NIT for Supply of 11KV, 630Amps, 50Hz, 3Way (2LBS+1CB) Non-Extensible Two (2) Motor operated LBS with Manual operated Earth Switch, Outdoor, SF6, Ring Main Unit.

INDEX

EXECUTIVE ENGINEER
DIV-II (S&W), MARGAO-GOA

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Government of Goa

GOVERNMENT OF GOA
OFFICE OF THE EXECUTIVE ENGINEER,
ELECTRICITY DEPARTMENT, DIVISION –II (S&W),
AQUEM, MARGAO – GOA 403-601
TENDER NOTICE: 23 -/ET/25-26
(E-TENDERING MODE ONLY)

The Executive Engineer,Div-II, (S&W), Aquem, Margao on behalf of the Governor of Goa invites online tenders for the below mentioned supply

Sr. No	Tender No.	Name of Work	Estimated cost exclusive of GST in (Rs.)	Earnest Money Deposit (Rs.)	Cost of Tender Document (Rs.)	e-Tender Processing Fee (Rs.)
1.	TEN 23/25-26	Supply of 11KV, 630Amps, 50Hz, 3Way (2LBS+1CB) Non-Extensible Two (2) Motor operated LBS with Manual operated Earth Switch, Outdoor, SF6, Ring Main Unit.	93112500/-	18,62,250/-	1500/-	6000/-
Time/date of bid submission/opening of tenders			i)Last date and time of bid submission is on or before 05 /03 /2026 up to 17:30 hrs. ii) The Technical bid opening is on 06/03 /2026 at 11:00 hrs. in the office of the Executive Engineer, Div-II(S&W), Aquem -Margao.			

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The online application should accompany the following documents and Mode of Payment: e-Payment Only (Scan and Upload on the e-Tender website at time of requesting):

1. Attested copy of PAN CARD.
2. Attested copy of GSTIN.
3. Mode of Payment towards Cost of the Tender Document (Non-refundable), EMD & Tender Processing Fee (Non-refundable), To be paid online through e-payment mode via NEFT/RTGS/net banking with pre-printed challans available on e-tendering website and directly credit the amount to ITG account as generated by challans for NEFT/RTGS.
   Note:
   1. Payment deposited through NEFT/RTGS should be made at least two bank working days in advance for successful reconciliation before any due date.
   2. NEFT/RTGS receipt copy scan upload along-with tender documents on the e-tender web site on or before tender submission date and time.

* Attested copies of registration certificates MSME unit of Goa for tendered item shall be furnished to avail tender documents at concessional rate of Rs.500/- per set (non-refundable) and Rs. 5000/- towards EMD.Copy of the paid DDs towards tender fee and EMD shall be uploaded along with valid MSME certificate, if not submitted then bid will be rejected. The eligible Goa M.S.M.E. Unit will also be exempted from payment of Performance Security Deposit and Security Deposit as per the notification No.3/40/2003-IND (Pt. II) (Vol. III)/132 dt.27/06/2022, published on Govt. Gazette under series I No. 13 dt.30th June 2022.

INSTRUCTIONS TO CONTRACTORS

1. The intending bidder must read the terms and conditions of CPWD-6 carefully. He should only submit his bid if he considers himself eligible and he is in possession of all the documents required.
2. Information and Instructions for bidders posted on website shall form part of bid document.
3. The bid document consisting of plans, specifications, the schedule of quantity of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website www.eprocurement.goa.gov.in
4. Those bidders not registered on the website mentioned above, are required to get registered beforehand. If needed they can be imparted training on online bidding process as per details available on the website. For any of the assistance regarding participation may contact e-tender support staff or email: www.eprocurement.goa.gov.in
5. The intending bidder must have / obtain a valid Class-III digital signature to submit the bid.
6. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.
7. Bidder must ensure to quote Percentage rate (either Excess or Less) for the total consolidated amount and enter name of the contractor also.
8. In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO). Also name of the bidder should be entered in respective cell.
9. The tenderer shall be responsible for the correctness and genuine of the documents uploaded during tender submission. Any discrepancies in the matter will be liable for rejection and suitable action.
10. Incomplete applications shall be summarily rejected and right to reject any or all the tenders including the lowest without assigning any reason thereof is reserved.
11. The decision of the Executive Engineer, Div-II, (S&W), Aquem, Margao, for purpose of Eligibility & Technical Qualification / Commercial Bid shall be final and binding to all the tenderers/bidders.
12. The Bidder shall quote the percentage figure excluding GST. The GST as applicable shall be paid extra on total cost of supply. Any other Tax in respect of the contract shall be payable by the contractor.
13. Tenderer must ensure to quote percentage figure with '+ve' sign for 'Above' and 've' sign for 'Below' quote in the cell meant for quoting rate/percentage in the figure which appears in sky blue colour (Rupees in words will be automatically taken). Also, name of the Tenderer should be entered in respective cell.

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For and on behalf of Governor of Goa
Executive Engineer
Div-II, (S&W), Aquem, Margao

ELECTRICITY DEPARTMENT
GOVERNMENT OF GOA
ANNEXURE – 21
(Refer SOP No 4/8 & 4/9)
(NEW ANNEXURE AS PER OM No. DG/SOP 2022/07 dt. 09/11/2022)
CPWD-6 FOR E-TENDERING

1. Item rate/ percentage rate bids are invited on behalf of Governor of Goa in prescribed form PWD-9 from approved and eligible contractors/ manufacturers /suppliers or State Govt.'s Electricity Department for the following work:-
Name of Work:-_11KV, 630Amps, 50Hz, 3Way (2LBS+1CB) Non-Extensible Two (2) Motor operated LBS with Manual operated Earth Switch, Outdoor, SF6, Ring Main Unit The enlistment of the contractors should be valid on the last date of submission of bids.In case the last date of submission of bid is extended, the enlistment of contractor should be valid on the original date of submission of bids.

1.1 The work is estimated to cost **Rs.93112500/-**. This estimate, however, is given merely as a rough guide.

1.1.1 The authority competent to approve NIT for the combined cost and belonging to the major discipline will consolidate NITs for calling the bids. He will also nominate Division which will deal with all matters relating to the invitation of bids. For composite bid, besides indicating the combined estimated cost put to bid, should clearly indicate the estimated cost of each component separately. The eligibility of bidders will correspond to the combined estimated cost of different components put to bid.

1.2 Intending bidders is eligible to submit the bid provided he has definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar works of magnitude specified below:

Criteria of eligibility for submission of bid documents.

1.2.1 **Conditions for Non-CPWD registered contractors only, if bids are also open to non-CPWD contractors.**

For works estimated cost upto tendering limit of class-I category contractor (However, it may be modified as per bidding limit of CPWD class I Group A contractors of respective discipline such as contractors of Electrical, Horticulture and Furniture category as the case may be)

Three similar works each of value not less than Rs. **37245000/-** or two similar works each of value not less than Rs. **55867500/-.** or one similar work of value not less than Rs. **74490000**/- (all figures rounded to nearest convenient figure) during the last **7 years ending last day of the month previous to the one in which tenders are invited**.

(ii) For EPC tender under Mode-I/II only (Applicable for CPWD enlisted contractors of appropriate class also).
One completed work costing not less than Rs..... executed with the structural system technology as proposed by bidder in the letter of transmittal during the last 7 years ending last day of the month previous to the one in which tenders are invited. This work can be part of eligible work at 1.2.1 (i) above or as a separate work.
Note:
For works costing above tendering limit of class-II category contractors but upto tendering limit of Class-I category Contractor (However, it may be modified as per bidding limit of CPWD class II and CPWD class I contractors of respective discipline such as contractors of Electrical, Horticulture and Furniture category as the case may be) when bids are open to non- CPWD

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contractors also, then class II contractors of CPWD registered shall also be eligible if they satisfy the eligibility criteria specified in 1.2.1 above.

1.2.2 Criteria of eligibility for CPWD as well as non-CPWD contractors,
For works estimated to cost above the tendering limit of class-I (Super) category contractor (However , it may be modified as per bidding limit of CPWD class I Group A contractors of respective discipline such as contractors of Electrical, Horticulture and Furniture category as the case may be).
(i) Three similar works each of value not less than Rs..... or two similar works each of value not less than Rs..... or one similar work of value not less than Rs..... (all figures rounded to nearest convenient figure) during the last 7 years ending last day of the month previous to the one in which tenders are invited.
(ii) For EPC tender under Mode-I/II only (Applicable for CPWD) enlisted contractors of appropriate class also).
One completed work costing not less than Rs..... executed with the structural system technology as proposed by bidder in letter of transmittal during the last **7 years ending last day of the month previous to the one in which tenders are invited**. This work can be part of eligible work at 1.2.2 (i) above or as a separate work.

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of **7% per annum**, calculated from the date of completion to the last date of submission of bid. This is applicable for 1.2.1 as well as 1.2.2 (Para 1.2.1(i) and Para 1.2.2(i) are not applicable for CPWD enlisted contractors of appropriate class. Para 1.2.1 (ii) and Para 1.2.2(ii) are also applicable for CPWD enlisted contractors of appropriate class).

To become eligible for issue of bid, the bidders shall have to furnish an affidavit as under:

I/We undertake and confirm that eligible similar works(s) has / have not been got executed through another contractor on back to back basis. Further that, if such a violation comes to the notice of Department, then I/we shall be debarred for bidding in CPWD in future forever. Also, if such a violation comes to the notice of Department before date of start of work, the Engineer-in-Charge shall be free to forfeit the entire amount of Earnest Money Deposit/ Performance Guarantee. (Scanned copy to be uploaded at the time of submission of bid)

1.2.3 When bids are invited from non CPWD contractors and CPWD class II contractors as per provisions of clause **1.2.1** above, it will be mandatory for non CPWD contractors and CPWD class-II contractors to upload the work experience certificate (s) and the affidavit as per the provisions of clause **1.2.2**.
But for such bids, Class-I contractors of CPWD are eligible to submit the bids without submission of work experience certificate and affidavit. Therefore, CPWD class-I contractors shall upload two separate letters for experience certificate and affidavit that these documents are not required to be submitted by them. Uploading of these two letters is mandatory otherwise system will not clear mandatory fields.

2. Agreement shall be drawn with successful bidders on prescribed Form No. CPWD 9 (or other Standard Form as mentioned) which is available as a Govt. of India Publication and also available on website **www.cpwd.gov.in** Bidders shall quote his rates as per various terms and conditions of the said form which will form

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part of the agreement.

3. The time allowed for carrying out the work will be**.....days** from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the bid documents.

4. (i) The site for the work is available.
Or
The site for the work shall be made available in parts as specified below:
.....
.....
(ii) **The architectural and structural drawing for the work is available**
or
The architectural and structural drawings shall be made available in phased manner, as per requirement of the same as per approved program of completion submitted by the contractor after award of work.

5. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents except Standard General Conditions of Contract Form can be seen on website https://eprocure.goa.gov.in free of cost.

6. After the submission of the bid the contractor can re-submit revised bid any number of times but before last time and date of submission of bid as notified.

7. While submitting the revised bid, contractor can revise the rate of one or more item (s) any number of times (he need not re-enter rate of all the items) but before last time and date of submission of bid as notified..

8. When bids are invited in three stage system and if it is desired to submit revised financial bid then it shall be mandatory to submit revised financial bid. If not submitted then the bid submitted earlier shall become invalid.

9. **Earnest Money Deposit(EMD) Rs.1862250/-,, Tender Document Fee(TDF) Rs. 1500/-** and **e-Tender Processing Fee(TPF) Rs. 6000/--** shall be paid in the tender notice. ~~Earnest Money in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee including e-Bank Guarantee (for balance amount as prescribed) from any of the Commercial Banks (drawn in favour of Executive Engineer.....) shall be scanned and uploaded on the e-Tendering website within the period of bid submission. The original EMD should be deposited either in the office of Executive Engineer inviting bids or division office of any Executive Engineer, CPWD within the period of bid submission. The EMD receiving Executive Engineer (including NIT issuing EE/AE) shall issue a receipt of deposition of earnest money deposit to the bidder in a prescribed format (enclosed) uploaded by tender inviting EE in the NIT.~~

A part of earnest money is acceptable in the form of bank guarantee also. In such case, minimum 50% of earnest money or Rs. 20 lac, whichever is less, shall have to be deposited in shape prescribed above, and balance may be deposited in shape of Bank Guarantee including e-Bank Guarantee of any Commercial bank having validity for a period of 90 days for single bid works and 180 days for two bid system or more from the last date of receipt of bids which is to be scanned and uploaded by the intending bidders.

The earnest money given by all the tenderers except the lowest tenderer shall be refunded immediately after the expiry of stipulated bid validity period or immediately after acceptance of the successful bidder, whichever is earlier.

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However, certified copy of all the scanned and uploaded documents as specified in e-tender notice shall have to be submitted by the lowest bidder within a week physically in the office of tender opening authority. Online bid documents submitted by intending bidders shall be opened only of those bidders, whose original EMD deposited with any division of CPWD and other documents scanned and uploaded are found in order.

The bid submitted shall be opened at 11:00 AM on.....

10. The bid submitted shall become invalid and e-Tender processing fee (if applicable) shall not be refunded if:

(i) The bidder is found ineligible.

(ii) The bidder does not upload scanned copies of all the documents stipulated in the bid document.

(iii) If any discrepancy is noticed between the documents as uploaded at the time of submission of bid and hard copies as submitted physically by the lowest bidder in the office of bid opening authority.

(iv) If a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/below on the total amount of the tender or any section/ sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.
(OM No. DG/SOP 2022/07 dated 09.11.2022)

11. The contractor whose bid is accepted will be required to furnish performance guarantee/ performance security deposit of **5% (Five Percent)** of the tendered amount as mentioned in schedule E and within the period specified in Schedule F. This guarantee shall be in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt or Bank Guarantee from any of the Commercial Banks in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F', including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor. The earnest money deposited alongwith bid shall be returned after received the aforesaid performance guarantee. The contractor whose bid is accepted will also be required to furnish either copy of applicable licenses/ registrations or proof of applying for obtaining labour licenses registration with EPFO, ESIC and BOCW Welfare Board including Provident Fund Code no. If applicable and also ensure the compliance of aforesaid provisions by the sub contractors, if any engaged by the contractor for the said work within the period specified in Schedule 'F'.

12. **The description of the work is as follows**:

Intending Bidders are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their bids as to the nature of the ground and sub- soil (so far as if practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall the themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their bid. A bidders shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or other wise shall be allowed. The bidders shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a bid by a bidder implies that he has scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

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13. The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other bid and reserves to itself the authority to reject any or all the bids received without the assignment of any reason. All bids in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the bidders shall be summarily rejected.

14. Canvassing whether directly or indirectly, in connection with bidders is strictly prohibited and the bids submitted by the contractors who resort to canvassing will be liable for rejection.

15. The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the bid and the bidders shall be bound to perform the same at the rate quoted.

16. The contractor shall not be permitted to bid for works in the CPWD Circle (Division in case of contractors of Horticulture/ Nursery category) responsible for award and execution of contract, in which his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any gazetted officer in the Central Public Works Department or in the Ministry of Housing and Urban Affairs. Any breach of this condition by the contractor would render him liable for be removed form the approved list of contractors of this Department.

17. No Engineer of Gazetted Rank or other Gazetted Officer employed in Engineering or Administrative duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the prior permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the bid or engagement in the contractor's service.

18. The bids for the work shall remain open for acceptance for a period of 120 (One Hundred Twenty) days from the date of opening of technical bid.
Further
(i) If any tenderer withdraws his tender or makes any modification in the terms & conditions of the tender which is not acceptable to the department within 7 days after last date of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 50% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.

(ii) If any tenderer withdraws his tender or makes any modification in the terms & conditions of the tender which is not acceptable to the department after expiry of 7 days after last date of submission of bids, then the Government shall without prejudice to any other right or remedy, be at liberty to forfeit 100% of the earnest money absolutely irrespective of letter of acceptance for the work is issued or not.

(iii) In case of forfeiture of earnest money as prescribe in para (i) and (ii) above, the bidders shall not be allowed to participate in the rebidding process of the same work.

19. The notice inviting Bid shall form a part of the contract document. The successful

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bidder/ contractor, on acceptance of his bid by the Accepting Authority shall within 15days from the stipulated date of start of the work, sign the contract consisting of:
(a) The Notice Inviting Bid, all the documents including additional conditions specifications and drawings, if any, forming part of the bid as uploaded at the time of invitation of bid and the rates quoted online at the time of submission of bid and acceptance thereof together with any correspondence leading thereto.
(b) Standard C.P.W.D. Form 9 or other Standard C.P.W.D. Form as applicable.

20. For composite bids

20.1.1 The Executive Engineer in charge of the major component will call bids for the composite work. The cost of bid document and Earnest Money will be fixed with respect to the combined estimated cost put to tender for the composite bid.

20.1.2 The bid document will include following three components:
Part A: CPWD-6, CPWD-9 including schedule A to F for the major component of the work, Standard General Conditions of Contract for CPWD 2014 as amended/ modified up to.....
Part B: General/ specific conditions, specifications and schedule of quantities applicable to major component of the work.
Part C: Schedule A to F for minor component of the work (competent authority under clause 2 and clause 5 shall be same authority as mentioned in schedule A to F for major components), General/ specific conditions, specifications and schedule of quantities applicable to minor component(s) of the work.

20.1.3 The bidders must associate himself, with agencies as per NIT conditions.

20.1.4 The eligible bidders shall quote rates for all items of major component as well as for all items of minor components of work.

20.1.5 After acceptance of the bid by competent authority, the EE in charge of major component of the work shall issue letter of award on behalf of the President of India. After the work is awarded, the main contractor will have to enter into one agreement with EE incharge of major component and has also to sign two or more copies of agreement depending upon number of EE's/DDH incharge of minor components. One such signed set of agreement shall be handed over to EE/DDH incharge of minor component(s).

EE of major component will operate Part A and Part B of the agreement. EE/DDH incharge of minor component(s) shall operate Part C alongwith Part A of the agreement.

20.1.6 Entire work under the scope of composite bid including major and all minor components shall be executed under one agreement.

20.1.7 Security Deposit will be worked out separately for each component corresponding to the estimated cost of the respective component of works.

20.1.8 The main contractor has to associate agencies for specialized component(s) conforming to eligibility criteria as defined in the bid document and has to submit detail of such agency (s) to Engineer-in-Charge of relevant component(s) within prescribed time. Name of the agency(s) to be associated shall be approved by Engineer-in-Charge of relevant component(s).

20.1.9 In case the main contractor intends to change any of the above agency/ agencies during the operation of the contract, he shall obtain prior approval of Engineer-in-Charge of relevant specialized component(s).

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The new agency/ agencies shall also have to satisfy the laid down eligibility criteria. In case Engineer-in-Charge is not satisfied with the performance of any agency, he can direct the contractor to change the agency executing such items of work and this shall be binding on the contractor.

20.1.10 The main contractor has to enter into MoU with agency(s) associated by him. Copy of such MoU shall be submitted to EE/DDH in charge of each relevant component as well as to EE-in-charge of major component. In case of change of associate contractor, the main agency (s) has to enter into MoU/agreement with the new contractor associated by him.

20.1.11 Running payment for the major component shall be made by EE of major discipline to the main contractor. Running payment for minor components shall be made by the Engineer-in-Charge of the discipline of minor component directly to the main contractor. The CMB shall be maintained independently by Engineer-in-Charge of major and minor components.

20.1.12A The composite work shall be treated as complete when all the components of the work are complete. The completion certificate of the composite work shall be recorded by Engineer-in-Charge of major component after record of completion certificate of all other components.

20.1.12B Final bill of whole work shall be finalized and paid by the EE of major component.

Engineer (s) in charge of minor component(s) will prepare and pass the final bill for their component of work and pass on the same to the EE of major component for including in the final bill for composite contract.

21 Integrity Pact: The contractor shall download the Integrity Pact, which is a part of tender documents, affix his signature in the presence of a witness, and upload the same while submitting online bids for all works of estimated cost put to tender equal or more than the threshold value given in Schedule-F. In the event of his failure to sign and upload the Integrity Pact along with other bid documents, his bid shall be rejected.

22. The intending bidders are required to update their profile in CPWD e-tender portal and to upload their bids well in advance of last date of submission of tender. Any issue related to updating profile/ uploading tender can be resolved through the concerned Executive Engineer (Phone no 8380015002, e-mail* ee2stores@gmail.com) or e-procure site helpline no. +91-7972854213, 91-7822039673, 91-7972871944 or e-mail id e-tender.goa@gov.in The e-tendering bidders are also advised not to wait to raise any issues till the last date of submission of bid in their own interest.

* To be filled in by NIT approving authority.

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ANNEXURE – 22
(Refer SOP No 4/8)
INFORMATION AND INSTRUCTIONS FOR BIDDERS FOR e-TENDERING FORMING PART OF BID DOCUMENT
(Applicable for inviting open tenders

The Executive Engineer, Division-II(S&W), Electricity Department, Margao on behalf of President of India invites online percentage rate bids from approved and eligible contractors manufacturers/suppliers for the following work/supply :

S. No.	NIT No.	Name of Work & Location	Estimated Cost put to Bid (Rs.)	Earnest Money (Rs.)	Stipulated Period Of Completion of	Last date and time of online submission of bid, EMD, E-tender processing fee and other doc. as specified	Date and time of opening of online bid.
1	2	3	4	5	6	8	9
1.	Ten 23 /25-26	Supply of 11KV, 630Amps, 50Hz, 3Way (2LBS+1CB) Non-Extensible Two (2) Motor operated LBS with Manual operated Earth Switch, Outdoor, SF6, Ring Main Unit.	93112500/-	18,62,250/-	90 days from the date of order	05 /03/2026 Upto 17:30 hrs.	06/03 /2026 Upto 17:30 hrs.

1. The intending bidder must read the terms and conditions of CPWD-6 carefully. He should only submit his bid if he considers himself eligible and he is in possession of all documents required.
2. Information and Instructions for bidders posted on website shall form part of bid document.
3. The bid document consisting of plans, specifications, the schedule of quantities of various types of items to be executed and the set of terms and conditions of the contract to be complied with and other necessary documents can be seen and downloaded from website **https://eprocure.goa.gov.in** free of cost.
4. But the bid can only be submitted after deposition after depositing processing fee and uploading the mandatory scanned documents, such as proof of payments.
5. Those contractors who are not registered or have not updated their profile on the website mentioned above, are required to get registered/ update their profile beforehand. The necessary training materials including the videos with step to step process are available on download section of **https://eprocure.goa.gov.in**.
6. The intending bidder must have valid Class-III digital signature certificate with encryption key (combo type) to perform any operations/ transactions on the e-tendering portal/ website and the bidder should

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download and install the eMsigner on their system as per instructions available on download section of **https://eprocure.goa.gov.in**.

7. On opening date, the contractor can login and see the bid opening process. After opening of bids he will receive the competitor bid sheets.

8. Contractor can upload documents in the form of JPG format and PDF format.

9. Contractor must ensure to quote percentage rate (either Excess or Less) for the total consolidated amount.

In addition to this, while selecting any of the cells a warning appears that if any cell is left blank the same shall be treated as "0". Therefore, if any cell is left blank and no rate is quoted by the bidder, rate of such item shall be treated as "0" (ZERO).

However, if a tenderer quotes nil rates against each item in item rate tender or does not quote any percentage above/ below on the total amount of the tender or any section/ sub head in percentage rate tender, the tender shall be treated as invalid and will not be considered as lowest tenderer.

The name of the bidder should be entered in the respective cell in the online bidding schedule failing which the bid may be rejected.

1. The SC/ST contractors enlisted under class V category are exempted from processing fee payable to Infotech Corporation of Goa Limited.
2. The Bidder shall quote the percentage figure excluding GST. The GST as applicable shall be paid extra on total cost of supply. Any other Tax in respect of the contract shall be payable by the contractor.
3. Tenderer must ensure to quote percentage figure with '+ve' sign for 'Above' and 've' sign for 'Below' quote in the cell meant for quoting rate/percentage in the figure which appears in sky blue colour (Rupees in words will be automatically taken). Also, name of the Tenderer should be entered in respective cell.

List of Documents to be scanned and uploaded within the period of bid submission:

I. Proof of payment of EMD, Tender document fee and tender processing fee.

II. Enlistment Order of the Contractor.

III. Certificates of Work Experience (if required from non CPWD and CPWD class II contractors).

IV. Affidavit as per clause 1.2.3 of CPWD 6 (if required from non CPWD and CPWD class II contractors).

V. Two letters from CPWD class I contractors as specified under clause 1.2.3 of CPWD-6 (if applicable.)

VI. GST Registration Certificate if already obtained by the bidder.

If the bidder has not obtained GST registration as applicable, then he shall scan and upload following under taking along with bid documents.

" If work is awarded to me, I/we shall obtain GST registration certificate, as applicable, within one month from the date of receipt of award letter or before release of any payment by **Goa Electricity Department(GED)** whichever is earlier, failing which I/we shall be responsible for any delay in payments which will be due towards me/us on account of the work executed and/ or for any action taken by **GED** or GST department in this regard".

VII. Integrity Pact signed by the bidder in the presence of a witness for works equal to or above the threshold value given in Schedule-F.

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ANNEXURE – A

(To be issued by manufacturer required under clause-C(i) of T&C)

CERTIFICATE

This to certify that:-

1. All the departmental terms & conditions inclusive of payment terms are acceptable to us.

2. The material/works offered by us are fully conforming to the departmental specifications.

(SIGNATURE OF BIDDER OVER SEAL)

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ANNEXURE –B

(To be issued by manufacturer required under clause-7 of T&C)

CERTIFICATE

This is to certify that Supply of 11 KV, 630 Amps, 50Hz, 3 Way (2LBS+1CB) Non-Extensible Two (2) Motor operated LBS with Manual operated Earth switch Outdoor SF6 Ring Main Unit make:_____ (qty-_____ Nos.) are of good quality and have been manufactured in batch no._____ in the month of _____.

The above materials have been supplied through M/s._____.

Signature with Seal

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TERMS AND CONDITIONS TENDER No: -23/25-26

MODE OF SUBMISSION:

Tenders shall be submitted ONLINE through the website **www.eprocure.goa.gov.in**

1. Earnest Money Deposit (EMD), Tender Document Fee (TDF) and Tender Process Fees (TPF) are to be paid as per mentioned in tender notice. The bid shall not be opened even if one of the fees are not paid.
2. Supply for which technical specification is finalized and defined clearly in NIT, tenderers shall be required to submit the bids in **two** bid systems.
   Bid 1- Documents related to eligibility criteria
   Bid 2- Financial bid
   Technical bid of all tenders shall be opened first. Eligibility related documents shall be evaluated and parties qualified/ disqualified by the competent authority. Financial bid of qualified tenderers shall then be opened at notified time, date and place in presence of tenderers or their representatives.
   An envelope superscripted with Tender No., Name of work and due date of opening of the bid mentioned thereon and with stamp of firm may please deposited in this Office on or before due date & time of opening of bids containing

   (i) Enlistment Order/Work experience if applicable (ii) complete NIT documents except bidding schedule duly signed on each page and stamped (iii) list of purchase orders with completion certificate placed by various power utilities for the last 5 years for similar /tendered items (iv) the performance report issued by various power utilities for supply of tendered or similar items for the last 5 years (v) type test reports report/certificate conducted within last 10 years by Government approved NABL Laboratories i.e. National Test House/CPRI/ERDA/ETDC, etc. for the material/equipment tendered duly attested by Gazetted Officer of State/Central Government or Notarized by a Notary Public (if applicable) (vi) Valid SSI Registration certificate issued by Directorate of Industries, Trade and Commerce, Goa duly attested by Gazetted Officer of State/Central Government or Notarized by a Notary Public (vii) valid Registration certificates for GST duly attested by Gazetted Officer of State/Central Government or Notarized by a Notary Public (viii) Affidavit as per clause 1.2.3 of CPWD-6 (if applicable) and (ix) Two letters from CPWD class I contractors as specified under clause 1.2.3 of CPWD-6 (if applicable),(x)Acknowledgement copies of EMD, TDF (Tender Document Fee) & TPF (Tender Processing Fee).

The documents referred to at (iii), (iv), (v) and (vi) are to be submitted in respect of this tender even if the same were submitted earlier by the bidder for previous tenders or else the bid may be rejected.
All the above documents shall be signed/stamped, scanned and uploaded on the e-tendering website within the period of tender bid submission as per Terms and Conditions of the NIT.

3. **VALIDITY:**
   The rates quoted should be firm and for delivery at Central Stores, Aquem-Margao-Goa and should be valid for acceptance for a minimum period of 120 days from the date of opening of techno-commercial bid.

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4. WITNESSING OF TESTING/ TEST REPORT:

The Department shall witness the acceptance tests on randomly selected samples of materials ready for dispatch as per relevant IS at the manufacturers works sites. After successful passing of the tests the tenderer shall have to furnish the original copies of acceptance tests reports along with copies of routine tests reports of the manufacturers to the Goa Electricity Department. Actual expenses towards witnessing of tests as per relevant IS at the manufacturers works sites by the Departmental official shall be borne by the successful tenderer or shall be recovered from the R.A. bills payable to the suppliers/manufactures.

5. PAYMENT:

A commercial tax invoice (in quadruplicate) indicating commercial name of the firm, complete address, place of business, taxpayer's identification No. of dealer recipient dealer with GST number for the materials supplies/accepted is to be submitted for processing payments. The payment will be made by e-Payment, subject to availability of funds. Running account payment will be made once in a calendar month to the extent of the cost of materials supplied and accepted or work accepted and measured during the particular month. The final payment will however be made only after pre-check of the final bill by the Director of Accounts, Panaji-Goa if applicable.

6. GUARANTEE / WARRANTY:

The Transformer offered should be guaranteed for a period of 12 months or any period specified by the manufacturer/ supplier from the date of acceptance. The equipment or any of its parts found defective during guarantee period shall have to be repaired/replaced by the tenderer at their own cost. The Security Deposit will be refunded only after satisfactory completion of the guarantee period.

7. A certificate (Annexure-B) certifying the quality of the materials batch no, date of manufacture etc. and Routine acceptance test certificates and proof of purchase from the manufacturer shall be submitted at the time of delivery of materials in original failing which no materials will be accepted in the Central Stores, Aquem-Margao-Goa and the Goa Electricity Department will not be held responsible for the detention of the vehicles/delay in unloading of materials/equipment's.

8. The eligible lowest bid will be considered for placement of order.

9. The successful bidder/firm on whom supply order is placed will have to (i) submit a certificate that in the event of getting refund in whole or in part of the element of statutory taxes/duties in respect of the stores supplied under the contract, the same will be passed on to the Electricity Department (ii) submit a certificate along with the final bill to the effect whether or not they i.e. the firm have any pending appeal/protest for refund or partial refund of statutory levies/duties already reimbursed to the firm by the Government, pending with the authorities and if so, the nature, the amount involved and the position of such appeals (iii) an undertaking to the effect that in case it is detected by the Department of any refund from the Authorities was obtained by the Contractor/Suppliers in respect of supplies made to the Department, then the Department will have full authority to

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recover such amounts from the Contractors/Suppliers outstanding bills against the particular contract or any pending contracts and that no dispute on this account would be raised by the Contractors/Suppliers (iv) an undertaking that in case materials supplied have high failure rate during the purview of the guarantee period or are substandard or no free replacement/repairs are done then they i.e. the firm will be liable for black listing under the relevant clauses of the CPWD Manuals in force.

Note-1: If the documents as mentioned are not scanned and replaced then the tender bid is liable for rejection.

Note-2: Tenders with any conditions including that of conditional rebate and percentage shall be rejected forthwith.

Note-3: The manufacturer/supplier/bidder/contractor who bids shall indicate the brand offered/and submit original authorization letter from the manufacturer (if he is not a manufacturer) for the brand offered or else the offer will not be considered.

Note-4: The date of opening of the financial bid will be intimated later in the case of two bid tenders.

Note-5: It is not binding on the undersigned to accept the lowest tender. The right to reject any or all the tenders without assigning any reason is reserved by the undersigned.

Note-6: Department reserves the right to get tested the randomly selected sample material for ascertaining the quality and accuracy with any Government approved laboratories i.e. National Test House/CPRI/ERDA/ETDC at the cost of the supplier and in case material fails during above test the entire lot material will be rejected

Note-7: M.S.M.E. firms registered with Directorate of Industries, Trade and Commerce, Goa shall pay EMD maximum of Rs. 5000/- (Rupees Five Thousand Only) and TDF of Rs. 500/- (Rupees Five Hundred Only) as per the notification No.3/40/2003-IND (Pt. II) (Vol. III)/132 dt.27/06/2022, published on Govt. Gazette under series I No. 13 dt.30th June 2022. The eligible Goa M.S.M.E. Unit will also be exempted from payment of Performance Security Deposit and Security Deposit as per the notification No.3/40/2003-IND (Pt. II) (Vol. III)/132 dt.27/06/2022, published on Govt. Gazette under series I No. 13 dt.30th June 2022.

Note-8: BIS Certification of the supply items by the firms should be submitted

Note -9: Relaxation in eligibility criteria for submission of bid documents by Micro and Small Enterprise (Non- CPWD Contractors) with valid verification certificate set as per the NIT Clause 1.2.1 of CPWD-6 for E-Tendering has been allowed as per latest amendment captioned "Preferential Purchase Incentives for Micro and Small Enterprise Scheme(Amended,2022)" vide notification No.3/40/2003-IND (Pt.II)(Vol.III)/308 dt. 16/12/2022, published in Goa Govt.Gazette under Series I No.38 dt. 22nd December 2022.

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The CPWD-6 for E-Tendering eligibility criteria states that these Non CPWD registered contractors have to fulfill the criteria of execution of works as below. a) Three similar completed works each costing not less than 40% of the estimated cost put to tender, or b) Two similar completed works each costing not less than 60% of the estimated cost put to tender, or c) One similar completed works each costing not less than 80% of the estimated cost put to tender. (all amounts in (a), (b) and (c) are rounded off to a nearest convenient full figure), completed during last 7 years ending last day of the month previous to the one in which tenders are invited. To this clause, this scheme shall provide further that:- "If the applicant/beneficiary with a valid verification certificate is not satisfying any of the above criteria, then such beneficiary shall have completed works cumulatively costing not less than 80% of the estimated cost put to tender (amount rounded off to a nearest convenient full figure) completed during last 5 years ending last day of the month previous to the one in which tenders are invited.

Note-9 The Bidder shall quote the percentage figure excluding GST.The GST as applicable shall be paid extra on total cost of supply. Any other Tax in respect of the contract shall be payable by the contractor.

Executive Engineer-II (S&W)
For and on behalf of the Governor of Goa

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Government of Goa

P.W.D.9 (Pamphlet)

Electricity Department

Goa State

TENDER AND CONTRACT
FOR
SUPPLY OF MATERIALS
(Central P.W.D. Code paragraph 89)

GENERAL RULES AND DIRECTIONS

1. All supplies proposed to be obtained by contract will be notified in a form of invitationto tender posted in public place and signed by the Divisional Officer.

This form will state the supplies to be made as well as the date for submitting andopening tenders and the time allowed for carrying out the work; also the amount of theearnest money to be deposited with the tender, and the amount of the security deposit tobe deposited by the successful tenderer and the percentages, to be deducted from bills.Copies of the specifications and any other documents required in connection with thework, signed for the purpose of identification by the Divisional Officer shall also beopen for inspection by the contractor at the office of the Divisional officer during officehours.

2. In the event of the tender being submitted by a firm, it must be digitally signed bymember thereof or, in the event of the absence of any partner, it must be signed on hisbehalf by a person holding a power of attorney authorizing him to do so. Such power ofattorney to be produced, with the tender, and it must disclose that the firm is duly
registered under the Indian Partnership Act.

3. Receipts for payments made to a firm, must also be signed by the several partnersexcept where the contractors are described in their tender as a firm, in which case thereceipt must be signed in the name of the firm by one of the partners, or by some otherperson having authority to give effectual receipt for the firm.

4. Any person who submits a tender shall fill up the usual printed form, stating at what ratehe is willing to undertake each item of the work. Tenders which propose any alterationin the work specified in the said form of invitation to tender, or in the time allowed forcarrying out the work, or which contain any other condition of any sort, will berejected. No single tender shall include more than one work, but contractors who wish to
tender for two or more works shall submit a separate tender for each. Tenders shallhave the name and number of the work to which they refer written outside the envelope.

5. The Divisional Officer, or his duly authorized assistant, will open tender ONLINE in thepresence of any intending contractors who may be present at the time, and eTendersystem will generate the comparative statement. In the event of the tender beingaccepted, a receipt for the earnest money forwarded therewith shall thereupon be givento the contractor who shall thereupon for the purpose of identification sign copies of thespecifications and other documents mentioned in Rule 1. In the event of a tender beingrejected, the earnest-money forwarded with such unaccepted tender shall thereupon bereturned to the contractor making the same.

6. The Officer inviting tenders shall have the right of rejecting all or any of the tenders,and will not be bound to accept lowest tender.

7. The receipts of an accountant or clerk for any money paid by the contractor will not bereconsidered as any acknowledgement of payment to the Divisional Officer and thecontractor shall be responsible for seeing that he procures a receipt signed by theDivisional Officer, or duly authorized cashier.

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CONDITIONS OF CONTRACT

Clause 1. A sum @ 7.5% of the gross amount of the bill shall be deducted from eachrunning bill till the sum along with E.M.D. will amount to security deposit of 2.5% of thetendered value of the work. In addition, the contractor shall be required to deposit anamount equal to 5% of the tendered value as performance security within the periodprescribed for commencement of the work in the letter of award issued to him. Securitydeposit shall be refunded after maintenance period and after passing of final bill whicheveris later. Performance security shall be refunded on completion of the work and recordingcompletion certificate. The security deposit will also be accepted in cash or in the form ofGovernment securities and fixed deposit receipt. The security deposit and performancesecurity will be accepted as bank guarantee of scheduled banks in Goa in prescribed format.

2. The contractor is to deliver the materials on or before the dates mentioned in thetender failing which he shall be subject to pay or allow one percent on the total amountof the contract for every day not exceeding ten days that he shall exceed his time, as,and for liquidated damages.

3. In every case in which the payment or allowance mentioned in clause 2 shall haveincurred for ten consecutive days, the Divisional officer shall have the power to annulthe contract and to have the supply completed at the contractor's risk and expensewithout any further notice to him and the contractor shall have no claim tocompensation for a loss that he may incur in any case.

4. If the contractor shall be hindered in the supply of the materials so as to necessitate anextension of the time allowed in the tender, he shall apply in writing to DivisionalOfficer, who shall grant it in writing if reasonable ground be shown for it, and withoutsuch written authority of the Divisional Officer, the contractor shall not claimexemption from the fine leviable under clause 2.

5. The contractor shall give notice to the Divisional Officer (hereinafter called theEngineer-in-charge) of his intention of making delivery of materials, and on thematerials being approved, the Divisional Officer or his assistant shall grant a receipt tohim, and no material will be considered as delivered until so approved.

6. On the completion of the delivery of materials the contractor shall be furnished with acertificate of the effect by the Divisional Officer but the delivery will not be consideredcomplete until the contractor shall have removed all rejected materials and shall havethe approved materials stacked or placed in such position as may be pointed out to him.

6.A. If at any time after the commencement of the supplies the Governor of Goa shall, forany reason whatsoever not require the whole thereof as specified in the tender to besupplied, the Divisional Officer shall in addition to his power to annul the contract in caseof default on the part of the contractor, have power to terminate all liability of theGovernment there under at any time after giving due notice in writing to the contractor ofhis desire to do so. In the event of such a notice being given:-

a. the Divisional Officer shall be entitled to direct the contractor to complete thesupply of the materials which are ready for delivery up to the date of the expiryof the notice and thereafter to cease their supply; all the articles or suppliesreceived and accepted up to that date shall be paid for at the tendered rate, and

b. the contractor shall have no claim to any payment or compensation whatsoeveron account of any profit or advantage which he might have derived inconsequence of the full execution of the contract, but which he did not obtainowing to its premature termination, or for any loss which he might havesustained on this account.

7. No payment shall be made for supplies estimated to cost less than rupees one thousandtill after the whole of the supplies shall have been completed and a certificate of completiongiven. But in the case of supplies estimated to cost more than rupees one thousand thecontractor shall on submitting the bill therefore be entitled to receive a monthly paymentproportionate to the part thereof then approved and passed by the Engineer-in-chargewhose certificate of such approval and passing of the sums as payable shall be final andconclusive against the contractor. But all such intermediate payments shall be regarded aspayment by way of advance against the final payment only. Final bill shall be submitted by

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the contractor within one month of the date fixed for the completion of the delivery ofmaterials, otherwise the Engineer-in-charge's certificate of the measurement and of thetotal amount payable for the supplies, accordingly shall be final and binding on all parties.

Payments due to the contractor may, if so desired by him be made to his bank instead ofdirect to him, provided that the contractor furnishes to the Engineer-in-charge (1) anauthorization in the form of a legally valid document such as a power of attorneyconferring authority on the bank to receive payment, and (2) his own acceptance of thecorrectness of the account made out as being due to him by Government or his signature onthe bill or other claim preferred against Government before settlement by the Engineer-inchargeof the account or claim by payment to the bank. While the Receipt given by suchbank shall constitute a full and sufficient discharge for the payment. The contractor shouldwherever possible, present his bills duly receipted and discharged through his bankers.

Nothing here in contained shall operate to create in favour of the bank any rights or equitiesvis a-vis the Governor of Goa.

8. The materials shall be of the best description and in strict accordance with thespecification, and the contractor shall receive payment for such materials only as areapproved and passed by the Engineer-in-charge.

9. In the event of the material being considered by the Engineer-in-charge to be inferior tothat described in the specification, the contractor shall, on demand in writing, forth withremove the same at his own charge and cost, and in the event of his neglecting to do sowithin such period as may be named by the Engineer-in-charge that Officer may havesuch rejected material removed at the contractors risk and expense, the expenseincurred being liable to be deducted from any sums due, or which may become due, tothe contractor.

10. If the contractor or his work people or servants shall break, deface, injure or destroyany building, road, road curbs, fence, enclosure, water pipes, cables, drains, electric ortelephone posts or wires, trees, grass and on cultivated ground contiguous to placewhere the materials are being supplied, he shall, make good the same at his ownexpense, and in the event of his refusing or failing to do so the damage shall be repaidat his expense, by the Engineer-in-charge, who shall deduct the cost from any sumsdue, or which may become due, to the contractor.

11. The contractor shall supply at his own expense all tools, plant and implements requiredfor the due fulfillment of his contract, and the material shall remain at his risk till thedate for final delivery, unless it shall have been in the meantime removed for use by theEngineer-in-charge.

12. No materials shall be brought to site or delivered on Saturdays & Sundays without thepermission of the Engineer-in-charge.

13. This contract shall not be sublet without the written permission of the DivisionalOfficer. In the event of the contractor subletting his contract without such permission,he shall be considered to have thereby committed a breach of contract, and shall forfeithis security deposit, and shall have no claim for any compensation for any loss that mayaccrue from the material he may have collected or engagements entered into.

14-A. The Engineer-in-charge shall have power to make any alteration in, omissions fromadditions to, or substitutions for, the original specifications, drawings, design andinstructions, that may appear to him to be necessary or advisable during the course ofsupply of the materials and the contractor shall be bound to supply the materials inaccordance with any instructions which may be given to him in writing signed by theEngineer-in-charge, and such alterations, omissions, additions or substitutions shall notinvalidate the contract; and any altered, additional or substituted materials which thecontractor may be directed to supply in the manner above specified as part of the workshall be supplied by the contractor on the same conditions in all respect on which he agreedto do the main work, and at the same rate as are specified in the tender for the main work.The time for the completion of the supply shall be extended in the proportion that thealtered additional or substituted quantity of materials bears to the original quantity and thecertificate of the Engineer-in-charge shall be conclusive as to such proportion. And if, thealtered,

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additional or substituted materials include any class of materials, for which no rateis specified in this contract, then such class of materials shall be supplied at the ratesentered in the schedule of rates of the department on which the estimated cost shown onpage 2 of the tender is based; and if such class of materials are not entered in the saidschedule of rates, then the contractor shall within seven days of the date of his receipt ofthe order to supply the materials inform the Engineer-in-charge of the rate which it is hisintention to charge for such class of materials, and if the Engineer-in-charge does not agreeto his rate he shall, by notice in writing, be at liberty to cancel his order to supply such classof materials and arrange the supply thereof in such manner as may consider advisable,provided always that if the contractor shall commence supply or incur any expenditure inregard thereto before the rates shall have been determined as lastly herein beforementioned then and in such case he shall only be entitled to be paid in respect of the supplymade or expenditure incurred by him prior to the date of the determination of the rate asaforesaid according to such rate or rates as shall be fixed by the Engineer-in-charge. In theevent of a dispute the decision of the Superintending Engineer of the circle shall be final.

14-B. In every case in which by virtue of the provisions of Section 12, Subsection (1) of theworkmen's Compensation Act, 1923, Government is obliged to pay compensation to aworkman employed by the contractor, in execution of the works, Government will recoverfrom the contractor the amount of the compensation so paid; and without prejudice to therights of Government under Section 12, Sub section (2) of the said Act, Government shall
be at liberty to recover such amount or any part thereof by deducting it from the securitydeposit or from any sum due by Government to the contractor whether under this contractor otherwise.
Government shall not be bound to contract any claim made against it under section 12,subsection (1) of the said Act, except on the written request of the contractor and upon hisgiving to Government full security for all costs for which Government might become liablein consequence of contesting such claim.
14.C (a) The contractor shall pay not less than 'fair wage' to labourers engaged by him on
the work.
Explanation- "Fair wage" means wage whether for time or piece work notified at thetime of inviting tenders for the work and where such wages have not been so notified thewages prescribed by the C.P.W.D. for the district in which the work is done.

b) The contractor shall, notwithstanding the provision of any contract to the contrary causeto be paid a fair wage to labourers indirectly engaged on the work, including any labour engaged by his sub contractors in connection with said work, as if the labourers had be enimmediately employed by him.

c) In respect of all labour directly or indirectly employed in the works for the performanceof the contractor's part of this Agreement the contractor shall comply with or caused to becomplied with the C.P.W.D. contractor's Labour Regulations made by Government fromtime to time in regard to payment of wages, wage period, deduction from wages recoveryof wages not paid and deductions unauthorisedly made, maintenance of wage register,wage cards, publication of scale of wages and other terms of employment, inspection andsubmission of periodical return and all other matters of a like nature.

d) The Executive Engineer or Sub Divisional Officer concerned shall have the right todeduct, from the money due to the contractor any sums required or estimated to be requiredfor making good the loss suffered by a worker or workers by reason of non-fulfillment ofthe conditions of the contract for benefit of the workers, non-payment of wages or ofdeductions made from his or their wages which are not justified by the terms of the contractor non-observance of the Regulations.
The provision of the minimum wages Act, 1948 and minimum wages (Central)Rules 1950, the contractor is bound to allow or cause to be allowed to the labourers directly or indirectly employed in the works one day's rest of six days continuous workand pay wages at the same rates as for duty. In the event of default, the Executive Engineeror Sub Divisional Officer concerned shall have the right to deduct the sum or sums not paidon account of wages for weekly holidays to any labourers and pay the same to the personsentitled thereto, from any money due to the contractor.

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e) Vis-a-vis the Government, the contractor shall be primarily liable for all payments to bemade under, and for the observance of the Regulations aforesaid without prejudice tohis right to claim indemnity from his sub-contractors.

f) The Regulations aforesaid shall be deemed to be a part of the contract and any breachthere of shall be deemed to be a breach of his contract.

14.D. In respect of all labour directly or indirectly employed in the works for the performanceof the contractor's part of the agreement, the contractor shall comply with or cause to becomplied with all rules framed by Government from time to time for the protection of healthand sanitary arrangements for workers employed by the Central Public Works Department andits contractors.

14E. In the event of the contractor(s) committing a default or breach of any of the Provisionsof the Central Public Works Department contractor's Labour Regulations and Model Rules forthe protection of health and sanitary arrangements for the workers as amended from time totime or furnishing any information or submitting or filling any statement under the provisionsof above the Regulations and Rules which is materially incorrect, he/they shall withoutprejudice to any other liability pay to the Government a sum not exceeding Rs.50/- for everydefault, breach of furnishing making, submitting, filling such materially incorrect statementsand in the event of contractor(s) defaulting continuously in this respect, the penalty may beenhanced of Rs.50/- per day for each day of default subject to a maximum of 5 percent of theestimated cost of the work put to tender. The decision of the Engineer-in-charge shall be finaland binding on the parties.

14. Hutting for Labour – The contractor(s) shall at his/their own cost provide his/their labourwith a sufficient number of huts (thereafter referred to as the camp) of the followingspecification on a suitable plot of land to be approved by the Engineer-in-charge.

1. (a) The minimum height of each hut at the eye level shall be 7' and the floor area to beprovided will be at the rate of 30 sq. ft for each member of the worker's family staying with thelabour.

b) The contractor(s) shall in addition construct suitable cooking places having a minimum areaof 6'x 6' adjacent to the hut for each family.

c)The contractor(s) also construct temporary/latrines and urinal for the use of the labourers each on the scale of not less than four per each one hundred of the total strength separatelatrines and urinals being provided for women.

d)The contractor(s) shall construct sufficient number of bathing and washing places, one unitfor every 25 persons per residing in the camp. The bathing and washing places shall besuitably screened.

2.(a) All the huts shall have walls sun-dried or burnt bricks laid in mud, mortar or othersuitable local materials as may be approved by the Engineer-in-charge. In case of sun-driedbricks, the walls should be plastered with mud gobri on both sides. The floor may be katcha but plastered with mud gobri and shall be at least 6" above the surrounding ground. The roofsshall be laid with thatched or any other materials as may be approved by the Engineer incharge and the contractor shall ensure that throughout the period of their occupation the roofsremain watertight.

b) The contractor(s) shall provide each hut with proper ventilation.

c) All doors, windows, and ventilators shall be provided with suitable leaves for securitypurpose.

d)There shall be kept an open space of at least 8 yards between the rows of huts which may bereduced to 20 ft. According to the availability of site with the approval of the Engineer-incharge,back to back construction will be allowed.

3. Water supply – The contractor(s) shall provide adequate supply of water for the use of labourers. The provisions shall not be less than 2 gallons of pure and whole-some water per head per day fordrinking

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purposes and 3 gallons of clean water per head per day for bathingand washing purpose. Where piped water supply is available, supply shall be at stand posts andwhere the supply is from wells or river, tanks which may be of metal or masonry, shall beprovided. The contractor(s) shall also at his/their own cost make arrangements for laying pipelines for water supply to his/their labour camp from the existing mains wherever available andshall pay all fees and charges thereof.

4. The site selected for the camp shall be high ground removed from jungle.

5. Disposal of Excreta- The contractor(s) shall make necessary arrangements for the disposalof excreta from the latrines by trenching or incineration which shall be according to therequirements laid down by the Local Health Authorities. If trenching or incineration is notallowed, the contractor(s) shall make arrangements for the removal of the excreta through theMunicipal Committee/Authority and inform it about the number of labourers employed so that arrangements may be made by such Committee/authority for the removal of the excreta. Allcharges on this account shall be borne by the contractor and paid directly by him to theMunicipality/authority. The contractor shall provide one sweeper for every 8 seats in case drysystem.

6.Drainage- The contractor(s) shall provide efficient arrangements for draining away sewagewater so as to keep the camp neat and tidy.

7.The contractor(s) shall make necessary arrangements for keeping the camp are sufficientlylighted to avoid accidents to the workers.

8. Sanitation- The contractor(s) shall make arrangements for conservancy and sanitation inthe labour camps according to the rules of the Local public Health and MedicalAuthorities.

14.G. In respect of all labour directly or indirectly employed in the work for theperformance of the contractor's part of this agreement, the contractor shall at his ownexpense arrange for the safety provision as per CPWD safety code framed from time totime and shall at his own expense provide for all facilities in connection therewith. In casethe contractor fails to make arrangement and provide necessary facilities as aforesaid heshall be liable to pay penalty of Rs.50/- for each default and in addition the Engineer-incharge shall be at liberty to make arrangement and provide facilities as aforesaid andrecover the cost incurred in that behalf from the contractor.

15. On the breach of any term or condition of this contract by the contractor, the saidGovernor shall be entitled to forfeit the security deposit or the balance thereof that may atthe time remaining, and to realize and retain the same as damages and compensation for thebreach, but without prejudice to the right of the said Governor to recover any further sumsas damage from any sums due or which may become due to the contractor by Governmentor otherwise howsoever.

Interpretation Clause:

The Governor means the Governor of Goa and his successors.

The Divisional Officer means the Divisional Officer for the time being of the Divisionconcerned.

The sub Divisional Officer means the Sub-Divisional Officer for the time being of the Sub-Division concerned.

Words importing the singular number only include plural number and vice-versa.

Termination of contract:

16. Without prejudice to any of the right or remedies under this contract, if the contractordies, the Divisional Officer on behalf of the Governor shall have the option ofterminating the contract without compensation to the contractor.

17. (1) Whenever any claim against the contractor for the payment of a sum of moneyarises out or under the contract, Govt. shall be entitled to recover such sum byappropriating, in part or whole the security deposit of the contractor and to sell anyGovernment Promissory notes etc., forming the whole or such security. In the event ofthe security being insufficient or if no security has been taken from the contractor, then the balance or the total sum recoverable as the case may be, shall be deducted from any

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sum then due or which at any time thereafter may become due from the contractor underthis or any other contract with Govt. should this sum be not sufficient to cover the fullamount recoverable, the contractor shall pay to Government on demand the balanceremaining due.

(2) Government shall the right to cause an audit and technical examination of the works andthe final bill of the contractor including all supporting vouchers, abstracts etc, to be made after payment of the final bill and if as a result of such audit and technical examination anysum is found to have been overpaid in respect of any work done by the contractor under thecontract or any work claimed by him to have been done by him under work done by the
contractor and found not to have been executed, the contractor shall be liable to refund theamount of the over payment and it shall be lawful for Government to recover the same fromhim in the manner prescribed in sub clause (1) of this clause or in any other manner legallypermissible and if as a result of audit and technical examination it is found that thecontractor was paid less than what was due to him under the contract in respect of any workexecuted by him under it, the amount of such under payment shall be duly paid byGovernment to the contractor.
PROVIDED that Government shall not be entitled to recover any sum overpaid, nor thecontractor shall be entitled to payment of any sum paid short where such payment has beenagreed upon between the Superintending Engineer or Executive Engineer on the one handand the contractor on the other hand any term of the contract permitting payment for workafter assessment by the Superintending Engineer or the Executive Engineer.

CORRECTIONS:

CLAUSE –2 The time for and the dates of delivery of the materials mentioned in thetender shall be deemed to be of the essence of the contract and the contractor shall deliverthe materials on or before the dates mentioned in the tender. Should the contractor fail todeliver the materials on or before the stipulated dates, he shall pay as agreed the liquidateddamages and not by way of penalty, an amount equal to ONE PERCENT or such smalleramount as the Superintending Engineer (whose decision in writing shall be final) maydecide on the total amount of the contract for every day that the contractor shall exceed thetime of the delivery and the delivery of the materials may be in arrears. Provided alwaysthat the entire amount of liquidated damages shall not exceed TEN PERCENT of the total amount of the contract as shown in the tender.

SETTLEMENT OF DISPUTES BY CIVIL SUITS
(MODIFIED CLAUSE NO. 14)

CLAUSE: 14: Except where otherwise provided in the contract, all questions and disputesrelating to the meaning of the specification, designs, drawings and instructions hereinaftermentioned and as to the quality of workmanship or material used on the work or as to any otherquestion, claim, right, matter or things whatsoever in any way arising out of or relating to thecontract, designs, drawings, specifications, estimates, instructions, orders or other conditions orotherwise concerning the works, or the execution or failure to execute the same, whether,arising during the progress of the work or after the completion or abandonment thereof, shallbe settled through a Civil Suit to be filed in a Court of competent jurisdiction within the stateof Goa, within 30 days from the date of rejection of any of their claims by the Department.

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Should this tender be accepted, I/We hereby agree to abide and fulfill all the terms andprovisions of the said conditions annexed hereto so far as applicable and or in default hereof toforfeit and pay the Governor or his successors in office of the sum of money mentioned in thesaid herewith conditions.
A sum of Rs._____is herewith forwarded as Earnest Money. If I/We fail to commence the work specified against (ii) (a) in theabove memorandum in accordance with clause 1 of the said condition of contract. I/We agreethat the said Governor or his successors in office shall without prejudice to any other right orremedy, be at liberty to forfeit the said earnest money absolutely otherwise the said earnestmoney shall be retained by him towards such security deposit. I/We further agree that the saidGovernor or his successors in office shall also be at liberty to cancel the acceptance of thetender if I/We fail to deposit security amount as aforesaid

Signature:

Signature of witness to signature of tenderer.Address:

Address: Date:

Date:

The above tender is hereby accepted by me on behalf of the Governor of Goa.

Date: Signature of the Officer by
whom the tender is accepted.

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GOA ELECTRICITY DEPARTMENT

11KV RMU TECHNICAL SPECIFICATION

TECHNICAL SPECIFICATION OF 11 KV SF6 RING MAIN UNITS (RMUs)

	INDEX
Sr. No.	**Description**
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9	Technical Specification of FRTU.
10	Inspections and Test
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11KV RMU TECHNICAL SPECIFICATION

TECHNICAL SPECIFICATION OF 11 KV SF6 RING MAIN UNITS (RMUs)

1. SCOPE:

The specification covers site survey, engineering, manufacturing, pre dispatch testing, supply, and transportation, unloading at site complete erection, testing and commissioning of 11KV feeders with 11KV RMUs, (SCADA enabled) and in accordance with the specifications, technical requirements mentioned in the specification, relevant standard, code of operation. The scope also includes the handing over the complete installation after successful commissioning.

11 KV RMU's (SCADA enabled) : (As per BOQ) Nos.

2. STANDARDS:

a) The equipment delivered shall be new and of high quality, suitable for the purpose it is intended for, free from defects and imperfections and of the classifications listed herein, or their equivalents, subject to acceptance by the Utility.

b) Materials used in the manufacture of the specified equipment shall be of the kind, composition and physical properties best suited to their various purposes and in accordance with the best engineering practices.

c) The equipment design shall be suitable to render satisfactory operation under the conditions prevailing at site, and the equipment shall operate satisfactorily under normal load and voltage variations and frequency variations (50 Hz □ 3%) ensuring the safety, further include all necessary provisions ensuring the safety of the operating and maintenance personnel.

d) The applicable standards of various equipment as specified here below:

2.1 11kV Ring Main unit

Description	Standard
11kV Ring Main unit	
AC metal enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV	IS 3427 / IEC 62271-200
Classification of degrees of protection provided by enclosures of electrical equipment	IS 12063 / IEC 60529
High Voltage Switches	IS 9920 (Parts 1 to 4) / IEC 60694
Specification for AC disconnectors and earthing switches for voltages above 1000 V	IS 9921 (Parts 1 to 5)

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HV AC Circuit Breakers	IS 13118
Dimensions of terminals of HV Switchgear and Control gear	IS 10601
General requirements of switchgear and control gear for voltages exceeding 1000 V	IS 12729
High voltage/Low voltage prefabricated substations	IEC 1330
Common clauses for MV switchgear standards	IEC 62271-100/200
Monitoring and control	IEC 6081
Current Transformers	IS 2705 / IEC 60044-1
Voltage transformers	IS 3156 / IEC 60044-2
Specification for Static Protective Relays	IS 8686
Standards for high voltage metal clad switchgear up to 52 KV.	IEC 62271-200

Wherever IEC standards are indicated, suitable equivalent IS standards may be considered

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3. Key RMU Configurations of RING MAIN UNIT

As a minimum, the RMUs shall be equipped with on-load break switches and a fault passage indicator (FPI), VPIS, circuit breakers, and numerical relays for the protection of transformer feeders, tripping and protection functionalities from the Communicable Numerical relay to be provided on the RMU. The Load Break Switches and earthing switches shall be housed in SF6 and the Circuit Breakers used in the RMU shall be vacuum interrupter type. Each module shall consist of VPIS, FPI in LBS Module (N-1) but not less than 1 no's per RMU, Current Transformer and Numerical Relay with communication in all CB module. Suitable arrangement for mounting FRTU, modem or Ethernet Switch/LIU along with battery, battery charger shall be provided in RMU as per required configuration.

Key Configurations

A. 2 WAY, 11KV, 630A, 21 kA 3Sec, SF6 Outdoor RMU - 2LBS

Non-Extensible Two (2) Motor operated load break switches (LBSs) with Manual operated earthing switches **in SF6** SCADA Compatible and base channel. Battery charger along with batteries required for Electrical operations of RMU is in the scope of the Bidder. Each module shall consist of VPIS, FPI in LBS Module (N-1) but not less than 1 no's per RMU. Suitable arrangement for mounting FRTU, modem or Ethernet Switch/LIU along with battery, battery charger shall be provided in RMU. The recommended mounting size of FRTU is 680mm(H) X 250mm(D) X 565mm(W), However, the same to be confirmed at the time of drawing approval.

B. 3 WAY RMU, 11KV, 630A, 21 kA 3Sec, SF6 Outdoor RMU – 2LBS + 1CB

Non-Extensible Two (2) Motor operated load break switches (LBSs) with Manual operated earthing switches **in SF6** and One **(1) vacuum circuit breaker** with Electrical closing and tripping along with disconnector and earthing switches SCADA Compatible and base channel. Battery charger along with batteries required for Electrical operations of RMU is in the scope of the Bidder. Each module shall consist of VPIS, FPI in LBS Module (N-1) but not less than 1 no's per RMU. Suitable arrangement for mounting FRTU, modem or Ethernet Switch/LIU along with battery, battery charger shall be provided in RMU. The recommended mounting size of FRTU is 680mm(H) X 250mm(D) X 565mm(W), However, the same to be confirmed at the time of drawing approval.

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C. 3 WAY RMU, 11KV, 630A, 21 kA 3Sec, SF6 Outdoor RMU – 3LBS

Non Extensible Three (3) Motor operated load break switches (LBSs) with Manual operated earthing switches **in SF6** SCADA Compatible and base channel. Battery charger along with batteries required for Electrical operations of RMU is in the scope of the Bidder. Each module shall consist of VPIS, FPI in LBS Module (N-1) but not less than 1 no's per RMU. Suitable arrangement for mounting FRTU , modem or Ethernet Switch/LIU along with battery, battery charger shall be provided in RMU. The recommended mounting size of FRTU is 680mm(H) X 250mm(D) X 565mm(W), However, the same to be confirmed at the time of drawing approval.

D. 4 WAY RMU, 11KV, 630A, 21 kA 3Sec, SF6 Outdoor RMU – 2LBS + 2CB

Non Extensible two (2) Motor operated load break switches (LBSs) with Motor operated earthing switches **in SF6** and **2 vacuum circuit breaker** with Electrical closing and tripping along with disconnector and earthing switches SCADA Compatible and base channel. Battery charger along with batteries required for Electrical operations of RMU is in the scope of the Bidder. Each module shall consist of VPIS, FPI in LBS Module (N-1) but not less than 1 no's per RMU, Current Transformer and Numerical Relay with communication in all CB module. Suitable arrangement for mounting FRTU , modem or Ethernet Switch/LIU along with battery, battery charger shall be provided in RMU. The recommended mounting size of FRTU is 680mm(H) X 250mm(D) X 565mm(W), However, the same to be confirmed at the time of drawing approval.

E. 2 WAY, 11KV, 630A, 21 kA 3Sec, SF6 Outdoor RMU - 2LBS

Non Extensible Two (2) Motor operated load break switches (LBSs) with Manual operated earthing switches **in SF6** SCADA Compatible and base channel. Battery charger along with batteries required for Electrical operations of RMU is in the scope of the Bidder. Each module shall consist of VPIS, FPI in LBS Module (N-1) but not less than 1 no's per RMU. Suitable arrangement for mounting FRTU , modem or Ethernet Switch/LIU along with battery, battery charger shall be provided in RMU.

Auxiliary PT as per specification shall be provided in RMU. The recommended mounting size of FRTU is 680mm(H) X 250mm(D) X 565mm(W), However, the same to be confirmed at the time of drawing approval.

F. 3 WAY RMU, 11KV, 630A, 21 kA 3Sec, SF6 Outdoor RMU – 2LBS + 1CB

Non Extensible Two (2) Motor operated load break switches (LBSs) with Manual operated earthing switches **in SF6** and One **(1) vacuum circuit breaker** with Electrical closing and tripping along with disconnector and earthing switches SCADA Compatible and base channel. Battery charger along with batteries required for Electrical operations of RMU is in the scope of the Bidder. Each module shall consist of VPIS, FPI in LBS Module (N-1) but not les than 1 no's per RMU, Current Transformer and Numerical Relay with communication in all CB module. Suitable

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arrangement for mounting FRTU , modem or Ethernet Switch/LIU along with battery, battery charger shall be provided in RMU. The recommended mounting size of FRTU is 680mm(H) X 250mm(D) X 565mm(W), However, the same to be confirmed at the time of drawing approval.

Auxiliary PT as per specification shall be provided in RMU.

G. 3 WAY RMU, 11KV, 630A, 21 kA 3Sec, SF6 Outdoor RMU – 3LBS

Non Extensible Three (3) Motor operated load break switches (LBSs) with Manual operated earthing switches **in SF6** SCADA Compatible and base channel. Battery charger along with batteries required for Electrical operations of RMU is in the scope of the Bidder. Each module shall consist of VPIS, FPI in LBS Module (N-1) but not less than 1 no's per RMU. Suitable arrangement for mounting FRTU , modem or Ethernet Switch/LIU along with battery, battery charger shall be provided in RMU. The recommended mounting size of FRTU is 680mm(H) X 250mm(D) X 565mm(W), However, the same to be confirmed at the time of drawing approval.

Auxiliary PT as per specification shall be provided in RMU.

H. 3 WAY RMU, 11KV, 630A, 21 kA 3Sec, SF6 Outdoor RMU – 2LBS + 2CB

Non Extensible two (2) Motor operated load break switches (LBSs) with Motor operated earthing switches **in SF6** and **2 vacuum circuit breaker** with Electrical closing and tripping along with disconnector and earthing switches SCADA Compatible and base channel. Battery charger along with batteries required for Electrical operations of RMU is in the scope of the Bidder. Each module shall consist of VPIS, FPI in LBS Module (N-1) but not less than 1 no's per RMU, Current Transformer and Numerical Relay with communication in all CB module. Suitable arrangement for mounting FRTU , modem or Ethernet Switch/LIU along with battery, battery charger shall be provided in RMU. The recommended mounting size of FRTU is 680mm(H) X 250mm(D) X 565mm(W), However, the same to be confirmed at the time of drawing approval.

Auxiliary PT as per specification shall be provided in RMU.

Note : All the above configuration can also be provided with FRTU and Modem/Ethernet Switch-LIU as per the requirement mentioned in the Tender BOQ.

Other configurations if any in the tender shall also be adopted based on the requirement.

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11KV RMU TECHNICAL SPECIFICATION

4. CLIMATIC CONDITIONS OF THE INSTALLATIONS.

The equipment designed shall be capable of withstanding the following climatic conditions.

a) Max. Ambient température : 45 °C

b) Max. Daily Average ambient temp. : 35 °C

c) Min Ambient Temp : 10 °C

d) Maximum Humidity : 100%

e) Minimum Humidity : 10%

f) Average no. Of thunderstorm days per annum : 50

g) Average Annual Rainfall : 3500 mm

h) Average No. of rainy days per annum : 180

i) Rainy months : June to Dec.

j) Altitude above MSL not exceeding : 1000 mètres

k) Wind Pressure : 150kg/sq. m up to an elevation of 10 mtrs.

l) Seismic Level : 0.3g

m) Isoceraunic Level : 50

If the derating of the equipment is applicable for above climatic conditions same shall be specified by the bidder.

4.1 Control supply:

The Protection and control unit range shall be designed to accommodate the control power supply voltages of 24 V DC voltage which shall be supplied through set of Battery and Battery Charger.

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5. Technical parameters

5.1 Scope of Work

- The Package scope of work shall include Site Survey, design, manufacture, testing, delivery, installation, commissioning Ring Main Units capable of being monitored and controlled by the SCADA/DMS and also manually operated RMUs. This also includes supply of relevant 11 kV cable termination kits including the jointing as per this tender specification

- Where relevant, the RMU scope of work shall be coordinated with the work to be carried out like providing of UG cable under the project's other construction packages.

- Each RMU shall include its own power supply unit (including auxiliary power transformer (as applicable configuration), batteries, and battery charger), which shall provide a stable power source for the RMU. In case of remote operated RMUs, the same will be connected to the FRTU.

- The over current earth fault relay should be dual powered (self-powered and auxiliary DC voltage.

- Each new RMU shall be equipped with main-line load break switches and a fault passage indicator (FPI). Furthermore, to protect each of its lateral / transformer feeders, it shall be equipped with a corresponding set of circuit breakers and dual powered with battery backup numerical relays. The RMU shall include potential-free contacts so as to connect to SCADA/DMS via FRTUs in case of remote operated RMUs, so as to:

    - Monitor and control the open/closed status of the RMU circuit breakers and load break switches.

    - Monitor the local/remote position of RMU manually operated switches that can be used to enable and disable remote monitoring.

    - Monitor the health of the power supply, which will include battery failure and low voltage indications.

    - Monitor the open/closed status of RMU earthing switches.

    - Monitor for low SF6 gas pressure indication in case of SF6 Breaker.

    - Monitor for circuit breaker relay operations.

    - Monitor for indication of main-circuit fault detected by the RMU's FPI.

    - Power supply indications including battery failure and voltage alarms

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- FPI reset control
- The civil works, **foundations work** including providing of Earth pits and earth strips and their connectivity to earth pits for erection and commissioning of the RMU's are in the scope of the Bidder.

RMU shall have local indications as minimum

1. Operation counter on Front / Inside, the RMU Panel to be provided for each LBS & CB, non-resettable type.
2. Cable charge status for each LBS & CB - LED indication for each phase (VPIS)
3. CB status ON/OFF Indication
4. Earth switch status close status for each LBS/Disconnector
5. LBS On/Off indication – Green Off, Red On
6. Flag for CB Protection relay operated on Fault

5.2 Environmental Conditions

As per climatic conditions mentioned above.

5.3 Distribution Network Electrical Parameters

The main parameters of the distribution network are as follows:

- Nominal system voltage: - 11 kV (rms)
- Highest system voltage: - 12 kV (rms)
- Number of phases: - 3
- Frequency: - 50 Hz
- Variation in frequency: - 50 ±3% Hz
- Type of earthing: - Solid earth
- Power frequency withstand voltage: - 28 kV rms
- Basic impulse withstand voltage: - 75 kV peak

5.4 Testing

The specified RMUs shall be subject to Type tests, Routine tests, and Acceptance tests. Where applicable, these tests shall be carried out as per the standards stated above. Prior to acceptance testing,

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the supplier shall prepare and submit a detailed test plan for review and approval by the Utility. All the relevant type test reports shall be submitted along with drawing for scrutiny and shall not be older than 7 years from the award of the tender. Site acceptance test also shall be carried out during commissioning and handover.

5.5 11 KV RMU TECHNICAL PARAMETERS

- The scope of supply is 11 kV RMU suitable for outdoor application
- The RMU to be supplied shall be compact and shall meet the following requirements:

  Easy to install

  Safe and easy to operate

  Compact

  Low maintenance

  It shall include, within the same metal enclosure number of MV functional units required for connection,

  - Power supply including the battery ~~bank~~ for controlling the LBS and breakers,
  - Load break switches,
  - Earthing Switches
  - Circuit Breakers
  - Relays
  - Equipment and material conforming to any other standard, which ensures equal or better quality, may be accepted. In such case copies of English version of the standard adopted shall be submitted.
  - The electrical installation shall meet the requirement of Indian Electricity Rules, 1956 as amended up to date, relevant IS code of practice and Indian Electricity Act, 1977. The Electricity Act, 2003 and Amendment if any shall also apply. In addition, other rules and regulations applicable to the work shall be followed. In case any discrepancy the most stringent and restrictive one shall be binding.

The high-tension switchgear offered shall in general comply with the latest issues including amendments of the following standards but not restricted to them.

All design features of the proposed RMU, as described in the supplier's bid and in the bid's reference materials, shall be fully supported by the equipment delivered. The key design features include those that relate to:

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- Maintainability, expandability, and life span
- Ability to operate in severe outdoor environmental conditions.
- Immunity to electrical stress and disturbance.
- Acceptable insulation properties.
- Convenient FRTU interconnection features.
- The Utility intends to be self-reliant for RMU maintenance. To this end, the Supplier shall provide the support, documentation, and training necessary to operate and repair the RMU. The Utility will prefer RMU designs that do not require periodic preventive maintenance and inspections. To facilitate expansion and maintenance, the RMUs should be of modular type.
- The whole switchgear (RMU) should be suitable for extension on at least one side either left or right. (Applicable for Extensible RMU only)
- Each RMU shall have a design life of at least 25 years from the date of final acceptance. The Contractor shall make available, at no cost to the Employer, the manufacturing drawings, wiring diagrams, bill of material, foundation detail drawings, unpacking and transportation instructions, operation & maintenance manual, As-built drawings, installation and commissioning manual, and other relevant documentation. The specific components of each component /sub-assembly shall be identified and referenced in Supplier-supplied documentation.
- Each RMU shall include its own power supply, including battery and battery charger. In addition, RMU should have a bus connected PT (air insulated), which shall serve as the power supply's 230 V AC input.(As per Configuration)

5.6 Outdoor Features

- The RMUs shall be designed specifically for outdoor installation Non Kiosk design with ingress protection degree of IP54.They shall also be suitable for conditions in which they will be exposed to heavy industrial pollution, and high levels of airborne dust.
- The Outdoor RMU shall be conformably coated to meet these climatic conditions. In this respect, standards such as IEC 62271-200, covering equipment, systems, operating conditions, and environmental conditions shall apply. In particular, the RMU equipment shall have been type tested for IP54 from a national NABL aggregated laboratory.
- In addition to the above, materials promoting the growth of fungus or susceptibility to corrosion and heat degradation shall not be used, and steps shall be taken to provide rodent proofness.

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- The main SF6 tank, housing the on-load break switches and the vacuum circuit breakers, should be of minimum 3 mm robotically welded stainless steel tank to have high corrosion resistance and ensure high longevity. This tank containing SF6 to a maximum pressure as per manufacturer type tested design should be hermetically welded and sealed for life, ensuring a leakage rate not more than 0.1 % per annum. Except for stainless steel, all steel surfaces that are not galvanized shall be treated to protect against corrosion.
  The outdoor enclosure shall be made of minimum 2mm GI or 3mm CRCA.

As a minimum, corrosion treatment shall include the following procedures:

- The surface shall be cleaned to bare material by mechanical or chemical means.
- Must be powder coated by means of seven tank process
- All outdoor metal enclosures shall be treated in 7 tank Pre-treatment process & should be painted with UV Resistant Pure Polyester Powder coating. The powder coated sheet steel fabrication to withstand tropical heat and extremes of weather.

Immunity to Electrical Stress and Disturbance

The electrical and electronic components of the RMU shall conform to relevant standards concerning insulation, isolation, and the product shall comply with IEC 60270 Immunity to electrical stress & disturbance. The ability to meet these requirements shall be verified by type tests carried out by accredited test laboratories that are independent of the bidder and/or the manufacturer of the RMU components. Certified copies of all available type test certificates and test results shall be included as part of the bidder's proposal.

Minimum Insulation of Equipment

- The RMUs shall be of SF6 gas-insulated type with a maximum gas operating pressure up to 1.3 BAR @ 20 deg C.

Interconnecting Cables, Wiring, Connectors, and Terminal Blocks

- The Contractor shall provide all interconnecting wires, cables, connectors, terminations and other wiring accessories such as terminal blocks required by the RMU.

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11KV RMU TECHNICAL SPECIFICATION

Metallic Cables

- All metallic cables and wiring shall be of required cross-section solid or multiple strands of round copper conductors and have flame retardant insulation. All wiring shall be neatly laced and clamped.
- All wire and cable connectors and terminators shall be permanently labeled for identification. All connection points for external cables and wires shall be easily accessible for connection and disconnection and shall be permanently labeled. Conductors in multi-conductor cables shall be individually color-coded.

Connectors

- Plug-type connectors with captive fasteners shall be used for all interconnections. The connectors shall be polarized to prevent improper assembly.

RMU-FRTU Connectors

- In using a terminal block, no more than two cables or wires shall be connected to any of its individual terminals.
- Making strips shall be used to identify all external connection blocks. Marking tags shall be read horizontally. All terminals to which battery or other high voltages are connected shall be provided with fireproof covers.
- All individual status input, AC voltage input, and control output points shall be isolatable without the need to remove wiring by means of individual terminal blocks of the removable link type. In order to avoid open circuits on the secondary side of CTs, termination blocks with by-pass bridges shall be provided for all AC current inputs.
- Terminal blocks shall comply with iEC 60947-7-1 (2009): Low-voltage Switchgear and Control Gear, Part 7-1: Ancillary Equipment, Terminal Blocks for Copper Conductors.
- Each RMU shall be equipped with all necessary connectors, terminal blocks, and other accessories that will allow it to be connected to the FRTU, which in-turn will send required indications and measurements to the DMS via the communications system.

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6. Nameplate Information

RMU nameplate information shall be determined in agreement with the Employer. All the components and operating devices of the RMU shall be provided with durable and legible nameplates containing all technical parameters. Name plates shall be suitably embossed with" PO no. with date", "PROPERTY OF GED, GOA' & "CODE NUMBER" along with the following information. A Danger plate of appropriate size shall also be provided on the enclosure. All the components and operating devices of the RMU shall be provided with durable and legible nameplates containing all technical parameters. Name plates shall be suitably embossed with" PO no. with date", "PROPERTY OF GED, GOA' & "CODE NUMBER" along with the following information. A Danger plate of appropriate size shall also be provided on the enclosure.

- Name of manufacturer and country.
- Type, design, and serial number.
- Rated voltage and current.
- Rated frequency.
- Rated symmetrical breaking capacity.
- Rated making capacity.
- Rated short time current and its duration.
- Rated lightning impulse withstand voltage.
- Degree of protection.
- SF6 gas filling pressure.
- Mass of Unit.
- Purchase Order number and date.
- Month and year of supply/manufacturing.

Each RMU shall also exhibit a Danger Board to indicate the presence of high voltage (11,000 V).

7. Parameter Requirements

The RMUs shall be suitable for cable networks of 630 Amps and loop cable networks of 400 Amps. The minimum design parameters to which their major components shall conform or exceed are summarized in the following tables.

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Table 1: System Parameters

Parameter	**Value**
Nominal System Voltage	11 kV
Highest System Voltage	12 kV
Rated Voltage	12 kV
System frequency	50 Hz
Number of Phases	3 Phase/3 Wire

Table 2: Circuit Breaker Parameters

Parameter	**Value**
Lightning Impulse Withstand Voltage Phase-to-Phase & Phase-to- Earth:	75 kV (peak)
Power Frequency Withstand Voltage to Earth, Between Poles, & Across Opening Span	28 kV rms for 1 minute
Rated Short Time Withstand/Breaking Current:	21 kA (rms)
Rated Duration of Short Circuit:	3 seconds
Rated Normal Current:	630 Amps (rms)

Table 3: Load Break Switch Parameters

Parameter	**Value**
Rated Short Circuit Making Capacity	50 KA peaks at rated voltage (both LBS & Earthing Switch)

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Rated Load Interrupting Current	630 Amps
Rated Cable Charging Interrupting Current	25 Amps

The RMU switchgear shall be capable of withstanding the specified currents without damage in accordance with the latest versions of IEC 60694 (Common Specifications for High-Voltage Switchgear and Control Gear Standards) and IS 3427 (AC Metal Enclosed Switchgear and Control Gear for Rated Voltages above 1 kV and up to and including 52 kV).

The equipment offered shall be as per the standards specified in the bid specification and if the offered equipment is tested with any other international standards which is superior to the standards specified they can also be considered and the bidder has to submit the documentary evidence for the same to Utility.

8. Design Details

- The RMU shall be designed to operate at the rated voltage of 12 kV.
- It shall include, within the same metal enclosure, On-load break switch, circuit breakers and earthing switches for each Load Break Switch/Circuit Breaker.
- Suitable fool-proof interlocks shall be provided to the earthing switches to prevent inadvertent or accidental closing when the circuit is liv and the concerned Load Break Switch/Circuit Breaker is in its closed position.
- The degree of protection required against prevailing environmental conditions, including splashing water and dust, shall be not less than IP 54 as per IS 12063.
- The active parts of the switchgear shall be maintenance free. Otherwise, the RMU shall be of low-maintenance type.
- The tank shall be made of minimum 3 mm thickness of robotically welded stainless
- The Stainless-Steel tank should be completely welded to ensure IP 67 degree of protection and shall be internal arc tested.
- The RMU shall be suitable for mounting on its connecting cable trench.
- For each RMU enclosure, a suitably sized nameplate clearly identifying the enclosure and the electrical characteristics of the enclosed devices shall be provided.

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- The access to the cable compartment should be from the front / Side /Rear of the switchgear only to have minimum operating & maintenance space at site.
- The RMU design shall be such that access to live parts shall not be possible without the use of tools.
- The design shall incorporate features that prevent any accidental opening of the earth switch when it is in the closed position. Similarly, accidental closing of a Circuit Breaker or Load Break Switch shall be prevented when the same is in an open position.
- The RMU tank must be equipped with a suitable pressure relief device. The pressure relief must ensure that the escaping gases are dissipated to the rear / top or bottom of the switchgear.
- The complete RMU shall be tested in an accredited INDIAN or FOREIGN laboratory and designed for an Internal Arc.
- The RMU should be internal arc tested for 21KA for 1Second with IAC-AFLR classification for gas tank and gas to be released from the rear top or bottom from operator.
- The complete RMU shall have a provision to top up gas at site.

Earthing

- There shall be continuity between metallic parts of the RMUs and cables so that there is no dangerous electric field in the surrounding air and the safety of personnel is ensured.
- The RMU frames shall be connected to the main earth bars, and the cables shall be earthed by an Earthing Switch having the specified short circuit making capacity.
- The Earthing Switch shall be operable only when the main switch is open. In this respect, a suitable mechanical fail-proof interlock shall be provided.
- The Earthing Switch shall be provided with a reliable earthing terminal for connection to an earthing conductor having a clamping screw suitable for the specified earth fault conditions. The connection point shall be marked with the earth symbol.
- The Earthing Switch shall be fitted with its own operating mechanism. In this respect, manual closing shall be driven by a fast-acting mechanism independent of the operator's action.

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Incomer Load Break Switches

- The Load Break Switches shall be maintenance free. With outdoor canopy doors open, the position of power contacts and earthing contacts shall be clearly visible from the front of the RMU through the Mimic facia. The front fascia shall be screen printed sticker type fascia is not acceptable.

- The position indicator shall provide positive contact indication in accordance with IS 9920. In addition, the manufacturer shall prove the reliability of indication in accordance with IS 9921. These switches shall have three positions (or states), i.e., Open, Closed, and Earthed, and shall be constructed in such a way that natural interlocking prevents unauthorized operations.

- The switches shall be fully assembled, tested, and inspected in the factory.

- In case of Manual operation without motors, opening and closing shall be driven by a fast-acting mechanism independent of manual operator action.

- The Load Break Switches shall be provided with a motorized operating mechanism suitable for SCADA control..

- A facility shall be provided with an electrical operating mechanism allowing an operator at the RMU site to operate the Load Break Switches without any modification of the operating mechanism and without de-energizing the RMU ,

Circuit Breakers

- The Circuit Breakers shall be maintenance free and, when standing in front of the RMU with outdoor canopy doors open, their positions shall be clearly visible, through the Mimic facia. The position indicator shall provide positive contact indication in accordance with IS 9920. The breakers shall have two positions (or states), i.e., Open, Closed, and Off Load Three position switch with Open, Close and Earthed, and shall be constructed in such a way that natural interlocking prevents unauthorized operations. They shall be fully assembled, tested, and inspected in the factory.

- An operating mechanism made of steel shall be used to manually close the Circuit Breaker and charge the mechanism in a single movement. It shall be fitted with a local system for

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manual tripping. There shall be no automatic reclosing. The Circuit Breaker shall be capable of closing fully and latching against the rated making current. Mechanical indication of the OPEN, CLOSED, and EARTHED positions of the Circuit Breaker and off Load isolator shall be provided.

- Each Circuit Breaker shall operate in conjunction with a suitable protection relay under transformer feeder/ circuit phase and earth fault conditions. In addition, the Circuit Breaker shall be provided with a motorized operating mechanism that can be remotely controlled by the SCADA.

- Operating counters and VCB ON/OFF indication shall mandatorily be on the mimic surface , since if the indication is inside visible through a fiber/glass screen is bound to accumulate dust in future reducing visibility .

Cable Termination

- Bushings shall be conveniently located for working with the specified cables and shall allow for the termination of these cables in accordance with the prevailing practice and guidelines of cable manufacturers. The dimensions of the terminals shall be in accordance with IS 10601.

- A Non-Ferro magnetic cable clamp arrangement shall be provided for each cable to be terminated in the RMU.

- A suitable arrangement for the Circuit Breakers, Earthing Switches, and Load Break Switches shall be provided so that these devices can be padlocked in the "Open" and "Closed" positions.

- A permanent "Live Cable" indication as per IEC 61958 shall be provided for each cable using a capacitor voltage divider.

- It shall be possible to test the core or sheath insulation of the cables without disconnecting the cables in the cable compartment, after accessing the cable compartment. The cable end kits including the supply and erection is in the scope of the successful bidder.

- Two earth pits of 10 ohms each shall be provided diagonally and earthing to the equipment shall be done as detailed in the scope of supply.

- Cable termination shall be from front/Side/Rear

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Safety of Equipment

- With respect to the RMU's SF6-filled equipment, any accidental overpressure inside the sealed chamber shall be limited by the opening of a pressure-limiting device in the enclosure so that the gas will be released away from the operator and to the rear-top or bottom of the tank without endangering the ***operator*** or anyone else in the vicinity of the RMU.

- All manual / motorized operations, monitoring of open/close position of switches/breakers, live line indicators, FPI indication, SF6 gas pressure indication and access to the cable compartment shall be carried out from the front/Side/Rear of the RMU only.

Current Transformers.

- The RMU shall be provided with current transformers. These CTs shall meet the electrical and mechanical ratings as per the relevant standards.

- 3 Nos. ring type, single core CTs shall be provided in each circuit breaker cable compartment to mount a 3 Nos. single-core, ring type CT for protection purposes.

- The CTs shall conform to IS 2705. The design and construction shall be sufficiently robust to withstand thermal and dynamic stresses during short circuits. Secondary terminals of CTs shall be brought out.

CTs for Protection:

- Material : Epoxy resin cast/ Tape wound
- Burden : 2.5VA
- Ratio : 100-50-25-15/1-1 A (Or as per during detail engineering/drawing approval)
- Accuracy Class : 5P20/0.5 s

- The RMU's other CTs / sensors, i.e., those used by Fault Passage Indicators (FPIs), shall be supplied by the FPI manufacturer. These CTs/sensors shall be an integral part of the FPI's design to ensure that they properly match the requirements of the FPI.

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Voltage Transformers

- A single-phase potential transformer shall be provided. RMU should have a bus connected PT (air insulated), which shall serve as the power supply's 230 V AC
- HRC fuses shall be provided on the HV side.
- The PTs shall be of cast epoxy-resin construction, and they shall conform to IS 3156. Their design and construction shall be sufficiently robust to withstand the thermal and dynamic stresses during short circuits.

Fault Passage Indicator for RMU

- The FPI shall facilitate quick detection of faulty section of line. The fault indication may be based on monitoring fault current flow through the device. The FPI should be self-powered and should have internal lithium battery for external indication and setting of FPI in the absence of current.
- Fault detection - Phase to phase and Phase to earth faults.
- One potential-free output contacts for hardwiring to FRTUs. On this basis, the SCADA/DMS will be able to monitor phase / earth fault condition.
- Local fault indications - FPI front panel along with LED indication on front panel of RMU enclosure.
- Multiple reset option –
- End of time delay (Adjustable from 2 to 16 Hrs)
- Remote reset (Via potential free input contact of FPI)
- Manual reset (Reset button on front panel of FPI)
- Automatic reset on current restoration.

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The characteristics of the FPIs shall include:

- Phase fault thresholds configurable from at least 100 to 800 A
- Earth fault thresholds configurable from at least 20 to 200 A
- Multiple number of steps for adjusting phase and earth fault thresholds.
- Fault current duration range configurable from at least 40 ms to 100 ms in 20 ms steps and further 100 ms to 300 ms in 50 ms steps.
- Variations with respect to these characteristics may be acceptable if they prove applicable and provide the same or better flexibility.

Protection Relay

- The RMU shall be equipped with self-powered numerical relays.

  The Circuit Breaker in the RMU shall be fitted with a communicable-type, self-powered numerical relay, i.e., one for each outgoing circuit breaker. The protection relay's auxiliary contacts shall be provided for hardwiring to the FRTU. The relay shall also interface with the FRTU via an RS 232/485 port in order to send, as a minimum, real-time reading using the MODBUS /suitable protocol as per GED

The numerical relay shall be self-powered and should provide Inverse Definite Minimum Time (IDMT) and Instantaneous protection characteristics. On this basis, the relay as a minimum shall provide:

- Phase Overcurrent Protection (50/51)
- Earth Fault Protection (50N/51N)

The relay shall be provided with an input for remote tripping, which shall be realized via an electric output pulse even without presence of phase current. A flag indicator shall be installed for signaling the occurrence of trip conditions.

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Features and Characteristics

The numerical relay shall have the following minimal features and characteristics noting that variations may be acceptable if they provide similar or better functionality and/or flexibility:

- It shall be housed in a flush mounting case and powered by the RMU power supply unit.
- It shall have three phase overcurrent elements and one earth fault element.
- IDMT trip current settings shall be 50-200% in steps of 1% for phase overcurrent and 10-80% in steps of 1% for earth fault.
- Instantaneous trip current settings shall be 100-3000% in steps of 100% for phase overcurrent and 100-1200% in steps of 100% for earth fault.
- Selectable IDMT curves shall be provided to include, for example, Normal Inverse, Very Inverse, Extreme Inverse, Long Time Inverse, and Definite Time. Separate curve settings for phase overcurrent and earth fault shall be supported.
- For IDMT delay multiplication, the Time Multiplier Setting (TMS) shall be adjustable from 0.01 to 0.1 in 0.01 steps.
- The relay shall also be provided with:
  - Alphanumeric Liquid Crystal Display (LCD) for relay setting.
  - Communications via a MODBUS RS232/RS485 /IEC 103 port to provide the FRTU (and hence the DMS) with phase current measurements. It is also desirable that this same means of communication can be used by the FRTU to send setting and control commands to the relay.
  - Parameter change capability that is password protected.
  - Front USB port for local communication with laptop/PC
  - Capability to record up to 5 of the latest fault records.

Power Supply and auxiliary power transformer (As Applicable based on Configuration)

Each RMU shall be fitted with a power supply, including batteries and battery charger, suitable for operating the motors of the On-load Isolators and Circuit Breakers. On this basis, the following operational specifications shall apply:

- The power supply unit shall conform to the following requirements:

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- Input: 230 V AC nominal from the RMU's auxiliary power transformer allowing for possible variations from 190 to 300 V AC
- Output: Stable 24 V DC.
- Batteries: 24 V DC
- Battery Charger: 10A

- The auxiliary power transformer shall be of suitable rating as per the load calculation and the Auxiliary power transformer inputs shall be equipped with surge protection devices in accordance with IEC 62305.
- The 24 V DC batteries shall have sufficient capacity to supply power to the following devices with a nominal backup of 4 hours:
  - RMU's motors for a minimum of five (5) operations
  - RMU's trip coils, close coils, FPI.
- The batteries shall be of sealed lead acid VRLA or dry type and shall have a minimum life of five (5) years at 25°C.
- The battery charger shall be fully temperature compensated.

The battery charger shall be provided with an alarm at Local and Remote SCADA for following condition.

- Low battery Voltage
- High battery Voltage
- Battery failed
- AC supply fail
- Battery Charger fail

Construction

- The RMU shall be sufficiently sturdy to withstand handling during shipment, installation, and start-up without damage. The configuration for shipment shall adequately protect the RMU equipment from scraping, banging, or any other damage.

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Enclosures

- All supplied enclosures shall be sized to provide convenient access to all enclosed components. It shall not be necessary to remove any component to gain access to another component for maintenance purposes or any other reason.
- The enclosures shall also be designed to ensure that the enclosure remains rigid and retains its structural integrity under all operating and service conditions with and without the enclosure door closed.
- Enclosure panel body shall be made with minimum CRCA 3 mm or GI 2 mm thick and gland plate with 3 mm thick.

The appropriate corrosion treatment and finish requirements shall apply to both inside and outside enclosure surfaces. Other required features are as follows:

- Constructed according to IEC 60529 with IP rating 54 or better. Must be grit/shot blasted, thermally sprayed with Zinc alloy, phosphate, and subsequently painted with Pure Polyester Powder, the overall paint layer thickness including Zinc spraying shall be of the order of 70 to 80 microns

- Means, such as insulated heat shields and/or air vents, to prevent high temperatures from damaging the RMUs enclosed components. If air vents are installed, these vents shall in no way reduce the effectiveness of the enclosure's protective characteristics.

- A metal pocket attached to the inside of the front door to hold documentation, maintenance log sheets, and other such information.

- Door opening mechanism with built-in key-lock facility suitable for padlocking. An opening mechanism that is less prone to breaking than a projecting door handle is preferred, e.g., a push-button opening mechanism.

- A grounding terminal including grounding bolt and lock washer for connecting a 50 mm^2 copper or galvanized steel grounding conductor. The grounding bolt and lock washer shall be made of stainless steel.

- Means of preventing moisture from condensing on electronic components mounted inside the enclosure proposed for housing the FRTU. If necessary, heaters providing adjustable thermostat-control within the range 20 to 60 °C shall be installed in the enclosure for this purpose.

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- Means of protection against rainwater, and high levels of airborne dust, should be provided.
- Means of enabling the SCADA to monitor the open/closed status of the enclosure door. A SCADA equipment alarm shall be produced whenever the enclosure door is open.
- The outdoor RMU shall include having a minimum protection class of IP 54. It shall be tested in accordance with the latest IEC 60529 standard.
- The outdoor canopy shall have a hinged front access door with a two-point latch locking system with a latch operating lockable handle. The door shall be fitted with a perimeter flange and gasket (rubber or neoprene) to prevent the entrance of water. In addition, a means of monitoring and indicating that the door is open shall be provided.

Motors

- The RMU shall be fitted with spring charging motors of high insulation class allowing the circuit breakers and load break switches to be operated without manual intervention.
- In addition to allowing circuit breaker tripping by the RMU's protection relays, the motorized operating mechanism shall be suitable for remote control by the SCADA. (For SCADA enabled RMUs)
- The motors along with the supplied control card and push buttons shall allow Utility's personnel to electrically operate the circuit breakers and load break switches at site without any modification of the operating mechanism and without de-energizing the RMU.

9. TECHNICAL SPECIFICATION OF FRTU

1.0 General:

The Feeder Remote Terminal Unit (FRTU) shall be integral part of Ring Main Units (RMUs). FRTU shall be used for control of switching devices such as breaker, isolator inside RMU panel, etc. from Master station(s). The supplied FRTUs shall be interfaced with the RMUs, FPI, communication equipment, and power supply distribution boards; for which all the interface cables, TBs, wires, lugs, glands etc. shall be supplied, installed & terminated by the supplier.

The FRTU should be enabled for communication to any Front-End Processor of any vendor and should be capable of being integrated to any SCADA-DMS system of any vendor over IEC 104 protocol

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The FRTU shall be housed in a control cabinet that is mounted with the RMU panel with proper locking.

1.1 Design Standards:

The FRTUs shall be designed in accordance with applicable International Electro-Technical Commission (IEC) standards, unless otherwise specified in this Technical specification. In all cases the provisions of the latest edition or revision of the applicable standards in effect shall apply.

1.2 FRTU Functions:

All functional capability described herein shall be provided by the supplier even if a function is not initially implemented.

As a minimum, the FRTU shall be capable of performing the following functions:

a. Receiving and processing digital commands from the master station(s). Data transmission rates - 2400 to 115200 bps for Serial ports for MODBUS. and 100 Mbps for TCP/IP Ethernet ports
b. Use of IEC 60870-5-104/101 protocol to communicate with the Master station(s)

c. Use of MODBUS over RS485 interface, to communicate with the MFTs.
d. Have required number of communication ports for simultaneous communication with Master station(s), MFTs and FRTU configuration & maintenance tool.

e. FRTU shall have the capability of automatic start-up and initialization following restoration of power after an outage without need of manual intervention.

f. Remote database downloading of FRTU from master station from SCADA/DMS control Centre

g. As the SCADA/DMS system will use public domain such as Fiber/cellular etc, therefore it mandatory to guard the data/ equipment from intrusion/damage/breach of security & shall have SSL/VPN based security through MODEM.

h. Communication with at least two master stations simultaneously on IEC 60870-5-104 /101

i. FRTU should be remotely accessible, and user should be able to perform monitoring and diagnosis from a centralized location.

j. Inbuilt logics for breaker/isolator open/close functions.

k. Further FRTU should have provision for providing additional I/O modules and communication cards for future expansion.

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1.3 Communication ports:

The FRTUs shall have following communication ports to communicate with master station MFTs and configuration & maintenance terminal.

FRTU shall have two TCP/IP Ethernet port for communication with Master station(s) using IEC 60870-5-104 protocol and 1No.Rs232 serial port in case of IEC60870-101.

FRTU shall have 1No. of RS 485 port for communication with MFTs to be connected in daisy chain using MODBUS protocol if required in future. The MFT will act as slave to the FRTU. The FRTU shall transmit these values to the master station in the frame of IEC 60870-5-104/101 protocol.

FRTU shall have one port of serial/Ethernet for connecting the portable configuration (Local Display HMI) and maintenance tool for FRTU.

Sufficient number of communication ports shall be provided in the FRTU to be able to meet future requirements. The FRTU shall support the use of a different communication data exchange rate (bits per second) and scanning cycle on each port & different database for each master station.

Communication facility in FRTU to Master stations through 4G/3G etc for fixing communication mode (i.e Modem) shall be provided.

Note : MODEM/ETHERNET Switch/ SIM CARDS will be supplied and installed separately by M/s GED later

1.4 Status input:

FRTU shall be capable of accepting isolated dry (potential free) contact status inputs. The FRTU shall provide necessary sensing voltage, current, optical isolation and de-bounce filtering independently for each status input. The sensing voltage shall not exceed 24 Vdc/220VAC.

The FRTU shall accept two types of status inputs i.e. Single point Status inputs and Double point status inputs.

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To take care of status contact chattering, a time period for each point and the allowable number of operations per time period shall be defined. If the allowable number of operations exceed within this time period, the status change shall not be accepted as valid

Single point status input will be from a normally open (NO) or normally closed (NC) contact which is represented by 1-bit in the protocol message.

The Double point status input will be from two complementary contacts (one NO and one NC) which is represented by 2-bits in the protocol message. A switching device status is valid only when one contact is closed, and the other contact is open. Invalid states shall be reported when both contacts are open or both contacts are closed.

1.5 Sequence of Events (SOE) feature:

To analyze the chronology or sequence of events occurring in the power system, time tagging of data is required which shall be achieved through SOE feature of FRTU. The FRTU shall have an internal clock with the stability of 100ppm or better. The FRTU time shall be set from time synchronization messages received from master station using IEC 60870-5- 104 protocol. SOE time resolution shall be 10 msec or better

The FRTU shall maintain a clock and shall timestamp the digital status data. Any digital status input data point in the FRTU shall be assignable as an SOE point. Each time a SOE status indication point changes the state, the FRTU shall time-tag the change and store in SOE buffer within the FRTU. A minimum of 5000 events can be stored in the SOE buffer. SOE shall be transferred to Master Station as per IEC 60870-5-104 protocol.

1.6 Control Outputs:

The FRTU shall provide the capability for a master station to select and change the state of digital output points. These control outputs shall be used to control power system devices such as Circuit breakers, isolator, reset, relay disable/enable and other two-state devices, which shall be supported by the FRTU.

Each control output shall consist of one set of potential free NO contact. The output contacts shall be rated for at least 0.2 Amp. at 24 Vdc. These output contact shall be used to drive heavy duty relays. In case Control output module of FRTU does not provide potential free control of this rating, then separate

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control output relays shall be provided by the supplier. These relay coils shall be shunted with diodes to suppress inductive transients associated with energizing and de-energizing of the relay coils & shall conform to the relevant IEC requirements.

1.7 Heavy duty control output relays:

The control output contact from the FRTU shall be used for initiating heavy duty relays for trip/close of switching devices. The supplier shall provide heavy duty relay switch are in DIN rail mounting with aux voltage (coil voltage) on 24 V DC. Each control output relays shall consist of at least 2 NO contacts. The output contacts shall be rated for at least 10 Amps Continuous at 220Vdc and shall provide arc suppression to permit interruptions of an inductive load. Relay coils (24 V DC supply) shall be shunted with diodes to suppress inductive transients associated with energizing and de-energizing of the relay coils. The relays shall conform to the IEC255-1-00, IEC255-5 and IEC-60810 requirements.

- Upto 3 way RMU shall have 32 DI and 8 DO
- Above 4 way RMU shall have 40 DI and 16 DO

1.8 Input DC Power Supply:

The FRTU will be powered from a 24 V DC power supply system. The RTU shall not place additional ground on the input power source. The characteristics of the input DC power supply shall be Nominal voltage of 24 Vdc with variation between 20.4 and 28.8V dc (i.e. 24(+20%/-15%)

The FRTU shall have adequate protection against reversed polarity, over current and under voltage conditions, to prevent the FRTU internal logic from being damaged and becoming unstable causing mal operation.

1.9 Control Wiring

The Control Wiring should be carried out using multi strand copper wire of sixe 2.5 sq mm and wire code for circuit other than voltage supply and CT circuit should be grey. The size of DC cable from the battery unit to RMU /Pilot marshaling box shall be at least 4.00 sq mm.

2.0 Environmental Requirements:

The FRTU will be installed in inside RMU Panel or in open environment with no temperature or humidity control. The FRTUs shall be capable of operating in ambient temperature from 0 to +70 degree C with rate of temperature change of 20degree C/hour and relative humidity less than 95%, non-condensing.

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FRTU Type Test Requirements

Test No.	Test Name	EUT Status	Test Level	Power Supply Points		I/O Points	Passing Criteria
				CM	DM	CM	
1	Surge Immunity Test	ON	Level-3	2 kV	1 kV	2 kV	A
2	Electrical Fast Transient Burst Test	ON	Level-3	2 kV		1 kV	A
3	Damped Oscillatory Wave	ON	Level-3	2.5 kV	1 kV	2.5 kV	A
4	Electrostatic Discharge Test	ON	Level-3	+/- 6 kV in Contact discharge mode or +/- 8 kV in Air discharge mode			A
5	Radiated Electromagnetic Field Test	ON	Level-3	10 V/m electric field strength			A
6	Damped Oscillatory Magnetic Field Test	ON	Level-3	30 A/m at 1MHz of magnetic field strength			A
7	Power frequency magnetic field Test	ON	Level-3	30 A/m of magnetic field strength(Continuous duration sine wave)			A
8	Power frequency voltage withstand Test	OFF	-	1 kV RMS for 1 min			No break down or flashover shall occur
9	1.2/50µs impulse voltage withstand Test	OFF		2 kV p			No break down or flashover shall occur
10	Insulation Resistance Test	OFF	-	Measure Insulation resistance using 500 V DC Megger before & after Power Frequency & Impulse voltage withstand tests			As per manufacturer's Standard
11	Dry Heat test	ON	-	Continuous operation at 550C for 16 hrs			
12	Damp Heat Test	ON	-	at 95% RH and 400C			

10. Inspection and Test

Inspections and tests shall be performed to ensure RMU compliance with these Technical Specifications. Responsibility for conducting the inspections and tests shall rest with the

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Supplier. The Utility representatives will participate in the RMU inspections and will witness the testing as described in the following sub-clauses.

Inspections

- Utility's representatives shall be allowed access to supplier's facility where the RMU or its parts are being produced or tested. Such access will be used to verify by inspection that the RMUs are being or have been fabricated and tested in accordance with the Technical Specifications.

- The supplier shall give the utility's representatives 15 days notice in writing concerning the date and place at which the equipment will be ready for inspection or testing. The supplier shall provide all the necessary assistance and facilities to utility's representatives to carry such inspections and test witnessing.

- The supplier shall provide all documentation that is necessary to complete the inspections. The representatives shall be allowed to inspect the supplier's quality assurance standards, procedures, and records. Inspections, as a minimum, shall include checks on inventory, general appearance, cabling, drawing conformance, and labeling.

Test Procedures

- The supplier shall provide test plans and detailed procedures for all required testing. The plans and procedures shall ensure that each test is comprehensive and verifies proper performance of the RMU under test and, in this respect, shall be submitted for review and approval by the Utility.

- The test plans shall include all routine tests and acceptance tests as per relevant BIS/IEC standards and shall describe the overall test process including the responsibilities of the test personnel and how the test results will be documented.

- The test procedures shall describe the individual tests segments and the steps comprising each segment, particularly the methods and processes to be followed.

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11. Type Test Reports

- The Tenderers should, along with the tender documents, submit copies of all Type test certificate of their make in full shape as confirming to relevant IS/IEC of latest issue obtained from a International/National Govt. Lab/Recognized laboratory.
- The above type test certificates should accompany the drawings for the materials duly signed by the institution that has type test certificate.
- The supplier shall maintain complete records of all test results. The records shall be keyed to the test procedures.
- Upon completion of each test, the supplier shall submit a test report summarizing the tests performed and the results of the tests.

Type Test Certificates to be furnished:

The Bidder shall furnish the type test certificates of the 11KV RMU for the tests as mentioned above as per the corresponding standards. All the tests shall be conducted at CPRI/ERDA or any other International Laboratory as per the relevant standards. Type tests shall have been conducted in certified Test laboratories during the period not exceeding 10 years from the date of opening the bid. In the event of any discrepancy in the test reports, i.e. any test report not acceptable or any/all type tests (including additional type tests, if any) not carried out, same shall be carried out without any cost implication to GED.

1. Lightening Impulse test
2. Power Frequency Voltage Test
3. Temperature Rise Test
4. Measurement of Circuit Resistance
5. Rated Short Time and Peak Current Withstand test for main and Earth Circuit.
6. Breaking and Making Capacity Test for Breaker & Isolating Switches.
7. Operational & Interlock Performance Test
8. Internal Arc Withstand Test.
9. Degree of Protection (IP Code verification tests)
10. Mechanical Endurance Tests for isolator and Breaker.
11. Pressure withstand test & Leakage test on SF-6 Gas chamber
12. Dimensional and Visual Checks.

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Factory Acceptance Test

- A formal factory acceptance test shall be conducted to ensure that the RMUs have been designed to meet the utility's functional requirements in all respects. Utility representatives shall witness the test on a representative RMU, and the test shall be carried out in accordance with the supplier's/Owners test plan and procedures as approved by the Utility. Should the factory acceptance test prove unsatisfactory in any way, the Utility reserves the right to have further tests conducted and, if applicable, request further improvements in the supplier's RMU design.

Routine Factory Tests

- These tests shall be carried out during RMU manufacture as a quality control measure, i.e., to ensure each RMU to be delivered meets the Employer's minimum requirements including all relevant standards. Recording and reporting the routine test results shall be the responsibility of the Supplier.

- At the Utility's discretion, Utility representatives will witness such testing. This may include requesting the Supplier to perform tests on RMUs selected at random from each batch of RMUs that the Supplier deems ready to be delivered to site. Should any such test prove unsatisfactory, the Utility reserves the right to have further tests conducted and for delivery not to take place until a mutually agreed course of action has been reached.

- Further for additional reliability of the manufactured RMU it is mandatory to have the complete assembled tank tested for partial discharge.

Routine Tests

Following routine tests are to be done on 100% of the lot quantity: -

1. Power Frequency Withstand Test.
2. Dimensional & Visual Checks
3. Operational & Interlock Tests of breaker & isolator switches
4. Measurement of Circuit Resistance
5. SF-6 chamber pressure withstands/leakage test (Test Report)
6. HV withstand test across isolator distance.
7. HV withstand test of control and auxiliary circuits
8. Voltage Indication Tests.

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9. Breaker Contact Resistance Test
10. Total Trip Time Check Test through Current Injection in primary.
11. IR Value.

Below routine test has to be provided on cable Boot for cable termination:

a) Visual inspection of the final finished product.
b) Intactness with Bushing.
c) Insulation Test.
d) AC HV test.

ACCEPTANCE TESTS :

All the tests specified under Routine Test Clause above shall be carried out as acceptance test on random samples as per sampling plan under IEC/IS for each lot.

Heat Run Test shall be carried out on one random sample/configuration/tender quantity as acceptance test

Note: Bidder should have all the requisite testing equipment's to carry out routine and acceptance test mentioned above including:

Facility for primary current injection up to 630 amp.

Facility to check total trip timing of breaker along with breaker main contacts through primary current injection.

PRE-COMMISSIONING TEST TO BE CONDUCTED ON EACH RMU BEFORE INSTALLATION AND COMMISSIONING ARE AS UNDER-

1. IR value.
2. HV test (AC).
3. Primary injection with timer of breaker including relay and CT circuit.
4. Contact resistance.

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12. PRE-DISPATCH INSPECTION

Equipment shall be subject to inspection by a duly authorized representative of the GED. Inspection may be made at any stage of manufacture at the option of the purchaser and the equipment if found unsatisfactory as to workmanship or material is liable to rejection. Supplier shall grant free access to the places of manufacture to GED's representatives at all times when the work is in progress. Inspection by the GED or it's authorized representatives shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specifications. Material shall be dispatched after specific MDCC (Material Dispatch Clearance Certificate) is issued by GED. Following documents shall be sent along with material.

a. Test reports
b. MDCC issued by GED
c. Invoice in duplicate
d. Packing list
e. Drawings & catalogue
f. Guarantee / Warrantee card
g. Delivery Challan
h. Other Documents (as applicable)

13. INSPECTION AFTER RECEIPT AT STORE

The material received at GED Store will be inspected for acceptance and shall be liable for rejection if found different from the reports of the pre-dispatch inspection and one copy of the report shall be sent to Project Engineering department.

14. GUARANTEE

Bidder shall stand guarantee towards design, materials, workmanship & quality of process / manufacturing of items under this contract for due and intended performance of the same, as an integrated product delivered under this contract. In the event any defect is found by the Purchaser up to a period of at least 48 months from the date of commissioning or 60 months from the date of last supplies made under the contract whichever is later, Bidder shall be liable to undertake to replace/rectify such defects at its own costs, within mutually agreed time frame, and to the entire satisfaction of the Purchaser, failing which the Purchaser will be at liberty to get it replaced/rectified at Bidder's risks and costs and recover all such expenses plus the Purchaser's own charges (@ 20% of expenses incurred), from the Bidder or from the " Security cum Performance Deposit" as the case may be.

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In case of failure, Bidder shall report at site within 24 hours from intimation and arrange for rectification of fault within a mutually agreed time. In case rectification at site is not possible then alternative arrangement (replacement) to be made by Bidder within 15 days of intimation of failure.

Bidder shall further be responsible for 'free replacement' for another period of THREE years from the end of the guarantee period for any 'Latent Defects' if noticed and reported by the Purchaser.

15. PACKING

Bidder shall ensure that all equipment covered by this specification shall be prepared for rail/road transport (local equipment) and be packed in such a manner as to protect it from damage in transit. The packing should be in such manner that during storage the RMU and its components should not be damaged.

16. QUALITY CONTROL

The bidder shall submit with the offer, assurance plan indicating the various stages of inspection, the tests and checks which will be carried out on the material of construction, components during manufacture and 'after finishing, bought out items and fully assembled component and equipment including drives. As part of the plan, a schedule for stage and final inspection within the parameters of the delivery schedule shall be furnished. The Purchaser's or its nominated representative engineer shall have free access to the manufacturer/sub - supplier's works to carry out inspections.

Bidder shall have adequate in house testing facilities for carrying out all routine tests & acceptance tests as per relevant International / Indian standards.

17. MANUFACTURING ACTIVITIES

The successful bidder will have to submit the bar chart for various manufacturing activities clearly elaborating each stage with quantity. This bar chart shall be in line with the Quality Assurance Plan submitted with the offer. This bar chart will have to be submitted within 15 days from the release of the order.

18. SPARES, ACCESSORIES & SPECIAL TOOLS / GAUGES

Bidder shall provide a list of recommended spares with quantity and unit prices for 5 years of operation after commissioning. The Purchaser may order all or any of the spare parts listed at the time of contract

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award and the spare parts so ordered shall be supplied as part of the definite works. The Purchaser may order additional spares at any time during the contract period at the rates stated in the Contract Document. The bidder shall provide one no. SF6 gas leak indicator and one no. phase comparator/25 numbers of RMU. Bidder shall also provide 1 nos. FPI and VPIS per 10 'nos. of RMU at no additional cost. Auto changeover in-built requirement utilization VPI(Voltage Passage indicator) or through separate core of PT proposed on each breaker along with associated circuitry. A list of complete set of special tools, and gauges required for erection & maintenance and installation procedure shall be submitted.

Bidder shall give an assurance that spare parts and consumable items will continue to be available through the life of the equipment which shall be 25 years minimum. However, the Purchaser shall give a minimum of 12 months' notice in the event that the Bidder or any sub-vendor plans to discontinue manufacture of any component used in this equipment.

Any spare apparatus, parts or tools shall be subject to the same specification, tests and conditions as similar material supplied under the Contract. They shall be strictly interchangeable and suitable for use in place of the corresponding parts supplied with the plant and must be suitably marked and numbered for identification

19. Operating Manuals

- The Supplier shall submit, operating manuals for all RMU components including items such as FPI, Relay, and other equipment provided by the bidder. These manuals shall be in English. They shall include the RMU operating instructions. Context sensitivity shall be used to go directly to the appropriate place in the manual.

- The manuals shall be organized for quick access to each detailed description of the operator procedures that are required to interact with the RMU functions. This shall include the procedures to define, build, edit, and expand all data points provided with the RMU.

- The manuals shall present in a clear and concise manner all information that operators, including maintenance personnel, need to know to understand and operate RMUs satisfactorily. The manuals shall make abundant use of diagrams and/or photographs to illustrate the various procedures involved.

20. As-Built Documents and Drawings

The supplier shall submit As Built documents including applicable drawings for review and approval. All deliverable documents and drawings shall be revised by the supplier to reflect the as-

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built RMU components including all the FPI, LLI & Relay. Any errors in or modifications to an RMU resulting from its factory and/or site acceptance test shall be incorporated. Within this same context, all previously submitted documents that are changed because of engineering changes, contract changes, errors, or omissions shall be resubmitted for review and approval. The successful bidder must provide his quality document to Utility.

General Technical Particulars of Motorized RMU: GED			
Sr No	**Description**		**To be filled by Tenderer**
1	RMU Category	2/3/4 Way	
2	RMU application	2/3/4 Way	
3	Dielectric medium	SF6	
4	Interrupting medium	Vacuum	
5	System Frequency	50Hz	
6	Rated Voltage	12kV	
7	Service Voltage	11kV	
8	Rated current -Line Switches	630A	
9	Rated Current-CB	630A	
10	Rated Short time current withstand	21kA for 3 sec	
11	Making Capacity	50 kA	
12	Rated cable charging interrupting current of incomer load break switch	10 A	
13	Rated load interrupting line current	630 A	
14	Rated cable charging breaking current of breaker	25 A	
15	No. of operations at rated switches earthing switches and CB	5 Close	
16	Opening time of breaker (max.)	2.5 Cycle	
17	Closing time of breaker (max.)	3 cycle	
18	Breaker Duty Cycle	0 — 3min - CO - 3min - CO Min	
19	Mechanical endurance for Isolator & Earth Switch	5000 operations	
20	Mechanical endurance for Earth Switch	1000 operations	
21	Mechanical endurance for Circuit Breaker	Min 2000 Operations	
22	Electrical operation of current isolator & E/Switch at rated	To be Provided	
23	Temp rise above ambient	50 deg C	
24	Min Gas pressure	0.05 Bar G	

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24	SF6 Gas pressure indicator with indicating bars/scale to measure the actual gas pressure (SCADA compatible)	To be Provided by Bidder	
26	SF6 Gas leakage detector	1 per 25 RMUs. Subjected to minimum one number.	
27	Guaranteed leakage per annum	Less than 0.1%	
28	Degree of protection	IP 67 for the tank and IP2X for the fron cover / mimic board and IP54 for Outdoor RMUs. The RMU metal parts shall be greater than 2 mm GI / 3mm CRCA thickness high tensile steel which must be shot blasted, spray galvanized with minimum thickness of 30 micron and subsequently powder coated. The overall paint thickness shall not be less than 70 microns	
29	Internal Arc test for Complete RMU	21k A for 1 sec , IAC AFLR ,Gas release shall be from TOP/Bottom	
30	Lightning Impulse withstand Voltage	75kVp	
31	Power Frequency voltage	28kV	
32	SF6 Tank design	Hermetically robotically sealed , unpainted stainless steel enclosure with SF6 Gas. Sealed pressure system byrobotic welding so that no refilling of gas is required for 30 years. No gas work at site. Complete body shall be tamperproof to prevent access to live parts. No gaskets shall be used. No bolts shall be provided	
33	Earth bus bars	In enclosure to prevent tampering	
34	Material & size	To be provided by the bidder	
35	Earthing of main CCT Cables shall Be earthed with earth switch with SIC making capacity as per IEC 129. Moving contacts of earthing switch shall be visible in closed position thruogh transparent covers AND closing shall be possible only when Isolator is open	Required	

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36	Incomer Load Break switch: Shall be SF6 type with least maintenance. Shall have at least 3 positions, Open, Close & earth with natural interlocks. Fitting of motor at site shall be possible & shall have mechanical interlock	Required	
37	Circuit Breakers Preferably SF6 type with minimum maintenance and shall have at least 2 positions I.e. Open & Close, Manual operation & fitting Of motor at site shall be possible if required. 2 positions I.e. Open & Close, Manual operation & fitting of motor at site shall Be possible if required.	Required	
39	Protection Relay-Without auxiliary. Power & shall include 3 toroid transformers in trans. Tee-off bushings, energy release & fast on test receptacle for protection testing	Self- powered relay with 0/C IDMT characteristic with minimum PSM-0.2,TMS-0.01 +E/F IDMT characteristic with minimum PSM- 0.05,TMS-0.01 Hi-set setting for 0/C + E/F min setting 0.5 In and delay 20 ms	
40	Make of Relay	Suitable numerical relay with Necessary elements or any other as Purchaser's approval	
41	Cable clamps	HDPE/Nylon(Fire Retardant)	
42	Cable termination	Heat/ Cold shrinkable	
43	Size	11 kV 3CX300 sq.mm	
44	Earth fault passage indicator	01 per RMU	
45	Operating handle	01 per RMU	
46	Bus bar Material	Copper	
47	Current Transformer	Shall be epoxy resin and are mounted the cable outside SF6gas compartment. The CTs around the cables shall be supported the sheet steel bracket base sized for CTs shall not be kept hanging or put on base frame directly. The CT settings shall adjustable between 60 — 300/1 for feeder and transformer. CT Burden is 2.5 VA for Feeder and 2.5VA for Transformer, class 5P10	
48	SCADA Compatibility	Remote operation of both isolators and Breaker	
49	Guarantee	To be specified by Bidder	

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11KV RMU TECHNICAL SPECIFICATION

50	Dimension (LxWxH)	To be specified by Bidder	
51	Total weight		
52	Breaker operation counter	Yes	
53	LBS & Earth switch operating counter	Yes	
54	Moisture absorbtion material	To be specified by Bidder	
55	RMU Cable Boot	Yes	
56	Terminal Protector	Insulating Boots	
57	System Voltage	12KV	
58	AC high Voltage	28Kv For 1 min	
59	Impulse Withstand Voltage	75kVp	
60	Auxiliary Potential Transformer	11kV Sq root 3/ 230 VAC	

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Schedule of accepted makes

Sr. No.	Description	Preferred /Accepted makes by department
1.	Supply of 11KV,630Amps, 50Hz,3 Way (2LBS+1CB) Non-Extensible Two (2) Motor operating LBS with Manual operated Earth switch Outdoor SF6 Ring Main Unit.	LUCY ELECTRIC, SCHNEIDER,ABB/HITACHI, CG POWER AND INDUSTRIAL SOLUTIONS and LAURITZ KNUDSEN ELECTRICALS & AUTOMATION

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Checklist for submission of documents along with Techno-Commercial bid duly stamped and signed for approval.

Sr.No.	LIST OF DOCUMENTS	YES/NO
1.	Proof of payment of EMD, TDF and TPF.	
2.	Enlistment Order/Work experience if applicable.	
3.	Complete NIT documents along with technical specifications except bidding schedule duly signed and stamped on each page.	
4.	List of purchase orders placed by various Utilities for the last 5-7 years for similar tendered items.	
5.	Performance reports issued by various Utilities for supply of tendered or similar items for last 5-7 years	
6.	Type test reports report/certificate conducted within last 5 years by Government approved NABL Laboratories i.e. National Test House/CPRI/ERDA/ETDC, etc. for the material/equipment tendered duly attested by Gazetted Officer of State/Central Government or Notarized by a Notary Public (if applicable)	
7.	Original authorization letter from the manufacturer for the brand offered. (Note-3 of T&C).	
8.	Valid MSME registration certificate issued by Directorate of Industries, Trade & Commerce, Goa duly attested by Gazetted Officer of State/Central Govt. or Notarized by a Notary Public.	
9.	Valid Registration Certificate for GST attested by Gazetted Officer of Sate/Central Govt. or Notarized by a Notary Public.	
10.	Hard copies of tender document (Note-1 of T&C).	
11.	Sample at the time of opening (if necessary)	NA

Stamp and Signature-
Name of tendering -
Company/bidder

Place: -
Date: -

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Signature Not Verified
Digitally signed by PRASANNAKUMAR C RAMAKRISHNANNAIR
Date: 2026.02.24 11:56:50 IST
Location: Goa