td><td>Security feature</td><td>Programmable facility to restrict the access to the information recorded at different security level such as read communication, communication write etc</td></tr>
<tr><td>3.17</td><td>Software & communication compatibility</td><td>a) Optical port with RS 232 compatible to transfer the data locally through CMRI & remote through PSTN / Optical fiber / GSM / CDMA / RF / any other technology to the main computer. RJ11 configuration is required for RS 232 port.

b) The Supplier shall supply Software required for CMRI (both for Analogic & SANDS make)& for the connectivity to AMR modules. The supplier shall also provide training for the use of software. The software should be compatible to Microsoft Windows systems menu. The software should have polling feature with optional selection of parameters to be downloaded for AMR application.

c) The Supplier shall provide meter reading protocols. Vendor to jointly work with BSES IT team to develop CMRI software for meter downloading and further uploading on computer. The vendor has to give an undertaking in this regards.

d) Communication protocols will be either of following two types.
• Same as previous supplied meter to BSES, minimum for 10000 Nos OR
• As per IEC 62056/ DLMS protocol. Other protocols shall not be acceptable.</td></tr>
<tr><td>3.18</td><td>Memory</td><td>Non volatile memory independent of battery backup, memory should be retained up-to 10 year in case of power failure</td></tr>
<tr><td>3.19</td><td>Climatic conditions</td><td>a) The meter should function satisfactorily in India with temperature ranging from 0 - 60°C and humidity upto 96%.

b) Also refer IS: 13779 for climatic conditions.</td></tr>
<tr><td>3.20</td><td>Calibration</td><td>Modification in calibration shall not be possible at site by any means.</td></tr>
<tr><td>3.21</td><td>Battery</td><td>In case battery removal or total discharge same should not effect the working & memory of the meter.</td></tr>
</table>

Sr. No.	Parameters	Technical Requirements
3.22	KVAh defination	KVAh is computed based on KVArh and KWH value. If PF=1, or leading, then KVAh = KWH. At no instance KVAh < KWh.
3.23	Communication port	**Optical Port**: • Optical sensor should have 1 foot cable, terminated on female type D connector and should be suitable for meter data download. • It should have a life of 5 years • Both meter and sensor should have Mechanical arrangement, so as sensor can be fitted on meter without any tool and without any compromise on alignment and sensitivity. • The Pin configuration should be as per BSES standard, Refer configuration diagram - Annexure B. **Wired Port** • Wired port shall have provision for cover which can be sealed. • Both optical and wired port should work independently. • Failure of one port (including display) should not affect the other port down loading capabilities. •
3.24	Event logging and Phasor diagram	Nomenclature used for any event logging/ flags/ parameters/ alarms shall be clear and correct. All above as logged by meter shall be convertible to CSV/ ASCII/ XML format. BCS shall be capable to draw correct phasor diagram.

Note:

- No defraud and deficiency metering in export mode.
- Vendor has to define Tamper Logic, Occurrence and restoration time before supply.
- Tamper and fraud protection test shall be part of acceptance test.

Regarding definition of MD, Power OFF, TOD, Load survey, KVAh, meter output, Phasor diagram for field testing – refer CBIP Guide on Static Energy Meters- Specifications and Testing.

4.0 CONSTRUCTIONAL FEATURES

Sr. No.	Parameters	Technical Requirements
4.1	Body of Meter	a) Top transparent and base opaque material polycarbonate of LEXAN 143A/943AA or equivalent grade having properties of UV stabilized. • Front cover & base should be ultrasonically welded and should be provided with the brass sealing screws. • **Top cover Open** :- The meter shall have top cover opening detection mechanism. The top cover opening event shall be indicated display continuously in auto scroll mode with kWh or through additional LED and shall be logged in memory. The detection and logging mechanism shall work even when meter is not energized. In case of indication of display, meter display shall get reset in 150 days. Logic shall be defined
4.2	Terminal Block	Made of polycarbonate/ PBT and having properties of **V0 inflammability level or equivalent**, brass current terminals with flat-base screws. • Typical Minimum CSA of BRASS --- 2.5 Amp / Sqmm.

Sr. No.	Parameters	Technical Requirements
		• Brass Composition – 62:36:02, Extruded material, Environment protected. • Terminal screw – typically M6, two nos/ per wire Terminal cable entry hole should be suitable for 50 Sqmm PVC cable. Typically brass terminal should start from 6mm (minimum) from front face.
4.3	Terminal cover	Transparent terminal cover with provision of sealing through sealing screw. It should be extended type, with two cable entry holes suitable for 4C50 Al. armoured cable. Preferably with mechanism so as T-Cover should not be lifted once fixed on wall/ base plate. The entry wall should be minimum 80mm away from T block cable entry surface. Finally T cover should be easy to use.
4.4	Diagram of connections	Diagram of external connections to be shown on terminal cover
4.5	Marking on name plates	Meter should have clearly visible, indelible and distinctly name plate marked in accordance with IS & Reliance Energy Ltd specifications.
4.6	Meter Sealing	As per IS 13779 and CEA Metering Regulation 2006, Supplier will fix its seal on meter. In addition, supplier shall affix Buyer seal(s) on side of Meter body as advised by buyer and record should be forwarded to Buyer. **Supplier seal type**: Minimum one seal as Hologram type, numbered with hologram transfer on tamper proof paper seal. Seal should not be just Hologram sticker (100% hologram).
4.7	Guarantee / Warranty	5 Years.
4.8	Insulation	A meter shall withstand an insulation test of 4 KV and impulse test at 8 KV
4.9	Resistance of heat and fire	The terminal block and Meter case shall have safety against the spread of fire. They shall not be ignited by thermal overload of live parts in contact with them as per the relevant IS 13779.

5.0 TAMPER & ANTI-FRAUD DETECTION/EVIDENCE FEATURES

The meter shall log minimum 200 tamper events (ensuring atleast 20 events for each tamper) compartment wise division of each event and their persistence time shall be indicated in GTP.

The Meter shall not be affected by any remote control device & extra high voltage/ field, shall continue recording energy under any one or combinations of the following conditions:

5.1 Phase sequence reversal: The meters shall work accurately irrespective of the phase sequence of the supply.

5.2 Detection of missing potential: In case someone intentionally takes out a potential lead, the date and time of such occurrence shall be recorded by the Meter. The restoration of normal supply shall also be similarly recorded. The threshold for the voltages should be programmable.

5.2.1 Energy computation during missing potential: In case potential is found missing in one/ two phase but current is flowing, in that case energy will be computed assuming V = 240, pf=1.This is true only if current more than 10% of Ibasic.

5.3 **Reversal of C.C. (Current Coil) Polarity:** Meter shall record the reversal of C.C. polarity with time and date, and also the time of restoration. Meter shall however register the energy consumed correctly with any one, two or all three phase c.c. reversal.

5.4 **C.C. Shorting:** Meter shall record C.C. Terminal shorting with time and date and time of restoration. The threshold of the current should be programmable.

5.5 **Power On / Off:** Meter shall detect power OFF (minimum power off period 5 minutes) if all of phase voltages are not present. This event shall be recorded at the time of each power OFF. At the same time power 'ON ' event shall be recorded. This logging shall be available in Tamper details along with cumulative time of failure.

5.5.1 Abnormal Power Off: In case meter micro observes a power off even though AC supply is available, the event is called as "Abnormal power off". Meter shall able to detect and log such event. The logic need to be discussed and agreed before hand.

5.6 **Recording of Neutral disturbance: -** Meter shall log all events when AC/DC/ Pulsating voltage is injected in neutral circuit especially when same can disturb the recording of energy.

5.7 **Snap-on parameters:** Meter shall log all three phase voltage, current, power factor, neutral current etc. at the time of tamper attempt for all such occurrence.

5.8 **External Magnetic tampers:** Meter should log on the events of attempt of tampering by external magnetic field as mentioned in the relevant IS. Manufacturer to explain how MD is computed during magnetic effect.

The Meter shall record as per actual load once the external abnormal magnetic field is removed. In such conditions the Meter shall log the event for presence of abnormal external magnetic field and its restoration.

5.9 **Protection against HV spark/ ESD**: Meter shall continue to record energy or log the event, incase it is disturbed externally using a spark gun/ ignition coil. Up to 35 KV meter should be immune.

5.10 **Influence Quantities:** The Meter shall work satisfactorily with guaranteed accuracy limit under the presence of the following influence quantities as per IS 13779, IEC-1036, and CBIP Technical Report No.88 with latest amendment.

The influence quantities are:

a) External Magnetic field – 0.2 Tesla (with log on feature)
b) Electromagnetic field induction,
c) Radio frequency interference,
d) Unbalanced load,
e) Vibration etc,
f) Wave form 10% of 3rd harmonics,
g) Phase sequence,
h) Voltage unbalance,
i) Electro Magnetic H.F. Field, and
j) D.C. Immunity test.

5.11 **Manufacturing Detail in memory :-** Meter shall have manufacturing month and year in the memory and should come in data downloading.

5.12 **Neutral current measurement :–** Meter shall have feature of Neutral current measurement and display along with phase currents.

5.13 **Low voltage event :-** Meter shall have feature to log an event in case any of phase voltage is <180 Volt.

5.14 **Low Power factor recording):**

- The meter shall have feature to record low power factor as a separate event.
- Logic: Load > 10% of rated, pf range --- 0.2 to 0.5, duration 15 minutes.

5.15 **2Phase connection :-** Meter shall have feature to log an event in case only two phase are connected i.e. remaining one phase & Neutral are absent.

5.16 **Top cover open:** The meter shall have top cover opening detection mechanism. The top cover opening event shall be indicated display continuously in auto scroll mode with kWh or through additional LED and shall be logged in memory. The detection and logging mechanism shall work even when meter is not energized. In case of indication of display, meter display shall get reset in 150 days.

5.17 **Transactions:-** Other than RTC and TOU zone timing, no other parameter should be programmable/ resetable in field. Regarding RTC and TOU, all transactions should be logged.

- **Additional feature other than mentioned above will be preferred.**

6.0 COMPONENT SPECIFICATIONS

Sl. No	Component Function	Requirement	Makes and Origin
6.1	Current Transformers	The Meters should be with the current transformers as measuring elements. The current transformer should withstand for the clauses under 5.9.j	The current transformer should withstand for the clauses under 5.9.j
6.2	Measurement or computing chips	The Measurement or computing chips used in the Meter should be with the Surface mount type along with the ASICs.	Any branded make- to be specified by meter manufacturer before hand
6.3	Memory chips	The memory chips should not be affected by the external parameters like sparking, high voltage spikes or electrostatic discharges.	Any branded make- to be specified by meter manufacturer before hand.
6.4	Display modules	a) The display modules should be well protected from the external UV radiations. b) The display visibility should be sufficient to read the Meter mounted at height of 0.5 meter as well as at the height of 2 meters (refer 3.2.d for Viewing angle). c) The construction of the modules should be such that the displayed quantity should not disturbed with the life of display (PIN Type). d) It should be trans-reflective HTN or STN type industrial grade with extended temperature range minimum 70 ºC.	Truly semiconductor, Tianma/ Haijing Electronics, China
6.5	Optical port	Optical port should be used to transfer the meter data to meter reading instrument. The mechanical construction of the port should be such to facilitate the data transfer easily.	Everlight, Osram, Agillent, NFC
6.6	Power Supply	The power supply should be with the capabilities as per the relevant standards. The power supply unit of the meter should not be affected in case the maximum voltage of the system appears to the terminals due to faults or due to wrong connections.	SMPS Type (It should take care of clause 3.1 and 3.5)
6.7	Electronic components	The active & passive components should be of the surface mount type & are to be handled & soldered by the state of art	USA: National Semiconductors, Atmel, Phillips, Texas Instruments,ST,Onsemi

Sl. No	Component Function	Requirement	Makes and Origin
		assembly processes. The PTH components should be positioned such a way that the leads of components should not be under stress and not touching the internal wires. LED	Japan: Hitachi, Oki, AVX or Ricoh Korea: Samsung EPCOS,Vishay Everlight, Agillent
6.8	Mechanical parts	**a) The internal electrical components should be of electrolytic copper & should be protected from corrosion, rust etc.** b) The other mechanical components should be protected from rust, corrosion etc. by suitable plating/painting methods.	
6.9	Battery	Lithium with guaranteed life of 15 years.	Texcell, SAFT, Varta
6.10	RTC & Micro controller	The accuracy of RTC shall be as per relevant IEC / IS standards	Any branded make- to be s[pecified by meter manufacturer before hand
6.11	P.C.B.	Glass Epoxy, fire resistance grade FR4, with minimum thickness 1.6 mm	

Note:1) The components used by manufacturer shall have "Minimum Life" more than the 10 years.
2) Incase vendor want to use other make components; same shall be approved by BSES before use.. Deviation of component make is not allowed without prior approval.
3) Even for existing/ par suppliers – fresh approval is needed for all deviations.

7.0 GENERAL REQUIREMENTS

7.9 On the meter name-plate:

a) meter serial number should be of 8 digits

b) size of the digit of the meter serial number should be minimum 5mm X 3mm.

c) bar code should be printed next to / below / above the meter serial number

d) BIS registration mark (ISI mark)

Identification on rating plate for Net Meter: - NET METER

7.10 Meter Sr. Nos. to be printed in black on the name plate, instead of embossing.

7.11 Buyer's Serial Number sticker should be fixed on window glass from inside or on Meter front cover of minimum digit size 6 mm X 3 mm. Sticker should have uniqueness property so as same cannot be duplicated.

7.12 The supplier should seal meters on both sides. The Buyer shall approve the method of sealing.

7.13 The internal potential links should be in closed position or link less Meters will be preferred and there shall not be any external link.

7.14 The internal potential links should be in closed position or link less Meters will be preferred. There shall not be any external link.

7.15 Deliverable with Meters.

1. Individual meter accuracy test report.
2. Terminal cover
3. Consolidated report of routine test report & seal & initial reading record. (soft copy as per BRPL format)

7.16 Box number, Meter serial number, type, rating should be mentioned on cases / cartons.

7.17 Meters shall be suitably packed with environmental friendly material in order to avoid damage or disturbance during transit or handling and to prevent in grace of moisture and dust. Also refer CEA Metering Regulation 2006.

7.10 In case battery removal/ total discharge same should not effect the working & memory of the meter .

7.11 The bidder shall maintain a web site where routine test results of all meter supplied against these tender will be maintained and will be accessible to buyer/ buyer representative.

8.0 ANNEXURE 1: DISPLAY SEQUENCE FOR THE PARAMETERS

8.1 Default Display: (Auto scroll mode, Scroll time 6 Sec.)

a. LCD test
b. Date
c. Time
d. Cumulative Active import energy
e. Cumulative Active export energy
f. Cumulative Active net energy
g. Cumulative Apparent import Energy
h. Cumulative Apparent export Energy
i. Maximum demand in Active import
j. Maximum demand in Active export
k. Cumulative Reactive import while active import energy
l. Cumulative Reactive import while active export energy
m. Cumulative Reactive export while active import energy
n. Cumulative Reactive export while active export energy
o. Instantaneous Power Factor
p. Maximum Demand in Apparent import while Active import
q. Maximum Demand in Apparent import while Active export
r. TOD Active energy import (Reg.1 to Reg.3)
s. TOD Active energy export (Reg.1 to Reg.3)
t. Self Diagnostics Flags
u. Connection Check
v. Last Cover open date
w. Last Cover open time

8.2 On-demand Display:

After using pushbutton the following parameters should be displayed.

- LCD test
- Date
- Time
- R phase voltage
- Y phase voltage
- B phase voltage
- R phase current (line)
- Y phase current (line)
- B phase current (line)
- Neutral Current
- Last month billing Date & Time
- Last month billing Active import energy
- Last month billing Active export energy
- Last month billing Reactive import while active import energy
- Last month billing Reactive import while active export energy
- Last month billing Reactive export while active import energy
- Last month billing Reactive export while active export energy
- Last month billing Apparent import energy

- Last month billing Apparent export energy
- Last month billing Maximum Demand in Active import
- Last month billing Maximum Demand in Active import occurrence Date and Time
- Last month billing Maximum Demand in Active export
- Last month billing Maximum Demand in Active export occurrence Date and Time
- Last month billing Maximum Demand in Apparent while Active import
- Last month billing Maximum Demand in Apparent occurrence Date
- Last month billing Maximum Demand in Apparent occurrence Time
- Last month billing Maximum Demand in Apparent while Active export
- Last month billing Maximum Demand in Apparent occurrence Date
- Last month billing Maximum Demand in Apparent occurrence Time
- Present PT Status
- Present CT Status
- Present Others Status
- Last Occurrence Tamper ID
- Date of Last Tamper Occurrence
- Time of Last Tamper Occurrence
- Last Restoration Tamper ID
- Date of Last Tamper Restoration
- Time of Last Tamper Restoration
- Cumulative Tamper Count
- Front Cover Open Count
- Last Cover open date
- Last Cover open time
- Present Sequence
- Instantaneous Load Active
- Instantaneous Load Reactive
- Instantaneous Load Apparent
- Cumulative Active import energy
- Cumulative Active export energy
- Cumulative Active net energy
- Cumulative Apparent import Energy
- Cumulative Apparent export Energy
- Cumulative Reactive import while active import energy
- Cumulative Reactive import while active export energy
- Cumulative Reactive export while active import energy
- Cumulative Reactive export while active export energy
- Self Diagnostic Flags
- Connection check.

Note: The meter display should return to Default Display mode (mentioned above) if the 'push button' is not operated for more than 6 seconds.

9.0 ADDITIONAL OPTIONAL FEATURES:-

9.1 Mid night data):

- The meter should record midnight Cumulative KWh & KVah reading for load survey days.

9.2 Temperature (optional):

- The meter should have capability to measure inside temperature and can log high temperature Events.

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Specification

Three Phase LT.CT. NET Meter

CONTENTS

1.0 SCOPE

This Specification covers the design, engineering, manufacture, assembly, inspection and testing before dispatch and supply of 3 phase 4 wire, Class 0.5 accuracy, 3 X 240V and -/5 Amps static meter for outdoor use.

2.0 APPLICABLE STANDARDS

IS: 14697 for Class 0.5, IEC: 687 and CBIP Technical report no.88 and its latest amendments CBIP Guide on Static Energy Meters- Specifications and Testing, along-with BRPL specifications.

3.0 TECHNICAL SPECIFICATIONS

Sr. No.	Parameters	Technical Requirements
3.1	Voltage	240 volt (P-N), 415 volt (P-P) +20% to –40% Vref.
3.2	Current	-/5 Amps, Max. continuous current 10 Amps
3.3	Power Factor Range	Zero lag – Unity – Zero lead
3.4	Display	a) LCD (Seven digits) b) Height: 10 mm X 6 mm min. c) Pin Type d) Viewing angle min. 160 degrees
3.5	Display Parameters	Display order shall be as per Annexure-1
3.6	Power Consumption	As per Relevant IS
3.7	Starting Current	0.1% Ib
3.8	Running with no load	Meter shall not record any energy under no-load condition.
3.9	Frequency	50 Hz with +/- 5% variation
3.10	Process Technology	Surface Mounting Technology or better.
3.11	Test Output Device	Separate KWH & KVAh Flashing LED visible from the front
3.12	Billing Data	a) Display parameters: LCD test, date & time, cumulative KWH (import and export), cumulative KVAH & RKVAH (import and export), MD in KW & KVA (import and export), PF, V, I. b) Display order shall be as per Annexure-1
3.13	MD Registration	a) Meter shall store MD in every 30 min. period along with date & time with sliding window (5-15 min interval) programmable. At the end of every 30 min, new MD shall be previous MD and store whichever is higher and the same shall be displayed. b) It should be possible to reset MD automatically at the defined date (or period) or through MRI
3.14	Auto Reset of MD	Default auto reset date : 00:00 hrs on 1st day of the month however provision shall be made to change MD reset date through MRI even after installation of meter on site.

<table>
<tr><th>Sr. No.</th><th>Parameters</th><th>Technical Requirements</th></tr>
<tr><td>3.15</td><td>TOD metering</td><td>Meter shall be capable of doing TOD metering for KWH, KVARH, KVAH and MD in KW and KVA with 6 time zones (programmable on site through CMRI)- for both import and export mode. Following are the default TODs:-
<table>
<tr><th>Tariff</th><th>Timings</th><th>1st April-30 st Sep</th><th>1st Oct-31 March</th></tr>
<tr><td>1</td><td>00:00 to 3:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>2</td><td>03:00 to 09:00</td><td>Tnp</td><td>Tnp</td></tr>
<tr><td>3</td><td>09:00 to 13:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>4</td><td>13:00 to 17:00</td><td>Tp</td><td>Tp</td></tr>
<tr><td>5</td><td>17:00 to 21:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>6</td><td>21:00 to 24:00</td><td>Tp</td><td>Tp</td></tr>
</table>
Note: Tnp – TOD zone for non peak
Tn – TOD zone for normal
Tp - TOD zone for peak</td></tr>
<tr><td>3.16</td><td>Load Survey</td><td>30 min integration period, load profile of phase voltage (R,Y,B) and line current(R,Y,B), and all three phase active, reactive and apparent power – both import and export of 90 days (MD integration should be 30 min.)</td></tr>
<tr><td>3.17</td><td>Time required for data reading from meter and downloading on desktop PC</td><td>a) Meter data consisting of all parameters and 90 days load survey for above parameters shall be read by CMRI and downloaded on desktop PC in minimum possible time and it shall be indicated at the time of finalizing GTP. (The meter reading time should not be more than 3 minutes for complete set of data).
b) The software should have capability to transfer data from single CMRI to PC and the multiple CMRI data download to PC with a loader charger.</td></tr>
<tr><td>3.18</td><td>Diagnostic Feature</td><td>Self-diagnostic for time, calendar, RTC battery all display segments and NVM.</td></tr>
<tr><td>3.19</td><td>Security Feature</td><td>Programmable facility to restrict the access to the information recorded at different security level such as read communication, communication write etc.</td></tr>
<tr><td>3.20</td><td>Software & communication compatibility</td><td>a) Optical port with RS 232 compatible to transfer the data locally through CMRI & remote through PSTN / Optical fiber / GSM / CDMA / RF / any other technology to the main computer. The optical communication should not be affected by the normal day light or any other light source surrounding the installed meter.

b) The Supplier shall supply Software required for CMRI & for the connectivity to AMR modules. The supplier shall also provide training for the use of software. The software should be compatible to Microsoft Windows systems (Windows 98 system). The software should have polling feature with optional selection of parameters to be downloaded for AMR application.

c) Necessary provision shall be made in the software for converting all the parameters available for new and old meters if supplied earlier. Copy of operation manual shall be supplied. The software should have selection of meters by date, serial number, data file name or groups of files for data conversion to text file process.

d) The Supplier shall provide meter reading protocols.
* Same need to be confirmed and mutually agreed before supply *.
Vendor to jointly work with BSES IT team to develop CMRI software for meter downloading and further uploading on computer</td></tr>
</table>

Sr. No.	Parameters	Technical Requirements
3.21	Additional communication port	An additional RS 232 hardwired port to be provided in sealable area for AMR PSTN/Optical fiber/GSM/CDMA to the main computer.
3.22	Memory	Non-volatile memory independent of battery backup, memory should be retained upto 10 years in case of power failure.
3.23	Climatic Conditions	The meter should function satisfactorily in India with temperature ranging from -10 °C - 60°C and humidity upto 96%.
3.24	Calibration	Meters shall be software calibrated at factory and modification in calibration shall not be possible at site by any means.
3.25	Battery	In case battery removal or total discharge same should not effect the working & memory of the meter.
3.26	KVAh definition	KVAh is computed based on KVArh and KWH value. If PF=1, or leading, then KVAh = KWH. At no instance KVAh < KWh
3.27	CT and voltage terminals	Meter height, pitch for CT and voltage terminals should align with the LT CT meter box used in BRPL. Following are the dimensions:- • Pitch for CT and voltage terminals- 11.5 mm • PIN height – 28 mm, PIN diameter -4.5 mm, distance of center from base of meter - 31 mm (tolerance- 0.5 mm) Note- Sample of box can be seen at BRPL office

4.0 CONSTRUCTIONAL FEATURES

Sr. No.	Parameters	Technical Requirements
4.1	Meter Body	a) Top transparent and base opaque material polycarbonate of LEXAN 143A/943AA or equivalent grade. b) Front cover & base should be ultrasonically welded. c) Top cover should be designed so as the internal components should not be visible.
4.2	Terminal Block	Made of polycarbonate of grade 500 R or equivalent grade and shall form Integral part of the meter base, brass or copper duly plated current terminals with flat-head brass screws.
4.3	Terminal Cover	Transparent terminal cover with provision of sealing through sealing screw.
4.4	Diagram of connections	Diagram of external connections to be shown on terminal cover
4.5	Marking on name plates	Meter should have clearly visible, indelible and distinctly name plate marked in accordance with IS & Reliance Energy Ltd specifications. (Cl No 7.0)
4.6	Meter Sealing	Supplier shall affix one Buyer seal on side of Meter body as advised and record should be forwarded to Buyer.
4.7	Warrantee	05 years.
4.8	Insulation	A meter shall withstand an insulation test of 4 KV and impulse test at 8 KV
4.9	Resistance of heat and fire	The terminal block and Meter case shall have safety against the spread of fire. They shall not be ignited by thermal overload of live parts in contact with them as per the relevant IS 14697.

5.0 TAMPER AND ANTI-FRAUD DETECTION/EVIDENCE FEATURES

Total no of tamper events logged by meter shall be at least 200 nos., compartment wise division of each event and their persistence time shall be indicated at the time of finalizing GTP.

The meter shall not get affected by any remote control devices and shall continue recording energy under any one or combinations of the following conditions**.** Meter shall log all three-phase voltage, current, power factor, **neutral current** etc. at the time of tamper attempt for all such occurrences:

1.1 **Phase sequence reversal**: The meters shall work accurately irrespective of the phase sequence of the supply.

1.2 **Detection of missing potential**: In case someone intentionally takes out a potential lead, the meter shall record the date and time of such occurrence. The last restoration of normal supply shall also be similarly recorded. The threshold value of voltage should be agreed before delivery.

1.3 **Reversal of C.C. Polarity**: Meter shall record the reversal of C.C. polarity with time and date, and also the time of restoration. Meter shall, however, register the energy consumed correctly with any one, two or all three-phase C.C. reversal.

1.4 **C.C. Shorting/ Bypass**: Meter shall record C.C. terminal shorting/ bypass with time and date and time of restoration. The threshold value of currents should be programmable. Logging of neural current is most important.

1.5 **Unbalance voltage:** Meter shall record all events when the difference between two phase voltage is more than 20V.

1.6 **Low voltage:** Meter shall record all events, if all the three voltages are beyond 20% of Vref.

1.7 **Power On/Off**: Meter shall detect power OFF (minimum power off period 5 mins) if any of phase voltages are not present. This event shall be recorded at the time of each power OFF. At the same time power ON event shall be recorded. **Meter should have provision to record last 30 such events.**

1.8 **Snap Shots:** Meter shall log all three-phase voltage, current, power factor, neutral current etc. at the time of tamper attempt for all such occurrences.

1.9 **Neutral Disturbance**: Meter shall record correctly in case of any AC, DC high frequency signal injected in the neutral circuit of meter. Meter should log the event. Meter shall record correctly in case of missing neutral connection.

1.10 **External Magnetic tampers:** Meter should log on the events of attempt of tampering by external magnetic field as mentioned in the relevant IS. The Meter shall record as per actual load once the external abnormal magnetic field is removed. In such conditions the Meter shall log the event for presence of abnormal external magnetic field and its restoration.

1.11 Protection against HV spark/ ESD: Meter shall continue to record energy or log the event, incase it is disturbed externally using a spark gun/ ignition coil. Upto 35 KV meter should be immune.

1.12 Over Load: Meter shall record Over Load as an event, incase the current in any phase persist for more than rated current that is 5Amp.

1.13 Abnormal power off : Meter shall record case of abnormal power off with date and time. In general meter should not get off, if AC supply is available.

1.14 Abnormal voltage/ load: meter shall record abnormal voltage and / or abnormal current if either the angle between two phases is beyond 120 +/- 20deg or angle between two current is less than 30deg.

1.15 Top cover open: The meter shall have top cover opening detection mechanism. The top cover opening event shall be indicated display continuously in auto scroll mode with kWh or through additional LED and shall be logged in memory. The detection and logging mechanism shall work even when meter is not energized. In case of indication of display, meter display shall get reset in 150 days.

1.16 Manufacturing Detail in memory :- Meter shall have manufacturing month and year in the memory and should come in data downloading

1.17 Wiring connection Display: Incase of abnormal wiring like sequence error. Phase association error, CT reversal, Phase- CT mismatch, one/two phase no voltage- An indication, clearly indicating type of fault should appear and get logged in meter.

Note:

- No defraud and deficiency metering in export mode
- Vendor has to define Tamper Logic, Occurrence and restoration time before supply.
- Tamper and fraud protection test shall be part of acceptance test.

5.1 Influence Quantities

The meter shall work satisfactorily with guaranteed accuracy limit under the presence of the following influence quantities as per IEC-1036 and CBIP Technical Report no.88 with latest amendment.

The influence quantities are:

- External Magnetic field – 0.2 tesla (with log on feature)
- Electromagnetic field induction,
- Radio frequency interference,
- Unbalanced load,
- Vibration etc,
- Wave form 10% of 3rd harmonics,
- Phase sequence,
- Voltage unbalance,
- Electro Magnetic H.F. Field, and

6.0 COMPONENT SPECIFICATIONS

Ser No	Component Function	Requirement	Makes and Origin
6.1	Current Transformers	The Meters should be with the current transformers as measuring elements. The current transformer should withstand for the clauses under 5.2.h	The current transformer should withstand for the clauses under 5.2.h
6.2	Measurement or computing chips	The Measurement or computing chips used in the Meter should be with the Surface mount type along with the ASICs.	USA: Anolog Devices, Cyrus Logic, Atmel, Phillips,Texas Instruments. South Africa: SAMES Japan: NEC
6.3	Memory chips	The memory chips should not be affected by the external parameters like sparking, high voltage spikes or electrostatic discharges.	USA: Atmel, National Semiconductors, Texas Instruments, Phillips, ST,Microchip Japan: Hitachi or Oki
6.4	Display modules	a) The display modules should be well protected from the external UV radiations. b) The display visibility should be sufficient to read the Meter mounted at height of 0.5 meter as well as at the height of 2 meters (refer 3.2.d for Viewing angle). c) The construction of the modules should be such that the displayed quantity should not disturbed with the life of display (PIN Type). d) It should be trans-reflective HTN or STN type industrial grade with extended temperature	Hongkong: Genda Singapore: Bonafied Technologies Korea: Advantek China: Sucess Japan: Hitachi, Sony Holland / Korea: Phillips

Ser No	Component Function	Requirement	Makes and Origin
		range.	
6.5	Communication modules	Communication modules should be compatible for the two RS 232 ports (one for optical port for communication with Meter reading instruments & the other - for the hardwired RS 232 port to communicate with various modems for AMR)	USA: National Semiconductors, HP, Optonica,ST, Holland / Korea: Phillips Japan: Hitachi Taiwan: Ligitek Germany: Siemens
6.6	Optical port	Optical port should be used to transfer the meter data to meter reading instrument. The mechanical construction of the port should be such to facilitate the data transfer easily.	USA: National Semiconductors ,HP Holland / Korea: Phillips Japan: Hitachi, Taiwan: Ligitek
6.7	Power Supply	The power supply should be with the capabilities as per the relevant standards. The power supply unit of the meter should not be affected in case the maximum voltage of the system appears to the terminals due to faults or due to wrong connections. Should work upto -50% vref with only one phase	SMPS Type (It should take care of clause 3.1 and 3.5)
6.8	Electronic components	The active & passive components should be of the surface mount type & are to be handled & soldered by the state of art assembly processes.	USA: National Semiconductors, Atmel, Phillips, Texas Instruments,ST,Onsemi Japan: Hitachi, Oki, AVX or Ricoh Korea: Samsung
6.9	Mechanical parts	a) The internal electrical components should be of electrolytic copper & should be protected from corrosion, rust etc. b) The other mechanical components should be protected from rust, corrosion etc. by suitable plating/painting methods.	
6.10	Battery	Lithium with guaranteed life of 15 years (manufacture guarantee card)	Varta, Tedirun, Sanyo or National
6.11	RTC & Micro controller	The accuracy of RTC shall be as per relevant CBIP -88 standards	USA: Philips, Dallas Atmel, Motorola, Microchip Japan: NEC or Oki
6.12	P.C.B.	Glass Epoxy, fire resistance grade FR4, with minimum thickness 1.6 mm	

Note:1) The components used by manufacturer shall have "Minimum Life" more than the 10 years.
2) Incase vendor want to use other make components; same shall be approved by BSES before use. Deviation of component make is not allowed without prior approval.
3) Even for existing/ par suppliers – fresh approval is needed for all deviations.

7.0 GENERAL REQUIREMENTS

7.18 On the meter name-plate:

a) meter serial number should be of 8 digits

b) size of the digit of the meter serial number should be minimum 5mm X 3mm.

c) bar code should be printed next to / below / above the meter serial number

d) BIS registration mark (ISI mark)

Identification on rating plate for Net Meter: - NET METER

7.19 Meter Sr. Nos. to be printed in black on the name plate, instead of embossing.

7.20 Buyer's Serial Number sticker should be fixed on window glass from inside or on Meter front cover of minimum digit size 6 mm X 3 mm.

7.21 The supplier should seal meters on both sides. The Buyer shall approve the method of sealing.

7.22 The internal potential links should be in closed position or link less Meters will be preferred and there shall not be any external link.

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1. Individual meter accuracy test report.
2. Terminal cover
3. Consolidated report of routine test report & seal & initial reading record. (soft copy as per BRPL format)

7.24 Box number, Meter serial number, type, rating should be mentioned on cases / cartons.

7.25 Meters shall be suitably packed with environmental friendly material in order to avoid damage or disturbance during transit or handling and to prevent in grace of moisture and dust. Also refer CEA Metering Regulation 2006.

7.10 In case battery removal/ total discharge same should not effect the working & memory of the meter

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8.1 Default Display: (Auto scroll mode, Scroll time 6 Sec.)

x. LCD test
y. Date
z. Time
aa. Cumulative Active import energy
bb. Cumulative Active export energy
cc. Cumulative Active net energy
dd. Cumulative Apparent import Energy
ee. Cumulative Apparent export Energy
ff. Maximum demand in Active import
gg. Maximum demand in Active export
hh. Cumulative Reactive import while active import energy
ii. Cumulative Reactive import while active export energy
jj. Cumulative Reactive export while active import energy
kk. Cumulative Reactive export while active export energy
ll. Instantaneous Power Factor
mm. Maximum Demand in Apparent import while Active import
nn. Maximum Demand in Apparent import while Active export
oo. TOD Active energy import (Reg.1 to Reg.3)
pp. TOD Active energy export (Reg.1 to Reg.3)
qq. Self Diagnostics Flags
rr. Connection Check
ss. Last Cover open date
tt. Last Cover open time

8.2 On-demand Display:

After using pushbutton the following parameters should be displayed.

- LCD test
- Date
- Time
- R phase voltage
- Y phase voltage
- B phase voltage
- R phase current (line)
- Y phase current (line)
- B phase current (line)
- Last month billing Date & Time
- Last month billing Active import energy
- Last month billing Active export energy
- Last month billing Reactive import while active import energy
- Last month billing Reactive import while active export energy
- Last month billing Reactive export while active import energy
- Last month billing Reactive export while active export energy
- Last month billing Apparent import energy
- Last month billing Apparent export energy
- Last month billing Maximum Demand in Active import
- Last month billing Maximum Demand in Active import occurrence Date and Time
- Last month billing Maximum Demand in Active export
- Last month billing Maximum Demand in Active export occurrence Date and Time
- Last month billing Maximum Demand in Apparent while Active import
- Last month billing Maximum Demand in Apparent occurrence Date
- Last month billing Maximum Demand in Apparent occurrence Time
- Last month billing Maximum Demand in Apparent while Active export
- Last month billing Maximum Demand in Apparent occurrence Date

- Last month billing Maximum Demand in Apparent occurrence Time
- Present PT Status
- Present CT Status
- Present Others Status
- Last Occurrence Tamper ID
- Date of Last Tamper Occurrence
- Time of Last Tamper Occurrence
- Last Restoration Tamper ID
- Date of Last Tamper Restoration
- Time of Last Tamper Restoration
- Cumulative Tamper Count
- Front Cover Open Count
- Last Cover open date
- Last Cover open time
- Neutral Current
- Present Sequence
- Instantaneous Load Active
- Instantaneous Load Reactive
- Instantaneous Load Apparent
- Cumulative Active import energy
- Cumulative Active export energy
- Cumulative Active net energy
- Cumulative Apparent import Energy
- Cumulative Apparent export Energy
- Cumulative Reactive import while active import energy
- Cumulative Reactive import while active export energy
- Cumulative Reactive export while active import energy
- Cumulative Reactive export while active export energy
- Self Diagnostic Flags
- Connection check.

Note: The meter display should return to Default Display mode (mentioned above) if the 'push button' is not operated approx. more than 10 seconds.

Note: The meter display should return to Default Display mode (mentioned above) if the 'push button' is not operated for more than 6 seconds. . Provision for scroll lock by pressing for 15 sec and sent to normal after 5 min.

Specification

Three Phase HT 3p4w NET Meter

CONTENTS

1.0 Scope

This specification shall cover design, engineering, manufacture, assembly, inspection, testing at manufacturers' works before dispatch, supply of 3 phase 4 wire ,Class 0.5 accuracy, lag only HT CT-PT operated NET energy meter. The meter shall be suitable for measurement of energy and power, demand requirement in an A.C. balanced/unbalanced system over a power factor range of zero lag to zero lead. These meters should have communication ports to interface standard modems for remote meter reading on PSTN lines / optic fiber / CDMA / GSM/ GPRS.

A related base computer & analysis software (BCS), as per the details given in this specification, shall also be supplied along with the meters.

2.0 Applicable Standards

IS 14697: 1999 for Class 0.5 and IS :13779:1999 for class 1.0 , IS 9000, IEC 687 for Class 0.5 and IEC 61036 for Class 1.0 with latest amendments and CBIP Technical Report No. 88 with latest amendments, CBIP Guide on Static Energy Meter – Specifications and Testing along with the BRPL Specifications.

3.0 Technical Specification

Sr.No	Parameters	Technical Requirements
3.1	Voltage	63.5 V (P-N) with +20% to -30% Vref.
3.2	Rated secondary current	-/5 Amps. Balanced & unbalanced load
3.3	Display	LCD, scrolling, 5 sec for each parameter
3.4	Display parameters	a) LCD (Seven digits) b) Height: 10 mm X 6 mm min. c) Pin Type d) Viewing angle min. 120 degrees *Phasor diagram/ wiring error*: Meter should indicate/ display wiring error with fault type. Fault related to phase association error should be clearly tagged.
3.5	Power Consumption	As per relevant IS.
3.6	Starting current	0.1 % of I_b For Class). 5 and 0.2 % Ib for Class 1.0
3.7	Frequency	50 Hz with + / - 5% variation
3.8	Process technology	SMT or better
3.9	Test Output Device	Flashing LED visible from the front for KWh, KVAH, RKVAH
3.10	Billing data	a) Display parameters: LCD test, date & time, cumulative KWH, cumulative KVAH & RKVAH, MD in KW & KVA, PF, V, I (cumulative KWH continuous and other parameter with pushbutton. Display parameters in Normal Display as well as On demand Display mode shall be finalized at the time of actual order. b) Display order shall be as per Annexure-1
3.11	MD Registration	a) Meter shall store MD in every 15/30 min. period along with date & time with sliding window (5-15/30 min interval) programmable. At the end of every 15/30 min, new MD shall be previous MD and store whichever is higher and the same shall be displayed. **on a later date both MD and load survey can be programmed for 15/30 minutes** b) It should be possible to reset MD automatically at the defined date (or period) or through MRI c) MD reset knob should be sealable.
3.12	Auto Reset of MD	Auto reset date for MD shall be indicated at the time of finalizing GTP and provision shall be made to change MD reset date through MRI even after installation of meter on site.
3.13	TOD metering	Meter shall be capable of doing TOD metering for KWH, KVARH, KVAH and MD in KW and KVA with 6 time zones (programmable on site through CMRI) **for both import and export mode**. Following are the default TODs:-

<table>
<tr><th>Sr.No</th><th>Parameters</th><th>Technical Requirements</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Tariff</th><th>Timings</th><th>1st April-30 st Sep</th><th>1st Oct-31 March</th></tr>
<tr><td>1</td><td>00:00 to 3:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>2</td><td>03:00 to 09:00</td><td>Tnp</td><td>Tnp</td></tr>
<tr><td>3</td><td>09:00 to 13:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>4</td><td>13:00 to 17:00</td><td>Tp</td><td>Tp</td></tr>
<tr><td>5</td><td>17:00 to 21:00</td><td>Tn</td><td>Tn</td></tr>
<tr><td>6</td><td>21:00 to 24:00</td><td>Tp</td><td>Tp</td></tr>
</table>
Note: Tnp – TOD zone for non peak
Tn – TOD zone for normal
Tp - TOD zone for peak
</td></tr>
<tr><td>3.14</td><td>Load survey</td><td>30 min integration period, load profile of phase wise voltage and current, KW, RKVA and KVA for min- for both import and export - 60 days (with 30 minutes integration period).</td></tr>
<tr><td>3.15</td><td>Time required for data reading from meter and downloading on desktop PC</td><td>a) Meter data consisting of all parameters and 60 days load survey for above parameters shall be read by CMRI and downloaded on desktop PC in minimum possible time and it shall be indicated at the time of finalizing GTP. (The meter reading time should not be more than 3 minutes for complete set of data).

b) The software should have capability to transfer data from single CMRI to PC and the multiple CMRI data download to PC with a loader charger.</td></tr>
<tr><td>3.16</td><td>Diagnostic feature</td><td>Self-diagnostic for time, calendar, RTC battery all display segments and NVM.</td></tr>
<tr><td>3.17</td><td>Security feature</td><td>Programmable facility to restrict the access to the information recorded at different security level such as read communication, communication write etc.</td></tr>
<tr><td>3.18</td><td>Additional communication port</td><td>An additional RS 232 hardwired port to be provided in terminal block for AMR PSTN/Optical fibre/GSM/CDMA to the main computer.</td></tr>
<tr><td>3.19</td><td>Software & communication compatibility</td><td>a) Optical port with RS 232 compatible to transfer the data locally through CMRI & remote through PSTN / Optical fiber / GSM / CDMA / RF / any other technology to the main computer.

b) The Supplier shall supply Software required for CMRI & for the connectivity to AMR modules. The supplier shall also provide training for the use of software. The software should be compatible to Microsoft Windows systems (Windows 98 system). The software should have polling feature with optional selection of parameters to be downloaded for AMR application.

c) Necessary provision shall be made in the software for converting all the parameters available for new and old meters if supplied earlier. Copy of operation manual shall be supplied.

d) The data transfer (from meter to CMRI / AMR equipment) rate should be minimum 2400 bps.

e) The Supplier shall provide meter-reading protocols. Meters with open protocols will be preferred . Vendor to jointly work with BSES IT team to develop CMRI software for meter downloading and further uploading on</td></tr>
</table>

Sr.No	Parameters	Technical Requirements
		computer
3.20	Memory	Non volatile memory independent of battery backup, memory should be retained up-to 10 year in case of power failure
3.21	Climatic Conditions	a) The meter should function satisfactorily in India with temperature ranging from 0 - 60°C and humidity upto 96%. b) Also refer IS: 13779 for climatic conditions.
3.22	Calibration	Meters shall be software calibrated at factory and modification in calibration shall not be possible at site by any means.
3.23	Computation of KVAh	KVA shall be computed as Modulus of Active and reactive energy. How ever incase of capacitive Reactive energy, the KVA will same as KW. The polarity of KVA is same as KW. At no given instant, the KVAH should be less than KWH. Meter should have calibration LED to check meter accuracy in field condition both for Active and Apparent Energy.

4.0 Constructional Features

Sr.NO	Parameters	Technical Requirements
4.1	Body of Meter	a) Top transparent and base opaque material polycarbonate of LEXAN 143A/943AA or equivalent grade. b) Front cover & base should be ultrasonically welded. c) Top cover should be designed so as the internal components should not be visible.
4.2	Terminal Block	Made of polycarbonate of grade 500 R or equivalent grade and shall form Integral part of the meter base, brass or copper current terminals with flat-head brass screws.
4.3	Terminal cover	Transparent terminal cover with provision of sealing through sealing screw.
4.4	Diagram of connections	Diagram of external connections to be shown on terminal cover from inside.
4.5	Marking on name plates	Meter should have clearly visible, indelible and distinctly name plate marked in accordance with IS & Reliance Energy Ltd specifications.
4.6	Meter Sealing	Supplier shall affix one Buyer seal on side of Meter body as advised and record should be forwarded to Buyer.
4.7	Warrantee	66 months.
4.8	Insulation	A meter shall withstand an insulation test of 4 KV and impulse test at 6 KV
4.9	Resistance to heat and fire	The terminal block and Meter case shall have safety against the spread of fire. They shall not be ignited by thermal overload of live parts in contact with them as per the relevant IS 13779.

5.0 Tamper & ANTI-Fraud detection/evidence features

Total no of tamper events logged by meter shall be at least 200 nos., compartment wise division of each event and their persistence time shall be indicated at the time of finalizing GTP

The meter shall not get affected by any remote control devices and shall continue recording energy under any one or combinations of the following conditions:

5.1 **Phase sequence reversal**: The meters shall work accurately irrespective of the phase sequence of the supply.

5.2 **Detection of missing potential**: In case someone intentionally takes out a potential lead, the date and time of such occurrence shall be recorded by the meter. The last restoration of normal supply shall also be similarly recorded. The threshold of the voltages should be programmable.

5.3 **Reversal of C.C. Polarity**: Meter shall record the reversal of C.C. polarity with time and date, and also the time of restoration. Meter shall however register the energy consumed correctly with any one, or all two phase c.c. reversal.

5.4 **Power On / Off:-** Meter shall detect power OFF (minimum power off period 5 minutes) if any of phase voltages are not present. This event shall be recorded at the time of each power OFF. At the same time power ' ON ' event shall be recorded. This logging shall be available in Tamper details along with cumulative time of failure.

5.6 Snap shots: Meter shall log all three phase voltage, current, power factor etc. at the time of tamper attempt for all such occurrences.

5.7 External Magnetic tamper: Meter should log on the events of attempt of tampering by external magnetic field & should function as mentioned in the CBIP Technical report no. 88 with latest amendments.

5.8 Over Load/Low Load: Meter shall record Over Load/Low load as an event, in terms of defined % threshold value of load(Programmable at factory)

5.9 Voltage High/Voltage Low: Meter shall record case of High Voltage/Low Voltage in terms of defined value Voltage Threshold (Vref.)

* *Vendor has to define Tamper Logic, Occurrence and restoration time before supply and take approval before supply. Further when ever meter switch to Imax mode due to tamper the event should be logged and no MD should be computed for that period.*

5.10 Influence Quantities: The meter shall work satisfactorily with guaranteed accuracy limit under the presence of the following influence quantities as per IEC-1036, and CBIP Technical Report No.88 with latest amendment.

The influence quantities are:

a) External Magnetic field – 0.2 tesla (with log on feature)
b) Electromagnetic field induction,
c) Radio frequency interference,
d) Unbalanced load,
e) Vibration etc,
f) Wave form 10% of 3rd harmonics,
g) Phase sequence,
h) Voltage unbalance,
i) Electro Magnetic H.F. Field

5.11 RTC Drift:

In case of TOD tariff the proper RTC functioning will be of prime importance. In view of this a software to adjust the RTC drift to be provided along with.

5.12 Protection against HV spark: Meter shall continue to record energy or log the event, incase it is disturbed externally using a spark gun/ ignition coil. Upto 35 KV meter should be immune.

5.13 Recording of Neutral disturbance: - Meter shall log all events when AC/DC/ Pulsating voltage is injected in neutral circuit especially when same can disturb the recording of energy.

5.14 Abnormal power off : Meter shall record case of abnormal power off with date and time. In general meter should not get off, if AC supply is available.

5.15 Abnormal voltage/ load: meter shall record abnormal voltage and / or abnormal current if either the angle between two phases is beyond 120 +/- 20deg or angle between two current is less than 30deg.

5.16 Top cover open: The meter shall have top cover opening detection mechanism. The top cover opening event shall be indicated display continuously in auto scroll mode with kWh or through additional LED and shall be logged in memory. The detection and logging mechanism shall work even when meter is not energized. In case of indication of display, meter display shall get reset in 150 days.

5.17 Wiring connection Display: Incase of abnormal wiring like sequence error. Phase association error, CT reversal, Phase- CT mismatch, one/two phase no voltage- An indication, clearly indicating type of fault should appear and get logged in meter.

Note-
No defraud and deficiency metering in export mode
Tamper and fraud protection test shall be part of acceptance test.

6.0 COMPONENT SPECIFICATIONS

Ser No	Component Function	Requirement	Makes and Origin
6.1	Current Transformers	The Meters should be with the current transformers as measuring elements. The current transformer should withstand for the clauses under 5.2.h	The current transformer should withstand for the clauses under 5.2.h
6.2	Measurement or computing chips	The Measurement or computing chips used in the Meter should be with the Surface mount type along with the ASICs.	USA: Anolog Devices, Cyrus Logic, Atmel, Phillips,Texas Instruments. South Africa: SAMES Japan: NEC
6.3	Memory chips	The memory chips should not be affected by the external parameters like sparking, high voltage spikes or electrostatic discharges.	USA: Atmel, National Semiconductors, Texas Instruments, Phillips, ST,Microchip Japan: Hitachi or Oki
6.4	Display modules	a) The display modules should be well protected from the external UV radiations. b) The display visibility should be sufficient to read the Meter mounted at height of 0.5 meter as well as at the height of 2 meters (refer 3.2.d for Viewing angle). c) The construction of the modules should be such that the displayed quantity should not disturbed with the life of display (PIN Type). d) It should be trans-reflective HTN or STN type industrial grade with extended temperature range.	Hongkong: Genda Singapore: Bonafied Technologies Korea: Advantek China: Sucess Japan: Hitachi, Sony Holland / Korea: Phillips
6.5	Communication modules	Communication modules should be compatible for the two RS 232 ports (one for optical port for communication with Meter reading instruments & the other - for the hardwired RS 232 port to communicate with various modems for AMR)	USA: National Semiconductors, HP, Optonica,ST, Holland / Korea: Phillips Japan: Hitachi Taiwan: Ligitek Germany: Siemens
6.6	Optical port	Optical port should be used to transfer the meter data to meter reading instrument. The mechanical construction of the port should be such to facilitate the data transfer easily.	USA: National Semiconductors ,HP Holland / Korea: Phillips Japan: Hitachi, Taiwan: Ligitek
6.7	Power Supply	The power supply should be with the capabilities as per the relevant standards. The power supply unit of the meter should not be affected in case the maximum voltage of the system appears to the terminals due to faults or due to wrong connections.	SMPS Type (It should take care of clause 3.1 and 3.5)
6.8	Electronic components	The active & passive components should be of the surface mount type & are to be handled & soldered by the state of art assembly	USA: National Semiconductors, Atmel, Phillips, Texas

Ser No	Component Function	Requirement	Makes and Origin
		processes.	Instruments,ST,Onsemi Japan: Hitachi, Oki, AVX or Ricoh Korea: Samsung
6.9	Mechanical parts	a) The internal electrical components should be of electrolytic copper & should be protected from corrosion, rust etc. b) The other mechanical components should be protected from rust, corrosion etc. by suitable plating/painting methods.	
6.10	Battery	Lithium with guaranteed life of 15 years	Varta, Tedirun, Sanyo or National
6.11	RTC & Micro controller	The accuracy of RTC shall be as per relevant IEC / IS standards	USA: Philips, Dallas Atmel, Motorola, Microchip Japan: NEC or Oki
6.12	P.C.B.	Glass Epoxy, fire resistance grade FR4, with minimum thickness 1.6 mm	

7.0 GENERAL REQUIREMENTS

7.1 On the meter nameplate:

a) meter serial number should be of 8 digits

b) size of the digit of the meter serial number should be minimum 5mm X 3mm.

c) bar code should be printed next to / below / above the meter serial number .

d) BIS registration mark (ISI mark)

Identification on rating plate for Net Meter: - NET METER

7.26 Supplier shall supply software suitable for energy measurement & energy spot billing through CMRI.

7.27 Buyer's Serial Number sticker should be fixed on window glass from inside or on Meter front cover of minimum digit size 6 mm X 3 mm.

7.28 The supplier should seal meters on both sides. The Buyer shall approve the method of sealing.

7.29 The internal potential links should be in closed position or link less Meters will be preferred and there shall not be any external link.

7.30 Terminal cover should be fixed on Meter before dispatch.

7.31 Meter Sr. Nos. to be printed in black on the name plate, instead of embossing.

7.32 Box number, Meter serial number, type, rating should be mentioned on cases / cartons.

7.33 Meters shall be suitably packed with environmental friendly material in order to avoid damage or disturbance during transit or handling and to prevent in grace of moisture and dust.

8.0 ANNEXURE 1: DISPLAY SEQUENCE FOR THE PARAMETERS

8.1 Default Display: (Auto scroll mode, Scroll time 10 Sec.)

uu. All Segment on display
vv. Date
ww. Real Time
xx. Cumulative Active import energy
yy. Cumulative Active export energy
zz. Cumulative Apparent import Energy
aaa. Cumulative Apparent export Energy
bbb. Maximum demand in Active import
ccc. Maximum demand in Active export
ddd. Cumulative Reactive import while active import energy
eee. Cumulative Reactive import while active export energy
fff. Cumulative Reactive export while active import energy
ggg. Cumulative Reactive export while active export energy
hhh. Instantaneous Average Power Factor
iii. Maximum Apparent Demand while active import
jjj. Maximum Apparent Demand while active export
kkk. TOD Active energy import (Reg.1 to Reg.3)
lll. TOD Active energy export (Reg.1 to Reg.3)
mmm. TOD Apparent energy while Active import (Reg.1 to Reg.3)
nnn. TOD Apparent energy while Active export (Reg.1 to Reg.3)
ooo. TOD Reactive import while active import energy (Reg.1 to Reg.3)
ppp. TOD Reactive import while active export energy (Reg.1 to Reg.3)
qqq. TOD Reactive export while active import energy (Reg.1 to Reg.3)
rrr. TOD Reactive export while active export energy (Reg.1 to Reg.3)
sss. Phase To Neutral Voltage R
ttt. Phase To Neutral Voltage Y
uuu. Phase To Neutral Voltage B
vvv. R Phase Line Current
www. Y Phase Line Current
xxx. B Phase Line Current

8.2 On-demand Display:

After using pushbutton the following parameters should be displayed.

a. All Segment on display
b. Date
c. Real Time
d. Cumulative Active import energy
e. Cumulative Active export energy
f. Cumulative Active net energy
g. Cumulative Apparent import Energy
h. Cumulative Apparent export Energy
i. Maximum demand in Active import
j. Maximum demand in Active export
k. Cumulative Reactive import while active import energy
l. Cumulative Reactive import while active export energy
m. Cumulative Reactive export while active import energy
n. Cumulative Reactive export while active export energy
o. Instantaneous Average Power Factor
p. Maximum Demand in Apparent while Active import
q. Maximum Demand in Apparent while Active export
r. TOD Active energy import (Reg.1 to Reg.3)
s. TOD Active energy export (Reg.1 to Reg.3)
t. TOD Apparent energy while Active import (Reg.1 to Reg.3)
u. TOD Apparent energy while Active export (Reg.1 to Reg.3)
v. TOD Reactive import while active import energy (Reg.1 to Reg.3)
w. TOD Reactive import while active export energy (Reg.1 to Reg.3)
x. TOD Reactive export while active import energy (Reg.1 to Reg.3)

y. TOD Reactive export while active export energy (Reg.1 to Reg.3)
z. Phase To Neutral Voltage R
aa. Phase To Neutral Voltage Y
bb. Phase To Neutral Voltage B
cc. R Phase Line Current
dd. Y Phase Line Current
ee. B Phase Line Current
ff. History 1 Active import energy
gg. History 1 Active export energy
yyy. History 1 Reactive import while active import energy
zzz. History 1 Reactive import while active export energy
aaaa. History 1 Reactive export while active import energy
bbbb. History 1 Reactive export while active export energy
hh. History 1 Apparent import Energy
ii. History 1 Apparent export Energy
jj. History 1 Maximum demand in Active import
kk. History 1 Maximum demand in Active import Occurrence Time and Date
ll. History 1 Maximum demand in Active export
mm. History 1 Maximum demand in Active export Occurrence Time and Date
nn. History 1 Maximum Demand in Apparent while Active import
oo. History 1 Maximum demand in Apparent while Active import Occurrence Time and Date
pp. History 1 Maximum Demand in Apparent while Active export
qq. History 1 Maximum demand in Apparent while Active export Occurrence Time and Date
rr. Cumulative Tamper Count
ss. Present PT Status
tt. Present CT Status
uu. Phase Sequence
vv. Battery Status
ww. Self Diagnostic Flags
xx. Connection Check

Note: The meter display should return to Default Display mode (mentioned above) if the 'push button' is not operated approx. more than 6 seconds.

BSES
RAJDHANI POWER LIMITED

Annexure - A

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed & stamped by the bidder along-with bid)

BSES Rajdhani Power Ltd (BRPL) intends to use reverse auction through SAP-SRM tool as an integral part of entire tendering process. All bidders who are techno-commercially qualified on the basis of tender requirements shall participate in the reverse auction.

The following terms and conditions are deemed as accepted by the bidder on participation in the bid:-

1. In case of bidding through Internet medium, bidders are advised to ensure availability of all associated infrastructure as required to participate in the reverse auction event. Inability to bid due to telephone glitch, internet response issues, software & hardware hangs/failures, power failures or any other reason shall not be the responsibility of BRPL.

2. In case bidder fails to participate in the reverse auction event due to any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid submitted by them as a part of tender shall be considered as bidder's Final No Regret offer. Any off-line price bids received from a bidder in lieu of non-participation in the reverse auction event shall be rejected by BRPL.

3. The bidder is advised to understand the auto bid process t safeguard themselves against any possibility of non-participation in the reverse auction event.

4. The bidder shall be prepared with competitive price quotes during the day of reverse auction event.

5. The prices quoted by bidder in reverse auction event shall be on FOR Landed cost BRPL Store/site basis inclusive of all relevant taxes, duties, levies, transportation charges etc.

6. The prices submitted by the bidder during reverse auction event shall be binding on the bidder.

7. The bidder agrees to non-disclosure of trade information regarding bid details e.g. purchase, identity, bid process/technology, bid documentation etc.

8. BRPL will make every effort to make the bid process transparent. However award decision of BRPL will be final and binding on the bidder.

9. The prices submitted during reverse auction event shall be binding on the bidder.

10. No request for Time extension of the reverse auction event shall be considered by BRPL.

BSES
RAJDHANI POWER LIMITED

Annexure -I

BID FORM

RATE CONTRACT FOR SUPPLY OF NET METERS(1 PHASE,3 PHASE,LTCT & HT METERS)

To

Head of the Department
Contracts & Materials
BSES Rajdhani Power Ltd
BSES Bhawan, Nehru Place
New Delhi– 110019
Sir,

1 We understand that BSES RAJDHANI POWER LTD is desirous of procuring different types of 'Meter's ' in it's licensed distribution network area in Delhi.

2 Having examined the Bidding Documents for the above named works, we the undersigned, offer to deliver the goods in full conformity with the Drawings, Conditions of Contract and specifications for the sum of AS PER PRICE BID ENCLOSED or such other sums as may be determined in accordance with the terms and conditions of the contract .The above Amounts are in accordance with the Price Schedules attached herewith and are made part of this bid.

3 If our Bid is accepted, we under take to deliver the entire goods as per delivery schedule given by you from the date of award of purchase order/letter of intent

4 If our Bid is accepted, we will furnish a performance bank guarantee for an amount of 10% (Ten) percent of the total contract value for due performance of the Contract in accordance with the General Conditions of Contract.

5 We agree to abide by this Bid for a period of 120 days from the date fixed for bid opening under clause 9.0 of GCC , and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

6 We declare that we have studied the provision of Indian Income Tax Law and other Indian Laws for supply of equipments/materials and the prices have been quoted accordingly.

7 Unless and until Letter of Intent isissued, this Bid, together with your written acceptance there of, shall constitute a binding contract between us.

8 We understand that you are not bound to accept the lowest, or any bid you may receive.

9 There is provision for Resolution of Disputes under this Contract, in accordance with the Laws and Jurisdiction of Contract, Clause 19 of GCC .

Dated this..... day of..... 20 .....

Signature..... In the capacity of ……

.....duly authorized to sign for and on behalf of

(IN BLOCK CAPITALS) .....

BSES
RAJDHANI POWER LIMITED

Annexure -II

FORMAT FOR BID SECURITY BANK GUARANTEE

(To be issued in a Non Judicial Stamp Paper of Rs.50/-purchased in the name of the bank)

Whereas [name of the Bidder](hereinafter called the Bidder") has submitted its bid dated [date of submission of bid] for the supply of [name and/or description of the goods] (hereafter called "the Bid").

KNOW ALL PEOPLE by these presents that WE [name of bank]at[Branch Name and address],having our registered office at[address of the registered office of the bank](herein after called —the Bank"),are bound unto BSES Rajdhani Power Ltd., with it's Corporate Office at BSES Bhawan Nehru Place, New Delhi -110019 ,(herein after called —the Purchaser")in the sum of Rs._____ for which payment well and truly to be made to the said Purchaser, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this_____ day of_____ 20____.

THE CONDITIONS of this obligation are:

1. If the Bidder withdraws its Bid during the period of bid validity specified by the Bidder on the Bid Form ;or

2. If the Bidder, having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity:

(a) fails or refuses to execute the Contract Form ,if required; or
(b) fails or refuses to furnish the performance security, In accordance with the Instructions to Bidders/GENERAL CONDITIONS.;

We undertake to pay to the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that is its demand the purchaser will note that amount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or condition s.

This guarantee will remain in force up to and including thirty (30) days after the period of bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

(Signature of the bank)

Signature of the witness

BSES
RAJDHANI POWER LIMITED

Annexure –III

PRICE FORMAT

ENQUIRY NO & DATE: CMC/BR/20-21/SV/RS/SN/876 DT : 25.02.2021

S.NO	HSN Code	Material Dispatch Location (GSTN no.)	Item Description	UOM	QTY (Nos.)	EX-WORKS RATE/No.	C GST (%)	C GST (Amt)	S GST (%)	S GST (Amt)	I GST (%)	I GST (Am)	FREIGHT	LANDED COST/No.	TOTAL LANDED COST
1			1-Ph Whole Current Net Meter	Nos	500										
2			3-Ph Whole Current Net Meter	Nos	600										
3			LT CT Net Meter	Nos	200										
4			HT Net Meter	Nos	200										

Pls attach the covering letter head alongwith the price format.

NAME OF THE BIDDER WITH STAMP

BSES
RAJDHANI POWER LIMITED

Annexure - IV

COMMERCIAL TERMS AND CONDITIONS

ENQUIRY NO & DATE : CMC/BR/20-21/SV/RS/SN/876, DT:25.02.2021

S/NO	ITEM DESCRIPTION	AS PER BRPL	CONFIRMATION OF BIDDER
1	Validity of prices	120 days from the date of offer	
2	Price basis	a) Firm, FOR Delhi store basis. Prices shall be inclusive of all taxes & duties, freight upto Delhi stores. b) Unloading at stores shall be in vendor's scope c) Transit insurance in BRPL scope for Indian portion only	
3	Payment terms	100% payment within 45 days after receipt of material at stores	
4	Delivery schedule	As per our requirement	
5	Defect Liability period	60 months after commissioning or 66 months from the last date of supply,whichever is earlier	
6	Penalty for delay	1% (Ex works value) per week of delay of undelivered units or part thereof subject to maximum of 10% of total PO value(Ex works) of undelivered units	
7	Performance Bank Guarantee	10% of total PO value valid for 60 months after commissioning or 66 months from the last date of supply,whichever is earlier plus 3 months towards claim period	

ANNEXURE V

ENQUIRY NO & DATE : CMC/BR/20-21/SV/RS/SN/876 DT: 25.02.2021

NO DEVIATION SHEET

SL NO	SL NO OF TECHNICAL SPECIFICATION	DEVIATIONS,IF ANY

SIGNATURE & SEAL OF BIDDER

NAME OF BIDDER

BSES
RAJDHANI POWER LIMITED

Annexure – VI

S.No	Qualification Criteria	Declaration by bidder with qualifying the fulfillment	Documentary Evidence attached page no. details
1	The bidder must be a meter manufacturer of static meter.		
2	The bidder shall either themselves be manufacturers of the equipment offered or accredited representatives of such manufacturers in India or of their Principals abroad with whom they may be having collaboration Such accreditation should be at least of one year preferably last year as on date of tender. Authority letter from manufacturer shall be attached along with bid.		
3	Relevant documents in support of the above must be furnished along with undertaking of the manufacturers. If these documents are not furnished along with the tenders the offer will be rejected summarily.		
4	Bidder should have supplied minimum 1000 similar type of meters in last five years (From the date of technical bid opening) to Electricity Distribution Utility / Undertaking in India with electronic display and communication facility.	Order copies /completion certificates to be submitted	
5	Offered meters should be in successful operation for minimum 2 years as on the date of opening of Bid. This should be supported by the copies of purchase orders and performance reports from the SEBs / Power utilities should be enclosed.	Copy of completion certificates to be submitted in this regard	
6	The bidder must possess valid ISO 9001:2000 certification for meter manufacturing and possess possess valid BIS Licence.	ISO or equivalent Certification copy	
7	Firms who are debarred/blacklisted in other utilities in India will not be considered.	Self certification	
8	The Bidder should have average turnover of Rs.20 Crores in the last three financial years (i.e. 2017-18,18-19 & 19-20) . Bidder should submit report on financial standing such as profit and loss statement, balance sheets for the last three years as an supporting documents.	Copy of audited Balance Sheet and P&L Account to be submitted in this regard	
9	Bidder should have complete volume of type test reports as per IS 13779 (Including latest amendments if any) and magnet test as per CBIP-88 from any NABL accredited lab. The type test report should not be older than 5 years as on the date of opening of tender.		
10	The bidder must be a meter manufacturer of static meter.		
10.1	Computerized test bench: The manufacturer should have sufficient Nos of Computerized test benches. The benches should have electronic supply, Isolated CT/ PT system and data should be directly stored in central server.		
10.2	Seal tracking system: The manufacturer has to put both his own seal and BSES seal on the meter. He should have a seal tracking software to ensure tracking of seal and no duplication of seals and meter nos,.		
10.3	Meter Burn In system: In order to ensure the reliability of components and that there is no drift in meter accuracy with time; the manufacturer should have burn in facility --- Running meter with load at elevated temperature		
10.4	Routine test data: During lot acceptance, all routine test data should be made available to inspector. In fact as per BIS, STI all test data should be offered to inspector for verification. Routine test report should be packed with each meter.		

10.5	**Test benches: During the lot acceptance, BSES inspector can test up to 5% of offered quantity. The manufacturer should agree to provide all test facility to do so. Further he should allow BSES inspector to check shop floor process.**		
10.6	**Test equipments: Since the meters has lot of anti theft features, the manufacturer should have test set up too check the working of all anti theft features.**		
10.7	**PCB assembly facility:- The PCB facility should have auto- pick n place machine, in- circuit testor, Protection against static charge/ dust etc.; and process to ensure no corrosion of solder points/ tracks. Incase service is taken from other vendor than bidder shall arrange inspection of facility. The bidder should be taking the service from the vendor since last two years and so far have procured & one million 50,000 3ph meter PCB from vendor.**		

BSES
RAJDHANI POWER LIMITED

CHECK LIST

Sl No	Item Description	YES/NO
1	INDEX	YES/NO
2	COVERING LETTER	YES/NO
3	BID FORM (UNPRICED) DULY SIGNED	YES/NO
4	BILL OF MATERIAL (UNPRICED)	YES/NO
5	TECHNICAL BID	YES/NO
6	ACCEPTANCE TO COMMERCIAL TERMS AND CONDITIONS	YES/NO
7	FINANCIAL BID (IN SEALED ENVELOPE)	YES/NO
8	EMD IN PRESCRIBED FORMAT	YES/NO
9	DEMAND DRAFT OF RS 1180/- DRAWN IN FAVOUR OF	BSES……POWER LTD
10	POWER OF ATTORNEY/AUTHORISATION LETTER FOR SIGNING THE BID	YES/NO