

TENDER DOCUMENT

RATE CONTRACT FOR SUPPLY & SUPERVISION

OF

11KV INDOOR & OUTDOOR RING MAIN UNIT'S

NIT NO CMC/BY/19-20/RB/SV/016

Due Date for Submission: 30.05.2019, 14:30 P.M.

**BSES YAMUNA POWER LIMITED (BYPL)
SHAKTI KIRAN BUILDING,
KARKARDOOMA,
DELHI-110032
CIN: U40109DL2001PLC111525
TEL: 011 3999 7111
WEBSITE: www.bsesdelhi.com**

This document is a property of BYPL. This is not transferable and shall not be used for any purpose other than, for which it is supplied.

SECTION – I: REQUEST FOR QUOTATION

1.00 Event Information

- 1.01 BSES Yamuna Power Ltd (hereinafter referred to as “BYPL”) invites sealed tenders in 2 envelopes for establishing Rate Contract from reputed manufacturers valid for a period of one year. The bidder must qualify the requirements as specified in clause 2.0 stated below. All envelopes shall be duly superscribed as – **“BID FOR RATE CONTRACT FOR SUPPLY & SUPERVISION OF INDOOR & OUTDOOR RING MAIN UNITS” “NIT NO CMC/BY/19-20/RB/SV/016 DUE ON 30.05.2019, 14:30 PM”**.

Sl. No.	Item Description	Technical Specification	Estimated Cost (₹)	Cost of EMD (₹)	Tentative Qty. (Nos)
1	SUPPLY & SUPERVISION OF 11KV INDOOR MOTORIZED RMU TYPE 4 WAY	SP-ERMUX-15-R6	7.50 Crore	7.50 Lakh	1
2	SUPPLY & SUPERVISION OF 11KV INDOOR MOTORIZED RMU TYPE 3 WAY				70
3	SUPPLY & SUPERVISION OF 11KV INDOOR MANUAL RMU TYPE 1 WAY				1
4	SUPPLY & SUPERVISION OF 11KV OUTDOOR MOTORIZED RMU TYPE 3 WAY				81
5	SUPPLY & SUPERVISION OF 11KV OUTDOOR MANUAL RMU TYPE 1 WAY				20
6	SUPPLY & SUPERVISION OF 11KV OUTDOOR MOTORIZED RMU TYPE 3 WAY AND METERING				1

- 1.02 The schedule of specifications with detail terms & conditions can be obtained from address given below against submission of non-refundable demand draft of **Rs.1,180/-** drawn in favour of BSES Yamuna Power Ltd, payable at Delhi. The tender papers will be issued on all working days upto **23.05.2019, 17:00 P.M.** The tender documents & detail terms and conditions can also be downloaded from the website www.bsesdelhi.com --> **Tenders** --> **BSES YAMUNA POWER LTD** --> **Open Tenders**. 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.
- 1.03 Offers will be received upto **30.05.2019, 14:30 PM.** at the address given below. Part A of the Bid shall be opened on **30.05.2019, 16:30 PM.** Part B of the Bid will be opened in case of Techno-Commercially qualified Bidders and the date of opening of same shall be intimated in due course. It is the sole responsibility of the bidder to ensure that the bid documents reach this office on or before the last date.
- 1.04 BYPL 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 by (\pm 50%).
- 1.05 Bid will be summarily rejected if:
- Tender fee of requisite value.
 - Earnest Money Deposit (EMD) of requisite value & validity.
 - The offer does not contain “FOR NEW DELHI” prices indicating break-up towards all taxes & duties.
 - Complete Technical details are not enclosed.
 - Tender is received after due date and time.

2.0 Qualification Criteria:-

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

- a. The bidder should be a manufacturer of 11KV Ring Main Units. Factory Licence copy to be submitted.
- b. The bidder should have plant installed capacity to supply of minimum 25-30 nos. per month.
- c. The bidder should have qualified technical personnel at various stages of manufacture & testing (necessary documentation shall be provided to support the qualification)
- d. The bidder should have executed at least 500 nos. RMU's quantity to any major utilities/SEB's/PSU's/other reputed firm during last 3 years from the date of opening of technical bid.
- e. The bidder should submit the 2 year satisfactory Performance Certificates for RMU's of similar or higher ratings from 2 reputed companies.
- f. Bidder should have an Average Annual Sales Turnover of Rs 500.00 Crore or more in last 3 financial years and positive net worth.
- g. The bidder must possess valid ISO 9001:2000 certification.
- h. An undertaking (self certificate) that the bidder has not been blacklisted/debarred by any central/state government institution including electricity boards. The bidder should also confirm and an undertaking (self certified) to be submitted that there is no pending litigation with government on account of executing similar order.
- i. The bidder should have infrastructure in India for providing service & spare support to BYPL. The relevant documents including details of manufacturing units, locations and works from where supply, spares & service against this tender shall be proposed to be furnished.
- j. In case of new bidders (not enlisted in BSES), Factory inspection & evaluation may be carried out to ascertain bidder's manufacturing capabilities and quality procedures.

Notwithstanding anything stated above, BYPL reserves the right to assess the capability and installed capacity of the Bidder for carrying out the supplies.

3.00 Bidding and Award Process

Bidders are requested to submit their offer strictly in line with this tender document. **NO DEVIATION IS ACCEPTABLE.** BYPL shall response to the clarifications raised by various bidders and the same will be distributed to all participating bidders through website.

3.01 BID SUBMISSION

The bidders are required to submit the bids in 2(two) parts and submitted in 1 original + 1 duplicate to the following address:

**Head of Department
Contracts & Materials Deptt.
BSES Yamuna Power Ltd
Ground Floor
Shaktikiran Building, Karkardooma
Delhi 110032**

PART A :: TECHNICAL BID comprising of following:

Sr. No	Descriptions	Type of Documents
Commercial :		

Sr. No	Descriptions	Type of Documents
1	Tender Fee - Demand Draft (Rs.1180/-) (Incl GST)	Non-refundable demand draft for Rs 1180/- in case the forms are downloaded from website
2	EMD	In prescribed format
3	Power-of-Attorney / Authorization letter	POA in prescribed stamp paper & format. Proper authorization letter to sign the tender on the behalf of bidder shall accompany the bid.
4	PQR Compliances	Documentary evidence in support of qualifying criteria like : 1. Details of constitution of the company (Proprietary/Limited/etc along with the details), Memorandum of Association of the company 2. Bidders shall submit the certified annual Balance sheets for the last completed three (3) financial years 3. Supportive document on Positive Net worth. Credit rating/solvency certificate from competent authority. 4. Copies of Orders, Execution /Performance Certificate & Other Documents to support qualification Criteria
5	Signed Tender document	Original Tender documents duly stamped & signed on each page as token of acceptance
6	Black listing undertaking	Bidder should submit a Self undertaking signed by its Authorized Signatories that the Bidder or any of their sub contractor has not been blacklisted/banned by any Govt. Organization or Regulatory Agencies in India or abroad.
7	Commercial Terms and Conditions	Acceptance on Commercial Terms and Conditions viz Delivery schedule/period, Payment terms, PBG etc.
8	Acceptance on Reverse Auction	Duly signed Acceptance Form For Participation In Reverse Auction Event as per attached format
9	Bid Form (Unpriced) Duly	Duly Signed Bid Form as per attached format
10	Un price Bid Duly Signed	Duly Signed Un price Bid as per attached format
Technical:		
11	Technical Details/ Filled in GTP/Drawings	Bidder shall submit duly filled GTP with all Technical documents and Drawings.
12	Field Quality and assurance Plan (QAP)	Bidder shall submit the detailed QAP plan in their technical proposal.
13	Type Test Reports	Bidders shall submit the copy of type test reports in their technical bids in support of PQR conditions
14	Testing Facilities	Bidder shall submit the details of testing facilities available at their works/factory.
15	Organization Chart & Manpower Details.	Bidder shall submit the details of Manpower to be deployed for project management with qualification and experience.
16	Checklist	Duly filled in prescribed format

PART B :: FINANCIAL BID comprising of (01 original only)

- Price strictly in the Format enclosed indicating Break up of basic price, taxes & duties, transportation etc

3.02 TIME SCHEDULE

The bidders should complete the following within the dates specified as under:

S.No.	Steps	Due date
1	Last Date of Sale of Bid Documents	23.05.2019
2	Last Date of Queries, if any	23.05.2019
3	Last Date of Receipt of Bid Documents	30.05.2019, 14:30 HRS
4	Date & Time of Opening of PART A - Technical and Commercial Bid	30.05.2019, 16:30 HRS

NOTE: In case last date of submission of bids & date of opening of bids is declared as holiday in BYPL office, the last date of submission will be following working day at the same time.

This is a two part bid process. Bidders are to submit the bids in 2(two) parts

Both these parts should be furnished in separate sealed covers super scribing NIT no. DUE DATE OF SUBMISSION, with particulars as **PART-A TECHNICAL BID & COMMERCIAL TERMS & CONDITIONS** and **Part-B FINANCIAL BID** and these sealed envelopes should again be placed in another sealed cover which shall be submitted before the due date & time specified.

Part – A :: Technical Bid should not contain any cost information whatsoever and shall be submitted within the due date. The technical bid shall be properly indexed.

PART B :: This envelope will be opened after techno-commercial evaluation and only of the qualified bidders.

REVERSE AUCTION CLAUSE :: Purchaser reserves the right to use reverse auction as optional tool through SAP – SRM as an integral part of the entire tendering process. All the bidders who are techno-commercially qualified on the basis of tender requirements shall participate in reverse auction.

Notwithstanding anything stated above, the Purchaser reserves the right to assess bidder's 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.

BIDS RECEIVED AFTER DUE DATE AND TIME MAY BE LIABLE TO REJECTION

4.00 Award Decision

4.01 Purchaser intends to award the business on a lowest bid basis, so suppliers are encouraged to submit the bid competitively. The decision to place purchase order/LOI 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.

4.02 The purchaser reserves the right to distribute the procurable quantity on one or more than one of the eligible tenders.

If the quantity is to be split, quantity distribution shall be in the manner detailed below:

a) If the quantity is to be split among 2 bidders, it will be done in the ratio of 70:30 on L1 price.

b) If the quantity is to be split among 3 bidders, it will be done in the ratio of 50:30:20 on L1 price.

Note: In case quantity needs to be distributed and order splitting is required, distribution of quantity shall be maximum among three (3) bidders.

- 4.03 In the event of your bid being selected by purchaser (and / or its affiliates) and you 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 NIT/RFO.
- 4.04 In case any supplier is found unsatisfactory during the delivery process, the award may be cancelled and BYPL reserves the right to award other suppliers who are found fit.
- 4.05 Bidders are requested to quote their lowest No-Regret prices since BYPL would not prefer to negotiate the price further.
- 4.06 **Rate Contract:** The rate contract shall have a validity period of 12 months from the date of LOI/PO issued to the responsive, techno-commercially acceptable and evaluated to be the lowest bidder. Purchase Order (PO) shall be placed as per the requirement of BYPL. Rate shall remain FIRM till the validity of Rate Contract.
- 4.07 **QTY VARIATION:** The purchaser reserves the rights to vary the quantity by (\pm 50%) of the tender quantity during the execution of the rate contract.

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. A bidder who violates the marketplace rules or engages 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/NIT.

6.00 Supplier Confidentiality

All information contained in this RFQ is confidential and shall not be disclosed, published or advertised in any manner without written authorization from BYPL. This includes all bidding information submitted.

All RFQ documents remain the property of BYPL and all suppliers are required to return these documents to BYPL upon request.

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

7.0 Contact Information

Technical clarification, if any, as regards this RFQ shall be sought in writing and sent by post/courier to following address. The same shall not be communicated through email/phone.

	Technical	Commercial
Contact Person	Mr Ashwani Aggarwal Copy to : Mr. Rakesh Bansal	Mr Rakesh Bansal & Rajesh Srivastava
Address	BSES Yamuna Power Ltd , 3 rd floor, B Block, Shaktikiran Building, Karkardooma, Delhi 110032	C&M Deptt. 3 rd Floor , A-Block, BSES Yamuna Power Ltd Shaktikiran Building, Karkardooma, Delhi 110032
E-Mail ID	ashwani.aggarwal@relianceada.com	rakesh.bansal@relianceada.com rajesh.r.srivastava@relianceada.com

SECTION – II: INSTRUCTION TO BIDDERS

A. GENERAL

1.00 BSES Yamuna 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 material notified earlier in this bid document.

2.00 SCOPE OF WORK

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

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 arising 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.

B. 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:

- | | |
|--|----------------|
| (a) Request for Quotation (RFQ) | - Section - I |
| (b) Instructions to Bidders (ITB) | - Section - II |
| (c) Terms & Conditions of Contract (T&C) | - Section -III |
| (d) Delivery schedule | - Section IV |
| (e) Price Formats & Summary T&C | - Section V |
| (f) Bid Form | - Section VI |
| (g) Acceptance Format – RA | - Section VII |

- (h) EMD BG Format - Section VIII
- (i) Vendor code of conduct - Section –IX
- (j) Appendix
- (k) Technical Specifications (TS) - Section –X

5.02 The Bidder is expected to examine the Bidding Documents, including all Instructions, Forms, Terms 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.

6.0 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 web site www.bsesdelhi.com and the same 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. The same shall be published as a corrigendum in website www.bsesdelhi.com

6.04 Purchaser shall reserve the rights to following:

- a) extend due date of submission,
- b) modify tender document in part/whole,
- c) cancel the entire tender

6.05 **Bidders are requested to visit website regularly for any modification/clarification/corrigendum/addendum of the bid documents.**

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 Technical Specification.
- (b) All the Bids must be accompanied with the required EMD as mentioned in the Section-I against each tender.
- (c) Tender documents duly stamped and signed on each page by authorized signatory.

9.0 **BID FORM**

9.01 The Bidder shall submit one "Original" and one "Copy" of the Bid Form and the appropriate Price Schedules and Technical Data Sheets duly filled in as per attached specification (Section VIII) enclosed with the Bidding Documents.

9.02 **EMD**

Pursuant to Clause 8.0(b) above, the bidder shall furnish, as part of its bid, a EMD amounting to as specified in the Section-I. The EMD is required to protect the Purchaser against the risk of Bidder's conduct which would warrant forfeiture.

The EMD shall be denominated in any of the following form:

- (a) Bank Guarantee drawn in favour of BSES Yamuna Power Ltd, payable at Delhi.
- (b) EMD shall be valid for One Hundred Twenty (120) days after due date of submission drawn in favour of BSES Yamuna Power Ltd

The EMD may be forfeited in case of:

- (a) the Bidder withdraws its bid during the period of specified bid validity
- or
- (b) the case of a successful Bidder, if the Bidder does not
 - (i) Accept the Purchase Order, or
 - (ii) Furnish the required performance security BG.

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/ Price Variation Clause will be treated as non -responsive and rejected.**

11.0 **BID CURRENCIES**

Prices shall be quoted in Indian Rupees Only.

12.0 **PERIOD OF VALIDITY OF BIDS**

12.01 Bids shall remain valid for 120 days from the due date of submission of the Bid.

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 and sent by post/courier

13.0 ALTERNATIVE 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 regarding the rejection of Bids in the terms and conditions, 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 Clause 9.0), clearly marked "Original Bid" plus one copy must be received by the Purchaser at the date, time and place specified pursuant to Clauses 15.0 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. The Bid submitted on behalf of companies registered with the Indian Companies Act, for the time being in force, shall be signed by persons duly authorized to submit the Bid on behalf of the Company and shall be accompanied by certified true copies of the resolutions, extracts of Articles of Association, special or general Power of Attorney etc. to show clearly the title, authority and designation of persons signing the Bid on behalf of the Company. Satisfactory evidence of authority of the person signing on behalf of the Bidder shall be furnished with the bid. A bid by a person who affixes to his signature the word 'President', 'Managing Director', 'Secretary', 'Agent' or other designation without disclosing his principal will be rejected.

The Bidder's name stated on the Proposal shall be the exact legal name of the firm.

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 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 Bid & EMD". The price bid shall be inside another sealed envelope with superscribed "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 opening".

15.03 The Bidder has the option of sending the Bids in person. Bids submitted by Email/Telex/Telegram /Fax will be rejected. No request from any Bidder to the Purchaser to collect the proposals from Courier/Airlines/Cargo Agents etc shall be entertained by the Purchaser.

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 on

or before the due date & time of submission.

16.02 The Purchaser may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Documents in accordance with Clause 9.0, 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 by itself. No Joint Venture is acceptable. 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 may be rejected

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 subject to any corrigendum/addendum/modifications in the tender documents uploaded in website.

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. Purchaser may ask for submission of original documents in order to verify the documents submitted in support of qualification criteria.

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 the Total 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. The Technical & qualifying 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) Delivery Schedule

(b) Conformance to Qualifying Criteria

(c) 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 If any Bidder wishes to contact the Purchaser on any matter related to the Bid, from the time of Bid opening to the time of contract award, the same shall be done in writing only.

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

Submission of bids shall not automatically construe qualification for evaluation. The Purchaser reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at anytime prior to award 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 to other bidders in the tender, provided it is required for timely execution of project & provided he agrees to come to the lowest rate. Purchaser reserves the right to distribute the entire tender quantity at its own discretion without citing any reasons thereof.

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 terms 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 Bidder 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 GAURANTEEE

Within 15 days of the receipt of Notification of Award/ Letter of Intent from the Purchaser, the successful Bidder shall furnish the Performance Bank Guarantee for an amount of 10% (Ten percent) of the Contract Price. The Performance Bond shall be valid for a period of 24 months from the date of Commissioning or 30 months from the date of last dispatch whichever is earlier plus 3 months 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, or soliciting 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.

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

(d) 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 Terms and Conditions of Contract.

SECTION – III: TERMS AND CONDITIONS

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 Yamuna Power 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" 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 BYPL in accordance with the specification.
- 2.09 "Contract" shall mean the "Letter of Acceptance/Purchase Order" issued by the Purchaser.

- 2.10** "Contract Price" shall mean the price referred to in the "Letter of Acceptance/Purchase Order".
- 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:
- The written acceptance of material by the inspector at suppliers works to ship the materials.
 - Acceptance of material at Purchaser site stores after its receipt and due inspection/ testing and release of material acceptance voucher.
 - Where the scope of the contract includes supply, 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.

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 BYPL.
- 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 only be dispatched after receipt of dispatch instructions

issued by the Purchaser.

5.05 All in-house testing and inspection shall be done with out any extra cost. The in-house inspection shall be carried out in presence of BSES/BSES authorized third party inspection agency. Cost of Futile/abortive visit(s) shall be debited from the invoices.

5.06 Purchaser reserves the right to send any material being supplied to any recognized laboratory for testing, wherever necessary and the cost of testing shall be borne by the Bidder. 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 bidder's representative.

6.0 Inspection & Test charges:

6.01 GOODS shall be inspected by BUYER and/or third party inspection agency nominated by BUYER. Inspection shall carry out stage wise/final inspection as per agreed QA /QC procedure. In addition, inspection of GOODS shall be carried out at our Site/stores. SELLER shall, however, repair/replace the damaged/rejected GOODS to the satisfaction of BUYER at no extra cost.

6.02 Inspection charges are included in total order value, however BUYER will bear third party inspection charges. In case of futile/abortive visit of BUYER's inspector at SELLER'S works, the cost towards the same shall be debited from the SELLER's invoices.

6.03 GOODS covered by this PURCHASE ORDER shall not be dispatched in whole or in part until SELLER has received a written Release for Shipment Notice from BUYER or their designated representative.

6.04 Inspection call shall be raised minimum 15(fifteen) days in advance from delivery schedule mentioned in PO and duly filled Format issued by BYPL

7.0 Handling and Storage:

7.01 Material Safety Data Sheet (MSDS), detail handling & storage instruction sheet/manual, wherever applicable, to be furnished before commencement of supply and one copy is to be submitted in store/site with First Lot.

8.0 Packing, Packing List & Marking

8.01 **Packing:** Supplier shall pack or shall cause to be packed all Commodities in crates/boxes/drums/containers/cartons and otherwise in such a manner as shall be reasonably suitable for shipment by road or rail to BYPL, Delhi/New Delhi stores/site without undue risk of damage in transit.

8.02 **Packing List:** The contents of each package shall be itemized on a detailed list showing the exact weight, extreme outside dimensions (length, width & weight) of each container/box/drum/carton, Item SAP Code, PO No & date. One copy of the packing list shall be enclosed in each package delivered.

9.0 Prices/Rates/Taxes

9.01 Price basis for supply of materials

- a) Bidder to quote their prices on Landed Cost Basis and separate price for each item for supply to BYPL Delhi/New Delhi stores inclusive of packing, forwarding, loading at manufacturer's premises, payment of GST, Freight, any other local charges. **Octroi is presently not applicable in Delhi and however if applicable shall be reimbursed at actuals.**
- b) The above supply prices shall also include unloading at BYPL Delhi/New Delhi stores/site.

c) Transit insurance will be arranged by Purchaser; however bidder to furnish required details in advance for arranging the same by Purchaser

10.0 Taxes & Duties:

- 10.01 Prices for Goods are on Ex- Works basis. For the Goods covered under the GST laws, all taxes that are applicable under CGST, SGST, UGST, IGST and GST Compensation Cess shall be payable extra.
- 10.02 For the Goods not covered in the GST laws, the applicable ED, VAT / CST shall be payable extra at applicable rates.
- 10.03 GSTIN of BSES YAMUNA POWER LTD - 07AABCC8569N1Z0
CST No of BSES YAMUNA POWER LTD -07740254593
TIN NO of BSES YAMUNA POWER LTD - 07740254593
PAN NO of BSES YAMUNA POWER LTD - AABCC8569N
- 10.04 At the end of each month, the SELLER must submit their detail of invoices and amount thereof to the concerned officer in charge, within 07 days after the close of the respective month of which supply relates. Non submission of the said request would be treated as good as that the SELLER has no requirement of reconciliation.

11.0 Invoicing Instructions:

- 11.01 Invoices in triplicate [1) Original for recipient, 2) Duplicate for Transporter, 3) Triplicate for supplier] shall be made out and delivered to the following address: BSES YAMUNA POWER LIMITED, SHAKTI KIRAN BUILDING, KARKARDOOMA, DELHI-110032.
MDCC will be released separately for Capex & Opex. Invoice will be submitted by supplier as per the MDCC.
- 11.02 Vendor shall obtain GST registration in the State from where the supply will be carried out. Vendors supplying Goods to the Purchaser shall have a valid GST registration number and shall submit GST Tax Invoice and other documents as per SGST Act, CGST Act, IGST Act, UTGST Act, GST Compensation Cess Act and Rules made there under. Failure to submit GST Tax Invoice shall be liable for withholding SGST, CGST, IGST, UTGST, GST Compensation Cess amount charged by the vendor while releasing the payment.
- 11.03 Invoice in the name of BSES YAMUNA Power Limited & address of the store/site mentioned in the MDCC. Invoice should contain all information as required under GST Invoice, Debit Note and Credit Rules. The government has notified rules of invoicing under GST along with a template of invoice(GST INV-01) covering the elements such as supplier's details, GSTIN No, HSN Codes, item details, GST tax rates, etc that need to be presented by the supplier.
- 11.04 Vendor to carefully examine and charge relevant CGST / SGST, UGST, IGST and GST compensation cess as applicable to the transactions.
- 11.05 Timely provision of invoices / Debit Notes / Credit Notes:
- 11.05.1 Vendor to timely provide invoice / Debit note / Credit note to enable Purchaser to claim tax benefit on or before stipulated time period. All necessary adjustment entries (Credit Note, Purchase Returns, Debit Notes) shall be made within the time lines prescribed under the GST Laws.
- 11.05.2 In case of receipt of advance, the Vendor undertakes to raise the tax invoice. Purchaser, upon payment of advance, shall issue payment voucher as per applicable GST laws and rules. Four copies of the invoices

need to be provided by suppliers and wherever the law requires, an Electronic Reference Number for each invoice.

Documents and devices to be carried by a person-in-charge of a conveyance under.

12.0 Terms of payment and billing

12.01 For Supply of Equipments:

100% payment shall be made within 45 days from the date of receipt & acceptance of material at store/site on against submission of following documents against dispatch of each consignment at our Vendor Support Cell (VSC):

- a) Signed copy of accepted Purchase Order (for first payment)
- b) LR / RR / BL as applicable
- c) Challan as applicable
- d) Two (02) copies of Supplier's detailed Recipient Invoice showing Commodity description, quantity, unit price, total price and basis of delivery, and being 100% of the value of the consignment claimed.
- e) Two (02) copies of Supplier's transporter invoice duly receipted by BYPL Stores & Original certificate issued by BYPL confirming receipt of the subject material at Stores/Site and acceptance of the same as per the provisions of the contract.
- f) Two (02) copies Packing List / Detailed Packing List
- g) Approved Test certificates / Quality certificates, if applicable
- h) Certificate of Origin, if applicable
- i) Material Dispatch Clearance Certificate (MDCC)
- j) Insurance Policy / Certificate, if applicable
- k) Warranty / Guarantee Certificate, if applicable
- l) Check list for bill submission.

12.02 Purchaser has the right to recover tax loss, interest and penalty suffered due to any non-compliance of tax laws by the Vendor. In the event, Purchaser is not able to avail any tax credit due to any short coming on the part of the Vendor (which otherwise should have been available to Purchaser in the normal course), then the Vendor at his own cost and effort will get the short coming rectified. If for any reason the same is not possible, then the Vendor will make 'good' the loss suffered by Purchaser due to the tax credit it lost . In such event, any amount paid to the Vendors shall be first attributable to the tax (GST) charged in the invoice and the balance shall be considered towards the 'value' of supply of goods/ services.

12.03 Purchaser shall deduct "Tax Deducted at Source" wherever applicable and at the rate prescribed under the GST Laws or any other Indian law and remit the same to the Government. Necessary TDS certificates as per law shall be issued by the purchase to the vendor.

12.04 Any liability arising out of dispute on the tax rate, classification under HSN, calculation and payment of tax to the Government will be to the Vendor's account.

12.05 Where the supply of Goods are liable to GST under reverse charge mechanism, then the supplier should clearly mention the category under which it has been registered and also that "the liability of payment of GST is on the Recipient of Supply".

13.0 Tax Indemnity Clause:

13.01 Vendor (along with its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for the purpose of this agreement) agrees that it will be solely responsible for performing all compliances and making payments of all taxes (direct tax or indirect tax including but not limited to income-tax, transfer pricing, value added tax, SGST, CGST, IGST, UTGST, GST Compensation Cess custom duty, excise duty, Research and Development Cess, etc.), cesses,

interest, penalties or any other tax/ duty/ amount/ charge/ liability arising either out of laws/ regulations applicable in India and overseas or because of a demand/ recovery initiated by any revenue authority under laws/ regulations applicable in India or overseas.

- 13.02 In case any tax liability (including but not limited to income-tax, transfer pricing, value added tax, SGST, CGST, IGST, UTGST, GST Compensation Cess custom duty, excise duty, Research and Development Cess, etc.), cesses, interest, penalties or any other tax/ duty/ amount/ charge/ liability becomes payable by Purchaser due to failure of the Vendor, or any of its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for the purpose of this agreement, to comply with the relevant laws/ regulations applicable in India or overseas, Vendor undertakes to indemnify Purchaser for an amount equal to amount payable by Purchaser.
- 13.03 Further, Vendor undertakes to keep Purchaser indemnified at all times against and from all other actions, proceedings, claims, loss, damage, costs and expenses which may be brought against Purchaser or suffered or incurred by Purchaser and which shall have arisen either directly or indirectly out of or in connection with failure of The Vendor, or any of its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for the purpose of this agreement, to comply with relevant obligations/ compliance under any law/ regulations applicable in India and overseas.
- 13.04 The parties agree to follow the following process in case any communication of demand, arising out non-compliance by Vendor (along with its affiliates in India or overseas including any agent/ third party contractor or any other person appointed by such affiliates for the purpose of this agreement), is received by Purchaser :
- 13.04.1 On Purchaser receiving any communication from a competent authority demanding tax liability (including but not limited to income-tax, transfer pricing, value added tax, SGST, CGST, IGST, UTGST, GST Compensation Cess custom duty, excise duty, Research and Development Cess, etc.), cesses, interest, penalties or any other tax/ duty/ amount/ charge/ liability, Purchaser shall, within 5 common working days from the date of receipt of such communication (save where the period to respond to the relevant authority is less than five days, in which case, as soon as reasonably possible) inform Vendor in writing of such communication.
- 13.04.2 Pursuant to receiving communication from Purchaser, Vendor shall suggest to accept the communication and pay the demand amount to the competent authority. In such an event, Vendor shall reimburse such amount paid to Purchaser within 5 working days from the date of payment by Purchaser to the competent authority.
- 13.04.3 If Vendor advises in writing and Purchaser agrees to dispute the demand, then Purchaser shall dispute the matter with competent authority as per due process prescribed under the regulations and Purchaser shall not pay the Tax Demand. In such scenario, cost of litigation including but not limited to Counsel cost, filing fees, other related charges, should be reimbursed by Vendor to Purchaser. Additionally, If any coercive steps of recovery are initiated by the department, then Purchaser would pay such amount (including by way of adjustment of refunds due to it) and the same would be reimbursed by Vendor within 5 working days from date of such recovery from Purchaser. Purchaser will take all necessary steps to avoid such recovery measures.
- 13.04.4 On determination of the demand through an Order issued by a Tribunal or any other similar Authority, by whatever name called, under any law applicable in India or overseas, if the demand or any part thereof becomes payable and is paid by Purchaser, then Vendor undertakes to reimburse such amount to Purchaser within 10 days from the date of payment. Alternatively, if on determination of the demand through an Order, no amount is payable by Purchaser then any refund arising to Purchaser due to such an Order shall be passed on to Vendor within 10 days from the date of receipt of refund.

14.0 The Micro, Small and Medium Enterprises (MSME):

14.01 If the SELLERS establishment is covered under the purview of The Micro, Small and Medium Enterprises Development Act, 2006, he shall declare so within the bid of its status failing which it will be presumed that it is a non-MSME unit. Also submit a copy of Udyog Aadhaar (UA) if available.

15.0 Price Validity

15.01 All bids submitted shall remain valid, firm and subject to unconditional acceptance by Delhi for 120 days from the due date of submission. For awarded suppliers, the prices shall remain valid and firm till contract completion.

16.0 Performance Guarantee

16.01 To be submitted within fifteen (15) days from the date of issuance of the Letter of Award/PO, supplier shall establish a performance bond in favor of BYPL 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 24 months from the date of Commissioning or 30 months from the date of last dispatch whichever is earlier plus 3 months claim period.

16.02 Bank guarantee shall be drawn in favour of BSES Yamuna Power Ltd as applicable. The performance Bank guarantee shall be in the format as specified by BYPL.

17.0 Forfeiture

17.01 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 BYPL of this Performance Bond, to the relevant bank referred to above, together with a simple statement that supplier has failed to comply with any term or condition set forth in the Contract.

17.02 Each Performance BG established under will be automatically and unconditionally forfeited without recourse if BYPL in its sole discretion determines that supplier has failed to comply with any term or condition set forth in the contract.

18.0 Release

18.01 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.

19.0 Defects Liability Period/Guarantee/Warranty

19.01 The bidder to Guarantee the materials / items 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 date of delivery whichever is earlier.

19.02 If during the Defects Liability Period any GOODS are found to be defective, they shall be promptly replaced or rectified by BIDDER at its own cost (including the cost of dismantling and (reinstallation) on the instructions of BUYER and if removed from SITE for such purpose, shall be removed and re-delivered to SITE by BIDDER at its own cost.

20.0 Return, Replacement or Substitution.

20.01 BYPL shall give Supplier notice of any defective Commodity promptly after becoming aware thereof. BYPL may in its discretion elect to return defective Commodities to Supplier for replacement, free of charge to BYPL, or may reject such Commodities and purchase the same or similar Commodities from any third party. In the latter case BYPL 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. BYPL may set off such costs against any amounts payable by BYPL to Supplier. Supplier shall reimburse BYPL for the amount, if any, by which the price of a substitute Commodity exceeds the price for such Commodity as quoted in the Bid. BUYER at its sole discretion shall have the opinion to dispose the material or GOODS so rejected and not taken back within forty-five days from the date of intimation of rejection.

21.0 Effective Date of Commencement of Contract:

21.01 The date of the issuance of the Letter of Acceptance/Purchase Order shall be treated as the effective date of the commencement of Contract.

22.0 Time – The Essence Of Contract

22.01 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.

23.0 The Laws and Jurisdiction of Contract:

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

23.02 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 Delhi in India

24.0 Events of Default

24.01 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 BYPL.

25.0 Consequences of Default.

- (a) If an Event of Default shall occur and be continuing, BYPL may forthwith terminate the Contract by written notice.
- (b) In the event of an Event of Default, BYPL 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
 - (iii) recover any losses and/or additional expenses BYPL may incur as a result of Supplier's default.

26.0 Penalty for Delay

- 26.01 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 basic (ex-works) price for every week delay of undelivered units or part thereof for individual mile stone deliveries.
- 26.02 The total amount of penalty for delay under the contract will be subject to a maximum of ten percent (10%) of the basic (ex-works) price of total undelivered units.
- 26.03 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.
- 22.4 If Penalty is levied as per the Order terms & conditions; BYPL will raise Invoice of the penalty amount along with applicable GST rates. Accordingly, after set off of the penalty Invoice amount, net payment shall be made.

27.0 Variation in Taxes, Duties & Levies

- 27.1 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. In case of reduction in taxes, duties and levies, the benefits of the same shall be passed on to BUYER.
- 27.2 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.
- 27.3 Notwithstanding what is stated above, changes in Taxes, Duties & Levies shall applied 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.
- 27.4 PURCHASE ORDER value shall not be subject to any variation on account of variation in Exchange rate(s).

28.0 Taxes & Duties on raw materials & bought out components:

- 28.01 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.
- 28.02 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.

29.0 Force Majeure

29.01 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.

29.02 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.

29.03 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.

29.04 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.

- 29.05 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.
- 29.06 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.
- 29.07 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.
- 29.08 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.
- 29.09 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."

30.0 Transfer And Sub-Letting

- 30.01 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.

31.0 Recoveries

- 31.01 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 deducting 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.

32.0 Waiver

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

33.0 Indemnification

- 33.01 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.

34.0 Acceptance:

- 34.01 Vendor confirms to have gone through the Policy of BYPL on legal and ethical code required to be followed by vendors encapsulated in the "Vendor Code of Conduct" displayed on the official website of BYPL (www.bsesdelhi.com) also, which shall be treated as a part of the contract/PO/WO. Vendor undertakes that he shall adhere to the Vendor code of Conduct and also agrees that any violation of the Vendor Code of Conduct shall be treated as breach of the contract/PO/WO. In event of any such breach, irrespective of whether it causes any loss/damage, Purchaser (BYPL) shall have the right to recover loss/damage from Vendor. The Contractor/Vendor hereby indemnifies and agrees to keep indemnified the Purchaser (BYPL) against any claim/litigation arising out of any violation of Vendor Code of Conduct by the Contractor/Vendor or its officers, agents & representatives etc.
- 34.02 Acceptance of the CONTRACT implies and includes acceptance of all terms and conditions enumerated in the CONTRACT in the technical specification and drawings made available to Contractor consisting of general conditions, detailed scope of work, detailed technical specification, detailed equipment drawing and complete scope of work.
- 34.03 Contractor and Company contractual obligation are strictly limited to the terms set out in the CONTRACT. No amendments to the concluded CONTRACT shall be binding unless agreed to in writing for such amendment by both the parties

SECTION – IV: QUANTITY AND DELIVERY REQUIREMENT

Sl. No.	Item Description	Technical Specification	Tentative Qty. (Nos)	Tentative Schedule Per Month (Nos)	Delivery at
1	SUPPLY OF 11KV INDOOR MOTORIZED RMU TYPE 4 WAY	SP-ERMUX-15-R6	1	1	BYPL Stores/ Site, New Delhi
2	SUPPLY OF 11KV INDOOR MOTORIZED RMU TYPE 3 WAY		70	25	
3	SUPPLY OF 11KV INDOOR MANUAL RMU TYPE 1 WAY		1	1	
4	SUPPLY OF 11KV OUTDOOR MOTORIZED RMU TYPE 3 WAY		81	30	
5	SUPPLY OF 11KV OUTDOOR MANUAL RMU TYPE 1 WAY		20	10	
6	SUPPLY OF 11KV OUTDOOR MOTORIZED RMU TYPE 3 WAY AND METERING		1	1	

The delivery schedule shown above is tentative. PO(s) will be released as per the actual requirement. However, supplier has to deliver the material within the delivery schedule provided. Schemes may be executed in the phased manner.

BRIEF SCOPE OF WORK (SOW) FOR SUPPLY & SUPERVISION OF TESTING AND COMMISSIONING

1.0 The scope of supply shall include following

- 1.1 All load break switches are motorized
- 1.2 Transformer breaker should be manually operated
- 1.3 Design, manufacture, testing at manufacturer works before dispatch, packing, delivery and submission of all documentation the 11kv Ring Main Unit (RMU).
- 1.4 11kV RMU shall be as per scheme enclosed as Annexure E of Specification
- 1.5 FRTU along with necessary software's as per detailed specification in Annexure H
- 1.6 Supply of 4G Modem for FRTU communication with Control Center. SIM card shall be provided by BSES.
- 1.7 Configuration of 11kV RMU shall be as per the Purchase Requisition.
- 1.8 Guarantee Period for RMU along with FRTU & Modem: 66 months from the date of supply or 60months from date of commissioning, whichever is earlier. Service Performance Requirements During Guarantee Period:
 - a) RMU including battery charger: Complaint to be attended on urgent basis and to be resolved within 24hrs, 1day from intimation. Necessary spares may be maintained by vendor service team at Delhi.
 - b) FRTU: After reporting of FRTU modules compliant / failure, within 24 hours FRTU modules shall be replaced by vendor at site. Spare cards / modules shall be maintained by the vendor at Delhi during the guarantee period.
 - c) Modem: After reporting of Modem compliant / failure, within 24 hours Modem to be rectified / replaced by vendor at site. Spare modems if required shall be maintained by the vendor at Delhi during the guarantee period.
- 1.9 Each RMU shall be supplied with 2 sets of Operating Handle.
- 1.10 Supplier scope includes training of BSES team – 4 batches (each batch with 4-5 engineers) for minimum 3 days at factory for erection, commissioning, maintenance trouble shooting of mechanism, FPI and all other components. This shall be carried out 1 week from date of 1st shipment/ dispatch. Supplier shall also provide training for Self Powered relay & FRTU at respective manufacturer' factory for 12 engineers/ technicians in 2 batches.
- 1.11 Unit price for Conversion kit should be offered separately for converting the RMU from single cable termination design to double cable termination design, at site.

2.0 The scope of Services shall include following

- 2.1 Testing & commissioning supervision of all motorized RMUs at site included in the scope of vendor including all operational checks, LV wiring checks, battery / charger checks, VPI , FPI, self powered relay. Supervision of testing & commissioning of all the panels at site. Vendor shall depute the service team with 2 days prior notice from owner. For details scope refer Annexure-A.
- 2.2 Testing and commissioning of FRTU. Unit price for each configuration as per the BOQ shall be provided. Assisting BYPL automation team for interfacing / implementing DMS with existing control room. Existing DMS software is from ABB. Communication with central control room is on IEC 104 protocol. For details scope refer Annexure-B.

Annexure-A

Scope for Supervision of testing and commissioning of Motorized RMU

1. Supervision of installation, testing and commissioning of Motorized RMU. Activity shall be performed after installation of RMU and before energization of unit.

2. Scope of Visual Examination by Supplier's representative

- a. Complete checking of RMU installation
- b. Gas pressure.
- c. Battery and cabling of FPI and relay.
- d. Proper Earthing of RMU.
- e. Cable terminations and clamping of cable.

3. Scope of Witness of Pre-commissioning Tests by supplier's representative.

- a. Hi voltage tests.
- b. IR test before and after HV test.
- c. Operation of Motorized load break switches through mechanical, Electrical local and Remote SCADA
- d. Operation of Circuit breakers
- e. Checking of all electrical/ mechanical interlocks.
- f. Operational checks of Motor control card/Interlocking card
- g. Operational checks of Battery and Battery charger
- h. Operation of all auxiliary contacts.
- i. Checking of all control wiring (i.e. continuity test)
- j. Functional Operation of relay and FPI by PI.
- k. Resistance of main and earthing circuit before and after operation test.

Annexure-B

Scope for Commissioning and Testing of FRTU with motorised RMU

- **Pre-commissioning requirement of FRTU:-**
 - 1) Permanent reliable power supply to FRTU shall be provided.
 - 2) Earthing of FRTU, communication system and equipment shall be proper.
 - 3) Signal strength shall be checked at site and gain of dual band Antenna shall be 12 dBi /24 dBi as modem shall be kept in FRTU panel only.
- **Configuration, Commissioning & testing of FRTU**
 - 1) Configuration shall be done as per Cat-1 approved drawing/ documents and schematics of RMU& FRTU. If any changes are required with respect to Cat-1 approved documents, same shall be properly communicated to BSES and re-configuration shall be done accordingly in concurrence with BSES only.
 - 2) Testing of FRTU shall be done based on following checklist---
 - a. **Visual Inspection**
 - i. General arrangement check as per Cat-1 approved drawing/document
 - ii. **External checks for:**
 1. Physical damages
 2. Function of door locks
 3. Texts on legend plates and labels
 4. Physical dimensions
 - iii. **Internal checks for :**
 1. Equipment mounting as per Cat-1 approved drawing/document
 2. Lighting
 3. Wiring arrangement
 4. Terminal block locations
 - b. **Wiring Check:**
 - i. For FRTU wiring check done as per Cat-1 approved drawing/document
 - c. **Functional tests**
 - i. Communication modules
 - ii. Processor modules
 - iii. Power Supply modules
 - iv. Digital Input modules
 - v. Digital Output Modules
 - vi. Analog Input Modules
 - vii. DC to DC converter
 - viii. Industrial Grade AC kit
 - 3) Simulation of all configured signals on simulator available with vendor (same master/ slave configuration settings) shall be done
- **Configuration, Commissioning & testing of FRTU along with RMU**
 - 1) During commissioning of FRTU along with RMU system, if any modification required to be done in configuration of FRTU or any hardware failure of FRTU / RMU, same shall be re-configured or replacement of hardware for FRTU/ RMU shall be done immediately by vendor of RTU/RMU (whoever is responsible) to not to stop the process of commissioning. Testing shall not be continued further by making temporary arrangement of hardware or by doing temporary configuration.
 - 2) If it is not possible to replace hardware of FRTU/RMU at the same time by vendor, whole testing process will be repeated by vendor and both vendors ie of RMU and FRTU shall be present during testing.
 - 3) All interlocks shall be tested locally through FRTU along with vendor of RMU/FRTU.

- 4) All operations of RMU shall be tested first through actuators provided on RMU itself then only testing shall be done from FRTU.

- **Testing of FRTU along with RMU from System operation(MCC)**

Simulation of all configured signals on simulator available with vendor (same master/ slave configuration settings) shall be done on IEC 104 protocol before testing with system operation.

- 1) All signals of FRTU shall be tested from system operation in presence of vendor of RMU/FRTU.
- 2) If any punch point is found, same shall be rectified immediately by vendor of RTU/RMU (whoever is responsible). If it is not possible to resolve it immediately by vendor of RTU/RMU, whole testing process will be repeated and both vendors ie of RMU and FRTU shall be present during testing.
- 3) Battery backup shall be observed for recommended operation of Isolaters of RMU by BSES O&M.
- 4) All interlocks shall be tested from remote along with vendor of RMU/FRTU.

- **Drawing & Documents:**

- 1) As-built drawing of FRTU and configured file shall be handed over.
- 2) FRTU configuration for supplied equipments to be explained by vendor after commissioning and testing.

Performance observation to be done as per SAT document after handing over of signed commissioning report.

After all above mentioned tests/checks, joint team of user group (BSES SCADA Team/BSES Protection Team/BSES O&M team) and vendors of RMU/FRTU shall sign the commissioning report and declare FRTU along with RMU fit for energization and operation. Abnormality, if any shall be clearly brought out in commissioning report in writing.

SECTION – V: PRICE FORMAT – SUPPLY

DESCRIPTION OF GOODS	HSN CODE (8 Digit Mandatory)	QTY	UoM	UNIT BASIC PRICE (₹)	UNIT FREIGHT (₹)	TOTAL TAXABLE UNIT BASIC PRICE (₹)	UNIT GST & CESS AS APPLICABLE		UNIT LANDED COST (₹)	TOTAL LANDED COST (₹)
							CGST & SGST/ IGST/ CESS/ etc			
							%	AMT		
SUPPLY OF 11KV INDOOR MOTORIZED RMU TYPE 4 WAY		1	Nos							
SUPPLY OF 11KV INDOOR MOTORIZED RMU TYPE 3 WAY		70	Nos							
SUPPLY OF 11KV INDOOR MANUAL RMU TYPE 1 WAY		1	Nos							
SUPPLY OF 11KV OUTDOOR MOTORIZED RMU TYPE 3 WAY		81	Nos							
SUPPLY OF 11KV OUTDOOR MANUAL RMU TYPE 1 WAY		20	Nos							
SUPPLY OF 11KV OUTDOOR MOTORIZED RMU TYPE 3 WAY AND METERING		1	Nos							

NOTE: Cost of all type/special tests as per technical specification is to be quoted separately.

The Un-priced bid should be marked as **“Quoted”** and to be submitted with Part – A

PRINCIPLE ADDRESS OF BUSSINESS FROM WHERE THE SUPPLY WILL BE CARRIED OUT:

GSTIN:

SECTION – V: PRICE FORMAT (B) - SUPERVISION OF TESTING & COMMISSIONING AS PER THE SOW

DESCRIPTION OF GOODS	SAC CODE	QTY	UoM	UNIT RATE	UNIT GST (CGST, SGST, IGST) as applicable			UNIT LANDED COST (₹)	TOTAL LANDED COST (₹)
					CGST	SGST/UTGST	IGST		
SUPERVISION OF 11KV INDOOR MOTORIZED RMU TYPE 4 WAY		1	Nos						
SUPERVISION OF 11KV INDOOR MOTORIZED RMU TYPE 3 WAY		70	Nos						
SUPERVISION OF 11KV INDOOR MANUAL RMU TYPE 1 WAY		1	Nos						
SUPERVISION OF 11KV OUTDOOR MOTORIZED RMU TYPE 3 WAY		81	Nos						
SUPERVISION OF 11KV OUTDOOR MANUAL RMU TYPE 1 WAY		20	Nos						
SUPERVISION OF 11KV OUTDOOR MOTORIZED RMU TYPE 3 WAY AND METERING		1	Nos						

The Un-priced bid should be marked as **"Quoted"** and to be submitted with Part – A

PRINCIPLE ADDRESS OF BUSSINESS FROM WHERE THE SUPPLY WILL BE CARRIED OUT:

GSTIN:

SUMMARY COMMERCIAL TERMS AND CONDITIONS

SI No	Item Description	AS PER BYPL	BIDDER'S CONFIRMATION
1	Validity	120 days from the date of submission of bid	
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 BYPL scope	
3	Payment terms	100% payment within 45 days after receipt & acceptance of material at stores	
4	Delivery schedule	GTP/Drawings/QAP/etc to be submitted within 15 days to the concern official in BYPL for Transmittal approval. BYPL shall approve/ provide comments on the submitted drawings within 7 days of first submission. Delivery shall be completed within 12 Weeks from the LOI/PO date or completion as per the schedule.	
5	Defect Liability period	60 months after commissioning or 66 months from the last date of despatch, whichever is earlier	
6	Penalty for delay	1% per week of delay of the basic (ex-works) price of undelivered units or part thereof subject to maximum of 10% of total basic (ex-works) price of undelivered units	
7	Performance Bank Guarantee	10% of total PO value valid for 24 months after commissioning or 30 months from the last date of despatch, whichever is earlier plus 3 months towards claim period	

Bidder should furnish the below details for future communication:-

General Information

Full Name of the Company:

Postal Address:

For Technical Clarification(s)

Name:

Designation:

E-Mail:

Mobile No.:

Telephone No.:

For Commercial Clarification(s)/ Reverse Auction

Name:

Designation:

E-Mail:

Mobile No.:

Telephone No.:

SECTION VI

BID FORM

To

Head of Department
Contracts & Material Deptt.
BSES Yamuna Power Ltd
Shaktikiran Building, Karkardooma,
Delhi 110032

Sir,

1 We understand that BYPL is desirous of procuring..... for 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 Terms and Conditions and technical specifications for the sum of..... (figures.....) 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) as per delivery schedule mentioned in Section IV 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 Terms and Conditions.

5 We agree to abide by this Bid for a period of 120 days from the due date of bid submission 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 Laws for supply of equipments/materials and the prices have been quoted accordingly.

7 Unless and until Letter of Intent is issued, 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.

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

Signature..... In the capacity of

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

(IN BLOCK CAPITALS)

SECTION VII

ACCEPTANCE FORM FOR PARTICIPATION IN REVERSE AUCTION EVENT

(To be signed and stamped by the bidder)

BSES Yamuna Power Ltd (hereinafter referred to as “BYPL”) intends to use the reverse auction through SAP-SRM tool as an integral part of the entire tendering process. All the bidders who are found as techno commercial qualified based on the tender requirements shall be eligible to participate in the reverse auction event.

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

1. BYPL shall provide the user id and password to the authorized representative of the bidder. (Authorization letter in lieu of the same be submitted along with the signed and stamped acceptance form)
2. BYPL will make every effort to make the bid process transparent. However, the award decision by BYPL would be final and binding on the bidder.
3. The bidder agrees to non-disclosure of trade information regarding the purchase, identity of BYPL, bid process, bid technology, bid documentation, bid details, and etc.
4. The bidder is advised to understand the auto bid process to safeguard themselves against any possibility of non-participation in the auction event.
5. In case of bidding through internet medium, bidders are further advised to ensure availability of the entire infrastructure as required at their end to participate in the auction event. Inability to bid due to telephone line glitch, internet response issues, software or hardware hangs; power failure or any other reason shall not be the responsibility of BYPL.
6. In case of intranet medium, BYPL shall provide the infrastructure to bidders, further, BYPL has sole discretion to extend or restart the auction event in case of any glitches in infrastructure observed which has restricted the bidders to submit the bids to ensure fair & transparent competitive bidding. In case of an auction event is restarted, the best bid as already available in the system shall become the start price for the new auction.
7. In case the bidder fails to participate in the auction event due any reason whatsoever, it shall be presumed that the bidder has no further discounts to offer and the initial bid as submitted by the bidder as a part of the tender shall be considered as the bidder’s final no regret offer. Any offline price bids received from a bidder in lieu of non-participation in the auction event shall be out rightly rejected by BYPL.
8. The bidder shall be prepared with competitive price quotes on the day of the reverse auction event.
9. The prices as quoted by the bidder during the auction event shall be inclusive of all the applicable taxes, duties and levies and shall be FOR Landed Cost basis at BYPL site.
10. The prices submitted by a bidder during the auction event shall be binding on the bidder.
11. No requests for time extension of the auction event shall be considered by BYPL.
12. The original price bids of the bidders shall be reduced on pro-rata basis against each line item based on the final all inclusive prices offered during conclusion of the auction event for arriving at contract amount.

Signature & seal of the Bidder

SECTION VIII

FORMAT FOR EMD 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*] (herein after called the "Bidder") has submitted its bid dated[*date of submission of bid*] for the supply of [*name and/or description of the goods*] (here after 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 Yamuna Power Ltd., with it's Corporate Office at Shaktikiran Building, Karkardooma, Delhi -110032, (herein after called —the "Purchaser")in the sum of Rs..... (Rupees..... only) 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/ Terms and 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 condition(s), specifying the occurred condition or condition(s).

This guarantee will remain in force up to and including One Hundred Twenty (120) days after the due date of submission bid, and any demand in respect thereof should reach the Bank not later than the above date.

(Stamp & signature of the bank)

Signature of the witness

SECTION IX

VENDOR CODE OF CONDUCT

Purchaser is committed to conducting its business in an ethical, legal and socially responsible manner. To encourage compliance with all legal requirements and ethical business practices, Purchaser has established this Vendor Code of Conduct (the "Code") for Purchaser's Vendors. For the purposes of this document, "Vendor" means any company, corporation or other entity that sells, or seeks to sell goods or services, to Purchaser, including the Vendor's employees, agents and other representatives.

Fundamental to adopting the Code is the understanding that a business, in all of its activities, must operate in full compliance with the laws, rules and regulations of the countries in which it operates. This Code encourages Vendors to go beyond legal compliance, drawing upon internationally recognized standards, in order to advance social and environmental responsibility.

I. Labour and Human Rights

Vendors must uphold the human rights of workers, and treat them with dignity and respect as understood by the international community.

- . Fair Treatment - Vendors must be committed to a workplace free of harassment. Vendors shall not threaten workers with or subject them to harsh or inhumane treatment, including sexual harassment, sexual abuse, corporal punishment, mental coercion, physical coercion, verbal abuse or unreasonable restrictions on entering or exiting company provided facilities.

- . Antidiscrimination - Vendors shall not discriminate against any worker based on race, colour, age, gender, sexual orientation, ethnicity, disability, religion, political affiliation, union membership, national origin, or marital status in hiring and employment practices such as applications for employment, promotions, rewards, access to training, job assignments, wages, benefits, discipline, and termination. Vendors shall not require a pregnancy test or discriminate against pregnant workers except where required by applicable laws or regulations or prudent for workplace safety. In addition, Vendors shall not require workers or potential workers to undergo medical tests that could be used in a discriminatory way except where required by applicable law or regulation or prudent for workplace safety.

- . Freely Chosen Employment - Forced, bonded or indentured labour or involuntary prison labour is not to be used. All work will be voluntary, and workers should be free to leave upon reasonable notice. Workers shall not be required to hand over government-issued identification, passports or work permits as a condition of employment.

- . Prevention of Under Age Labor - Child labor is strictly prohibited. Vendors shall not employ children. The minimum age for employment or work shall be 15 years of age, the minimum age for employment in that country, or the age for completing compulsory education in that country, whichever is higher. This Code does not prohibit participation in legitimate workplace apprenticeship programs that are consistent with Article 6 of ILO Minimum Age Convention No. 138 or light work consistent with Article 7 of ILO Minimum Age Convention No. 138.

- . Juvenile Labor - Vendors may employ juveniles who are older than the applicable legal minimum age for employment but are younger than 18 years of age, provided they do not perform work likely to jeopardize their health, safety, or morals, consistent with ILO Minimum Age Convention No. 138.

- . Minimum Wages - Compensation paid to workers shall comply with all applicable wage laws, including those relating to minimum wages, overtime hours and legally mandated benefits. Any Disciplinary wage deductions are to conform to local law. The basis on which workers are being paid is to be clearly conveyed to them in a timely manner.

- . Working Hours - Studies of good manufacturing practices clearly link worker strain to reduced productivity, increased turnover and increased injury and illness. Work weeks are not to exceed maximum set by local law. Further, a work week should not be more than 60 hours per week, including overtime, except in emergency or unusual situations. Workers should be allowed at least one day off per seven-day week.

. Freedom of Association - Open communication and direct engagement between workers and management are the most effective ways to resolve workplace and compensation issues. Vendors are to respect the rights of workers to associate freely and to communicate openly with management regarding working conditions without fear of reprisal, intimidation or harassment. Workers' rights to join labour unions seek representation and or join worker's councils in accordance with local laws should be acknowledged.

II. Health and Safety

Vendors must recognize that in addition to minimizing the incidence of work-related injury and illness, a safe and healthy work environment enhances the quality of products and services, consistency of production and worker retention and morale. Vendors must also recognize that ongoing worker input and education is essential to identifying and solving health and safety issues in the workplace.

The health and safety standards are:

. Occupational Injury and Illness - Procedures and systems are to be in place to prevent, manage, track and report occupational injury and illness, including provisions to: a) encourage worker reporting; b) classify and record injury and illness cases; c) provide necessary medical treatment; d) investigate cases and implement corrective actions to eliminate their causes; and e) facilitate return of workers to work.

. Emergency Preparedness - Emergency situations and events are to be identified and assessed, and their impact minimized by implementing emergency plans and response procedures, including: emergency reporting, employee notification and evacuation procedures, worker training and drills, appropriate fire detection and suppression equipment, adequate exit facilities and recovery plans.

. Occupational Safety - Worker exposure to potential safety hazards (e.g., electrical and other energy sources, fire, vehicles, and fall hazards) are to be controlled through proper design engineering and administrative controls, preventative maintenance and safe work procedures (including lockout/tagout), and ongoing safety training. Where hazards cannot be adequately controlled by these means, workers are to be provided with appropriate, well-maintained, personal protective equipment. Workers shall not be disciplined for raising safety concerns.

. Machine Safeguarding - Production and other machinery is to be evaluated for safety hazards. Physical guards, interlocks and barriers are to be provided and properly maintained where machinery presents an injury hazard to workers.

.Industrial Hygiene - Worker exposure to chemical, biological and physical agents is to be identified, evaluated, and controlled. Engineering or administrative controls must be used to control overexposures. When hazards cannot be adequately controlled by such means, worker health is to be protected by appropriate personal protective equipment programs.

.Sanitation, Food, and Housing - Workers are to be provided with ready access to clean toilet, facilities potable water and sanitary food preparation, storage, and eating facilities. Worker dormitories provided by the Participant or a labour agent are to be maintained clean and safe, and provided by the Participant or a labour agent with hot water for bathing and showering, and adequate heat and ventilation and reasonable personal space along with reasonable entry and exit privileges.

. Physically Demanding Work - Worker exposure to the hazards of physically demanding tasks, including manual material handling and heavy or repetitive lifting, prolonged standing and highly repetitive or forceful assembly tasks is to be identified, evaluated and controlled.

III. Environmental

Vendors should recognize that environmental responsibility is integral to producing world class products in manufacturing operations, adverse effects on the environment and natural resources are to be minimized while safeguarding the health and safety of the public.

The environmental standards are:

- . Product Content Restrictions - Vendors are to adhere to applicable laws and regulations regarding prohibition or restriction of specific substances including labeling laws and regulations for recycling and disposal. In addition, Vendors are to adhere to all environmental requirements specified by Purchaser.
- . Chemical and Hazardous Materials -Chemical and other materials posing a hazard if released to the environment are to be identified and managed to ensure their safe handling, movement storage, recycling or reuse and disposal.
- . Air Emissions - Air emissions of volatile organic chemicals, aerosols, corrosives, particulates, ozone depleting chemicals and combustion by-products generated from operations are to be characterized, monitored, controlled and treated as required prior to discharge.
- . Pollution Prevention and Resource Reduction -Waste of all types, including water and energy, are to reduced or eliminated at the source or by practices such as modifying production, maintenance and facility processes, materials substitution, conservation, recycling and re-using materials.
- . Wastewater and Solid Waste - Wastewater and solid waste generated from operations industrial processes and sanitation facilities are to be monitored, controlled and treated as required prior to discharge or disposal.
- . Environmental Permits and Reporting - All required environmental permits (e.g. discharge monitoring) and registrations are to be obtained, maintained and kept current and their operational and reporting requirements are to be followed.

IV. Ethics

Vendors must be committed to the highest standards of ethical conduct when dealing with workers, Vendors, and customers.

- . Corruption, Extortion, or Embezzlement - Corruption, extortion, and embezzlement, in any form, are strictly prohibited. Vendors shall not engage in corruption, extortion or embezzlement in any form and violations of this prohibition may result in immediate termination as an Vendor and in legal action.
- . Disclosure of Information - Vendors must disclose information regarding its business activities, structure financial situation, and performance in accordance with applicable laws and regulations and prevailing industry practices.
- . No Improper Advantage - Vendors shall not offer or accept bribes or other means of obtaining undue or improper advantage.
- . Fair Business, Advertising, and Competition - Vendors must uphold fair business standards in advertising, sales, and competition.
- . Business Integrity - The highest standards of integrity are to be expected in all business interactions. Participants shall prohibit any and all forms of corruption, extortion and embezzlement. Monitoring and enforcement procedures shall be implemented to ensure conformance.
- . Community Engagement - Vendors are encouraged to engage the community to help foster social and economic development and to contribute to the sustainability of the communities in which they operate.
- . Protection of Intellectual Property - Vendors must respect intellectual property rights; safeguard customer information; and transfer of technology and know-how must be done in a manner that protects intellectual property rights.

V. Management System

Vendors shall adopt or establish a management system whose scope is related to the content of this Code. The management system shall be designed to ensure (a) compliance with applicable laws, regulations and customer requirements related to the Vendors' operations and products; (b) conformance with this Code; and (c) identification and mitigation of operational risks related to this Code. It should also facilitate continual improvement.

The management system should contain the following elements:

- . Company Commitment - Corporate social and environmental responsibility statements affirming Vendor's commitment to compliance and continual improvement.

- . Management Accountability and Responsibility - Clearly identified company representative[s] responsible for ensuring implementation and periodic review of the status of the management systems.
- . Legal and Customer Requirements - Identification, monitoring and understanding of applicable laws, regulations and customer requirements.
- . Risk Assessment and Risk Management - Process to identify the environmental, health and safety and labour practice risks associated with Vendor's operations. Determination of the relative significance for each risk and implementation of appropriate procedural and physical controls to ensure regulatory compliance to control the identified risks.
- . Performance Objectives with Implementation Plan and Measures - Areas to be included in a risk assessment for health and safety are warehouse and storage facilities, plant/facilities support equipment, laboratories and test areas, sanitation facilities (bathrooms), kitchen/cafeteria and worker housing /dormitories. Written standards, performance objectives, and targets an implementation plans including a periodic assessment of Vendor's performance against those objectives.
- . Training - Programs for training managers and workers to implement Vendor's policies, procedures and improvement objectives.
- . Communication - Process for communicating clear and accurate information about Vendor's performance, practices and expectations to workers, Vendors and customers.
- . Worker Feedback and Participation - Ongoing processes to assess employees' understanding of and obtain feedback on practices and conditions covered by this Code and to foster continuous improvement.
- . Audits and Assessments - Periodic self-evaluations to ensure conformity to legal and regulatory requirements, the content of the Code and customer contractual requirements related to social and environmental responsibility.
- . Corrective Action Process - Process for timely correction of deficiencies identified by internal or external assessments, inspections, investigations and reviews.
- . Documentation and Records - Creation of documents and records to ensure regulatory compliance and conformity to company requirements along with appropriate confidentiality to protect privacy.

The Code is modeled on and contains language from the Recognized standards such as International Labour Organization Standards (ILO), Universal Declaration of Human Rights (UDHR), United Nations Convention against Corruption, and the Ethical Trading Initiative (ETI) were used as references in preparing this Code and may be useful sources of additional information

CHECK LIST

SI 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 1,180/- DRAWN IN FAVOUR OF	BSES YAMUNA POWER LTD
10	POWER OF ATTORNEY/AUTHORISATION LETTER FOR SIGNING THE BID	YES/NO

APPENDIX

A. FORMAT OF PERFORMANCE BANK GUARANTEE

(To be executed on a Non-Judicial Stamp Paper of appropriate value)

This Guarantee made at _____ this [___] day of [_____] 20XX

1. WHEREAS M/s BSES Yamuna Power Limited, a Company incorporated under the provisions of Companies Act, 1956 having its Registered Office at Shaktikiran Building, Karkardooma, Delhi 110032, India hereinafter referred to as the " Owner ", (which expression shall unless repugnant to the context or meaning thereof include its successors, administrators, executors and assigns).
2. AND WHEREAS the Owner has entered into a [contract for _____](#) (Please specify the nature of contract here) vide Contract No. _____ dated _____ (hereinafter referred to as the "Contract") with M/s. _____, (hereinafter referred to as "the Supplier", which expression shall unless repugnant to the context or meaning thereof be deemed to mean and include each of their respective successors and assigns) for providing services on the terms and conditions as more particularly detailed therein.
3. AND WHEREAS as per clause ____ of conditions of Contract, the Suppliers are obliged to provide to the Owners an unconditional bank guarantee for an amount equivalent to ten percent (10%) of the total Contract Value for the timely completion and faithful and successful execution of the Contract from [_____] *pl. specify the name of Bank* having its head/registered office at [_____] through its branch in _____ *(pl. specify the name of Branch through which B.G is issued)* hereinafter referred to as "the Bank", (which expression shall unless it be repugnant to the context or meaning thereof be deemed to include its successors and permitted assigns).
4. NOW THEREFORE, in consideration inter alia of the Owner granting the Suppliers the Contract, the Bank hereby unconditionally and irrevocably guarantees and undertakes, on a written demand, to immediately pay to the Owner any amount so demanded (by way of one or more claims) not exceeding in the aggregate [Rs.]..... *(in words)* without any demur, reservation, contest or protest and/or without reference to the Supplier and without the Owner needing to provide or show to the Bank ,grounds or reasons or give any justification for such demand for the sum/s demanded.
5. The decision of the Owner to invoke this Guarantee and as to whether the Supplier has not performed its obligations under the Contract shall be binding on the Bank. The Bank acknowledges that any such demand by the Owner of the amounts payable by the Bank to the Owner shall be final, binding and conclusive evidence in respect of the amounts payable by the Supplier to the Owner. Any such demand

made by the Owner on the Bank shall be conclusive and binding, notwithstanding any difference between the Owner and the Supplier or any dispute raised, invoked, threatened or pending before any court, tribunal, arbitrator or any other authority.

6. The Bank also agrees that the Owner at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor without proceeding against the Suppliers notwithstanding any other security or other guarantee that the Owner may have in relation to the Supplier's liabilities.
7. The Bank hereby waives the necessity for the Owner first demanding the aforesaid amounts or any part thereof from the Suppliers before making payment to the Owner and further also waives any right the Bank may have of first requiring the Owner to use its legal remedies against the Suppliers, before presenting any written demand to the Bank for payment under this Guarantee.
8. The Bank's obligations under this Guarantee shall not be reduced by reason of any partial performance of the Contract. The Bank's obligations shall not be reduced by any failure by the Owner to timely pay or perform any of its obligations under the Contract.
9. The Bank further unconditionally and unequivocally agrees with the Owner that the Owner shall be at liberty, without the Bank's consent and without affecting in any manner its rights and the Bank's obligation under this Guarantee, from time to time, to:
 - (i) vary and/or modify any of the terms and conditions of the Contract;
 - (ii) Forebear or enforce any of the rights exercisable by the Owner against the Suppliers under the terms and conditions of the Contract; or
 - (iii) Extend and/or postpone the time for performance of the obligations of the Suppliers under the Contract;and the Bank shall not be relieved from its liability by reason of any such act or omission on the part of the Owner or any indulgence shown by the Owner to the Suppliers or any other reason whatsoever which under the law relating to sureties would, but for this provision, have the effect of relieving the Bank of its obligations under this Guarantee.
10. This Guarantee shall be a continuing bank guarantee and shall not be discharged by any change in the constitution or composition of the Suppliers, and this Guarantee shall not be affected or discharged by the liquidation, winding-up, bankruptcy, reorganisation, dissolution or insolvency of the Suppliers or any of them or any other circumstances whatsoever.

11. This Guarantee shall be in addition to and not in substitution or in derogation of any other security held by the Owner to secure the performance of the obligations of the Suppliers under the Contract.
12. NOTWITHSTANDING anything herein above contained, the liability of the BANK under this Guarantee shall be restricted to _____ *(insert an amount equal to ten percent (10%) of the Contract Value)* and this Guarantee shall be valid and enforceable and expire on _____ *(pl. specify date)* or unless a suit or action to enforce a claim under this Guarantee is filed against the Bank on or before the date of expiry.
13. On termination of this Guarantee, all rights under the said Guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities hereunder.
14. The Bank undertakes not to revoke this Guarantee during its validity except with the prior written consent of the Owner and agrees that any change in the constitution of the Bank or the Suppliers shall not discharge our liability hereunder.
15. Owner may assign this Guarantee to any Person or body whether natural, incorporated or otherwise under intimation to the Bank. The Bank shall be discharged of its obligations hereunder by performance in accordance with the terms hereof to such assignee without verifying the validity / legality / enforceability of the assignment.
16. This Guarantee shall be governed by the laws of India. Any suit, action, or other proceeding arising out of, connected with, or related to this Guarantee or the subject matter hereof shall be subject to the exclusive jurisdiction of the courts of **Delhi**, India.

Dated this day of 20XX at

(Signature)

.....

(Name)

.....

(Designation with Bank Stamp)

Attorney as per

Power of Attorney No.....

Date.....



Vendor has to fill this form & submit along with the PERFORMANCE BANK GUARANTEE

1. Bank Email ID----- Bank Phone No-----

2. Where to Dispatched the BG -Local Address of bank -----

3. Where to Dispatch the BG Head Office Address -----

B. BENEFICIARY'S BANK DETAIL WITH IFSC CODE:

1. Name of the Bank: Axis Bank Limited

2. Branch Name & Full Address: C-58, Basement & Ground Floor, Preet Vihar, Main Vikas Marg, New Delhi 110092

3. Branch Code: 055

4. Bank Account No: 911020005246567

5. IFSC Code: UTIB0000055

C. FORMAT OF WARRANTY/GUARANTEE CERTIFICATE

BSES YAMUNA POWER LIMITED Shaktikiran Building, Karkardooma, Delhi -110032.

Ref. Purchase Order No. :

Dear Sir,

We hereby confirm that the.....dispatched to BSES YAMUNA POWER LTD vide invoice no.....
DT.....is exactly of the same nature and description as per above mentioned Purchase Order.

We further confirm that we will replace/repair our.....free of cost If found any manufacturing defect
during.....months from the date of dispatch of material or.....months from the data of commissioning whichever
is earlier.

Vendors Name & Signature

D. UNDERTAKING GST

The Vendor shall give an undertaking in the following words on each invoice in the absence of which tax payment
as on the Vendor's invoice may be withheld.

"The tax component as mentioned in the invoice shall be deposited with GST Department as per law by way of
actual payment or by way of legal set off as per law. The turnover billed shall be duly declared in my GST
returns a copy of which shall be filed with the Purchaser. Should the input tax credit to the Purchaser be denied
by way of any lapse on the part of the Vendor, the same shall be paid on demand and in any case the Purchaser
is authorized to deduct the tax equivalent amount from the amount payable to the Vendor"

E. SCHEDULE OF DEVIATIONS

Vendor shall refrain from taking any deviations on this TENDER. Still in case of any deviations, all such deviations from this tender shall be set out by the Bidder, Clause by Clause in this schedule and submit the same as a part of the Technical Bid.

Unless **specifically** mentioned in this schedule, the tender shall be deemed to confirm the BYPL's specifications:

SL NO	Clause No.	Details of deviation with justifications

Technical Bid Submission Check List

S. No.	Description	BYPL Requirement	Bidder's Compliance
1	Tender No.	Required	
2	Technical Specification reference number	Required	
3	Communication Details		
3.1	Name of the Bidder	Required	
3.2	Name of Authorized contact person	Required	
3.3	Contact No. of Authorized contact person	Required	
3.4	E-mail id of Authorized contact person	Required	
4	Document Submission Format		
4.1	Documents shall be submitted in Box file/spiral binding. Any other format is not acceptable	Required	
4.2	Index of documents with page numbers for each document	Required	
4.3	Separator with document description shall be provided before each document	Required	
5	Qualifying Requirement Compliance		
5.1	Summary of compliance of qualifying criteria in tabular form along with summary of documentary proof provided	Required	
5.2	Deatiled Documents supporting compliance of qualifying criteria	Required	
6	Drawings/ Documents as per Technical Specification.		
6.1	Signed copy of technical specification	Required	
6.2	Type Test reports of offered model/ type/ rating	Required	
6.3	Guaranteed Technical particulars (GTP)	Required	
6.4	Deviation Sheet	Required	

S. No.	Description	BYPL Requirement	Bidder's Compliance
6.5	Detailed Drawings	Required	
6.6	Manufacturer's quality assurance plan	Required	
6.7	Other drawing/ documents mentioned in technical specification	Required	
7	Soft copy of complete technical bid in pen drive	Required	
8	Samples as per technical specification.	Required	

Note: Submission of Technical bid check list along with all items mentioned in the check list is mandatory. Order of documents shall be strictly as per the technical bid check list. Bids with incomplete/ wrong information are liable for rejection.

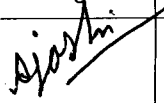
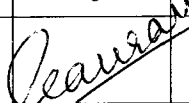
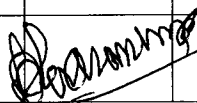


SP-ERMUX-15-R6

Technical Specification For 11 KV Ring Main Unit

Specification for 11 KV Ring Main Unit

Specification no – SP-ERMUX-15-R6

Prepared by		Reviewed by		Approved by		Rev	Date
Name	Sign	Name	Sign	Name	Sign		
Ashish		GS		DS		R6	10/07/2014

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Technical Specification For 11 KV Ring Main Unit**Record of Revision**

Revision No	Item / clause no.	Nature of Change	Approved By
R5	1, Annex A 1.3,1.4	FRTU along with modem included in the scope of supply of RMU	DS
R5	1, Annex. 1.6	Supervision of Testing & commissioning of all motorized RMUs included in the scope including all operational checks, LV wiring checks, battery / charger checks, VPI , FPI, self powered relay.	DS
R5	1, Annex 1.7	Testing & commissioning of FRTU at site -FRTU customization, parameterization along with integration of FRTU with Control Center included in the scope of vendor	DS
R5	1, Annex. 1.8	Guarantee period for RMU along with FRTU & Modem specified as 66months from date of supply & 60 months from date of commissioning.	DS
R5	1, Annex. 1.9	Service performance requirements during guarantee period specified.	DS
R5	1, Annex. 1.11	Training requirements for RMU, FRTU & Self powered relay specified.	DS
R5	2	IEC 62271 specified	DS
R5	4.4.1	Solid Shielded Insulation Added	DS
R5	4.7	FRTU requirements with modem added along with detailed specification	DS
R5	4.8	Modem specification included in Annexure G	DS
R5	5.6	Added – Operating Handle support	DS
R5	5.13.3	Cable termination height is increased to 900 mm.	DS
R5	5.14.2	Bus bar short time withstand capacity changed to 20kA for 3 sec	DS
R5	5.24	Added – Avoid any type of Gaps or holes on the cable termination chamber wall.	DS
R5	6.3.1	Separate ON/OFF switching for each motor is added	DS
R5	6.4.2	Clause deleted as all RMU's shall be motorized	DS
R5	6.5	Added – Indication for Battery charger FAIL, Battery LOW, Reverse polarity	DS
R5	6.5.4	Included provision of 2nos AC incoming supply MCB	DS

Technical Specification For 11 KV Ring Main Unit

R5	6.6.2	LBS short time withstand capacity revised to 20kA for 3 sec	DS
R5	6.7	LBS fault making capacity revised to 50kA peak	DS
R5	6.8	Mechanism endurance class M1 and Electrical Endurance class E3 specified	DS
R5	6.9	Minimum no. of operations at rated fault current specified – Electrical endurance class E3	DS
R5	6.10	Fault Passage Indicator specifications included	DS
R5	7.2	CB arc interruption medium only in Vacuum bottle	DS
R5	7.4	Added – Protective flap on Emergency PB	DS
R5	7.5.2	20kA short time withstand capacity specified	DS
R5	7.6	Mechanical – M1 & Electrical-E2 endurance class specified for circuit breaker module	DS
R5	7.7	CB fault making capacity revised to 50kAspecified	DS
R5	7.8	CB fault breaking capacity revised to 20kA	DS
R5	8.7	No load mechanical endurance class M0 specified for earth switch	DS
R6	8.8	Making capacity endurance class E2 specified	DS
R5	10.6	Added – Prevent electrical operation if handle is inserted for manual operation	DS
R5	10.6	Added – Supply to the motor shall be disconnected after certain time period if LBS fails to operate.	DS
R5	10.7	‘Desirable’ feature of preventing Motorized operation of more than one LBS at a time is changed to ‘Necessary’ feature	DS
R5	12.1	Sticker type mimic diagram non acceptance specified	DS
R5	13.3	Process audit included in the Quality systems for RMU, self powered relay, FRTU.	DS
R5	13.4	Approved sub vendor list specified for FRTU,FPI, Battery charger, self powered relay	DS
R5	14.1	FRTU type test requirement specified	DS
R5	14.3	FRTU acceptance tests requirement specified	DS

Technical Specification For 11 KV Ring Main Unit

R5	Annexure A – 1.5	2 nos. is changed to 2 sets of Operating handle	DS
R5	Annexure C – 21 to 26	Earth Switch , Self powered relay, FPI, CT, VPI , FRTU, Modem details included in GTP particulars, to be provided by supplier	DS
R5	Annexure F	BSES 11kV terminal connection lug dwg. – Bimetallic Ring type, provided for supplier to provide suitable terminal fixing arrangement at 11kV bushing.	DS
R5	Annexure G	Modem specification.	DS
R5	Annexure H	FRTU specification.	DS
R6	Annexure I	Requirement of 11 KV “Metering Cubicle” requirement added	DS/GS

Technical Specification For 11 KV Ring Main Unit**1.0 Scope of work**

- A. 11kV Manual (Motorized if specified in Tender) RMU with or without FRTU & Modem **[R5]** shall be supplied as per the specification.
- B. Metering Cubicle (Only with Outdoor RMU, if specified with purchase requisite) **[R6]**
- C. For scope of supply, refer annexure – A
Testing & commissioning supervision of all manual / motorized RMUs with FRTU included in the scope including all operational checks, LV wiring checks, battery / charger checks, VPI , FPI, self powered relay etc as applicable.**[R5]**

2.0 Codes & standards

Materials, equipment and methods used in the manufacture of switchboards shall conform to the latest edition of following –

S No.	Title
Indian Electricity Rules	With latest amendments
Indian electricity act	IE act 2003
IS 3427	A.C. Metal Enclosed Switchgear and Control gear for Rated Voltages Above 1 kV
IS 9920 part 1,3 & 4	High voltage switches above rated voltage 1kv
IS 13118	General requirements of circuit breakers above rated voltage 1kv
IS 3231	Electric Relays for Power System Protection
IEC 60265 part 1	High voltage switches
IEC 60056	High voltage alternating current circuit breakers
IEC 60059	Preferred current ratings of high voltage switchgear
IEC 60185	Current transformers
IEC 60694	Specification for high voltage switchgear
IEC 60298	AC metal enclosed switchgear
IEC 60129	Ac disconnect and earth switches
IEC 60529	Classification of degrees of protection provided by enclosures
IEC 60255	Electrical relays

In the event of direct conflict between various order documents, the precedence of authority of documents shall be as follows -

- i. Guaranteed Technical Particulars (GTP)
- ii. Specification including applicable codes & standards
- iii. Approved Vendor Drawings
- iv. Other documents

Technical Specification For 11 KV Ring Main Unit**3.0 Electrical Distribution System Data**

3.1	Supply	3 phase AC, 3 wire
3.2	Voltage	11000 volt $\pm 10\%$
3.3	Frequency	50 Hz $\pm 5\%$
3.4	System neutral	Earthed at upstream 11kv source

4.0 11kv RMU System layout

4.1	RMU Configuration	As per scheme given in Annexure E & type as per Purchase requisition
4.2	Extensibility	One side extensible / Purchase requisition
4.3	Load break switch, Circuit breaker & earth switch in RMU panel	All shall be non draw out type, fixed position
4.4.1	Insulation medium for panel	SF6 gas or Dry air in sealed metallic tank
4.4.2	Breakers	SF6 gas or Vacuum type (with disconnecter & earth switch)
4.4.3	load break switches	SF6 gas or Vacuum type (With Earth Switch)
4.5	Arc interruption chamber for breaker	i) Separate for each breaker ii) Arc interruption chamber of breakers shall be separate from the main insulated tank. (Desirable feature)
4.6	Maximum dimensions for a 3 way panel (1 CB + 2 LBS)	
4.6.1	Width (measured from front)	1250 mm
4.6.2	Depth	800 mm
4.6.3	height	2000 mm
4.7	FRTU	FRTU if required shall be provided integrated with RMU in the LV compartment completely wired along with Modem suitable for communicating in CDMA & GSM network of Reliance Communication and also have facility to communicate with RCIL fibre network. Vendor shall demonstrate the data communication of FRTU modem with BCC for the proposed modem for approval of owner in the Pre Order technical evaluation stage. For detailed specification of FRTU, I/O requirements, refer our standard specification of FRTU (Spec No :SP-FRTUX-16-R0)

Technical Specification For 11 KV Ring Main Unit

4.8	Modem	As per Modem Specifications given in Annexure G
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5.0 RMU panel construction

5.1	Panel type	Metal enclosed, framed, Compartmentalized panel construction
5.2	Service Location	Indoor, non air conditioned environment / Outdoor with continuous ambient temperature of 50 deg C and shall be suitable for external climatic condition Resistant to water ultraviolet radiation (Canopy for outdoor application)
5.3	Mounting	Free Standing
5.4	Overall Enclosure Protection	IP4X minimum, vermin proof IP 54 (For outdoor duty)
5.5	Doors	Front access with anti theft hinge arrangement, Minimum three hinges. Hinges arrangement shall ensure that door cannot be removed.
5.6	Covers	Bolted for rear access, with handles. Support for handle shall be provided at suitable place on RMU body. [R5] All the accessible bolts / screws shall be vandal proof. One set of required Special tools per RMU (if any) shall be in the scope of supply.
5.7	Construction	Sheet metal 2.5mm thick CRCA
5.8	Base frame	300 mm - 450 mm height (made with ISA / ISMC) for Indoor & Min. 500 mm for outdoor. Height to suit the operator's convenience & subject to drawing approval. Frame shall be completely covered from all the four sides by MS plate / sheet. Cable box compartment should be extended up-to base-frame bottom to have metallic separation between each of the feeders at base frame level too. Painting should match with RMU shade With fixing bolt for RMU & frame (in case the frame is supplied loose) & foundation bolts. HDPE clits as cable supporting clamps for each power cable (to suit the cable size from 150 to 300 sq mm PILC / XLPE cable. Exact size shall be provided during drawing approval stage.)
5.9	Lifting lugs	Four numbers
5.10	Cable Entry	Bottom 3mm metallic, removable type & split type in two parts, with 1no. 90 mm diameter knocks out punch/hole in the centre (For double cable boxes, Un-drilled gland plate to be supplied. Approval should be taken for the same during drawing submission)
5.12	Cable type & size	3c x 150 / 240 / 300 sq mm Aluminum conductor XLPE/ PILC with armor & PVC outer sheath

Technical Specification For 11 KV Ring Main Unit

5.13	Terminals for 11kv cable termination	Suitable for Ring Type Bimetallic lug as per annexure F [R5]
5.13.1	Right angled boots	Single piece cold shrink type (make – 3M or Raychem)
5.13.2	Brass Nut bolt	M16 size
5.13.3	Bimetallic washers	Required
5.13.4	Termination type	suitable for heat shrinkable type
5.13.5	Termination height	For Indoor / Outdoor : Min. height from gland plate shall be 900mm [R5]
5.14	Bus bar	Tinned copper with sleeve (Sizing Calculation to be submitted in support of its Guaranteed S.C. rating / Capability)
5.14.1	Bus bar continuous rated current	630amp (at designed 40 deg.C ambient)
5.14.2	Bus bar short time withstand capacity	20 KA for 3 sec (R5)
5.14.3	Bus bar support insulator material	SMC / DMC resin
5.14.4	Maximum temperature rise above reference ambient 40 deg C	In line with Table 3 of IEC60694
5.15	Earth bus bar	GI flat sized for rated fault duty for 3 sec
5.16	Earth bus internal connection to all non current carrying metal parts	By 2.5 sq mm copper flexible wire, Earth connection point maximum 1 meter away from cable test facility
5.17	Earth bus external connection to owners earth	Studs on both sides with holes for M10 bolt + hardware to readily receive purchaser earth connection
5.18	Cooling arrangement	By natural air without fan
5.19	Panel internal wiring	Multi strand flexible color coded PVC insulated Cu wire 1 sq mm (SCADA) / 2.5 sq mm (for CT's) 1100 volt grade (AC-black, DC – grey, Earth – green) with ferrules at both ends.
5.18	Hardware (Nut, bolts & handle)	Stainless steel (Except termination nut-bolts which are Brass / Tinned Copper)
5.19	Gasket	Neoprene rubber

Technical Specification For 11 KV Ring Main Unit

5.20	Marshalling terminal blocks	1 Sq mm, Nylon 66 material, screw type + 20% spare in each row of TB.
5.21	Panel cover fixing bolts	Allen head 6mm with hexagonal slot
5.22	Padlock facility	Required for all earth switches & all handles
5.23	Bushings for future extensions of RMU	Should be duly insulated & covered with metallic covers in unused condition
5.24	Explosion vents	To ensure operator's safety, design should ensure that gases / flames generated during flash over / blast in any of the compartment, must not come out from the front of RMU as well shall not go to adjacent cable compartment. Internal arc test report (for Cable compartment & other compartments) must be submitted to support above, along with RMU GA drawing indicating these vents. There shall not be any type of holes, gaps etc on the walls of cable termination compartment. [R5]

6.0 Load break switch (LBS) / Isolator

6.1	Type	Three poles operated simultaneously by a common shaft
6.2	Arc interruption in dielectric medium	SF6 or Vacuum
6.3.1	Operating mechanism for close / open	Motorized LBS Each motor shall be provided with separate MCB or Local-Remote switch. [R5]
6.3.2	Manual operation	Possible without removal of motor
6.4.1	Addition / removal of motor	Without overhaul of operating mechanism
6.4.2		Clause deleted. [R5]
6.4.3	Motor rated voltage	24V DC
6.5.1	Battery type & size	<ol style="list-style-type: none"> 1. SMF lead acid battery 2. Battery provided in enclosure shall be rated for 10 close & 10 open operations of LBS / FCB + 2 hrs back up for SCADA FRTU load (10watt).®
6.5.2	Battery charger rating	Two chargers of rating 10A each
6.5.3	Battery charger configuration	With auto changeover between two chargers using 10Amp diodes
6.5.4	MCBs at charger input & output supply	Required 2nos for AC Incoming supply All the MCBs shall be easily accessible for operation, with proper labeling. [R5]
6.5.5	Charger temperature rise at heat sink at full load for 2 hours	Maximum 55 deg C above ambient of 40 deg C
6.5.6	DC power supply for	24v DC +/- 1 volt thru 2 Amp MCB

Technical Specification For 11 KV Ring Main Unit

	FRTU	
6.5.7	Battery charger cooling method	Natural without any fans
6.6.1	Continuous rating of LBS	630 Amp at design 40 deg C ambient
6.6.2	Short time withstand capacity	20 KA for 3 sec [R5]
6.7	Fault making capacity	50 kA peak [R5]
6.8	Minimum number of operations at rated current (as per IEC 62271-102)	Mechanical Endurance – Class M1(1000 operations) Electrical Endurance – Class E3 (100 operations) [R5]
6.9	Minimum number of operations at rated fault current (as per IEC IEC 62271-102)	Class E3 (Min 10 operations) [R5]
6.10	Fault passage indicator (FPI)	To be provided on right hand side of one LBS for panel type 1CB + 2 LBS. For all other configuration of RMU, FPI to be provided on all LBS. Wherever, there are two cables per LBS, two FPI needs to be considered for that particular LBS.
6.10.1	Earth Fault Indicator	CBCT – Split open type suitable for mounting without disconnection of cable.
6.10.2	Connection of CBCT with FPI	Cable connection of FPI with CBCT shall be of pre moulded type on the CBCT side. Cable shall be 2.5 sq.mm cu cable or fiber cable
6.10.3	Fault Passage Indicator	Digital type and shall operate as the current exceeds the set value. Flash indication for identifying faults with red LED with one flash for every one sec. Test & rest button 1 NO + 1 NC potential free contact for remote indication FPI power supply unit shall use lithium battery with minimum life of 1000 blinking hours , so that FPI shall continue to function even after main feeder has tripped.
6.10.4	Data by Purchaser	
6.10.4.1	System Fault Level	2kA – 8.75kA
6.10.4.2	Type of Grounding	Solidly Grounded
6.10.4.3	Fault clearing time	100ms
6.10.4.4	Cable Type	PILC / XLPE , 70 sq.mm to 300 sq.mm
6.10.4.5	Earth Fault Indicator	
6.10.4.5.1	Sensing Current	100 to 240A
6.10.4.5.2	Sensing Time	30 to 100 ms in steps of 10ms.
6.10.4.5.3	Reset Time	0.5 -1-2-3-4 hr

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6.10.4.5.4	Resetting Facility	a) Self rest after reset time b) Self rest after restoration of voltage c) Manual d) Remote resetting
6.10.4.5.5	Contact Rating	1A at 230 V
6.10.4.5.6	Degree of Protection	IP 54
6.10.4.5.7	Mounting Arrangement	Surface or Flush Mounting
6.10.4.5.8	Ambient Temperature	-20 to 55 Deg C

7.0 Circuit breaker (TCB / FCB)

7.1.1	Type	Three pole, operated simultaneously by a common shaft
7.1.2	Transformer circuit breaker -TCB	For controlling transformer, manual operation only
7.1.3	Feeder circuit breaker - FCB	For controlling cable feeder, manual operation. Remote trip operation by SCADA
7.2	Arc interruption in dielectric medium	Vacuum Bottle (R5)
7.3.1	Operating mechanism - TCB	Manual spring charged stored energy type
7.3.2	Operating mechanism - FCB	Motor & manual spring charged stored energy type, remote electrical close / open operation possible.
7.3.3	Addition / removal of motor	Without overhaul of operating mechanism
7.3.4	Motor rated voltage	24v / 48v DC
7.4	Emergency trip / open push button	On panel front with Protective flap to prevent any accidental tripping of breaker. [R5]
7.5.1	Continuous rating at design 40 deg C ambient	630amp
7.5.2	Short time withstand capacity	20 KA for 3 sec (R5)
7.6	Minimum number of operations at rated current (as per IEC 62271-100)	Mechanical Endurance – Class M1(2000 operations) Electrical Endurance – Class E2 (R5)
7.7	Fault making capacity	50 KA peak (R5)
7.8	Fault breaking capacity	20 KA Minimum (R5)
7.9	Maximum number of operations at rated Fault current (as per IEC 62271-100)	Electrical Endurance – Class E2 . To be guaranteed by manufacturer with authorized lab test reports (R5)
7.10	Breaker status auxiliary contact	2NO + 2NC wired to terminal block
7.11	Current transformer	1. 75-300 / 1 amp for TCB/ FCB. 2. Considering three core cable terminations, mounting

Technical Specification For 11 KV Ring Main Unit

		flexibility shall be provided for CT's (in horizontal & vertical direction both). Additionally, CAUTION marking (by sticker/ paint) shall be provided to avoid CT's installation above the screen of cable. (I.e. earth potential point.)
7.12	CT accuracy class	10P10 minimum
7.13	Protection relay	Self powered, Microprocessor based Numerical relay (with LCD display), IDMT over current / earth fault protection with high set element, manual reset type Relay mounting flush to panel front
7.14	Relay auxiliary contacts for remote indication	Potential free contact 1NO + 1NC wired to terminal block
7.15	Shunt trip 230v AC (for WTI trip & door limit switch of Dry type transformer) & for remote trip from SCADA.	To be wired to terminal blocks (If the functional requirement is achieved by the Protection relay, then shunt trip is not required.

8.0 Earth switch (ES)

8.1	Type	Three Pole, operated simultaneously by a common shaft, for each Circuit breaker & Load break switch.
8.2	Switching in dielectric medium	Dry Air in sealed medium or SF6 gas
8.3	Operating mechanism for close & open	Manual
8.4	Fault making capacity	50 kA (Desirable)
8.5	Auxiliary contacts	1NO+1NC wired to terminal block
8.6	Disconnect switch (if provided in series with vacuum bottle)	Desirable to be located on purchaser cable connection side of vacuum bottle
8.7	Minimum number of operations at no load (as per IEC 62271-102)	Mechanical Endurance – Class M0(1000 operations) [R5]
8.8	Making capacity endurance of earth switch (as per IEC IEC 62271-102)	Class E2 (Min 10 operations) [R5]

9.0 Requirements of sealed housing live parts

9.1	Enclosure	Stainless steel enclosure suitable for IP67
9.2	SF6 gas pressure low alarm	To be given
9.3	Provision for SF6 gas filling	To be given (For 'sealed for life' design of RMU, this is not applicable)

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9.4	Provision for SF6 gas pressure indication	Manometer with non return valve
9.5	Arc interruption method for SF6 breaker / Load break switch	Puffer type / rotating arc type
9.6	Potential free contacts for SF6 gas pressure low	1NO +1NC (Desirable)

10.0 Operational interlocks

10.1.1	Interlock type	Mechanical
10.1.2	Load break switch & respective earth switch	Only one in 'close' condition at a time
10.1.3	Circuit breaker & respective earth switch	Only one in 'close' condition at a time
10.2	Prevent the removal of respective cable covers if load break switch or circuit breaker is 'ON'	Electrical / Mechanical
10.3	Prevent the closure of load break switch or circuit breaker if respective cable cover is open	Electrical / Mechanical
10.4		® clause deleted
10.5	Cable test plug for LBS/CB accessible only if Earth switch connected to earth	Mechanical
	For motorized RMUs	
10.6	Prevent motorized operation of LBS / CB during manual operation	Electrical / Mechanical Electrical signal shall cut-off completely during manual operation. If LBS fail to operate, the supply to motor shall be disconnected after certain time period to prevent burning of motor due to continuous supply. [R5]
10.7	Prevent motorized operation of more than one LBS / CB at a time	Necessary feature (Electrical) [R5]

11.0 Indication & signals (for SCADA / Local)

11.1	Operation counter on front / Inside the RMU LT chamber	To be provided for each LBS & Circuit breaker, with minimum four digits & non resettable type
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Technical Specification For 11 KV Ring Main Unit

11.2	Cable charge status indication for all LBS & CB	Capacitor type voltage indicators with LED on all the phases (Shall be clearly visible in day light)
11.3	Spring charge status indication	On front for breaker
11.4	Earth switch closed indication (For Each LBS)	On front
11.5	Load break switch ON/OFF indication	Green for OFF / Red for ON
11.6	Circuit breaker On/OFF indication	Green for OFF / Red for ON
11.7	Circuit breaker protection relay operated on fault	Flag
11.8	Fault passage indication on LBS	Flag
11.9	Status signals to SCADA-to be wired to marshalling terminal block	2NO + 2NC
11.9.1	LBS close / open	potential free contacts
11.9.2	LBS & CB Earth Switch close /open	potential free contacts
11.9.3	Battery charger Fail	potential free contacts
11.9.4	CB close / open	potential free contacts
11.9.5	Protection relay operated	potential free contacts
11.9.6	FPI operated	potential free contacts
11.9.7	SF6 gas pressure low	potential free contacts (Desirable)
11.10.1	Commands from SCADA- to be wired to marshalling terminal block	LBS close / open
11.10.2		FCB close / open
11.10.3		FPI Reset

12.0 Mimic diagram, labels & finish

12.1	Mimic	<ol style="list-style-type: none"> Mimic diagram (Shall not be accepted with Stickers) [R5] On panel front with description of function & direction of operation of handles/buttons
	Operating Instructions	Operating instruction chart and Do's & Don'ts in Hindi / local language to be displayed on left / front side of panel enclosure on anodized Al Sheet 16SWG, duly affixed on panel.

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12.2	Name plate on panel front	Fixing by rivet only
12.2.1	Material	Anodized aluminum 16SWG / SS
12.2.2	Background	SATIN SILVER
12.2.3	Letters, diagram & border	Black
12.2.4	Process	Etching
12.2.5	Name plate details	Month & year of manufacture, equipment type, input & output rating, purchaser name & order number, guarantee period
12.3	Labels for meters & indications	Anodized aluminum with white character on black background OR 3 ply lamicoid
12.4	Danger plate on front & rear side	Anodized aluminum 16 SWG with white letters on red background
12.5	Painting surface preparation	Shot blasting or chemical 7 tank process
12.6	Painting external finish	Powder coated epoxy polyester base grade A, shade -RAL 7032, uniform thickness 60 micron minimum
12.7	Painting internal finish	Powder coated epoxy polyester base grade A, shade -white, uniform thickness 60 micron minimum

13.0 Quality assurance

13.1	Vendor quality plan	To be submitted for purchaser approval
13.2	Inspection points in quality plan	To be mutually identified & agreed
13.3	Quality – Process Audits	BSES shall carryout vendor process audits.
13.4	Field quality plan	Bidder to submit field quality plan along with the bid
13.5	Spare part list	Bidder to submit detailed spare part list along with the bid
13.6	Maintenance manual	Bidder to submit maintenance manual along with the bid
13.7	Approved sub vendor List	[R5]
13.7.1	RTU	ABB / Chemtrol / Schneider
13.7.2	Fault Passage Indicator	Flair / EMG - Easi
13.7.3	Battery Charger	Allan
13.7.4	Self Powered O/C & E/F Relay	Ashida ADR141S / VIP 300
13.7.5	Boots	3M / Raychem

Technical Specification For 11 KV Ring Main Unit**14.0 Inspection & testing**

14.1	Type test	<ol style="list-style-type: none"> 1. Equipment of type tested quality only, including internal arc test on various compartments like cable chamber, SF6 gas tank etc. 2. Type test certificate to be submitted along with offer for scrutiny. Type test more than 5 years old will not be acceptable. 3. <u>For motorized RMUs – Bidder to submit following test report for DC charger. ®</u> <ol style="list-style-type: none"> a) <u>temperature rise test</u> b) <u>voltage regulation test</u>
14.2	Routine test	As per relevant Indian standard
14.3	Acceptance test	To be performed in presence of purchaser at manufacturer works
		1. Physical inspection & BOM, wiring check
		2. Insulation resistance test (Before & after HV test)
		3. HV test for one minute,
		4. Operation & interlock check
		5. Measurement of resistance of main circuit
		6. Voltage Indication check
		7. Functional testing of Fault passage Indicator for Alarm
		8. Primary current injection test for each circuit breaker feeder with relay
9. Breaker closing & opening time measurement		

15.0 Shipping, Handling and Site support

15.1	Packing Protection	Against corrosion, dampness, heavy rains, breakage and vibration
15.2	Packing for accessories and spares	Robust wooden non returnable packing case with all the above protection & identification Label
15.3	Packing Identification Label (Anodized Aluminum Plate)	On each packing case, following details are required:
		i. Individual serial number
		ii. Purchaser's name
		iii. PO number (along with SAP item code, if any) & date
		iv. Equipment Tag no. (if any)
		v. Destination
		vi. Manufacturer / Supplier's name
vii. Address of Manufacturer / Supplier / it's agent		

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		viii. Description (Configuration of RMU; e.g. 1CB + 2 ISO, Motorized / Non Motorized, Extensible / Non Extensible) and Quantity must be prominently displayed at least 3 sides of packing box & on top.
		ix. Country of origin
		x. Month & year of Manufacturing
		xi. Case measurements
		xii. Gross and net weights in kilograms
		xiii. All necessary slinging and stacking instructions
15.4	Shipping	The seller shall be responsible for all transit damage due to improper packing.
15.5	Handling and Storage	1. Manufacturer instruction shall be followed. 2. Detail handling & storage instruction sheet / manual to be furnished before commencement of supply.

16.0 Deviations

16.1	List of deviations shall be stated in writing with the tender by reference to the Specification clause / GTP/ Drawing. In absence of such a statement, requirements of the Specification shall be assumed to be met without exception by the Seller
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17.0 Drawings Submission

17.1	To be submitted along with bid	The seller has to submit following:
17.1.1	GA / cross sectional drawing of product showing all the views / sections	
17.1.2	Detailed reference list of customers using the offered product during the last 5 years with similar design and rating	
17.1.3	Completely filled GTP	
17.1.4	Manufacturer's quality assurance plan and certification for quality standards	
17.1.5	Type test reports for the type, size & rating of product / equipment offered	
17.1.6	Complete product catalogue and Manual.	
17.1	Recommended spare parts and consumable items for five years of operation and spare parts catalogue with price list	
17.2	All documents as per clause 13 of this specification	
17.3	After award of contract, Seller has to submit following drawings for buyer's Approval (A) / Reference (R)	
17.3.1	Program for production and testing (A)	
17.3.2	Guaranteed Technical Particulars (A)	
17.3.3	GA drawing	
17.3.4	Schematic and wiring drawings for all components	
17.3.5	Terminal arrangement & cable box details including gland plate arrangement etc	

Technical Specification For 11 KV Ring Main Unit

17.3.6	Bill of material	
17.3.7	Detailed loading drawing to enable the buyer to design and construct foundations	
17.3.8	Transport / Shipping dimensions with weights, wheel base details, un tanking height	
17.3.9	detailed installation and commissioning instructions	
17.3.10	quality plan	
17.4	Submittals required prior to dispatch	
	-Inspection and test reports, carried out in manufacturer's works	
	-Test certificates of all bought out items	
	-Operation and maintenance Instruction as well as trouble shooting charts/ manuals	
17.5	Drawing and document sizes	Standard size paper A3, A4
17.6	Number of Documents required at different stages shall be per Annexure-A	
Note :	Duly signed & stamped copies of the drawings / documentation are required to be submitted to REL for approval.	

Annexure A Scope of supply

- 1.0 The scope of supply shall include following**
- 1.1 Design, manufacture, testing at manufacturer works before dispatch, packing, delivery and submission of all documentation the 11kv Ring Main Unit (RMU).
 - 1.2 11kV RMU shall be as per scheme enclosed as Annexure E.
 - 1.3 FRTU along with necessary software's as per detailed specification in Annexure H [R5]
 - 1.4 Supply of Modem for FRTU communication with Control Center as per specification in Annexure G. SIM card shall be provided by BSES.
 - 1.5 Configuration of 11kV RMU shall be as per Purchase Requisition.
 - 1.6 Testing & commissioning supervision of all motorized RMUs at site included in the scope of vendor including all operational checks, LV wiring checks, battery / charger checks, VPI , FPI, self powered relay. Supervision of testing & commissioning of all the panels at site. Vendor shall depute the service team with 2 days prior notice from owner. [R5]
 - 1.7 FRTU customization, parameterization along with integration of FRTU with Control Center has to be carried out at all sites by vendor engineer. [R5]
 - 1.8 Guarantee Period for RMU along with FRTU & Modem: 66 months from the date of supply or 60months from date of commissioning, whichever is earlier. [R5]
 - 1.9 Service Performance Requirements During Guarantee Period: [R5]
 - a) RMU including battery charger: Complaint to be attended on urgent basis and to be resolved within 24hrs, 1day from intimation. Necessary spares may be maintained by vendor service team at Mumbai.
 - b) FRTU: After reporting of FRTU modules compliant / failure, within 24 hours FRTU modules shall be replaced by vendor at site. Spare cards / modules shall be maintained by the vendor at Mumbai during the guarantee period..
 - c) Modem: After reporting of Modem compliant / failure, within 24 hours Modem to be rectified / replaced by vendor at site. Spare modems if required shall be maintained by the vendor at Mumbai during the guarantee period.
 - 1.10 Each RMU shall be supplied with 2 sets of Operating Handle. [R5]

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- 1.11 Supplier scope includes training of BSES team – 4 batches (each batch with 4-5 engineers) for minimum 3 days at factory for erection, commissioning, maintenance trouble shooting of mechanism, FPI and all other components. This shall be carried out 1 week from date of 1st shipment/ dispatch. Supplier shall also provide training for Self Powered relay & FRTU at respective manufacturer' factory for 12 engineers/ technicians in 2 batches. [R5]
- 1.12 Unit price for Conversion kit should be offered separately for converting the RMU from single cable termination design to double cable termination design, at site.
- 1.13 BOQ as following –

Sr No	Purchaser Equipment Tag No / SAP code	RMU standard configuration Type	Unit	Quantity
1		<i>Example – Type A2</i>	No	<i>e.g. 1</i>
2		<i>Example – Type R5</i>		
3				
4				

2.0 Submission of documents

	Along with offer	For Approval after award of contract	Final after approval
Documents as given in clause no 17 of specification	3 copies + 1 soft copy on CD	4 copies + 1soft copy on CD	6 copies + 1 soft copy on CD for all type of documents

3.0 Delivery schedule

- | | | | |
|-----|-----------------------------|---|-------------------------------|
| 3.1 | Delivery period start date | - | from date of purchase order |
| 3.2 | Delivery period end date | - | as agreed with supplier |
| 3.3 | Material dispatch clearance | - | after inspection by purchaser |

Technical Specification For 11 KV Ring Main Unit**Annexure B Technical particulars (Data by purchaser)**

Sr No	Description	Data by purchaser
1.	Reference design ambient temperature	<i>40 deg C</i>
2.	Maximum ambient temperatue	50 deg c for Delhi
3.	Relative humidity	e.g. 85% for Delhi
4.	Seismic zone	e.g. 4 for Delhi
5.	Extensibility of RMU on one side is required -	Yes / No

Technical Specification For 11 KV Ring Main Unit**Annexure C Guaranteed Technical Particulars (Data by Supplier)**

Bidder shall furnish the GTP format with all details against each clause.
 Bidder shall not change the format of GTP or clause description.
 Bidder to submit duly filled GTP in hard copy format with company seal.

Sr. No.	Description	Data to be filled by Manufacturer
1	11kv RMU (as per scope of supply annexure A)	Separate GTP to be filled for each type of RMU
2	Equipment make	
	Equipment type / brand name	
3	Conformance to design standards as per specification clause no 2.0 –	Yes/No
4	Conformance to specification clause no 3.0 to 17.0 –	Yes/No
5	If NO for pt 3 or pt 4 above, Submission of deviation sheet for each specification clause no –	Yes/No
6	Panel overall dimensions in mm	
	Width (measured from front)	
	Depth	
	height	
7	Panel weight in kg	
8	Panel extensible on both sides – Yes / No	
9	Panel enclosure protection offered	
10	Panel tested for internal arc (Cable & other compartments) –Yes / No	
11	Heat generated by the panel in Kw	
12	Insulation level for complete panel	
12.1	Impulse withstand (Kv peak) -70kvp min	
12.2	Power frequency withstand (Kv rms) – 28kv min	
13	Bus bar	
13.1	Material & grade	

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13.2	Bus bar cross section area in sq mm	
13.3	Bus bar rated current in amp i) at designed 40 deg.C ambient ii) at 50 deg.C ambient	
13.4	Max temperature rise above reference ambient of 40 deg C	
13.5	Short time current withstand capacity for 3 seconds (in KA)	
13.6	Bus bar clearances in mm P-P / P-E	
13.7	Bus bar with insulation sleeve / barriers	
13.8	Bus bar support insulator type	
13.9	Bus bar support insulator voltage class	
13.10	Bus bar support insulator minimum creepage distance / mm	
13.11	Earth bus bar material	
13.12	Earth bus bar size	
14	Circuit breaker type – SF6 or VCB	
14.1	Rated voltage & frequency	
14.2	Rated current in amp	
14.3	Rated breaking current – KA rms symmetrical	
14.4	Short time withstand capacity in KA for 3 sec	
14.5	Rated making current - KA peak	
14.6	Breaker total opening time at rated breaking capacity (in milliseconds)	
14.7	Number of breaks per pole	
14.8	Total length of contact travel in mm	
14.9	No of circuit breaker operation cycles (close & open) guaranteed at rated current, Electrical endurance class	25% rated current -
		50% rated current -
		75% rated current -
		100% rated current -

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14.10	No of breaker opening operations guaranteed at rated fault current, Electrical Endurance Class	
14.11	No of breaker mechanical operation cycles (close & open) guaranteed at zero current , Mechanical endurance class	
14.12	Contact material	
14.13	Operating mechanism – trip free	
	Manual Spring charge type	
14.14	Feeder circuit breaker (FCB) –VCB	
14.14.1	Spring charging motor rating - Watt	
14.14.2	Spring charging motor rated Dc voltage	
14.14.3	Closing coil wattage & rated DC voltage	
14.14.4	Trip coil wattage & rated DC voltage	
14.15	Transformer CT class, ratio & Vk	
15	Load break switch type – SF6 or VCB	
15.1	Rated voltage & frequency	
15.2	Rated current in amp	
15.3	Load break switch total opening time at rated current (in milliseconds)	
15.4	Number of breaks per pole	
15.5	Total length of contact travel in mm	
15.7	No of LBS close & open operation cycles guaranteed at	25% rated current -
		50% rated current -
		75% rated current -
		100% rated current -
15.8	No of LBS making operations guaranteed at rated fault current, Electrical endurance class	
15.9	No of LBS close & open operations guaranteed at zero current, Mechanical endurance class	
15.10	Contact material	

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15.11	Operating mechanism type	
15.12	Operating motor voltage with acceptable % variation	
15.13	Minimum permissible SF6 gas pressure (For SF6 type RMU only)	
15.14	Capacitor type cable voltage indication provided?	Yes / No
15.15	Operation counter provided	Yes/ No
16.1	Disconnect switch continuous rating (Amp)	
16.2	Disconnect switch Short time withstand rating -20kA for 3 sec minimum	Yes / No
16.3	One LBS open operation possible in the event of loss of SF6 gas	Yes/No
16.4	DC charger rating in amps – min 10 Amp Dual	Yes/No
a	MCB rating at 230v AC input of charger	Amp
b	MCB rating at 24v DC output of charger	Amp
c	Charger heat sink temperature rise (max 55 deg C above ambient 40 deg C)	
d	Voltage variation in 24v Dc output for FRTU	(Max +/-1 V)
e	Charger with natural cooling (no cooling fans)	Yes/No
f	Charger tested for input supply voltage regulation test (input variation 150v-250v, output Dc voltage variation +/- 1 volt max)	Yes/No
g	Charger temperature rise test certificate submitted	Yes/No
16.5	DC battery rating in Ah – 20Ah standard	Yes/No
16.6	DC charger changeover – Diode rating 10A min	Yes/No

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17.1	Cable termination – Height of power terminal from gland plate	mm
17.2	Torque required for tightening terminal lug	
18	Mimic diagram, labels & finish as per cl no 12	Yes / No
19	Submission of RMU / component catalogue	Yes/No
20	Unit price for Conversion kit offered separately for converting the RMU from single cable termination design to double cable termination design	Yes / No
21	Earth Switch	
21.1	Minimum number of operations at no load- Mechanical Endurance class	
21.2	Making capacity endurance of earth switch – Electrical endurance class	
22	Self Powered Relay – Make / Model	
22.1	CT Input	
22.2	IDMT Setting Range 4 element – Over Current & Earth fault & steps	Overcurrent- Earth Fault- Instantaneous O/C- Instantaneous E/F-
22.3	Operating Time	Over Current – Curves Instantaneous
22.4	Pick up Current	
22.5	Resetting Current	
22.6	Relay Burden	
22.7	Time Accuracy	
22.8	Tripping Coil O/P – type & duration	

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22.9	Fault Current Display	
22.10	No of Fault Current Latching with time stamping	
22.11	Display Facility / Type	
22.12	Operational Indicators	
22.13	Potential Free Output Contacts	
22.14	Thermal Withstand Capacity of Relay	
23	Fault Passage Indicator	
23.1	CBCT	
a	Type	
b	Mounting Arrangement	
c	CT to indicator connection	
d	ID of sensor	
23.2	Earth Fault Indicator	Make / Model
a	Sensing Current	
b	Sensing Time	
c	Indication	
d	Reset Time	
e	Resetting Facility	
f	Output Contact	
g	Contact Rating	
h	Aux Power Supply	
i	Degree of Protection	
j	Mounting Arrangement	
k	Ambient Temperature	
24	Current Transformer- Make	
24.1	Ratio	
24.2	Burden	
24.3	Accuracy Class	
25	Voltage Presence Indicator- Make / Model	
26	FRTU	



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26.1	Make & Model No	
26.2	No of DI Modules	
26.2.1	Type I – 1CB + 2ISO	
26.2.2	Type 2 – 2CB + 2ISO	
26.3	No of DO Modules	
26.3.1	Type I – 1CB + 2ISO	
26.3.2	Type 2 – 2CB + 2ISO	
26.4	No of AI Modules	
26.4.1	Type 1/ Type 2	
26.5	Make of Protocol converter	
26.6	Modem	
	Type – CDMA / GSM Speed – 800/1900 MHZ Make – Visiontek / REL Utility Engineers Ltd. Chipset – ZTE / Equivalent	Yes / No Yes / No Yes / No Yes / No
26.7	Interposing Relay with freewheeling diode	
	Make	
	Rating	
	Model No	
26.8	Terminal Blocks, Disconnecting type fuses make	

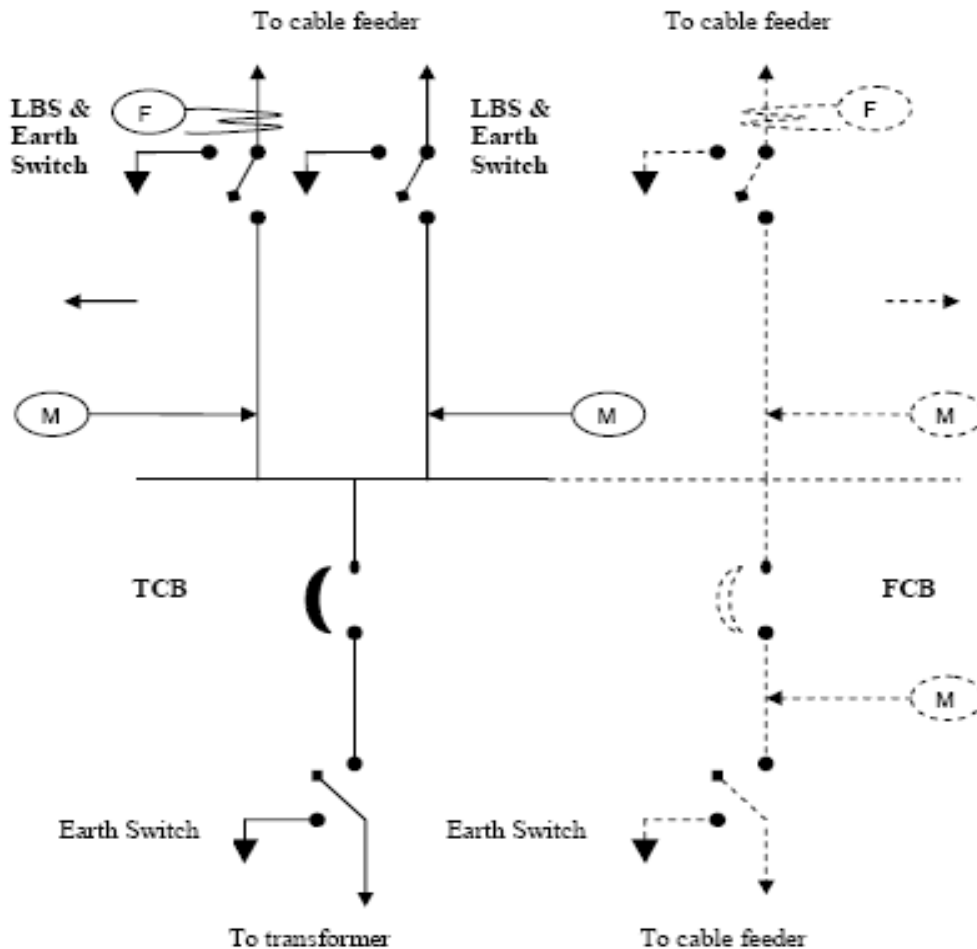
Bidder / Vendor seal / signature

Name of the bidder	
Address of bidder	
Name of contact person	
Telephone no & email id	

Annexure D Recommended spares (Data by supplier)

List of recommended spares as following

Sr No	Description of spare part	Unit	Quantity
1		No	
2		No	
3			
4			
5			
6			

Annexure E Typical scheme of RMU

- 11kv RMU shall have Transformer circuit breakers (TCB) with Load break switches (LBS) or Feeder circuit breakers (FCB) as per configuration defined in Purchase Requisition.
- Motor drive for LBS or FCB is shown by letter 'M'.
- TCB shall be operated manually only with facility for remote shunt trip.
- 11kv RMU shall be suitable for extension on sides for addition of LBS, TCB or FCB.
- Fault passage indicator (FPI) including associated CT & connecting cable is shown by letter 'F'.

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Annexure F Drawing of Bimetallic Ring Type Lug

**LUG FOR
240/300 sqmm CABLE**

**LUG FOR
120/150 sqmm CABLE**

CONDUCTIVE MATERIAL

ALUMINIUM BARREL >=99.95%
COPPER PLAIN FULLY ANNEALED, INCLUDING JOINT
FINAL METAL STATE BARREL SHALL BE FRICTION WELDED TO THE PLAIN THUS ACHIEVING THE
JOINING METHOD THE BEST POSSIBLE TRANSITION BETWEEN THE COPPER PLAIN AND ALUMINIUM
BARREL

FINISH
BRIGHT

- 1) ALL TEST SHALL BE CARRIED OUT AS PER ICE-61298-1
- 2) BARRELS SHALL BE CAPPED AND FILLED WITH GREASE SQ AS TO AVOID OXIDATION OF THE ALUMINIUM
- 3) LUGS SHALL HAVE MARKING AS MAKE & SIZE EMBOSSED ON LUG.

NOTE-ALL DIMENSIONS ARE IN MM.

SIZE	ALUMINIUM					COPPER						
	ΦA	ΦC	B	G	H	L	ΦE	ΦD	I	F	K	J
120/150	13.3	21.5	6.0	NA	8.3	2.3	17.0	35.0	4.2	7.3	3.0	11.0
240/300	21.9	31.0	7.0	8.3	9.0	2.0	17.0	35.0	4.2	7.3	3.7	11.7

DRAWN	MAKER	TITLE
CHECKED	DESIGN	BIMETALLIC
DATE	15.04.13	ALUMINIUM/COPPER LUG

BSES
BSES Yamuna Power Limited

DRWG NO- CSB/REP/TKT/046

REV 0

Annexure G Specification for Modem

Modem	: CDMA 800 MHZ
RUIM Interface	: External RUIM 3.0V
SMS	: Supports Text
Data	: Data circuit Asynchronous and non transparent Up to 153.6 kbps Autobaud rate (2400, 4800, 9600, 19200, 38400, 57600 bps) Fixbaud rate (300, 600, 1200, 9600, 115200 bps)
AT Commands Interface	: RS-232 port for supporting AT commands, PPP Protocol
Communication Interface	: Remote management features like telnet & remotely download facility.
LED Indications	: Power ON, Network
Connectors / Switches	: RS-232 Serial, RUIM Card Holder, DC power connector(Wago),SMA Antenna connector
Power Supply	: 6 – 30V DC (with reverse current protection)
Enclosure	: Aluminium Extrusion
Mounting	: DIN Rail Mounting
Temperature	: Operating (-10 to 65 Degree Centigrade)
Antenna	: 5db Magnetic Whip Antenna with 5-Meter cable
Accessories	: a) 1 Meter cable for connecting to external DC power source (5V – 30V) b) Standard RS232 serial data cable(1 Meter)



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Annexure H Specification For Feeder Remote Terminal Unit For RMU

Specification for FRTU

Specification no – SP-FRTUX-16-R0

Prepared by		Reviewed by		Approved by		Rev	Date
Name	Sign	Name	Sign	Name	Sign		
Ashish		Gaurav		DS		R0	10/07/2014

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Technical Specification For 11 KV Ring Main Unit**Record of Revision**

1.0.0 Feeder Remote Terminal Units

This specification encompasses the requirements for Feeder Remote Terminal Units (FRTU's) for acquisition of real time status and control functions associated with selected 11 kV Ring Main Units (for sites where 11 kV/415 V distribution transformers or capacitors are installed).

1.1.0 FRTU Architecture

The FRTU's shall have an architecture that supports convenient installation, maintenance and expansion features. Their configuration shall include a central processing module, I/O module, and time / date facilities.

1.1.1 Central Processing Module

The central processing module (CPM) shall handle all protocol emulation, perform data acquisition, and execute control requests. It shall accept commands from the master station, perform address recognition, assemble response messages in accordance with the received command messages, and transmit these messages to the SCADA/DMS master station. The CPM shall also provide interfaces for a time standard and a test set.

The CPM shall have user configurable routines / procedures to carry out connection establishment, link failure detections and reconnection after failures for dialup connectivity. The parameters viz: user name & password, baud rate, no. of retries after link failure shall be user configurable.

The CPM shall manage communications between all other functional modules of the FRTU and shall determine the integrity of the FRTU. The processor shall provide diagnostic information in the message structure that the SCADA/DMS shall monitor. A flag shall be set if the FRTU performs a restart for any reason including power failure.

The CPM shall be programmable in a high level language like C. REL shall be able to program the FRTU and manage the FRTU database from the FRTU test set and download parameters and configuration data from the SCADA/DMS system.

1.1.2 I/O Module

Each I/O module shall be capable of interfacing with digital inputs, control output points and combinations of point types. I/O modules shall be replaceable without reprogramming, redefinition of configuration parameters or rewiring.

A control disable switch shall be provided within each I/O module. When the switch is in the control position, the SCADA/DMS or test set shall have control of the digital control outputs. When the switch is in the disable position, the digital control outputs shall be disabled. A status input contact shall be available to monitor the position of this switch. The switch position shall be reported to the SCADA/DMS system. The required number of points shall be the responsibility of the Contractor.

1.1.3 FRTU Time and Date Facility

The FRTU shall have an internal clock for data collection coordination and time tagging. This shall include support for feeder fault detection. The FRTU internal clock time shall be maintained within hundred (100) millisecond of the same time reference used by the respective SCADA/DMS. The FRTU synchronization shall be accomplished by the communication protocol.

1.2.0 Functional Requirements

The FRTU's shall include all hardware, software, and firmware necessary to meet the Input/Output(I/O) point requirements including input and output cards and output relays.

1.2.1 Input / Output Point Types

The FRTU's shall include facilities for handling status input and control output points. Requirements for each type of I/O point are described in the following sub-sections.

1.2.2 Status Inputs

The Contractor shall supply the necessary sensing voltage, current limiting, input isolation, and bounce filtering for all status inputs. The debounce time period for each status input shall be individually configurable. The input circuit of the status input modules shall be optically isolated from the external signal. In addition, each input circuit shall include an LED indicator next to the circuit terminations to show the status of the associated input contact.

Technical Specification For 11 KV Ring Main Unit

The state of each status point shall be reported to the SCADA/DMS on a contention basis. That is, a status point shall not be reported unless the point state has changed from the last scan. The FRTU shall also report the state of selected status points upon receipt of a demand scan request from the SCADA/DMS.

The FRTU's shall include the following types of status input points:

- 1) Single Contact, Two-State Status: For single contact, two-state status points, a single contact shall represent both states of the monitored device. One position of the contact shall indicate an alarm or failure condition, while the opposite state of the contact shall indicate the normal condition.
- 2) Double Contact, Two-State Status: For double contact, two-state status input points; separate contacts shall be provided for representing each state of the monitored device. One contact shall indicate an OPEN condition of the monitored device. The other shall indicate a CLOSED condition. The contacts shall be treated as a complimentary pair. Conflicting contact positions (e.g., either indicates CLOSED or OPEN) shall be labeled INVALID.

1.2.3 Control Outputs

The FRTU's shall include on/off device control points to support control actions initiated from the SCADA/DMS master stations. The FRTU's shall perform on/off control actions using complimentary pairs of contact outputs. One contact output shall perform the ON control action, and a second output contact shall perform the OFF control action. The FRTU's shall be designed such that only one output in a complimentary pair can be activated at a time. For single point indications FRTU shall also support single command output.

To support the above capabilities, the FRTU's shall include momentary control outputs as required by the feeder device being controlled. Each momentary control output shall provide a contact closure (pulse) that shall have programmable pulse duration. The pulse duration shall be adjustable on an individual point basis from 0.1 to 60 seconds in increments of 0.01 seconds.

FRTU control outputs shall be equipped with high power relays with free-wheeling diodes that are integral to the FRTU so that external auxiliary control relays are not required. The associated high and low control power shall be obtained from the dc power supply in the switch. The voltage rating of the control output contacts shall be 24 V DC. All control outputs shall be capable of driving a load of eight (8) amps at the primary control voltage with provision for an additional NO contact for DI status of Command Execute Acknowledgement

Technical Specification For 11 KV Ring Main Unit

wired up to terminal blocks. External auxiliary control relays are not preferred, but may be applied if integral relays do not satisfy the above ratings. These relays shall be supplied by the Contractor.

All control points shall follow a Select - Check back – Before - Operate (SCBO) procedure for control operation. The SCBO procedure shall be equivalent to the following:

1. The point selection command is received from the SCADA/DMS master station.
2. The FRTU checks that no other point is selected.
3. The FRTU selects the addressed point and transmits a selection confirmation to the SCADA/DMS.
4. The FRTU starts the command receipt timer and checks that only the required point remains selected and no other points become selected.
5. The operate command is received from the SCADA/DMS.
6. The FRTU verifies the operate command and energizes the selected control point relay for a predetermined time.

Point selection shall be canceled automatically following the completion of the control action, and re-selection of the point shall be required for subsequent control actions.

1.2.4 Input / Output Point Counts

The FRTU's shall be equipped to handle the I/O point requirements as per each FRTU types described in Sr.No. 1.9 of index.

All I/O channels provided (used as well as additional / spares) irrespective of immediate application shall be wired from FRTU I/O card along with interposing relays for DOs to the associated terminal strips in the cabinet with proper segregation and identification of Digital inputs and Digital outputs.

It shall be possible to expand the FRTU capacity by an additional twenty percent (20%) of the initially delivered (including spares) I/O points by providing space for adding cards and terminations at future date.

1.2.5 Analog Inputs

FRTU shall be able to capture Analog values from current & voltage transducers and communicate the Analog Measured Information (AMI) to control centre through communication media in the intervals of 10 minutes.

Unipolar and bipolar analog measurements shall be collected by the AI cards. Input to the cards shall be programmable for various mA and V input ranges.

1.2.6 Programmable Logic Control (PLC)

The FRTU shall be provided with a PLC Module. The PLC module shall have access to the controlling process via its process interface imaged in the FRTU process DB actualized by the internal communication. That allows to use nearly all process information from direct connected process signals as well as from process data points received via serial communication line. Control information for actuators to the process will be handled in the same way from the PLC to the physical output signals etc. The overall transaction time for a PLC task is therefore to be given by the PLC cycle time plus the update time between the process actuators and sensors and the PLC's FRTU process DB.

Programming of the PLC program is to be done by a specific PLC programming tool. The integration of the PLC task and the link between the IO interfaces of the PLC to the real process signals is to be supported by FRTU Configuration Utility together with the PLC programming tool.

More than one PLC task shall be active. The FRTU shall allow to have more than one PLC module in the FRTU running.

1.2.7 FRTU Data Communications

The communication between the FRTU's and BCC/MCC shall be through RCIL's communication CDMA and GSM cellular network using Wireless VPN. Alternatively FRTU's shall also communicate with BCC/MCC wherever RCIL's communication fiber network is available. The FRTU's shall support communications using the IEC 608705-104 and Modbus set of protocols. Contractor shall provide Interoperability document specifying all the sets of parameters / functions implemented by its device. The message security defined in the protocol should be fully implemented, and if needed later, a convenient means of changing the communication protocol in the field should be provided.

The FRTU's shall have three (3) number serial ports, one port used for communication with slave device and one port for communication with BCC and MCC, and one RS485 port for Modbus communication with IEDs. The FRTU shall also have one Ethernet port for diagnostic and communication with MCC / BCC in addition to the serial ports. Each of the serial ports shall be individually selectable in RS-232 or RS485 mode and for operation from 9,600 to 38,400 bps. FRTU's shall support communication with redundant masters installed at both BCC and MCC ie. 4 masters.

1.3 FRTU Enclosures

Wall mounted / Free standing enclosures conforming to IEC 529, with an Index of Protection (IP) of 52 or better, shall be provided for housing the FRTU hardware. The enclosure shall be fabricated using 2 mm thick M.S.Steel and powder coated using seven tank process. The shade shall be RAL – 7035 paint shade.

The dimensions shall be suitable to accommodate FRTU CPM and I/O modules, power supply accessories, terminal blocks, communication modem with power adaptor, Ethernet switch for FO connection and ease of intra-panel wiring/termination and maintenance thereafter. Suitably sized PVC perforated channels to be used for routing intra-panel wiring. The front access door shall be hinged on cabinet with a common lock & key arrangement. Removable type gland plates shall be provided at bottom of enclosure with 8-12 nos. knock out holes suitable for CBW01 gland for control cable entry. Provision of entry shall be kept for extending CDMA and GSM modem antenna outside the enclosure. Alternately REL shall also have an option to mount communication switch connecting to optical fiber network. Suitable ventilation, if necessary forced ventilation, and louver with dust filters shall be provided to maintain operating temperature under permissible limits of electronic components.

Contractor shall indicate gross weight of FRTU in GA drawing.

Alternately Fiber Reinforced Plastic (FRP) enclosure with suitable thickness and dimension may also be quoted.

1.4 FRTU Power Supply

Power supply for FRTU shall be on 24V DC system which would be made wired from substation switchgear Battery Charger system to FRTU cabinet.

The main DC circuits shall be protected by incoming circuit breakers. Each circuit shall be tapped through single pole MCBs so as to provide an individual DC feed to each of the I/O modules, modems and protocol converters. Contractor shall provide maximum power consumption data of each of the type of FRTU.

1.5 FRTU Test Systems

The Contractor shall supply FRTU test systems for performing the functions listed below. Portable computers shall be used for this purpose. The FRTU test system shall comply with the following requirements:

- 1 Each test system shall support all maintenance aspects: verifying proper operation, troubleshooting, reconfiguring, and setting operational parameters for the FRTU's.
- 2 The test systems shall support all functional capabilities of the FRTU's, including functions which are not explicitly required in these Technical Specifications and functions which may not be included in the delivered FRTU's.
- 3 It shall be possible to use a test system locally at the site of the FRTU under test, and also remotely wherever access can be obtained to the communication channel of the FRTU.
- 4 All the required data rates shall be easily selectable.
- 5 It shall be possible to use the test systems to monitor communications between the respective SCADA/DMS and the FRTU's by selecting specific data streams, or portions of such data streams, both to and from FRTU. The data shall be displayed in a form that is easy for the user to interpret.
- 6 It shall be possible to connect the test system directly to the FRTU and to use the test system to perform all necessary FRTU management and expansion functions, monitor all stored data, monitor FRTU inputs, exercise FRTU outputs, and diagnose and troubleshoot the FRTU. It shall also be possible to use the test system as a local user interface at the FRTU location.
- 7 No programming skills shall be required to use the field test system. Interactive procedures relying mostly on pull down menus shall be used. The user shall not be required to type in commands, and shall be prompted when data entry is needed.
- 8 The test system shall be ruggedly constructed and suitable for field work and transportation in trucks. All cables, connectors, equipment, and documentation associated with their operation shall be included and stored either within the test system package or in suitable separate containers.

The test systems shall operate on internal battery and 220 V. AC, 50 Hz

1.6 Software / Firmware

The term software is used in this Technical Specification to mean software or software implemented through firmware. All software shall be implemented according to the Contractor's latest established design and coding standards. Complete and comprehensive documentation shall be provided for all software. Contractor may consider providing windows based software as it is preferred for its user friendliness.

1.6.1 General

A real-time non-proprietary operating system that is capable of managing the FRTU applications shall be provided.

This software shall provide automatic restart of the FRTU upon power restoration, memory parity errors, hardware failures, and manual request. The software shall initialize the FRTU and begin execution of the FRTU functions without intervention by the SCADA/DMS master station. All restarts shall be reported to the SCADA/DMS.

The software shall be prepared in a high level language and shall be documented in detail. No separate licensing charges or agreements shall attach to the FRTU software or its underlying operating system.

In order to easily support the system under continuously changing site conditions all protocol, configuration, and application data must be contained in easily programmable non-volatile memory such as Flash EPROM.

The FRTU design shall be independent of any communication protocol that would impose restrictions on the flexibility or functionality of the FRTU. Protocol changes shall be accomplished by software/firmware changes only.

1.6.2 Diagnostic Software

Software shall be provided to continuously monitor operation of the FRTU and report FRTU hardware errors to the SCADA/DMS. The software shall check for memory, processor, and input/output errors and failures. It is desirable that internal diagnostics be sufficiently detailed to detect malfunctions to the level of the smallest replaceable component.

The FRTU shall facilitate isolation and correction of all failures and shall include features that promote rapid fault isolation and component replacement. All functional module nodes shall be designed with integrated on-line diagnostic functions. The results of these diagnostics

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shall be reported to the central processing module. The central module shall store this information and report it to the SCADA/DMS as permitted by the protocol. FRTU shall be able to access from remote (BCC/MCC) for down loading configuration.

1.7 FRTU Testing

1.7.1 Type Tests

The FRTU's shall have passed type tests carried out by government accredited labs and in accordance with IEC 255-4, 255-5, 255-6, 801-2, and 801-3 to demonstrate that the FRTU's comply with the ratings stated in these standards. As a minimum, certificates for the following type tests shall be furnished:

1. Dielectric test
2. Impulse voltage withstand test
3. High frequency disturbance test
4. Thermal requirement test
5. Mechanical requirement test
6. Limiting dynamic value test
7. Contact performance test
8. Electromagnetic radiation susceptibility test
9. Electrostatic discharge susceptibility test

1.7.2 Routine Tests

The FRTU's shall pass the Manufacturer's standard routine tests in accordance with the referenced standards.

In addition to the tests described in the IEC standards, the routine tests and test report of the FRTU's shall include the following:

1. Visual tests to confirm that construction and sizing requirements have been met.
2. Rigorous testing of each input and output function of the FRTU's. This shall include the fault detection and the disturbance data storage functions as well as the operation and performance of the FRTU time and date facilities.
3. Verification of the use of the FRTU test equipment for maintenance and testing.
4. Verification of the ability to download parameters and configuration data from the SCADA/DMS master station.

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5. Verification that FRTU software and firmware support FRTU sizing and expansion requirements.
6. Verification of successful communications (i.e. protocols) at all the required data rates.
7. Testing for secure operation, including verification that: a) Communication errors are detected. b) SCBO procedures are properly performed for control outputs. c) No erroneous control operation occurs and no incorrect data is generated when power is turned on or off or when operating on low battery voltage.

1.8 FRTU Spares:

Bidder shall indicate recommended spares for 5 years trouble free operations.

1.9 FRTU Types:

FRTU's are categorized as type 1 to 7 in this specification, according to their DI/ DO/AI Channel requirements as indicated in the annexure – 1

Technical Specification For 11 KV Ring Main Unit**Annexure – 1: Guaranteed Technical Particulars**

FRTU Types	Digital Input Channels	Digital Output Channels	Analogue Channels
1	24	8	6
2	32	16	6
3	48	24	6
4	64	32	6
5	80	40	6
6	96	48	6
7	112	32	6

(Vendors shall furnish the General Technical Particulars along with their offer)

Sr. No.	Description	Buyer's Requirement	Vendors Data
1	Vendors Name		
2	Guarantee period	5 yrs	
3	Make of FRTU base module		
4	No. of DI modules		
	Type 1	1 x 24	
	Type 2	2 x 16	
5	No. of DO modules		
	Type 1	1 x 8	
	Type 2	2 x 8	
6	No. of AI modules		
	Type 1 to 2	1x 6	
7	Dimensions & Weight of FRTU		
	Type 1	Vendor shall Provide	
	Type 2		
8	Make of protocol converter	Vendor shall provide	
9	Interposing relay with freewheeling diode		
	Make	ABB / Tyco	
	Capacity	>8 A	
	Model	CR-P with 2C/O contacts / Eqv	
10	AC & DC MCB	Merlin & Gerin / Protec / Indokopp	
11	Terminal Blocks	Elmex / Connectwell / Phoenix	

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12	Disconnecting type fuses	Elmex / Connectwell / Phoenix	
13	Enclosure		
	Sheet steel thickness	2 mm	
	Painting process	7 tank	
	Construction of steel according to IEC 529 , index of protection	IP52	
	Shade	RAL-7035	
	Louvers with filters	2 Nos	

Annexure – II: IO List**Digital Inputs**

Isolator	Isolator ON
	Isolator OFF
	Earth Status
	Fault Indicator Status
	Local/Remote
	CB ON
Circuit Breaker	CB OFF
	Earth Status
	Auto Trip
	SF6 Low
Common Signals	Battery Charger Fail
	Command Acknowledgement
	Door Open/Close
Bus Coupler	Bus Coupler ON
	Bus Coupler OFF
	Earth Status

Digital Outputs

Isolator ON
Isolator OFF
FPI Reset
Bus Coupler ON
Bus Coupler OFF

Technical Specification For 11 KV Ring Main Unit**Annexure 'I' 11 Kv Metering Cubicle****1.0 General Requirement**

1	Panel Type	Outdoor, Metal enclosed, framed, Compartmentalized panel construction
2	Service Location	Outdoor
3	Mounting	Free Standing
4	Overall Enclosure Protection	IP 54 Minimum (Complete unit i.e. RMU coupled to Metering unit shall be IP54)
5	Panel Fabrication	The metering cubicle shall be fabricated with 2.0mm CRC sheet. Load bearing members and high voltage compartments shall be 3.0 mm. The panel shall be vermin proof and totally enclosed. CT/PT compartment shall be fabricated after bending the M.S. Sheets on three sides and fourth side shall be welded to make the complete assembly tamper proof. Pressure release device/ explosion vent should be provided on the CT PT compartment at the rear side.
6	Compartmentalized panel construction	The panel shall have four separate compartments. All the compartments shall be completely segregated from each other. 1. Meter Compartment 2. CT- PT compartment 3. Incoming 4. Outgoing
7	Meter Compartment	The Upper compartment i.e. the "meter compartment" shall be suitable for housing 3 phase 4 wire Energy Meter (energy meter not in bidder's scope of supply) and associated wiring.
7.1	Double door	1. Double door arrangement as front and back door to meet IP54 requirement. Both the doors should have 02 no's concealed type (Anti Theft) hinges. 2. Front door should have at least 01 no's padlocking and 02 no's sealing arrangements.
7.2	Meter reading Window	Provided on front and back door to enable the meter reader to perform inspection of meter compartment and note down the reading of meter.

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		<p>1. Front Door: window of size 350 (W) X 300 (H) mm approximately with colour-less transparent acrylic sheet and wire mesh welded from inside.</p> <p>2. Back door: window of size 350 (W) X 300 (H) mm approximately with colour-less transparent acrylic sheet.</p>																												
7.3	Data Downloading slot	<p>Slot to facilitate installation of data downloading cable with DB9 serial connector.</p> <p>1. Front door: Slot of size 25mm X10 mm (+/- 2 mm) should be provided on front door with sealable cover.</p> <p>2. Back door: Slot of size 30 mm X 50 mm shall be provided to facilitate installation of data downloading cable.</p>																												
7.4	Meter hanging arrangement	<p>The meter compartment shall contain hanger arrangement of slotted angle for mounting meter so that meter can be adjusted vertically and horizontally. Two horizontal and two vertical slotted channels should be provided for the same.</p>																												
8	CT PT Compartment	<p>The CT/PT compartment shall be completed welded type and house the 11 KV dry type current transformers (3 no's) and 3 phase dry type potential transformer.</p>																												
8.1	Current Transformers	<p>The metering current transformers shall be suitable for 11 KV; 50Hz effectively earthed neutral system. The CT shall be single core, epoxy resin cast, copper wound primary type with rated burden 5VA and accuracy class 0.5s or better conforming to IS:2705 (Part-I&II). Instrument security factor shall be less than or equal to 10. CTs should have solid copper bus bar type primary terminals for connection with main busbar/bushing terminal. Secondary terminals of CTs should be made of copper or brass.</p>																												
8.2	STC of CT	<table border="1"> <thead> <tr> <th>SL</th> <th>CT ratio</th> <th>Short time rating</th> <th>Size of main Bus bar</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>15 / 5 A</td> <td>6 KA for 1 sec.</td> <td>30 x 4 sqmm</td> </tr> <tr> <td>2</td> <td>30 / 5 A</td> <td>6 KA for 1 sec.</td> <td>30 x 4 sqmm</td> </tr> <tr> <td>3</td> <td>60 / 5 A</td> <td>18KA for 1 seconds</td> <td>30 x 4 sqmm</td> </tr> <tr> <td>4</td> <td>100 / 5A</td> <td>18KA for 1 seconds</td> <td>30 x 4 sqmm</td> </tr> <tr> <td>5</td> <td>150 / 5 A</td> <td>18KA for 1 seconds</td> <td>30 x 4 sqmm</td> </tr> <tr> <td>6</td> <td>300 / 5 A</td> <td>18KA for 1 seconds</td> <td>40 x 6 sqmm</td> </tr> </tbody> </table>	SL	CT ratio	Short time rating	Size of main Bus bar	1	15 / 5 A	6 KA for 1 sec.	30 x 4 sqmm	2	30 / 5 A	6 KA for 1 sec.	30 x 4 sqmm	3	60 / 5 A	18KA for 1 seconds	30 x 4 sqmm	4	100 / 5A	18KA for 1 seconds	30 x 4 sqmm	5	150 / 5 A	18KA for 1 seconds	30 x 4 sqmm	6	300 / 5 A	18KA for 1 seconds	40 x 6 sqmm
		SL	CT ratio	Short time rating	Size of main Bus bar																									
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8.3	Potential Transformer	<p>The Potential Transformer shall be dry type Epoxy resin cast, Copper wound suitable for 3 phase 11KV, 50Hz effectively</p>																												

Technical Specification For 11 KV Ring Main Unit

		earthed neutral system. The PT shall be connected in star to have ratio $11KV/\sqrt{3}$ / $110/\sqrt{3}$ V with rated burden of 10VA per phase and accuracy class 0.5 or better conforming to IS:3156 (Part I & II). Primary terminal of PT should be of copper. Secondary terminals of PT should be made of copper or brass.
8.4	Pressure release device	Pressure release device/ explosion vent should be provided on the CT PT compartment at the rear side.
9	Incoming	<ol style="list-style-type: none"> 1. Coupled to the breaker module of RMU. 2. Coupling arrangement should meet the IP54 requirement.
10	Outgoing	Cable compartment with cover/ door.
10.1	Cable type & size	3C x 300 sq mm Aluminum conductor XLPE with armor & PVC outer sheath
10.1	Cable Entry	<ol style="list-style-type: none"> 1. Bottom 2. Gland plate - 3mm metallic, removable & split type in two parts, with 1no. 90 mm diameter knocks out punch/hole in the centre. Approval should be taken for the same during drawing submission
10.2	Cable support	'HDPE' cleat(s) shall be provided.
10.3	Termination Type	Suitable for heat shrinkable type
10.4	Terminals for 11kV cable termination	<ol style="list-style-type: none"> 1. Suitable for Ring Type Bimetallic lug. 2. Material of Nut, bolts and spring washer- Brass 3. Size of Nut bolt- M16
10.5	Termination height	From gland plate 900 mm minimum
10.6	Right angled boots	Single piece cold shrink type (make – 3M or Raychem)
11	Panel Wiring	<ol style="list-style-type: none"> 1. Secondary wiring of CTs and PTs shall be done with 2.5 sq. mm PVC insulated cables with stranded copper conductor. 2. CT and PT wiring should run in independent rigid steel conduit pipes of appropriate size from CT/PT compartment to meter compartment. 3. Conduit pipes shall be clamped with the inner wall of the panel and shall be so laid that none of the wires can be tampered from outside. 4. Current transformer and Potential transformer secondary

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		wiring shall be colour coded as per IS and shall be suitably ferruled for identification. 5. No link or test terminals shall be provided in wire from CT/PT to meter terminals.
12	Earthing	<ol style="list-style-type: none">1. The assembly comprising of the chassis, framework and the fixed parts of the metal casing shall be provided with two separate earthing terminals of M10 or above.2. These terminals shall be provided over and above all other means provided for securing and earthing metallic enclosures (armour or other metallic coverage) or current-carrying cables.3. The earthing terminals shall be readily accessible and so placed that the earth connection of the CT/ PT chamber is maintained when the cover or any other movable part is removed.4. The earthing terminals shall be protected against corrosion and shall be metallically clean.5. Earth continuity shall be provided to all Gasketed joints by copper braid suitable for rated fault current.6. Under no circumstances shall a movable metal part of the enclosure be insulated from the part carrying the earthing terminals when the movable part is in place.7. The earthing terminals shall be identified by means of the symbol marked in a legible and indelible manner on or adjacent to the terminals.
13	Bushing	<p>Bushing should be made of homogeneous epoxy / polymeric material free from laminations, cavities and other flaws or imperfections that might affect the mechanical or dielectric quality. Bushings shall be designed to have ample insulation level, mechanical strength and rigidity for the conditions under which they will be used. The hollow porcelain bushings shall conform to IS-5621.</p> <p>Bushing clamping accessories, bolts, studs etc shall be hot dip galvanized. All the nuts and washer shall be SS-304. All iron parts shall be hot tin galvanized and all points shall be airtight. All current carrying contact surfaces shall be silver plated. The creepage distance of the bushing shall not be less than 31 mm/KV. Bushing shall be tested in accordance with IS-2099. Routine as well as type tests reports in conformity with IS-2099 shall be furnished to the purchaser.</p>
14	Connections	<ol style="list-style-type: none">1. No joint in the primary winding of CT shall be acceptable.

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		<p>2. Connection between CT terminal and bushing terminals shall be done with solid copper busbar of adequate size.</p> <p>3. Flexible copper strip / rope are not acceptable for primary connection.</p> <p>4. PT should be connected to primary busbar through bus bar of appropriate size (connections using flexible conductor are not acceptable).</p> <p>5. All bus bars/ connections in the CT/PT compartment shall be encapsulated in epoxy.</p>
15	Lifting Lug	<p>1. 04 No's lifting lugs shall be provided at the top of the metering cubicle for transportation.</p> <p>2. All nuts, bolts, flat and spring washers shall be SS only.</p>
16	Height of the Base frame	The total height including base channel shall not be more than 2000 mm. Width and depth should be minimum possible and may be increased suitably to accommodate CT's/PT's.
17	Provision for Sealing	<p>Welded Stud with nut must be provided for the purpose of sealing on the following compartments/ locations.</p> <p>1. Meter compartment</p> <p>2. Coupling arrangement of RMU and metering cubicle.</p> <p>3. Outgoing cable compartment</p>

2.0 Labels & painting

1	Name plate	The metering cubicles shall be provided with a non detachable type nameplate with legible and indelible marking fixed on the enclosure sheet with welded arrangement so that in case name plate is removed no passage holes are left. (separate name plate should be provided for RMU & metering cubicle)
2.1	Location	Name plate having complete data shall be provided outside as well as inside the metering cubicle at a suitable place where it can be easily read.
2.2	Material	Anodized aluminum 16SWG / SS
2.3	Background	SATIN SILVER
2.4	Letters, diagram & border	Black
2.5	Process	Etching

Technical Specification For 11 KV Ring Main Unit

2.6	Name plate details	<ol style="list-style-type: none">1. BRPL/BYPL Property2. Supplier's name3. P.O. No. & Year of manufacturing4. Sr. No. of metering cubicle5. Particulars of CT's such as ratio, VA burden, accuracy class, SC rating, BIL.6. Particulars of PT's such as ratio, accuracy class, VA burden, BIL.7. Standard connection diagram8. Consumer account no9. Sanctioned load.10. Date of release of connection.
2.7	Labels for CT Ratio	On CT PT compartment by anodized aluminum with white character on black background OR 3 ply lamicaid
2.8	Danger plates	<ol style="list-style-type: none">1. On CT PT compartment and each cable compartment2. Anodized aluminum 16 SWG with white letters on red background
2.9	BSES Insignia	<ol style="list-style-type: none">a) 01 no'sb) Shall be etched on anodized aluminium 16SWG / SS plate.c) Details shall be finalized during drawing approval.
2.10	Enclosure painting surface preparation	Shot blasting or 7 tank chemical process
2.11	Enclosure painting internal/ external finish Powder coated epoxy polyester base	Hot dip galvanizing – 80 micron thick grade A, shade - RAL 7032, uniform thickness 60 micron minimum.

Technical Specification For 11 KV Ring Main Unit**3.0 Technical requirement of CT and PT**

SL	Description	Requirement for CT	Requirement for PT
1	Nominal System Voltage (KV rms)	11KV	11KV
2	Highest System Voltage (KV rms)	12KV	12KV
3	Type	Single phase Indoor CT's	Three phase Star/Star PT.
4	Accuracy Class	0.5s	0.5
5	Rated frequency	50Hz	50Hz
6	Rated Secondary Current Amp.	5 Amp	N / A
7	Rated continuous thermal current	1.2 times of rated primary current,	NA
8	Max Ratio error	As per IS 2705	As per IS 3156
9	Max Phase angle error	As per IS 2705	As per IS 3156
10	Rated burden	5VA at 0.8 pf (Lag)	10VA/ phase at 0.8 pf (Lag)
11	Rated voltage factor	N / A	1.2 times continuous and 1.5 times for 30 seconds
12	Short time current rating		
12.1	Thermal rating	As provided in section 3.2	N / A
12.2	Dynamic rating	2.55 times of short time thermal current rating	N / A
13	One minute high voltage power frequency withstand voltage		
13.1	On primary winding KV rms On secondary winding KV rms	28KV (rms) for 1 minute for 11 KV class 3KV (rms) for 1 minute	28KV (rms) for 1 minute for 11 KV class 3KV (rms) for 1 minute
13.2	1.2 / 50 impulse withstand voltage	75 KV (peak) for 11 KV class	75 KV (peak) for 11 KV class
14	Winding materials	Copper	Copper
15	Insulation security factor	< 10	N / A

Technical Specification For 11 KV Ring Main Unit**4.0 Inspection & testing**

1	Type test	<ol style="list-style-type: none"> 1. Metering cubicle shall be type tested as per IS 3427 2. CT and PTs shall be type tested as per IS2705 and IS3156 respectively. 3. Bushings shall be type tested in accordance with IS2099. 4. Type tests should not pertain to period earlier than five Years.
2	Routine test	<ol style="list-style-type: none"> 1. Metering cubicle shall be tested as per IS 3427 2. CT and PTs will be tested in accordance with IS2705 and IS3156 respectively. 3. Temperature rise test will have to be carried out during Inspection. 4. During inspection, all routine and acceptance tests shall be carried out in presence of purchaser's representative.
3	Physical Inspection	<ol style="list-style-type: none"> 1. Checks of all mounting plates / fasteners. 2. Checking of components as per drawing. 3. Electrical circuit's fasteners tightness / surface area contacts. 4. Labels / identification / nameplates. 5. All doors checks – safety and accessibility. 6. Panel surface finish / smoothness.
4	Right to waive off tests	Reserved by Purchaser

5.0 Guaranteed Technical Particulars (Data by Supplier)

SL	Description	Requirement	Data By Supplier
1	Name of Manufacturer		
2	Type and Designation	Outdoor type with resin cast CT and PT	
3	Normal system voltage	11KV	
4	Highest system voltage	12KV	
5	Frequency	50Hz	

Technical Specification For 11 KV Ring Main Unit

SL	Description	Requirement	Data By Supplier
6	Insulation Class		
7	Impulse Withstand Voltage (On assembled CT-PT set)	75 KV peak	
7.1	One minute power frequency dry withstand voltage (On assembled CT-PT set Primary)	28KV rms	
7.2	Secondary	3KV rms	
8	Current Transformers:	(3 nos. total, 01 no. per phase)	
8.1	Type	Resin cast wound type	
8.2	Transformation ratio (CT Ratio)	As per requirement	
8.3	Rated Output (VA Burden)	5VA	
8.4	Class of accuracy	0.5s	
8.5	Rated continuous thermal current	1.2 times of rated primary current	
8.6	Short time thermal current rating for one second	As per CT ratio and specification	
8.7	Rated Dynamic current	2.55 times of short time thermal current rating	
8.8	Security factor	Less than 10	
8.9	Insulation level	28KV for 1 min	
8.10	No. of cores	One	
8.11	Max Ratio error	As per IS:2705/1992	
8.12	Max phase angle error	As per IS:2705/1992	
8.13	Max. temp rise over max ambient temp of 50 deg C at rated continuous thermal current at rated frequency & withstand burden	As per IS:2705/1992	
8.14	Make and Grade of epoxy resin		

Technical Specification For 11 KV Ring Main Unit

SL	Description	Requirement	Data By Supplier
9	Potential Transformers	(3 Phase 4 wire unit)	
9.1	Burden in VA/Phase	10 VA/phase	
9.2	Transformation ratio	11KV/110V (L-L)	
9.3	Class of accuracy	0.5	
9.4	Winding connection	Star/Star	
9.5	Insulation level	28KV for 1 min	
9.6	Rated voltage factor and time	1.2 continuous and 1.5 for 30 seconds	
9.7	Temp rise over max ambient temp	Within limits of IS-3156/1992	
9.8	Max phase angle error	Within limits of IS-3156/1992	
9.9	Max Ratio error	Within limits of IS-3156/1992	
9.10	Make and Grade of epoxy resin		
10	Size of main busbar		
10.1	For CT ratio less than and equal to 150/5	30 x 4mm (minimum)	
10.2	For CT ratio of 300/5	40 x 6mm (minimum)	
11	Core material	CRGO (Virgin grade)	
12	Minimum creepage for HT Bushing	300 mm	
13	Clearances a. Phase to phase clearance b. Phase to earth clearance		
14	No. of Paint coats a. Primer b. Enameled RAL 7032	2 coats 2 coats	
15	Weight of complete unit		
16	Gauge of a. Meter box b. HT compartments	2mm (min) 3 mm (min)	

Technical Specification For 11 KV Ring Main Unit

SL	Description	Requirement	Data By Supplier
17	Dimensions of complete Metering cubicle a. Height (mm) b. Breadth (mm) c. Length (mm)		
18	Meter compartment		
18.1	Dimensions of meter compartment with double door (minimum sheet thickness 2mm) a. Height (mm) b. Breadth (mm) c. Length (mm)		
18.2	Protection class	IP 5X	
18.3	Provision of Acrylic window		
18.4	Provision of slotted channel (40*12mm) suitable for 6mm bolts (4 Nos)	Required	
18.5	Provision of Pad locking & sealing arrangement of door		
18.6	Provision of mounting metering reading port on door.		
19	Metering cubicle mounting	Floor mounting	