Maharashtra State Electricity Distribution Co. Ltd.

Tender Details 06-02-2026 07:09:40	
Tender Code	MMD/T-HTM1-01/0226
Tender Type	Procurement Tender
Type Of Bid	Two Bid
Description	Procurement of 22 kV Ring Main Units
Estimated Cost (In Lakhs)	2408
Basis of prices	Firm Price Basis
Tender Validity	120
Delivery Requirement (In Months)	3
Tender on rate contract basis	NO
Tender Fee (In INR)	25000
GST In INR (@18% on Tender Fee: SAC No.	4500
Total Tender Fee Amount including GST in INR.	29500
Contact	Kirankumar Shinde , 7045791361 ,cemmcmsedcl@gmail.com
Pre-Qualifying Req	As per SBD
Budget Type	NA
Scheme Code	null
Scheme Name	
Department	Material Management Cell
Office Type	HO
Location Type	Corporate Office
Designation	Executive Engineer(Distribution)
Pre-Bid Meeting Address	THE CHIEF ENGINEER Maharashtra State Electricity Distribution Co. Ltd. Material Management Department, Plot No. G-9, “Prakashgad” First floor, Prof. A. K. Marg, Bandra(E), Mumbai–400051
Bid Opening Address	THE CHIEF ENGINEER Maharashtra State Electricity Distribution Co. Ltd. Material Management Department, Plot No. G-9, “Prakashgad” First floor, Prof. A. K. Marg, Bandra(E), Mumbai–400051
Version No	1
Call for Deviation	YES
Is Annexure C1 Applicable	YES
Is Manufacturer Applicable	YES
Is Trader Applicable	NO
Minimum % of Offered Quantity	20
Is Power Supplier Applicable	NO
Tender Sale Start Date	06-02-2026 19:30
Tender Sale End Date	23-02-2026 12:00
Bid Start Date	06-02-2026 20:00
Bid End Date	23-02-2026 15:00
Pre-Bid Meeting Date	10-02-2026 16:00
Techno-Commercial Bid opening on	23-02-2026 15:30
Price Bid opening on	Will be declared later
Annexure C1 Opening Date	Will be declared later
Winner Selection Date	06-02-2026 15:06
Can Bidder opt for EMD Exemption	YES
Is Annexure-E [Consent for MSEDCL Standard Technical Specifications and GTP] Applicable ?	NO

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MAHAVITARAN
Maharashtra State Electricity Distribution Co. Ltd.

MATERIAL MANAGEMENT DEPARTMENT
MAHARASHTRA STATE ELECTRICITY DISTRIBUTION CO. LTD.
Tender No. MMD/T-HTM1-01/0226

SHORT TENDER BID NOTICE

The Chief Engineer, Material Management Department (MMD), on behalf of Maharashtra State Electricity Distribution Company Limited (the Purchaser), hereby invites sealed bids from eligible bidders for procurement of 22 kV Ring Main Unit. Entire bidding document is available online on https://etender.mahadiscom.in/eatApp/ as per date indicated below. Any changes in the Bid Schedule, corrigendum etc. shall also be notified via MSEDCL's website. Prospective bidders are therefore requested to regularly check the website for any updates.

Tender No. MMD/T-HTM1-01/0226

Estimated Tender Cost: Rs. 24.08 Crore inclusive of 18% GST.

Tender Fee: Rs. 25,000.00 + 18% GST

The bidder should submit non-refundable Bid Fee of Rs. 25,000.00 + 18% GST paid through online payment only, prior to the dead line for submission of bids as per the procedure laid by the MSEDCL.

Earnest Money Deposit: The bid must be accompanied with EMD @ 0.5% (Half Percent) value of the estimated cost of offered quantity of the tender in the form of E-BG only as per the Annexure–M enclosed with tender documents having validity of 120 days from opening of tender. Interest shall not be allowed on EMD.

The PDF / scanned copy of the online payment receipt / E-BG should be uploaded (in e-tendering).

Calendar of Events	Date and Time
Begin Sale of Bid Document	06.02.2026
Date and time of submission of Bids	23.02.2026 at 15:00 hrs.
Date and time of Bid Opening	23.02.2026 at 15:30 hrs.
Date and time of Pre-bid meeting	10.02.2026 at 16:00 hrs. Online Google Meet joining info : meet.google.com/pob-cfyb-vay

THE CHIEF ENGINEER
Maharashtra State Electricity Distribution Co. Ltd.
Material Management Department,
Plot No. G-9, "Prakashgad" First floor, Prof. A. K. Marg,
Bandra(E), Mumbai–400051.
E-mail- cemmcmsedcl@mahadiscom.in, cemmcmsedcl@gmail.com

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MAHARASHTRA STATE ELECTRICITY DISTRIBUTION CO. LTD.

TENDER FOR

Procurement of 22 kV Ring Main Unit

Tender No: MMD/T-HTM1-01/0226

OFFICE OF THE CHIEF ENGINEER,
Maharashtra State Electricity Distribution Co. Ltd.
Material Management Department,
Plot No. G-9, "Prakashgad" First floor, Prof. A. K. Marg,
Bandra (E), Mumbai – 400 051.
E-mail- cemmcmsedcl@gmail.com

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SECTION-I

INVITATION TO SHORT TENDER AND INSTRUCTION TO BIDDERS

TENDER FORM (NOT TRANSFERABLE)

(TO BE SUBMITTED ONLINE DULY FILLED IN AND DIGITALLY SIGNED)

To be submitted online not later than the date mentioned in the tender details. For participating in tender opening, the bidder can login at the specified time and date of opening of the tender, if he desires so.

The bidder is requested to quote his lowest rates F.O.R. destination for the supply of materials. The material is required at various places in the State of Maharashtra. The tender documents duly filled-in and digitally signed, are to be submitted online before due time & date of the submission of tender in prescribed form.

The modifications made to the terms & conditions shall applicable to this tender only.

FOR CHIEF ENGINEER (M.M.DEPARTMENT)

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INSTRUCTIONS TO THE BIDDERS

I SCOPE OF WORK:

The scope of work under this tender is for design, engineering (wherever applicable), manufacture, inspection & testing before dispatch, packing and supply of material / equipment as specified in Annexure-D (Technical Specifications) at various destination sites / stores centers of the purchaser in Maharashtra.

The actual quantity that will be procured may vary depending upon the site requirement. The quantity advertised against various capacities can undergo change.

The list of various destination sites / stores centers of the purchaser is enclosed as Annexure K.

II Qualifying Requirements:

Qualifying requirement will be as per Section-III.

III PRICES:

(i) Prices are acceptable only on F.O.R. destination basis inclusive of Goods and Service Tax (GST for brevity) i.e. Integrated GST (IGST) for outside State / Central GST+ State GST (CGST+SGST) for within State, risk in transit, freight showing the break-up as desired in the Annexure 'B'. It shall be noted that quotations not conforming to F.O.R. destination basis inclusive of IGST/(CGST+SGST) etc. and to the unit as specified in Annexure 'B', shall be rejected even though the bidder's offer may be lowest. The bidder shall quote Ex-Works Price and element of freight and insurance along with applicable rate of IGST/(CGST+SGST). The F.O.R. destination price i.e. up to site or the Store Centre of the purchaser as the case may be inclusive of IGST/(CGST+SGST), risk in transit and freight will be programmatically calculated. While raising the invoices, however, IGST/(CGST+SGST) should be shown separately in the invoice raised.

(ii) For each of the items quoted, bidder shall specify offered quantity. However, the offered quantity shall not be less than 20% of the advertised quantity (Advertised quantity means the quantity required as indicated in Annexure 'B' / Price Bid) so as to deliver the said quantity within the delivery requirement of the Purchaser as indicated in the tender documents.

IV TAXES:

(i) The Purchaser shall be registered under Goods and Service Tax Act and should comply with all the statutory compliance requirements of GST Law diligently.

(ii) It is imperative for the bidder to indicate the amount of IGST/(CGST+SGST) included in their price while giving the break-up of F.O.R. destination price in Annexure 'B', failing which, the offer will be treated as ambiguous and will be rejected as per the provisions of clause X of tender form.

(iii) After awarding the contract, the supplier shall not charge any additional amount towards GST; during the currency of contract except statutory variation by Central / State Government in normal (full) rate of integrated GST. In case the GST is decreased than the rate indicated in the price bid, the benefits of the

reduction in the GST shall be passed on to the purchaser. The increase in the GST rate due to increase in turnover during the contractual delivery period shall not be charged to the purchaser.

(iv) Necessary documentary evidence for the GST claimed shall be submitted along with the bills.

V BASIS OF PRICES:

The bidder shall quote the prices on firm price basis, as has been specifically brought out in the Tender Details. For any deviation in this regard, the offer shall be summarily rejected.

VI PRICE VARIATION:

Not applicable.

VII DELIVERY:

(i) Bidder is requested to quote delivery F.O.R. DESTINATION only & only in the unit of the item specified in Annexure 'B' i.e. if the quantity is in sets or in tones or in numbers or in kilometers or in coils, the rate of delivery shall only be in the same unit.

(ii) It is mandatory on the part of the tenderer to quote the delivery on monthly basis. If the offered delivery is indicated on quarterly basis, then the delivery would be counted proportionately in three equal installments per month for liabilities of the contract including levy of liquidated damages. If ordered quantity is less than offered quantity, delivery schedule will not be changed as per ordered quantity. Delivery schedule will be fixed as per offered quantity only.

(iii) Size mix for the purpose of delivery, when delivery is quoted in assorted items, shall be determined by the Purchaser while issuing the A/T or dispatch instructions and will be binding on the bidder. The Purchaser will also have the liberty of modifying the size mix for the purpose of delivery, even after the A/T is issued.

(iv) If the commencement period and rate of delivery per month is not indicated, the delivery period will be considered in equal installment per month on offered quantity.

(v) The scheduled delivery period is 3 months from the letter of award in equated monthly lots as per offered quantity.

(vi) MSEDCL may issue dispatch instructions as per requirement. The quantity demanded per consignee may be less than or equal to monthly lot specified in contract. Wherever as per demand, if the quantity to be supplied to a consignee in a particular month is less than monthly lot quantity; the said quantity will be treated as lot quantity for the purpose of delivery and payment.

(vii) MSEDCL may instruct the supplier to withhold entire or part of monthly supply of material for a specified period by giving two months advance instruction.

(viii) Time being the essence of contract, the supplier shall strictly maintain monthly delivery schedule.

The bidder is advised to get their type tests & drawing approval immediately after placement of LoA from Chief Engineer (Testing & QC) so that the material is

received by the purchaser well within the committed delivery period. If there is any delay in delivery of material as per schedule, the undelivered quantity as per schedule can be diverted to other good performing bidder.

VIII OFFERING THE MATERIAL:

(A) The bidder shall offer the material as per MSEDCL technical specifications as per Annexure-D and shall have to fill the entire GTP.

(B) The person / entity should not have controlling stake in more than one entity applied for the tender / bid. **Necessary certificate duly certified by Chartered Accountant to this effect shall be submitted along with the tender documents**.

(C) Factory address, from which the bidder intends to supply the material against the tender, shall be as indicated in the latest approved online vendor registration form on e-tendering through which the vendor is submitting the offer.

(D) The bidder shall offer the rates, taxes as applicable for the factory location indicated in his latest approved online vendor registration form on e-tendering through which he is submitting his offer.

IX CONFLICT OF INTEREST

A bidder may be considered to have a conflict of interest with one or more parties in a bidding process if they:

(a) Have controlling shareholders in common; or

(b) Receive or have received any director in direct subsidy from any of them; or

(c) Have the same legal representative for purposes of a bid; or

(d) Have a relationship with each other, directly or through common third parties, that puts the mina position to have access to information about or influence on a bid of another bidder, or influence the decisions of the purchaser regarding the bidding process.

Bidders found to be in conflict of interest, shall be disqualified.

X QUOTATION:

(i) Bidder shall quote his rate per unit specified in Annexure 'B' / Price Bid in figures.

(ii) Bidder's printed terms and conditions will not be considered as forming part of the tender.

XI AMBIGUITY IN QUOTATION:

The bidder is requested to please make a note that in case of ambiguous terms in respect of offered quantity in Annexure- B and schedule 'C', F.O.R. condition, GST, basis of price (i.e. firm / variable) or if the blanks are left out in the offer, the item / tender shall be rejected.

XII FILLING IN OF ANNEXURE:

The bidder is requested to ensure that the comments against each and every item/clause of Annexure shall be clearly filled in and answered. Any item/clause shall not be left blank or unanswered. If any item /clause is not applicable, the "Not Applicable (N.A.)" check box shall be selected.

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XIII ADDITIONS/ALTERATIONS PROHIBITED:

The bidder shall not make any additions, alterations or changes in the Tender Form and the Conditions of Tender & Supply (Annexure 'A') including the description of material mentioned in Annexure 'B'. They should quote rate for the material described or click the check box 'Not quoted' against each of the item in Annexure 'B'/ Price Bid.

XIV B.I.S. LICENCE AND BEE CERTIFICATE : (If applicable)

A scanned copy of valid BIS License & BEE certifications for offered items ratings duly sealed & signed must be uploaded and submitted along with offer, failing which, the offer shall be rejected.

In case the validity of the BIS license / BEE certifications is expiring before date of submission of tender, necessary documentary proof of having applied for renewal of validity of the BIS license / BEE certifications must be uploaded while submitting the bid. The renewed copy of the BIS License / BEE certifications shall be submitted before commencement of supply.

However, valid BIS license / BEE certifications scan copy of offered material must be submitted by the qualifying bidders before commencement of supply, failing which their order will be cancelled with financial liability on supplier.

XV MANDATORY REQUIREMENT OF SUBMISSION OF OFFER:

The offer shall be submitted online duly filled in; attaching all the required documents, completed in all respects and should be digitally signed.

XVI SUBMISSION OF DRAWING & BILL OF MATERIAL:

The bidder shall submit the drawings and bill of material conforming to the tender specification wherever applicable. In such cases, the offer without the drawings and bill of material shall not be evaluated and considered. The drawings and bill of material submitted along with the bid shall not be considered for evaluation of the offer but the drawings and bill of material of the successful bidder shall be scrutinized when the Purchaser decides to accept such bid. It may, however, be noted that Purchaser's action of evaluation of the tendered bid would not mean approval of the drawings and bill of material submitted along with the tender bid.

The bidder shall depute his authorized representative for discussion on the drawings, either immediately on hearing from the Purchaser or after receipt of Letter of Award. The formalities like submission of drawings, bill of material etc. and getting the same approved by the Purchaser shall be completed by the successful bidder within TEN DAYS from the date of Letter of Award of the contract. The approval to drawings complete in all respects mentioned in technical specifications (Annexure-D) will be accorded within SEVEN working days thereafter. Any delay in this regard shall lead to cancellation of the Letter of Award at the risk and cost of the bidder. The supplies against the contract shall conform to the approved detailed drawings / bill of material and the detailed technical specifications.

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XVII NAME OF AUTHORIZED REPRESENTATIVE:

The digital certificate shall be in the name of person authorized by the firm. In case, the digital certificate is compromised or the person holding the digital certificate is no longer authorized to digitally sign the tender, it is the responsibility of the bidder to revoke this certificate and obtain the fresh certificate. While submitting the bids online only valid digital certificate shall be used. The vendors are requested to check the validity of digital signature and prior to the expiry date & they are requested to get their Digital signature key validated before expiry of the same. MSEDCL shall not be responsible for Non-submission of any of the Bids (Techno Commercial Bid, Deviation Bid, Price Bid, Annexure - C-1) by vendors due to expired/Invalid Digital signature.

The bidder is responsible for all the contractual liabilities and responsibilities thereof.

In case the bidder authorizes the representative to deal on behalf of the bidder, the name and address of such person should be informed to the purchaser. The bidder shall submit the power of Attorney in favour of representative duly executed before the Notary. In the absence of the Power of Attorney, the purchaser shall not deal with the representative.

XVIII (A) Offer of Micro & Small Enterprises: (If matching is called)

The bidder registered with Directorate of Industries of Government of Maharashtra for manufacturing the items tendered/offered and those who have attached valid certificate at the time of vendor registration shall be considered for concessions applicable and procurement of reserved items as per GoM G. R. dtd. 30-10-2015 amended up to date. These benefits shall be available only to those items approved during the registration process and subsequent updates in registration up to the submission of this tender.

Based on concession of Central Government's Micro &Small Enterprises office order dtd. 23-03-2012, 241 items are being kept reserved. As per above reservation of items 100% reserved items to be purchased from Micro & Small Enterprises out of which 20% reserved items to be purchased from S.C./S.T. enterprises. Reservation is applicable for a limited period unless & until re-examined. If Micro & Small Enterprises participated in the tender and the tendered item is not reserved, then 20% order with L-1rate to be given to Micro & Small Enterprises and out of this 20%, 4% to be given to S.C./S.T. enterprises.

If there are any specific Government Directives such as reservation of items for units in Maharashtra, non-eligibility of preference to SSI units etc. for particular items, price and purchase preference etc. the same would be applicable irrespective of the fact that it has not been specifically incorporated in the tender notice and/or tender documents.

(B) PREFERENCE TO INDUSTRIAL UNITS LOCATED IN MAHARASHTRA AND OFFERS BY MATCHING RATES WITH LOWEST ACCEPTABLE BIDDER

The lowest acceptable rate will be the unit rate worked out without considering IGST/(CGST+SGST) as applicable and the same rate will be considered as applicable to the respective bidder who has agreed to accept order at lowest acceptable rate.

(C) Matching of rates:

The confirmation for acceptance of the order at the lowest acceptable rate shall be given in the format as per Annexure -'C-l' of the tender documents by the bidder

other than L-1. The same should be submitted online on or before the due time and date of submission of Annexure- 'C-1'. The confirmation shall be opened online on due time and date of opening of Annexure-'C-1'. Item wise and bidder wise schedule for submission and opening of Annexure 'C-1' shall be communicated separately by auto generated e-mail and on the website. MSEDCL reserves the right to call & open the Annexure 'C-1' of limited bidders as per their price ranking and preference to industrial units located in Maharashtra.

In the above confirmation, if the bidder indicates any rate, then the confirmation given by the bidder will not be considered as valid.

Above confirmation for the quantity less than as indicated in Clause III (ii) (offered quantity shall not be less than 20 %) of Instructions to the bidder shall not be acceptable.

The prices indicated in the original offer shall not be considered as valid once offer for acceptance of order by matching rates is given. In the event of withdrawal of offer by matching rates within the validity period, the entire offer against the tender shall become invalid and shall be summarily rejected and the earnest money paid by the bidder shall be forfeited.

The lowest acceptable tenderer would be considered for awarding order for quantity subject to his capacity and capability as under.

XIX QUANTITY ALLOCATION:

1) If L-1 bidder is within Maharashtra State and if total tender quantity for quoted item is offered by L-1 then 100% quantity will be awarded to L-1 bidder for quoted item.

2) If L-1 bidder is within Maharashtra State and offered quantity is less than the tender quantity for quoted item then,

    a) Quantity allotted to L-1 bidder will be equal to quantity offered by him.

    b) Balance quantity after allotment as (a) above, will be distributed among Maharashtra State bidders as per their price ranking (if ready to match with L-1 rate) subject to maximum 50% of total tender quantity for quoted item to Maharashtra State bidders including L-1 bidder.

    c) Any balance quantity after allotment as (a) & (b) above, will be distributed as per their price ranking (if ready to match with L-1 rate) irrespective of bidder is Maharashtra or out of Maharashtra state bidder including partial allotment if any to Maharashtra bidder in (b) above.

3) If L-1 bidder is outside Maharashtra State then,

    a) If the L-1 bidder offered more than 50% of tendered quantity for quoted item then maximum of 50% of tender quantity for quoted item will be allotted to L-1 bidder.

    b) If the L-1 bidder offered less than 50% of tendered quantity for quoted item then quantity equal to offered quantity for quoted item will be allotted to L-1 bidder.

    c) Balance quantity after allotment as (a) or (b) above, will be distributed among Maharashtra State bidders as per their price ranking for 50% of required quantity (if ready to match with L-1 rate).

d) Any balance quantity after allotment as (a), (b) & (c) above, will be distributed as per their price ranking (if ready to match with L-1 rate) irrespective of bidder is Maharashtra or out of Maharashtra state bidder including partial allotment if any.

e) If all bidders including L-1 bidder are from outside Maharashtra state and if the offered quantity of L-1 bidder is 100 % then entire quantity will be allotted to L-1 bidder. If quantity offered by L-1 bidder is less than 100 %, then after allotting to L-1 bidder balance quantity will be allocated to remaining bidder who matched the L-1 rates as per price ranking & quantity quoted.

f) In spite of above the quantity allocation will be at the sole discretion of MSEDCL.

4) If new suppliers are allowed then maximum 20% of tender quantity will be reserved for new supplier as per their price ranking.

XX EARNEST MONEY DEPOSIT (EMD):

The bidder should pay the Earnest Money @ 0.5% (Half Percent) value of the estimated cost of offered quantity of the tender in the form of E- Bank Guarantee only as per the Annexure–M enclosed with tender documents having validity of 120 days from opening of tender. Interest shall not be allowed on EMD. EMD shall be forfeited (i) in case the bidder withdraws the tender / offer during the validity period (ii) in case the bidder fails to pay the performance deposit if the contract is awarded.

However, bidders from the following categories are exempted from payment of earnest money deposit.

1) All Government and semi Government institutions under Govt. of Maharashtra and Zilla Parishad in Maharashtra and fully owned undertaking of any State Govt. and Govt. of India only for the items manufactured by such institutions.

2) Micro and Small Enterprises registered under Micro, Small and Medium Enterprises Development Act-2006 only for the items mentioned in their permanent registration certificate at the time of vendor registration.

3) The bidder registered with N.S.I.C. and those who have attached valid N.S.I.C. Registration Certificate for the items mentioned in their permanent registration certificate at the time of vendor registration.

The benefits mentioned in (1) to (3) above shall be available only to those items approved during the registration process and subsequent updates in registration up to the date of submission of this tender.

Exempted bidders should upload a latest valid certificate issued by any approved body of 'Ministry of Small & Medium Enterprises' (MSME) such as 'National Small Industries Corporation' (NSIC) or 'Udyam registration' for EMD exemption.

XXI SIGNING OF THE TENDER DOCUMENTS:

Offer shall be submitted along with the tender documents and duly filled in with all Sections / Annexures / Appendixes / Schedules etc. The offer shall be signed with valid digital signature.

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XXII SUBMISSION / SUPERSCRIBING OF THE TENDER DOCUMENTS:

The offer is to be submitted as follows.

(a) **Online Submission:**

(i) Techno-Commercial Bid (Part-I): This part shall contain all technical and commercial aspects of the bid and documents supporting the same except the Price Bid.

The bidder is requested to please make a note that in case of the Price Bid (Part-II) is submitted instead of Techno-Commercial Bid in Part-I or submitted Price Bid (Part-II) along with Techno-Commercial Bid in Part-I, the offer shall be rejected.

(ii) Price Bid (Part-II)

This part shall contain only the Price Bid strictly in the prescribed format, i.e. Annexure'B'.

(b) Off line Submission:

Physical submission of documents (Part-III) – Not mandatory.

Envelope for this part shall contain documents like Type Test Reports, Drawings, Bill of Material, Catalogues etc. wherever applicable as per technical specification and they shall be scanned and these scanned documents to be taken into PDF format on CD media (2 sets) or pen drive and are to be submitted to Executive Engineer (HTM-1) in the office of Chief Engineer, Material Management Department in sealed envelope on or before due date & time of submission.

METHOD OF SUBMISSION OF PART-III AND THEIR OPENING:

This envelope shall be individually sealed and shall be superscribed with the name and address of bidders and the following information before posting or delivering the same:

i. Tender No.

ii. Due date and time of submission.

iii. Due date and time of opening.

Envelope as above shall be submitted on or before the prescribed due date and time of submission and shall be opened on due date and time of opening as prescribed.

In case of bidders whose techno-commercial bid is acceptable, their Price Bids will be opened at a later date. This date shall be intimated to such bidders separately.

XXIII TIMELY SUBMISSION OF OFFER:

(a) The bid is to be submitted online on or before due date and time of submission to the Purchaser at website.

(b) It is advisable to submit the digitally signed offer sufficiently in advance of due date and time so as to avoid last minute congestion of network / server.

(c) Offer received after the due date and time of submission shall not be accepted.

(d) In case, the due date of opening of tender happens to be holiday, the offer shall be opened on the next working day at the same time.

XXIV PURCHASERS RIGHT:

The Purchaser reserves the right to reject any offer without assigning any reason whatsoever.

The Purchaser reserves the right to make any changes in terms & condition at any stage of the process without assigning any reason whatsoever.

If any type of legal litigation against MSEDCL is pending in any court/Forum against/by the bidder or its sister concern/Director/Partner/Proprietor, then purchaser reserves the right to reject partly or fully their bid without assigning any reasons thereof.

Bidder has to submit the declaration as per Annexure-F regarding no any type of legal litigation against MSEDCL is pending in any court/Forum against/by the bidder or its sister concern/Director/Partner/Proprietor.

XXV DISREGARD OF TENDER CONDITIONS:

Tender containing any deviations / additions / alterations / changes in the conditions of the tender and supply as stated in Annexure 'A', 'B', 'C-I', 'D', 'E' and schedule 'C' shall not be acceptable.

The bidder having digitally signed all the tender documents indicates any deviations / additions / alterations / changes in the covering letter, unrelated annexure and schedules of the offer or elsewhere, the same shall be ignored and the offer shall be treated as meeting with all specified tender conditions.

XXVI PROHIBITION FOR POST TENDER CORRESPONDENCE:

The Bidder should note that no correspondence shall be entertained or considered after the due date and time of submission of tender unless otherwise sought by the Purchaser.

The Bidder should also note that no correspondence shall be entertained or considered after the placement of LoA/AT unless otherwise sought by the Purchaser.

XXVII RIGHT TO ORDER OUT QUANTITY IN VARIANCE TO OFFERED QUANTITY:

The Purchaser reserves the right to order out / procure any quantity in excess of the offered quantity with change in delivery period with mutual consent. The quantity specified may be for dispatch to one destination or several places.

XXVIII ACCEPTANCE OF TENDER:

The Purchaser does not bind itself to accept the lowest or any tender; neither will any reasons be assigned for the rejection of any tender or part of tender. It is also not binding on the Purchaser to disclose any analysis report on tender/samples. The bidder on his part binds himself to supply any item or items selected from his offer in part or whole at the option of the Purchaser.

XXIX NOTIFICATION OF AWARD:

Notification of Award of contract will be made by a letter of Award, to be sent by registered post or given by hand or by E-mail to the successful bidder by the Purchaser. It could also be made by e-mail to be confirmed in writing by registered post to the successful bidder by the Purchaser.

XXX EARNEST MONEY OF UNSUCCESSFUL BIDDER:

Earnest money deposit will be returned to the unsuccessful bidder by RTGS within 7 (seven) working days after the tender has been decided and on submission of receipt of E.M.D. payment to the G.M. (F&A-SB), MSEDCL, Prakashgad, Prof. A.K. Marg, Bandra (East), Mumbai-400051. Earnest money deposit in the form of E-BG only will be returned to the unsuccessful bidder within 7 (seven) working days by Chief Engineer, Material Management Department after the tender has been decided.

XXXI VALIDITY OF OFFERS:

The bidder shall keep the offer valid for acceptance up to and including last date of calendar month, covering the date of completion of 120 days (one hundred and Twenty days) from the date of opening of the tender and shall also agree to extend the period of validity required by the Purchaser. The bidder shall not be allowed to modify or change the conditions of the tender while extending the period of validity.

XXXII DECLARATION FROM BIDDER:

In order to ensure participation of reliable and honest bidders / contractors / vendors, etc. the bidder shall submit the declaration along with the bid in Annexure-I.

XXXIII CORRUPT OR FRAUDULENT PRACTICES:

The Maharashtra State Electricity Distribution Company Ltd. and the State require that bidders / suppliers / contractors observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, MSEDCL:

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

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

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

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

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

XXXIV INFLUENCE:

Any efforts by the bidders to influence the owner during evaluation process before order placement will be rejected. Similarly deviation in the term of payments, penalty,

performance deposit, delivery period will be treated as non-responsive quotation/offer and will not be considered for evaluation/order placement.

Bidder shall submit the undertaking certifying that they have not approached any one for undue influence.

XXXV TENDER FEES EXEMPTION:

Tender fee to be paid at the time of uploading / online submission of the tender. Bidders from the following categories are exempted from payment of Tender fees:

1) All Government and semi Government institutions under Govt. of Maharashtra and Zilla Parishad in Maharashtra and fully owned undertaking of any State Govt. and Govt. of India only for the items manufactured by such institutions.
2) Micro and Small Enterprises registered under Micro, Small and Medium Enterprises Development Act-2006 only for the items mentioned in their permanent registration certificate at the time of vendor registration.
3) The bidder registered with N.S.I.C. and those who have attached valid N.S.I.C. Registration Certificate at the time of vendor registration.

The benefits mentioned in (1) to (3) above shall be available only to those items approved during the registration process and subsequent updates in registration up to the date of submission of this tender.

The tender fee paid against the particular tender shall not be refunded / transferred /adjusted at all.

XXXVI PRE-BID MEETING:

1) The bidder or its official representative is invited to attend pre-bid meeting (s) which will take place at the place, date and time designated in the Bidding Data.
2) The purpose of the pre-bid meeting(s) will be to present the salient features of the bidding documents to the bidders, including the bid submittal requirements, the Conditions of Contract (including payment terms and conditions), the technical features of the project, and to clarify issues and to answer questions on any matter that may be raised by the bidders.
3) The bidder is advised to visit the Site and study the bid document thoroughly, and is requested to submit any questions in writing or by E-mail, to reach the Employer not later than one week before the pre-bid meeting.
4) Minutes of the meetings, including the text of the questions raised and the responses given will be transmitted without delay to all the prospective bidders through the website https://etender.mahadiscom.in/eatApp/. Any modification of the bidding documents listed which may become necessary as a result of the pre-bid meetings shall be made by the Purchaser exclusively through the issue of an Addendum pursuant to Clause and not through the minutes of the pre-bid meetings.
5) Non attendance at the pre-bid meeting will not be a cause for disqualification of a bidder. Nevertheless, senior representatives of the bidders are strongly encouraged to participate in the pre-bid meeting to help ensure that they fully understand the key concerns of the Employer and the Employer's requirements.

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XXXVII CLARIFICATION ON DEVIATIONS:

The purchaser, if necessary, shall obtain clarifications on deviations within 1 or 2 working days by requesting for such information from any or all the bidders in writing, as may be necessary.

The same should be submitted online on or before the due time and date of submission of Deviation Bid. The clarification shall be opened online on due time and date of opening of Deviation Bid.

The Schedule for submission and opening of Deviation Bid shall be communicated by auto generated e-mail of the e-tender website.

CERTIFICATE:

I / We agree to supply the materials at the rates herein tendered by me / us subject to the conditions of tender and supply in Annexure 'A' of this tender which I / We have carefully read and which I / we have thoroughly understood and to which I / we agree. I / we hereby agree to keep this offer open up to the date mentioned in tender details and shall be bound by communication of acceptance dispatched within the validity period.

Seal & Signature of bidder

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MAHAVITARAN
Maharashtra State Electricity Distribution Co. Ltd.

SECTION-II

CONDITIONS OF SUPPLY

1) EFFECT OF CONTRACT:

The contract shall be considered as having come in to force and shall be in operation for a period of 3 months from the date of Notification of Award. The bidder whose offer is accepted is hereinafter called "the supplier".

2) QUALITY OF SUPPLIES:

All materials supplied shall be strictly as per specification laid down by MSEDCL and in accordance with the approved standard Guaranteed Technical Particulars (GTP), drawings and type test reports.

3) MATERIAL AND COMPONENTS:

The material and components not specifically stated in this specification but which are necessary for satisfactory operation of the equipment / items specified, shall be deemed to be included unless specifically excluded and shall be supplied without any extra cost.

4) ACCEPTANCE OF SUPPLIES / INSPECTION:

i) The supplier shall normally offer at a time, the entire quantity required to be delivered every month as per the delivery schedule indicated at Annexure 'B' of A/T for the purpose of inspection by the Purchaser.

Time being the essence of contract; the supplier shall strictly maintain the monthly delivery schedule.

ii) Materials shall be inspected by the Purchaser's Executive Engineer / or the representative authorized by the Purchaser before dispatch. An intimation in the prescribed Proforma about the date on which materials shall be ready for inspection, indicating quantity, shall have to be given to the Executive Engineer / or the representative authorized by the Purchaser before dispatch so as to reach him 10 working days in advance, failing which, the supplier shall be responsible for delay in delivery on account of inspection.

The intimation in the prescribed proforma (Inspection call) shall be forwarded on MSEDCL Material Inspection Portal i.e. https://mip.mahadiscom.in/InspectionPortal/. Inspection calls sent via any other media will not be entertained and the supplier will be responsible for delay in delivery on account of inspection.

The inspection call should reach to MSEDCL maximum 7 days prior to date of readiness. On receipt of such intimation, the materials shall be inspected within 10 working days from the date of receipt of inspection call. The materials shall be dispatched only after inspection and approval of same by the Inspector. The inspection approval letter shall be valid for a period of 30 days from the date of issue of letter to enable the supplier pack the material and arrange transportation thereof so that material should be reached at the respective consignee within scheduled delivery period.

After this period of 30 days, the validity of this inspection approval letter will lapse. If the material is not reached within scheduled delivery period to respective consignees, the approval of purchaser is to be sought by the supplier for revalidation of inspection approval letter at the sole discretion of MSEDCL.

For quantity supplied beyond contractual delivery period, statutory variations is applicable only when the delayed delivery is attributed to MSEDCL.

iii) The supplier shall notify the names of the consignees as per DI, to whom the inspected lot would be dispatched. The supplier shall get the copies of inspection approval letter together with witness certificate duly signed by the concerned Inspecting Officer and also mention reference or inspection approval letter on the challan / invoice, failing which any delay occurred in getting the S.R. Notes from the consignees would be solely to supplier's account. The inspection report shall be filled in online on the same day by the Inspector from the site on MSEDCL web portal after the inspection.

iv) Factory address, from which the bidder has to supply the material, shall be as indicated in the latest approved on line vendor registration form on e-tendering through which the bidder has submitted the offer.

v) The supplier shall offer inspection call intimation of readiness of material as per the monthly schedule only. In the event, during the inspection by the Purchaser's Inspecting Officer, if it is observed that the quantity actually offered for inspection is less than the quantity indicated for inspection in the inspection call, the Purchaser shall be entitled to recover from the supplier, the actual expenses incurred for arranging the inspection, and the supplier shall not dispute the amount to be recovered.

vi) The supplier shall submit the test certificates / reports from any NABL approved laboratory for the respective quantity of material, before dispatch. The material shall not be dispatched unless and until the test certificates are approved by the Purchaser.

vii) All the necessary help shall be extended by the supplier to the authorized representative of the Purchaser to carry out testing of equipment / materials. Testing equipment's shall be arranged by the supplier.

viii) MSEDCL may issue the dispatch instructions (DI) to deliver the ordered quantity to the bidders in Maharashtra within same districts of factory location of the supplier. However, it will not be binding on the MSEDCL; supplier has to deliver the material in other districts as per MSEDCL requirement. Further outside Maharashtra bidders have to deliver the material as per MSEDCL requirement to the designated consignee.

ix) MSEDCL on its sole discretion may get material / equipment inspected and tested by third party NABL lab.

5) RIGHT TO CARRY OUT INSPECTION DURING MANUFACTURING:

The Purchaser at its option, will inspect the material ordered during its process of manufacturing including the inspection of raw materials and will request the supplier to carry out such tests as may be necessary to ensure proper quality of the material. The samples of components of the material shall be subject to quality check by the inspecting officer during manufacturing.

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6) RIGHT TO REVISE DESPATCH INSTRUCTIONS, DELIVERY SCHEDULE AND TO DEFER SUPPLIES:

i) The Purchaser reserves its right to revise the dispatch instructions issued along with the order, at the time of giving final clearance for dispatch after inspection of the material. If such change in destination is not intimated at the time of inspection approval or waiver of inspection, the supplier shall dispatch the material as per the dispatch instruction in accordance with A/T. indicated by him in the inspection call letter.

ii) The Purchaser reserves its right to change the delivery schedule of the contract either by reducing the monthly lot up to 60% of the agreed lot or by increasing the same up to 120% of the agreed lot with prior two months' notice and the Purchaser shall not be liable to pay any compensation/damages on account of such change in delivery schedule.

iii) The Purchaser reserves its right to defer the balance supply to be received against the order by giving two months' notice for a maximum period of 6 months. In such an event, the delivery period for the deferred material shall be deemed to be extended proportionate to the period of deferment and the Purchaser shall not be liable to pay any compensation/damages on account of such deferment of deliveries.

7) WAGON LOADS / TRUCK LOADS:

Quantity to be dispatched to consignee should be minimum in two full truck loads and may be part load as per the Purchaser's requirements may not necessarily be in full wagon load / truck load and may be part load as per the Purchaser's requirement.

8) ROAD TRANSPORT:

In case the supplier prefers to dispatch the materials by road transport at his risk and cost and without any extra cost to the Purchaser, the materials shall be accepted only during office hours on working days. The supplier should ensure that the goods reach the stores in first half so as to arrange their unloading during office hours, failing which, the Purchaser shall not be liable for delay in unloading and for inconvenience caused to the transport contractor in the form of detention etc. Unloading at stores will be arranged by the consignee.

9) DESPATCH INTIMATION:

The supplier shall inform by e-mail to the consignee details of dispatch along with e-way bill receipt in hard & soft format giving RR / LR No., Wagon / Truck No., Type of wagon, craneable consignment or otherwise, total value of consignment, etc. to facilitate the consignee to arrange for clearance of goods on cemmcmsedcl@mahadiscom.in or cemmcmsedcl@gmail.com.

10) BILL OF MATERIALS: (WHEREVER APPLICABLE)

The supplier shall furnish bill of materials for each type of equipment / material offered which should be consistent with the drawing, specification and guaranteed technical particulars. The copies of the bill of materials should always be enclosed along with the bill submitted by the supplier for payment wherein he should specifically mention the materials / components dispatched out of the bill of materials, if the equipment is not sent in totality. Where the equipment / material to be supplied consist of more than one component, the supplier claiming payment for equipment / materials shall certify that all components of the equipment / material have been supplied in full for the quantity indicated in the invoice. Part payment shall not be allowed.

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11) PACKING LIST:

Each package shall contain, in waterproof cover, the detailed list indicating the order reference, date, list of content and reference to the approved bill of materials. Each item contained in the package shall be described sufficiently to enable identification of the quantity, weight etc. There should not be any alteration in the packing list incorporated in the order, soft copy of the packing list should be sent to all the consignees and hard copy to G.M. (F&A-SB) should be enclosed with the bills along with other documents.

12) REPLACEMENT OF GOODS LOST, BROKEN OR DAMAGED:

Notwithstanding anything herein contained, the supplier undertakes to be responsible for the safe arrival of the materials in good condition and without any loss or damage at the final destination and until the same be actually delivered to and received by the Purchaser at its stores or other place of final destination and for this purpose, materials carried by railways or other carrier shall be deemed to be so carried at the risk of the supplier. In case of transit damage / shortages, the payment shall be made only for the quantity received in good and working condition and the consignee shall lodge claims with carriers and transfer the same to the supplier with all necessary documents for settlement of the same with carriers at the supplier's end. The transit damages / shortages / losses reported by the consignee shall be repaired / replaced by the supplier duly inspected, free of cost, within one month from the date of such intimation of breakages / shortages / losses without waiting for settlement of the claims from carrier or insurance co. etc.

However, rectification of minor defects at store locations are allowed for following minor defects only.

i. Leakages.

ii. Bushing replacement

iii. LA replacement

iv. Nut bolt tightening etc.

13) REPLACEMENT OF REJECTED MATERIALS:

If, on inspection at the final destination, the Purchaser discovers any loss in the materials supplied or that they are received in damaged condition or that in the opinion of the Purchaser, they are not of the contracted quality or specification, the Purchaser shall be entitled (notwithstanding that the property in the materials shall have passed on to the Purchaser) to refuse to accept or reject the materials altogether and claim damages or cancel the contract and buy its requirements from any of its suppliers stipulating earliest possible delivery and in accordance with its tender system against the supplier and recover the damages if any, from the supplier from any outstanding sums that may be due to the supplier from the Purchaser against this contract or against any of the contract entered into with the supplier, without prejudice to other rights and remedies available to it in law and reserving always to itself the right to forfeit the performance deposit placed by the supplier for the due fulfillment of the contract.

In case the stores / materials are found not in accordance with the prescribed specifications and / or the approved sample, the same will be rejected and the supplier shall replace the rejected stores / materials free of cost within one month from the date of intimation. The replacement of goods shall also have to be got inspected as per inspection clause. Further if the stores / equipment supplied becomes incomplete on account of either

rejection or short supply of its components, the complete cost of the stores / equipment shall be recovered from supplier's bills without notice.

14) MATERIAL DESPATCHED AND PROGRAMME:

A statement as under indicating dispatches effected during every month shall be furnished to this office along with the programme of manufacturing / dispatches during the following two months. In the event of no dispatch, the statement shall contain nil information.

MONTHLY STATEMENT:

I. Name of Supplier:

II. Reporting Month:

Sr. No.	A/T No.	Material	Item No. as Per A/T	Consignee	RR / LR Delivery Challan No. With date	Date of Actual Receipt of Material	Qty. Dispatched Between 26th of Preceding Month and 25th of the Reporting month	Programme of supply during the next 2 months
1	2	3	4	5	6	7	8	9

Consolidated details of the above information shall be furnished to office of the Chief Engineer (M.M. Dept.) after completing the supplies of a particular order. The copy of this consolidated information shall invariably be forwarded to the respective consignees, failing which; security deposit paid against the contract shall not be released.

15) MATERIAL RECEIPT & SUBMISSION OF BILLS AT CONSIGNEE:

On receipt of material at destination of consignee as per DI, Additional Executive Engineer (MM DEPT.) of respective store should ensure the receipt of material in good & healthy condition. While receiving the material, store in charge should ensure the receipt of material as per Dispatch Instructions issued by MM Dept. Further, the store in charge should ensure the receipt of original & scan copies of following documents:

a) Tax invoice.

b) Detailed packing list.

c) Bill of Material.

d) Delivery challan.

e) E-way bill receipt.

f) Dispatch document (RR/LR).

On confirmation & validity of above documents, store in charge will generate Provisional SR Note through ERP system immediately for receipt of material at stores thereof.

Where required by the Purchaser, the successful bidder must send the operation and maintenance manuals, test certificates, drawings etc. for the material ordered. These should be sent immediately after dispatch of material and a statement to that effect should be made in the invoice.

After successful RST of supplied each lot, store in charge will generate final SR note through ERP system immediately from receipt of RST report at stores.

16) PAYMENT OF BILLS:

(a) Terms of payment:

a. The Bidder shall be paid 100% payment within 60 days from the date of receipt of material in good condition, against Stores Receipt Notes (S.R. Notes) issued by the concerned consignee.

b. However, in respect of only those entities which qualify for 45 days payment period under the Micro, Small and Medium Enterprises Development Act, 2006, 100% payment of the Contract price will be paid within 45 days from the date of receipt of material at Consignee Store in good condition, against Stores Receipt Notes (S.R. Notes) issued by the concerned consignee.

c. In respect of Micro, Small and Medium Enterprises, best efforts will be made for payment within 45 days from date of submission of invoice along with requisite documents after the delivery of entire lot. However, no claim for interest will be entertained in case of delay in payment beyond 45 days. The Micro, Small and Medium Enterprises who are ready to accept this payment term may only quote. No dispute in this regard will be entertained. After completion of order, the claims of whatsoever nature lodged after 30 days from the last date of payment will not be entertained.

d. The payment shall be effected by A/C payee cheques / RTGS. Following documents as required in terms of order, will have to be forwarded to the G.M. (F&A-SB), Maharashtra State Electricity Distribution Co. Ltd., Prakashgad, Station Road, Bandra (East), Mumbai - 400 051 along with bills in triplicate to facilitate payment with a copy to the Chief Engineer of respective Zone.

(i) Invoice (on the basis of rates accepted as per A/T) issued in accordance with the provisions of GST Invoice Rules.

(ii) Inspection and Test Certificate approval.

(iii) E Way Bill

(iv) Copy of Acceptance letter of Permanent Bank Guarantee / Security Deposit Certificate.

(v) Packing list.

(vi) Approved Bill of Material.

(vii) Certificate of having dispatched Operation & Maintenance Manual, copies of Test Certificates and approved drawings / Bill of Material to consignees wherever applicable.

The supplier shall forward the original R.R. / L.R. direct to the consignee along with relevant documents. The original bill shall be forwarded to The G.M. (F&A-SB), MSEDCL, Prakashgad, Bandra (E) and marked ORIGINAL. The bill should indicate the GST registration no. and date held by him under the GST Law. The Purchaser shall not be responsible for delay in payment of bills if the supplier fails to comply with any of the above requirements.

Supplier's copy of S.R. Note will be forwarded by the consignees through their

respective Common Stores for supplier's record towards acknowledgement of receipt of material. Accounts copy of S.R. Note will be forwarded by the respective Common Stores to G.M. (F&A-SB) for payment.

Wherever the payment is to be effected against Material Receipt Intimation (MRI) and if the supplier fails to forward the documents such as inspection report, bill of materials, approved drawings, etc. wherever required along with the invoice to the respective consignees and no payment shall be made against the said MRI.

The whole of the first lot as well as monthly lot when delivered in installments, the date of delivery and due date of payment will be counted after the receipt of the entire lot.

Any amount more than Rs. One Lakh can be transferred to the bank Account of the supplier electronically. For this RTGS (Real Time Gross Settlement) provision, following information is to be furnished by the bidder in the required documents of the online offer.

1. Name of the Company
2. Name of the Bank & Branch with address where the amount is to be transferred.
3. Current Account Number (15 digits)
4. RTGS No. / (IFSC Code) (Indian Financial Security Code)
5. MICR Code of the Bank
6. Company's email ID
7. Contact Name & Telephone No.

17) TAXES:

(A) Notwithstanding the fact that contract price is inclusive of GST:

(i) GST shall be paid at actual on the basis of due date of delivery or actual date of supply whichever is lower against documentary evidence.

(ii) Variation in GST on bought out items shall not be entertained.

(B) Structural changes in and due to 'Input Tax Credit' Scheme: -

(i) In the event of any structural change occurred in the Input Tax Credit Scheme after the date of submission of the tender till the currency of the contract, the benefit out of such change shall be passed on to the purchaser.

(ii) In the event of 'Input Tax Credit' being extended by the GST Law which were otherwise ineligible for claiming Input tax credit thereof, the seller should advise the purchaser about the additional benefits accrued or any variation thereof, through a letter containing such details and computation within such time as may be agreed between both the parties i.e. Supplier & MSEDCL.

18) DEDUCTION:

Any amount or amounts which become payable by the supplier to the purchaser under a particular contract, shall be deducted by the purchaser from any amount/amounts due or becoming due to the supplier under the same or any other contract and shall be adjusted against dues to the Purchaser.

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19)GUARANTEE:

Material offered shall be guaranteed for a period 66 months from the date of receipt at the consignee's Stores Center or 60 months from the date of commissioning, whichever is earlier. In case of failure of material within the above guarantee period, tenderer shall make available other new conditioned / repaired material / equipment, free of cost at Division / Stores/Site for replacement within 45 days from the date of intimation from Division filter unit / Stores/Site and lift the failed material / equipment for repair rejected material after replacement. For this purpose, bidder shall maintain spare stock in adequate quantity of ordered ratings of material / equipment. If the defective material is not replaced / repaired within the specified period as above, the Maharashtra State Electricity Distribution Company Ltd. shall retain an equivalent end cost of material plus 15% supervision charges from any of the bills of the supplier or encashing available performance E-bank guarantee submitted against guarantee period or through any available sources, till the return of the equipment. No interest will be paid on the amount so retained / recovered. In case of material / item not returned duly repaired within 45 days, penalty shall be imposed @ 0.5% per week or part thereof maximum up to 10% of the cost of undelivered material / equipment beyond specified time limit. In case of material / item not returned duly repaired within 5 months, total cost of the material / item along with penalty will be adjusted / recovered from the pending bills of the supplier or encashing available performance E-bank guarantee submitted against guarantee period or through any available sources with MSEDCL.

The guarantee period failed material / equipment will be made available at MSEDCL filter unit. Loading and unloading of guarantee period failed material / equipment should be arranged by the supplier.

The clause itself shall be the notice to the supplier about encashment of PBG to adhere to the timelines.

The outage period, i.e. the period from the date of failure till unit is repaired / replaced shall not be counted for arriving at the guarantee period. Thus supplier has to extend the guarantee period by outage period.

Further, in case of repeated failures of equipments / material, the Purchaser reserves the right to debar / disqualify the supplier for future tenders / orders.

20) LIFTING OF MATERIALS:

A) LIFTING OF REJECTED/DAMAGED MATERIALS FROM STORES:

(a) On failure to replace or repair the transit damaged or rejected material within one month from the date of intimation as required under tender, it shall be deemed to have concluded that such material is finally rejected. The damaged / rejected material shall be lifted by the supplier within 30 days from the date of receipt of notice to that effect from the concerned consignee on reimbursement to the Purchaser of the cost of the material / equipment, if any, already paid in terms of payment clause in the contract and actual expenses incurred by the consignee towards handling, demurrage / wharfage / undercharges, freight, insurance premium etc. The Purchaser shall not be responsible in any case for the loss, destruction, damage, deterioration of the material after expiry of the said 30 days period.

(b) If the supplier fails to lift the material within this period, the material will remain with the Purchaser at the cost and risk of the supplier. Supplier shall, therefore, be liable to

pay ground rent @ 0.1% (Plus GST as may be applicable) per day of purchase cost of the material to be lifted from the date of intimation of rejection till the actual date of lifting.

(c) The Purchaser will give 7 days' notice for lifting of rejected material and if not lifted, will be also free to Scrap / dispose of such material, after the period of said 37 days, by Public auction/Tender notice/Destruction as may be deemed fit and storage charges @ 0.1 % (Plus GST as may be applicable) per day of purchase cost will be recovered from the date of intimation of rejection of materials till the date of realization of the sale amount/physical removal of the material besides the actual expenses incurred as referred to at (a) above. The amount received from the sale of scrap/rejected material will be adjusted in the penalty.

Notwithstanding what is contended in the foregoing clauses, the supplier shall be liable to pay the Purchaser the cost and expenses incurred by the Purchaser, if any, including ground rent and the same shall be appropriated and recovered from the sale proceeds.

B) LIFTING OF FAILED MATERIAL / EQUIPMENT FROM DIVISION FILTER UNIT/SITE:(If applicable)

a) If the supplier fails to lift the failed material within specified period, the material will remain with the Purchaser at the cost and risk of the supplier (By recovering end cost of failed transformer). The Purchaser will be also free to dispose of such material, after the period of 5 months from the date of intimation of failure by Public auction / Tender notice / Destruction as may be deemed fit or repaired departmentally and recovered cost will not be refunded to supplier.

b) Process for lifting of rejected / damaged / failed materials from Divisions / Stores/Site:

i. The communication / correspondence shall only be made by specified e-mail id cemmcmsedcl@gmail.com by MSEDCL field offices / the supplier.

ii. As soon as the material/equipment is failed within guarantee period, the concerned Executive Engineer of O&M Division / Stores-in-charge shall inform the intimation of such failure immediately to Supplier as well as Material Management Department, Head Office on specified e-mail id in Format A (failure report).

iii. The Material Management Department will forward the format A to SB Section, Head office to withhold the payment equivalent to the cost of material/equipment with 15% supervision Charges from any of the bills of the supplier. If the supplier fails to return repaired material/equipment at concern O&M Division / Store/Site within 45 days from the date of intimation, penalty to be imposed @ 0.5% per week or part thereof maximum up to 10%.

iv. On receipt of material/equipment against replacement or repairs, the Executive Engineer, O&M Division / Store-in-charge will issue Format C (Rectification report) to concern supplier with copy to Material Management Department Head Office through specified e-mail id.

v. The supplier shall note that the guarantee period for the delayed period taken for replacement / repairing of material/equipment will be automatically extended.

vi. Material Management Department Head Office shall inform the SB Section, Head office to release the payment withheld against that material/equipment.

vii. From the date of intimation, if supplier fails to return repaired material/equipment at O&M Division / concern store within 5 months, concerned Executive Engineer of O & M Division / Stores-in-charge shall inform the intimation of such failure immediately to Material Management Department, Head Office on specified e-mail id.

viii. The Material Management Department Head Office shall forward the same to SB Section, Head office to recover the payment equivalent to the cost of material/equipment from any of the bills of the supplier with penalty to be imposed @ 0.5% per week or part thereof maximum up to 10% for final recovery as per clause 19.

21) LIQUIDATED DAMAGES FOR LATE DELIVERY:

In case the materials are not delivered within the period stipulated in the order, the supplier shall be liable to pay at the discretion of the competent authority of the Purchaser, the liquidated damages to the Purchaser @ 1% per week or part of week on the value of delayed material / unexecuted quantity plus taxes as applicable, if any on the price subject to a maximum of cumulative ceiling of 10% reckoned on the contract value of such complete portion or section of the plant, equipment or material delayed and also the portion supplied which could not be brought into commission due to any part thereof not having been delivered in time. In addition to above if bidder fails to supply the material within contractual delivery period continuously for 3 lots, then the order shall be liable for cancellation.

Due consideration may be given in the levy of liquidated damages for reasons absolutely beyond the control of the supplier, for which documentary evidence shall be produced to the satisfaction of the competent authority of the Purchaser.

The Purchaser shall be entitled to deduct/recover the amount of liquidated damages from the current bill payable to the supplier or any other amount due or payable to him against this or any other contract.

For computing the liquidated damages for delayed supplies, the date of railway receipt or the date of receipt of materials at stores in case of road transport, shall be the date of delivery.

In case the Purchaser does not arrange for inspection of material within 10 days from the date of receipt of inspection call to MSEDCL wherever applicable, the period of more than 10 days till inspection will not be considered for levy of liquidated damages. For computing the period taken for inspection in such cases, the relevant date mentioned in the inspection certificate issued by the inspecting officer would be considered.

22) ORDER PLACED ON TIME PREFERENCE BASIS (WHEREVER APPLICABLE):

In case of order on time preference basis (i.e. orders given at higher rate on delivery period considerations only) if order is given at higher rate of L-2 (or L-3 etc.), then the payment at higher rates will be made provided the firm makes supplies within the stipulated time period. In case of delay in supplies, the payment will be made at the rates offered by L-1. In addition, Clause No.21 above for Liquidated Damages for late delivery will also be applicable. However, the quantity allocation for order under this clause shall be at the sole discretion of MSEDCL & the specified quantity allocation for this tender will not be applicable in this case.

23) FORCE MAJEURE CLAUSE:

If, at any time, during the continuance of this contract the performance in whole or in part by either party of any obligation under this contract shall be prevented of delayed by reason of any war, hostility, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restriction, strikes, lock-outs or acts of God (herein after referred to as

"events"), provided notice of happening of any such eventuality is given by either party to the other within 21 days from the date of occurrence thereof, neither party shall by reason of such event, be entitled to terminate this contract nor shall either party have any claim for damages against the other in respect of such non-performance or delay in performance; and deliveries under the contract shall be resumed as soon as practicable after such event has come to an end or ceased to exist, and the decision of the purchasing officer as to whether the deliveries have been so resumed or not, shall be final and conclusive, provided further that if the performance in whole or part of any obligation under this contract is prevented or delayed by reason of any such event for a period exceeding 60 days, either party may at its option terminate the contract PROVIDED ALSO that it the contract is terminated under this clause, the purchaser shall be at liberty take over from the contract at a price to be fixed by the purchasing Officer which shall be final all unused, undamaged and acceptable materials, bought out components and stores in course of manufacture in the possession of the contractor at the time of such termination or such portion thereof as the purchaser may deem fit accepting such material, bought out components and stores as the contractor may with the concurrence of the purchaser elect to retain.

24) ACCEPTANCE OF LOWER FORD RATE OFFERED IN SUBSEQUENT TENDER :

During contractual delivery period of supply, the quoted rates shall remain the same, however for same specification of material if the rates will receive lower in another subsequent tender in extended period of contract then it is binding on the supplier to supply the same material at lower rate for balance quantity of material i.e. in case if price bid of next subsequent tender of similar technical specification is opened and FORD rate found lower than the ongoing contracts this FORD rate shall be made applicable for the balance quantity beyond contractual delivery period. Further the purchaser reserves the right to allow the supplier to deliver the quantity or otherwise beyond the contractual delivery period.

However other stipulations of clause No. 23 of Section-II i.e. Annexure-A will remain unchanged.

25) PERFORMANCE OF CONTRACT:

The Purchaser will not be in any way liable for non-performance either in whole or in part of any contract or for any delay in performance thereof in consequence of strikes, shortage, non-availability of raw materials, combination of labour or workmen or lockout, breakdown or accident to machinery or accidents of whatever nature, failure on the part of the railways to supply sufficient wagons to carry essential raw materials etc. and finished products from the stores, subject to the provision and stipulation made in condition No. 21 as stated above i.e. Liquidated damages for late delivery.

26) CONTRACT PERFORMANCE DEPOSIT:

a) The supplier will have to furnish contract performance deposit as per Annexure - N in the form of unconditional & irrevocable BG within 10 days from the date of issue of LoA.

b) The contract performance deposit shall be an amount equal to 5% of the contract value and shall be valid for a period of 90 days beyond guarantee period of the last lot of the equipment supplied.

c) The contract performance deposit shall be refunded within 90 days from the date of expiry of the guarantee period of the equipment supplied. The purchaser shall not be liable to pay any interest or compensation to the contractor for retaining the deposit after the end of the said period.

d) The contract performance deposit is intended to secure the performance of the contract for guarantee period of the equipment supplied. However, it is not to be construed as limiting the damages stipulated in other clauses of the contract.

27)POWER OF ATTORNEY:

It will be obligatory on the supplier to communicate the revocation of Power of Attorney, if any, after submission of offer till the execution of contract failing which the act/s & action done by the agent / representative shall be deemed to be the valid act/s & action of the bidder / supplier.

28)SETTLEMENT OF DISPUTE:

Permanent Dispute Resolution Committee (PDRC) comprises of Chief Engineer (MM Dept.), one member of Accounts Department and representative of supplier will resolve the dispute arise if any.

29)JURISDICTION:

Any disputes or difference arising under, out of or in connection with this tender or contract if concluded, shall be subject to the exclusive jurisdiction of the "Courts" in Mumbai.

30)TERMINATION OF CONTRACT

1) The decision of the Purchaser shall be final as regards the acceptability of the stores supplied by the supplier and the Purchaser shall not be required to give any reason in writing or otherwise at any time for the rejection of the stores/materials.

2) In case the contractor/supplier fails to deliver the stores/material or any consignment thereof within the contracted period of delivery as per delivery schedule or in case the stores/materials are found not in accordance with the prescribed specification and the performance of the supplied material is not found satisfactory, the Purchaser shall exercise in discretionary power either,

   a) To purchase from elsewhere, after giving 15 days due notice to the contractor, at the risk of contractor, such stores/material not so delivered or other of similar description, without cancelling the contract in respect of consignment not yet due for delivery,

      OR

   b) To cancel the contract reserving Purchaser's right to recover damages Plus GST as may be applicable.

   c) notwithstanding that the powers under (a) and (b) referred above are in addition to the rights and remedy available to the Purchaser under the General Law of India relating to contract.

   d) Purchaser reserves right to recover damages against risk purchase or 10% value of non-supplied material plus applicable taxes, if any whichever is higher.

   In the event of risk purchase of stores of similar description, the option of the Purchaser shall be final. In the event of action taken under (a) or (b) above, the supplier shall be liable for any loss which the Purchaser may sustain on that account but the supplier shall not be entitled to any saving on such purchases made against default.

3) Further contract can be terminated in case of sub-standard /poor quality material.

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31) DEBAR / BLACKLISTING OF MANUFACTURER:

In the event of fraudulent practices / non-compliance / non fulfilment of any obligation as required by MSEDCL at any stage of tendering or execution, the bidder is liable to be debarred / blacklisted at the discretion of MSEDCL.

32) TAX DEDUCTED AT SOURCE:

The purchaser shall deduct tax at source in accordance with the provisions of the laws as and when the same is notified.

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SECTION-III

I. Quantity procurement :

The quantity for procurement is as below.

22 kV, 630 ampere, extensible type, outdoor SCADA compatible motorised Ring Main Unit, with 400 ampere Vacuum Circuit Breaker, with CTs 400- 200/1 Amp CTR class 5P10, 5 VA burden. The Aux supply shall be PT driven. 2 FPIs arrangement at incoming (isolators)					
Sr. No.	Item code	Item description	Unit	Tender quantity in nos.	Estimated cost of tender (Crores)
1	86999884904	22 kV SF6, Motorized, SCADA Compatible RMU 2 Iso + 2 Br	No	240	21.02
2	86999885114	22 kV SF6, Motorized, SCADA Compatible RMU 2 Iso + 4 Br	No	20	3.06
Total				260	24.08

II. Qualifying Requirements:

1. The bidder shall be an Original Equipment Manufacturer (OEM).

   Upload:

   a) Udyam adhar / Certificate of Incorporation etc.

2. The bidder should have experience for supply of similar or higher rating of material / equipment to any Electricity Distribution Utility, Electricity Distribution Franchisee, Public Sector Undertaking directly or through EPC contractor and should have executed orders of 30% of tender quantity for offered item during last three financial years. If order is executed through EPC contractor then bidder has provide the documentary evidence for supply of material to Electricity Distribution Utility, Franchisee and Public Sector Undertaking.

   Bidders who supplied the material in MSEDCLs projects viz; INFRA - II, IPDS, DDUGJY, DPDC, DDF, Non DDF, HVDS or any other scheme shall also be considered & bidder shall produce the order completion / quantity supplied certificate from concern Superintending Engineer (Infra/O&M).

   Upload:

   a) Copies of orders executed by the bidder and the Certificate from the purchaser / Electricity Distribution Utility, Electricity Distribution Franchisee, Public Sector Undertaking for supply of quantity for preceding three financial years.

   b) Order Completion certificate from Electricity Distribution Utility, Electricity Distribution Franchisee, Public Sector Undertaking or Documentary evidence for supply of material to Electricity Distribution Utility, Franchisee and Public Sector Undertaking if material is supplied Through EPC contractor with regards to successful execution of the order / supply of quantity for preceding three financial years.

   c) List of orders in hand.

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3. For all tendered material, valid Type test certificates (If applicable) as per MSEDCLs technical specifications (Annexure-D) which are carried out within 10 years prior to the date of opening of tender from NABL accredited lab such as CPRI / ERDA shall be uploaded in the bid. Bids without the Type test certificates shall not be considered for further evaluation.

   Upload:

   a) Type test certificates from NABL accredited lab such as CPRI/ERDA valid for a period of ten years.

4. Average Annual Turnover – The Average annual turnover of last three financial years of the bidder shall be 30% of the tender estimated cost of offered quantity. The bidder has to submit the annual turnover certificate of the company of last three financial years duly certified by Chartered Accountant.

   Upload:

   a) Documentary evidence showing annual turnover of last 3 years, certified by Chartered Accountant for preceding three financial years. (As per attached Format-4)

5. The bidder should have in-house testing facilities for conducting acceptance & routine tests in accordance with the procedures laid down in relevant IS /IEC amended up to date.

   Upload:

   a) List of in house manufacturing and testing facilities as well as quality control set up.

6. The bidder shall have ISO certification for quality management system & environmental management system.

   Upload:

   a) ISO for quality management system.

   b) ISO for environmental management system.

7. Following Documents should be submitted by the bidder along with the bid.

   Upload:

   a) Documentary evidence (for e.g. Udyam Registration/NSIC/Chartered Accountant/Engineer Certificate) for manufacturing capacity to cover the quantity offered by the bidder and considering orders in hand.

   b) Certificate from Charted Accountant for not having controlling stake in more than one entity as per attached Format-3.

   c) Annexure-F regarding declaration of legal litigations.

   d) Annexure-I regarding debar undertaking.

   e) Self-undertaking on bidders letter head for not approaching any one for undue influence as per attached Format-2.

   f) GST registration certificate.

   g) EMD receipt (E Bank Guarantee only)

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h) Power of attorney.

i) Certificate for No Deviation as per attached Format-5.

j) Offered quantity and delivery schedule on bidders letter head.

Note: If there is any ambiguity in other terms & conditions, this Section-III prevails.

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ANNEXURE - "B"

QUANTITY, PRICE AND DELIVERY PERIOD

ANNEXURE - "B" to be submitted online against commercial bid; attached separately

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ANNEXURE'C-1'

[To be submitted later on as per as per Clause XVIII (B) of Instructions]

CONFIRMATION FOR ACCEPTING ORDER BY MATCHING RATES WITH LOWEST ACCEPTABLE BIDDER

APPLICABLE FOR INDUSTRIAL UNITS FROM MAHARASHTRA ONLY Marketing Assistance and Purchase Preference to the units from Maharashtra (refer Clause XVIII of Instructions to Bidders):-

1. (a) In case your unit is located in Maharashtra and the lowest acceptable rate received against the tender is from the unit outside Maharashtra, please confirm whether you are agreeable to accept order at that lowest acceptable rate limited to 50% (fifty percent) of our requirement. .....

APPLICABLE FOR ALL BIDDERS INCLUDING THOSE ELIGIBLE UNDER THE ABOVE CLAUSES:

1. (b) Please confirm whether you are agreeable to accept order at the lowest acceptable rate received against the tender. .....

[Industrial units from Maharashtra can give option under 1(b) above for balance quantity]

Note:-

1. If the bidder gives the above confirmation for the quantity less than as indicated in Clause X (iii) of the Instructions to the Bidders, then the above confirmation shall not be acceptable.
2. Bidders may confirm matching for one or more items originally tendered.
3. Any withdrawal of confirmation for order by matching rate within validity of offer will render the entire offer invalid and shall be summarily rejected and Earnest Money Deposit shall stand forfeited.
4. A bidder will not be entitled to the benefit of offers by matching rates and will not be considered for orders if his original offer is rejected on the ground of ambiguity or because of not accepting /noncompliance of the terms & conditions of the tender.
5. In the above confirmation, if the bidder indicates any rate, then the above confirmation given by the bidder will not be considered as valid.

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ANNEXURE- 'D'

TECHNICAL SPECIFICATION

As Indicated in E-Tendering

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ANNEXURE-E

CONSENT FOR MSEDCL STANDARD TECHNICAL SPECIFICATIONS & GTP

Not Applicable

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ANNEXURE-F

(On supplier's Letter Head)

I, ... certify that,

The business dealings with our firm / agency M/s…….. and its sister concern/Director/Partner/Proprietor have no any type of legal litigation against MSEDCL is pending in any court/Forum against/by the bidder or its sister concern/Director/Partner/Proprietor.

If it is found at any stage of tendering and order execution process then as per the tender conditions our offer will be rejected and I /We don't have any objection on the same.

I hereby certify that I am duly authorized representative of M/s.---------- whose name appears above my signature.

Bidders Name:

Authorized representative's signature:

Authorized representative's Name:

Seal of the company

Name and address of the Bidder

Date:

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ANNEXURE -G

PRICE VARIATION CLAUSE

Not Applicable

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ANNEXURE - H

GUARANTEED TECHNICAL PARTICULARS

As indicated in E-Tendering GTP Parameter

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ANNEXURE - I

(On supplier's Letter Head)

I, ... certify that,

a. The business dealings with our firm / agency M/s…….. have not been debarred by any Ministry of GoI / GoM / state owned electricity distribution utility and still in force.

b. The Directors, Proprietors, Partners, Employee(s) or owner of our firm / agency M/s…….. have not been either jointly or severally guilty of malpractices in relation to its business dealings with the Government or MSEDCL during the last five years.

I hereby certify that I am duly authorized representative of M/s.---------- whose name appears above my signature.

Bidders Name:

Authorized representative's signature:

Authorized representative's Name:

Seal of the company

Name and address of the Bidder

Date:

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ANNEXURE - J

(On MSEDCL Letter Head)

Dispatch Instructions

BY R. P. A. D. / ORD. POST /E-MAIL

(SAP CONTRACT No: ----------)

To,

M/s. ----------

Email: ----------

Sub: Supply of ---------- against A/T No. ---------- dt. ----------

Ref: Final Inspection Call letter No. ---------- dt. ----------.

(I.W. Regn. No. ------- dt. ----------)

Your readiness of material letter no. …….. dtd……..

Dear Sir,

With reference to the above, you are requested to dispatch …….. VCB as given below:

Sr. No.	Consigned to	Meant for Circle	Meant for Zone	Qty. in Nos.

Further, you are requested to contact concerned S.E. (O&M) Circle / E.E. (O&M) Division / Addl. E.E. (MM Section) before dispatching / unloading the above material.

This is issued without prejudice to all other terms and conditions of the order.

Yours Sincerely,

Chief Engineer (M M Dept.)

Copy f.w.cs.to: The C.E., MSEDCL, ----------.

Copy to:

The G.M. (F & A – SB), MSEDCL, Mumbai.

The E.E. (IW), MSEDCL, Mumbai.

The E.E. (O & M Division), MSEDCL, ----------

The Addl.E.E. (MM Section), MSEDCL, ----------

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ANNEXURE - K

List of Stores

Sr. No.	Name of Stores	Address
1	Common Stores Ahmednagar	Nagar-Pune Road, Opp. Arti Hotel, Kedgaon, Ahmednagar.
2	Common Stores Airoli	Power House, Thane-Belapur Road, Airoli, Navi Mumbai.
3	Common Stores Akola	Major Store Babhulgaon NH No 6 Akola.
4	Common Stores Amravati	Major Store MSEDCL Power House, Mulshi Road, Amravati.
5	Common Stores Chhatrapati Sambhajinagar	MIDC Plot No. J-13, Opp. Garware Stadium, Naregaon Phata, Chikhalthana, Chhatrapati Sambhajinagar.
6	Common Stores Beed	Near 132 kV Sub-station, Idgah Nagar, Nalvandi Naka, Beed.
7	Common Stores Chandrapur	Near Vidyut Bhavan, Bagala Chaowk, Babu Peth, Chandrapur.
8	Common Stores Jalgaon	Old MIDC Area, Behind Ajanta Lawns, Ajanta Road, Aurangabad Highway, Jalgaon.
9	Common Stores Kalyan (Netivali)	MIDC Phase 1, Near Tata Power House, Kalyan - Dombivali Road.
10	Common Stores Kamptee	Maldhakka Godown, Behind Railway Station Kamatee, Nagpur.
11	Common Stores Khamgaon	Manav Dharm Bld. Near 132 kV Sub-Station, Shegaon Road, Khamgaon, Dist. Buldhana.
12	Common Stores Kolhapur	Kaneri Math Road, A/P Gokulshirgaon, Tal. Karveer, Dist. Kolhapur.
13	Common Stores Kudal	Malwan Road, MIDC Pinguli-Nerur, Kudal, Sidhudurg.
14	Common Stores Latur	MIDC Plot No. P-21/P, In Front of Kirti Gold Oil Mill, Latur.
15	Common Stores Mulshi	Phursungi-Saswad Road, Near Overhead Bridge, Mulshi/ Phursungi, Dist. Pune.
16	Common Stores Nanded	Taroda Naka Main Road, Nanded.
17	Common Stores Nashik	Aringale Plot, Hanuman Nagar, Jail Road, JunaSaykheda Road, Panchak, Nasik.
18	Common Stores Dharashiv	Near MSEDCL Rest House, Tuljapur Road, Dharashiv.
19	Common Stores Palghar	Near 33/11 kV Sub-Station, MSEB Coloney, Boisar Road, Palghar.
20	Common Stores Parabhani	Old Power House Jintur Road, Parbhani.
21	Common Stores Ratnagiri	MIDC Area Mirjole, Kuwarbav, Ratnagiri.
22	Common Stores Sangli	Near Walchand Engineering College, VishramBaug, Sangli.
23	Common Stores Satara	A/P Satara, Tal. Koregaon, Dist. Satara.
24	Common Stores Solapur	Plot No P-4, MIDC Chincholi, Behind Post Office, Solapur
25	Common Stores Tumsar	Near Power House, Nakaq Dongari Road, Old Bus Stop, Tumser, Bhandara.
26	Common Stores Yavatmal	MIDC Lohara, Yavatmal.

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ANNEXURE – L

Format for Inspection Call Readiness of Material

Ref. No. **Date:**

To,
The CE (MMD),
Prakashgad, Bandra (E),
Mumbai - 400051.

Sub: Inspection Readiness of material against A/T No. ---------- dated. ---------- for Supply of ----------.

……

1. Brief description of the material Offered for inspection:
2. Reference of drawing Approval :
3. a) Reference of approval of type test:
   b) Reference of approval of balance type test (If applicable):
4. Whether it is a joint inspection with Testing SE (TQA) etc. (if applicable):
5. a) Whether Performance Deposit has been paid against the order:
   b) if paid, please give details:
6. Sr. No. of the items as per A/T:
7. Total Quantity of the items Ordered:
8. Total quantity of the items inspected so far:
9. a) Quantity monthly committed in delivery schedule:
   b) Lot No. for which the Quantity is offered for inspection now:
   c) Due date of delivery as per A/T for offered quantity:
10. Date of readiness of Material:
11. Complete address of the factory where materials is to be inspected:
12. Name of the person to be contacted in connection with inspection & his Office/Factory/Residence Tel. No.:
13. Staggering holiday of Factory/Office at the place of inspection:
14. a) Whether Dispatch Instructions are available (Say Yes or No):
    b) Quote Letter No.:
    c) Brief destination & Qty. per consignee of this present lot offered:
15. Last visit of our Inspecting Officer:
16. a) Whether the entire material is dispatched against last inspection. (Our EE[IW] will ensure before inspection of this lot that the earlier inspected lot is already dispatched)
    b) Quantity dispatched
17. Further programme of production Quantity likely to be offered & by what date:

Authorized Signature
For (Name of the Firm).

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ANNEXURE – M

BANK GUARANTEE FORMAT

EARNEST MONEY DEPOSIT BANK GUARANTEE AGAINST TENDER

B.G. No. & DATE:

The Bank of _____(full address of Branch) hereby agree unequivocally and unconditionally to pay, at Mumbai within 48 hours, on demand in writing from the MAHARASHTRA STATE ELECTRICITY DISTRIBUTUION CO. LTD. (name of the company formerly known as M.S.E.B.) on behalf of M/s _____(Address as per MSEDCL REGISTRATION) who have tendered and/or contracted or may tender or contract hereafter for supply of materials. Equipments or services to the MAHARASHTRA STATE ELECTRICITY DISTRIBUTUION CO. LTD. against Tender No. ---------- dated ---------- total value of Tender is Rs. ----------

This agreement shall be valid and binding on this Bank up to and including validity (date) and shall not be terminable by notice or any change in the constitution of the Bank or the firm of contractors or any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made given conceded or agreed with or without our knowledge or consent by or between parties to the said within written contract. The validity of this Bank Guarantee will be extended by us for the further period of six months, one month prior to its present validity period at the request of MAHARASHTRA STATE ELECTRICITY DISTRIBUTUION CO. LTD.(name of the company-formerly known as M.S.E.B.).

In case of any dispute arising out or it connection with the extension or encashment of Bank Guarantee, the Courts in Mumbai will have jurisdiction.

Our liability under this Guarantee is restricted to Rs.----------/- (Rupees---------- only). Our Guarantee shall remain in force until (date). Unless a suit or action to enforce a claim under the guarantee is filed against us within six months from the aforesaid date, all your rights under the said guarantee shall be forfeited and we shall be relieved and discharged from all liability there under.

Place:

Date: Sign----------

For----------

(Banker's Rubber Seal & Bank Code No. of signatory)

Please note that:

1. The value of non-judicial stamp paper for this Bank Guarantee is Rs.200/- should be purchased in the name of Guarantor Bank.
2. The Bank Guarantee should be furnished from any Scheduled Bank/Nationalized Bank.
3. Please state the full and complete postal address of the Bank undertaken the guarantee.
4. The Bank Guarantee may be valid as per terms and condition of A.T.
5. B.G. should be submitted along with covering letter of Bank.

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ANNEXURE – N

BANK GUARANTEE FORMAT

FORM OF BANK GUARANTEE FOR THE PERFORMANCE OF THE EQUIPMENT

B.G. No.& Date:

This deed of Guarantee is made this ……..day of……. By……branch having at H.O. at…….. (here in after called "the Surety" which expression shall where the context so admits include its permitted assign) in favour of MAHARASHTRA STATE ELECTRICITY DISTRIBUTUION COMPANY LTD. (name of the company formerly known as M.S.E.B.) being a government company formed as per the provisions of the Maharashtra Electricity Reforms Transfer Scheme. 2005 having its registration no. U40109 MH 2005 SGC 153645 (here in after called the "Creditor" which expression shall include its permitted assigns). WHERE AS M/s. (Name of Party)…….. (Postal address as per A/T) have entered into a contract to supply (Name of Material) to the MAHARASHTRA STATE ELECTRICITY DISTRIBUTUION COMPANY LTD. (Name of the Company formerly known as M.S.E.B.). vide contract No. ……dtd……..on the terms and conditions in the said contract. (here in after for brevity sake called "the said contract").

In accordance with terms of the said contract, the creditor has agreed to pay to M/s……..(|Name of Party)……. the said sum representing the 5% of the total contract price for the Rs……../- and WHEREAS M/s. …….. (Name of Party)…….is required under the terms of contract to furnish a Bank Guarantee for Rs……../- (Rupees:…….Only) the said sum representing the 5 % …….price as given in the said contract.

The surety as he requests of M/s. ……(Name of Party)…. has agreed to give this guarantee.

NOW THEREFORE THIS DEED WITNESS AS FOLLOWS:

1. In consideration of the creditor agreeing to make to the debtor at Mumbai the payment of Rs…….. (Rupees……only) being the value of 10% of the total contract ……price as given in the said contract on supplying the complete material as per the contract by the debtor failing which the surety does undertake to pay to the creditor on demand such amount of amounts as the surety may be called upon to pay not exceeding in the aggregate sum of Rs. ……../- (Rupees……..only).
2. The surety hereby guarantee to the creditor the due performance and observance by the debtor of the terms and conditions of the contract.
3. The surety also agrees that it shall not during the currency of the guarantee herein given or during the period of its execution revoke the same even by giving notice to the creditor.
4. On account of the non-fulfillment of the contractual obligation by the debtor or in case the surety or contractor do not renew this guarantee bond as herein provided, the surety will on simple demand from the creditor, pay at Mumbai the creditor, the sum of Rs……..(Rupees …… .only) as indicated under clause -1 above, without demure and without the creditor to invoke any legal remedy that may be available to them to compel the surety to pay the same even if the debtor consider such demand of the creditor unjustified.
5. The surety agrees and declares that notwithstanding anything contained in Section 133 to 135 of the Indian Contract Act 1872 (IX of 1972) or any other rule of law or equity in the view of any variance in the terms of the said contract shall not operate as a discharge of

his obligations hereunder or shall any composition made by the creditor with debtor in respect of any breach of the terms and conditions of the said contract operate as a discharge of the surety's obligation and surety further expressly agrees and declares that though as between the creditor and surety, the surety shall be liable for sum payable or falling due hereunder equally with the debtor and the surety save as otherwise herein provided hereby waives all his rights which he might as guarantor be entitled to claim and enforce.

6. The decision of the creditor that any sum has become payable shall be final and binding on the surety.
7. The guarantee shall come into force on supply of material shall remain in force till the end of ……(date) ….The surety, at the request of the creditor shall extend the validity of the Bank Guarantee for a further period of 12 months, one month prior to its present validity period.
8. In case of any dispute arising out of or in connection with the extension or encashment of the Bank Guarantee, the courts in Mumbai will have the jurisdiction.
9. The guarantee herein contained shall not be effected, by the change in the constitution of the surety or the debtor.
10. Our liability under this guarantee is restricted to Rs. ……..(Rupees……only) and our guarantee shall remain in force until (Date….) unless a claim under this guarantee is lodged with us within six months from the date of expiry of guarantee i.e. on or before ..(date)…all your rights under this guarantee shall be forfeited and we shall be relieved and discharged from all our liabilities there under.

IN WITNESS WHERE OF THE surety has executed this deed in presence of

Place: Signature……..

Date: for……..

(Banker's Rubber Seal & Code No. of signatory)

Witnessed (2 witness is required from bank only)

1) Name & Address

   Signature

2) Name & Address

   Signature

Please Note:

1. The value of non-judicial stamp paper for this bank guarantee is Rs. 200/- should be purchased in the name of Guaranteed Bank.
2. The bank guarantee should be furnished from any Scheduled bank
3. Please state the full and complete postal address of the bank undertaking the guarantee.
4. B.G. may be valid as per terms of A/T including guarantee period of material.
5. B.G. should be submitted along with covering letter of Bank.

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FORMAT 1

ANNEXURE – U-I

"INDEMNITY BOND"

UNDERTAKING TO BE SUBMITTED BY THE PARENT COMPANY SITUATED ABROAD IN CASE OF THE PARTICIPANT BIDDER WHO IS AN INDIAN BASED SUBSIDIARY ON GENERAL STAMP OF `200.00.

The Chief Engineer,
Maharashtra State Electricity Distribution Co. Ltd.,
Material Management Department,
1st Floor, Prakashgad, Bandra (E),
Mumbai – 400 056.

Dear Sir:

Sub: Undertaking against Tender No. _____ for procurement of _____

We, M/s. _____ having registered office at _____ are the Parent Company of M/s. _____ who have participated against your tender no. _____ for procurement of _____.
We have carefully read and have thoroughly understood and agree to the terms and conditions of the subject tender.

We hereby undertake that in case of placement of order against the subject tender on our subsidiary company, M/s. _____, in the event of we accept all the responsibilities and liabilities for supply of quality equipments as per specification of the tender and execution of the contract. We further hereby undertake that we shall be responsible for any liability arising out of the contract placed on M/s. _____ and to pay MSEDCL on demand the sum of rupees as per agreement in the event of any breach of condition of the purchase order, loss and damage of the material till expiry of guarantee period as stipulated in the order.
Our liability here under shall not be impaired or discharged by extension of time or variation or alteration made with or without our knowledge or consent by or between the parties to the said contract. This undertaking shall be valid and binding on us upto and including the execution and guarantee period of the order and shall not be terminable by notice or change in the constitution of any of the companies. In case of any dispute arising out of or in connection with this tender or contract, if concluded, the same shall be subject to the exclusive jurisdiction of the **"Court in Mumbai (India)."**

Yours faithfully,

(Authorised Signatory)
For _____

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FORMAT-2

Undertaking for not approached any one for undue influence.

(To be submitted on letter head of the bidder)

Tender No. MMD/T-…… for supply of ……..

TO WHOM SO EVER IT MAY CONCEREN

I / We _____ hereby submit the undertaking that our firm or our partners or directors have not approached any one for undue influence against the Tender/Bid.

If it is found that we have given wrong or misleading information then our offer shall be summarily rejected.

Date:
Place:

(Signature, Name of Authorized Representative & Company Seal)

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FORMAT-3

Format of Certificate from Chartered Accountant for not have controlling stake in more than one entity applied for the Tender/Bid.

(To be submitted on Letter Head of the Chartered Accountant)

Tender No. MMD/T-…… for supply of ……..

TO WHOM SO EVER IT MAY CONCEREN

I _____ hereby certify that the firm M/s _____or its partners or directors does not have controlling stake in more than one entity applied for the Tender/Bid.

If it is found that they have given wrong or misleading information then their offer shall be summarily rejected.

Date:
Place:

(Seal, Signature & Name of C.A.with Regn. No. & UDIN No.)

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FORMAT-4

Format of Certificate from Chartered Accountant for Average Annual Turnover
(To be submitted on Letter Head of the Chartered Accountant)

Tender No. MMD/T-…… for supply of ……..

TO WHOM SO EVER IT MAY CONCEREN

We have examined the audited financials of M/s_____, having its registered office at _____, for the financial years. Based on our examination, we hereby certify that Annual Turnover for respective financial year mentioned below is in accordance with the audited financial statements:

Financial Year	Assessment Year	Annual Turnover Amount In Rupees Lakhs.
Total. Rs.		
(Rs. .. …Figure in words)		
Average Annual Turnover Of Last Three Financial Years		

This certificate is given on the basis of copy of audited financial reports for profit/loss account and balance sheet.

Date:
Place:

(Seal, Signature & Name of C.A. with Regn. No. & UDIN No.)

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FORMAT-5

Format for No Deviation Form

(To be submitted on letter head of the bidder)

Tender No. MMD/T-…….. for supply of ……..

CERTIFICATE FOR NO DEVIATION

We, (Bidder's Name), hereby certify that there is no technical or commercial deviation from the Conditions mentioned in Tender Document and I am agreeing to all the terms and conditions mentioned in the Tender Specification.

Bidders Name:
Authorized representative's signature:
Authorized representative's Name:
Seal of the company
Name and address of the Bidder
Date:

Annexure 'B'(Price Schedule)

Sr.No	Item Code	Material Description	Unit	Quantity Required	HSN	Quantity Offered	Unit ExWorks including packaging charges but excluding duties & taxes etc (In Rupees)	Freight Charges Per Unit (In Rupees)	Transit Insurance Charges Per Unit (In Rupees)	Integrated GST for outside State Transaction on (Ex-Works Price+Freight Charges + Transit Insurance Charges)(In Rupees)	Central GST for within State Transaction on (Ex-Works Price + Freight Charges + Transit Insurance Charges)(In Rupees)	State GST for within State Transaction on (Ex-Works Price + Freight Charges + Transit Insurance Charges)(In Rupees)	Free Door Delivery Price Per Unit by Road upto Destination/Stores/Sub Station (In Rupees)
1	2	3	4	5	6	7	8	9	10	11	12	13	14=(8+9+10+11+12+13)
1	86999884904	22 kV SF6, Motorized, SCADA Compatible RING MAIN UNIT 2 Isolator + 2 Breaker	NO	240	85352112								
2	86999885114	22 kV SF6, Motorized, SCADA Compatible RING MAIN UNIT 2 Isolator + 4	NO	20	85352112								

Annexure 'B'(Price Schedule)

Sr.No	Item Code	Material Description	Unit	Quantity Required	HSN	Quantity Offered	Unit ExWorks including packaging charges but excluding duties & taxes etc (In Rupees)	Freight Charges Per Unit (In Rupees)	Transit Insurance Charges Per Unit (In Rupees)	Integrated GST for outside State Transaction on (Ex-Works Price+Freight Charges + Transit Insurance Charges)(In Rupees)	Central GST for within State Transaction on (Ex-Works Price + Freight Charges + Transit Insurance Charges)(In Rupees)	State GST for within State Transaction on (Ex-Works Price + Freight Charges + Transit Insurance Charges)(In Rupees)	Free Door Delivery Price Per Unit by Road upto Destination/Stores/Sub Station (In Rupees)
1	2	3	4	5	6	7	8	9	10	11	12	13	14=(8+9+10+11+12+13)
Breaker													

Delivery Details
[Delivery must in the units specified for the items as per Price Schedule]
First lot of ___ in assorted sizes will be delivered within 1 Months from the date of LOA Award.After this period supply will be completed at the rate of ___ in assorted sized per month

Confirmation Details
We Confirm The Following :
I) Goods and Services Tax(GST) i.e Integrated GST / (Central GST+ State GST):
The GST is included in our prices quoted in price bid (Central GST+ State GST) for within Maharashtra State/Integrated GST for outside State and we shall not charge any additional amount towards Integrated GST / (Central GST+ State GST), during currency of contract except statutory variation by Central / State Government in normal (full) rate of Integrated GST / (Central GST+ State GST), in case of Integrated GST / (Central GST+ State GST) Rate is increased. In case the Integrated GST / (Central GST+ State GST) is decreased than the rate indicated in the price bid, the benefits of the reduction in the Integrated GST / (Central GST+ State GST) shall be passed on to the Purchaser.The increase in the Integrated GST / (Central GST+ State GST) rate due to increase in turnover during the contractual delivery period shall not be charged to the Purchaser .If the Integrated GST / (Central GST+ State GST) is not payable at present,we shall not charge the same, if it becomes applicable during the currency of contract due to expiry / withdrawal of tax concessions and incentives during the currency of contract except for statutory variation by Central / State Government.
(i) Necessary documentary evidence for the GST claimed by us shall be submitted along with the bills.
(ii) We here by declare that while quoting the price in the Price Bid, we have taken into account the entire credit on inputs available under the GST Act.

Maharashtra State Electricity Distribution Company Limited

SPECIFICATION NO.MMC: MSC/DB/01 /2018

TECHNICAL SPECIFICATION

For

22 kV SF6, Motorized, SCADA Compatible RING MAIN UNIT 2 Isolator + 2 Breaker

For

DISTRIBUTION SYSTEM

IN

MSEDCL

Maharashtra State Electricity Distribution Company Limited

Specification No. T&QC: MSC-I/ 22 kV, 630 Amps, Extensible / Non extensible type, Outdoor / Indoor, SCADA Compatible Motorized Ring Main Unit with 400Amps Vacuum Circuit Breaker /2020/01

Technical Specification

Of

22 kV, 630 Amps, Extensible / Non extensible type,

Outdoor / Indoor, SCADA Compatible Motorized Ring Main Unit with 400Amps Vacuum Circuit Breaker

For Distribution

System In

MSEDCL

I N D E X

MAHARASHTRA STATE ELECTRICITY DISTRIBUTION CO. LTD.

Technical Specification for 22 kV, 630 Amps, Extensible / Non extensible type,

Outdoor / Indoor, SCADA Compatible Motorized Ring Main Unit with 400Amps Vacuum Circuit Breaker

1.0 Scope:

i) This specification covers design, manufacture, assembly, Stage inspection, testing before supply, inspection, packing and delivery of SF6 gas filled 22 kV, 630 Amps, Extensible / Non extensible type, Outdoor / Indoor, SCADA Compatible Motorized Ring Main Unit with 400 Amps Vacuum Circuit Breaker.

ii) The Ring Main Unit shall be complete with all the accessories and auxiliary equipments required for their satisfactory operation in Distribution Network of MSEDCL in Maharashtra State, India.

iii) The Ring Main Unit should have compatibility with Open Protocol Control and data Acquisition system. The Ring Main Units capable of being monitored and controlled by the Supervisory Control and data Acquisition (SCADA)/ Distribution Management System (DMS). The Ring Main Units should have the castell lock for avoiding dual supply and safety purpose.

iv) The Ring Main Unit shall be complete with various combinations of Load Break Isolators & Circuit Breaker for Distribution transformers center and feeders.

v) The Ring Main Units to be supplied against this specification are required for vital installations where continuity of service is very important. The design, materials and manufacture of the Ring Main Unit shall, therefore, be of the highest order to ensure continuous and trouble-free service over the years.

vi) It is not the intent to specify, completely here in all the details of design and construction of the Ring Main Unit. However, the Ring Main Unit shall conform, in all respects to high standards of engineering, design and workmanship as per recent Indian standards or International standards. It shall be capable of performing in continuous commercial operation up to the supplier's guaranteed life of Ring Main Unit in a manner acceptable to the purchaser who will interpret the meanings of drawings and specifications and shall have power to reject any work or material which, in his judgment, is not in accordance therewith. The Ring Main Unit offered shall be compact, maintenance free, easy to install reliable, safe and easy to operate and complete with all parts necessary for their effective and trouble-free operation. Such components shall be deemed to be within the scope of supplier's supply, irrespective of whether those are specifically brought out in this specification and/or in the commercial order or not.

vii) Recommended spares: The bidder shall furnish in his offer a list of recommended spares with unit rates for each set of Ring Main Unit that may be necessary for satisfactory operation and maintenance of Ring Main Unit for a period of 5 years.

The purchaser reserves right of selection of items and quantities of these spares to be ordered. The cost of such spares shall not be considered for tender evaluation.

viii) Erection and maintenance tools: The bidder shall submit a list and unit rates of all the special tools, equipment and instruments required for erection, testing, commissioning and maintenance of the Ring Main Unit. The purchaser shall decide the quantity of tools to be ordered. Prices of these tools shall not be considered for tender evaluation. However, the list of necessary tools/equipment which will be supplied free of cost with each Ring Main Unit may be furnished separately.

ix) The Bidder shall bind himself to abide by these considerations to the entire satisfaction of the purchaser and will be required to adjust such details at no extra cost to the purchaser over and above the tendered rates and prices.

2.0 System Particulars:

2.1 Nominal System Voltage	:	22 kV
2.2 Voltage variation on supply side	:	±10 %
2.3 Corresponding Highest System Voltage:		24 kV
2.4 Frequency	:	50 Hz with ± 3 % tolerance
2.5 Transient condition	:	-20 % or + 10 % combined variation of voltage and frequency.
2.6 Number of Phase	:	3 Phases
2.7 Neutral earthling	:	Solidly earthed.
2.8 Fault level (minimum) kA /Sec	:	21/3
2.9 Lightning Impulse Withstand Voltage (kVp)	:	125
2.10 One minute dry/wet power frequency withstand voltage primary (kV rms)	:	50
2.11 Rated Dynamic Withstand Current for 1 second duration (kAp)	:	52.5

3.0 Service Conditions :

A) The SF6 gas filled 22 kV, 630 Amps, Extensible / Non extensible type, Outdoor / Indoor, SCADA Compatible Motorized Ring Main Unit with 400Amps Vacuum Circuit Breaker to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

3.1	Maximum ambient temperature (Degree C)	50
3.2	Maximum temperature in shade (Degree C)	45
3.3	Minimum Temperature (Degree C)	3.5
3.4	Relative Humidity (percent)	10 to 95
3.5	Maximum Annual rain fall (mm)	1450
3.6	Maximum wind pressure (kg/sq.m)	150

3.7	Maximum altitude above mean sea level (Meter)	1000
3.8	Isoceranic level (days per year)	50
3.9	Seismic level (Horizontal Acceleration)	0.3 g
3.10	Climatic condition	Moderately hot And Humid tropical climate conducive to rust and fungus growth

B) The climatic conditions are prone to wide variations in ambient conditions and hence the SF6 gas filled 22 kV, 630 Amps, Extensible / Non extensible type, Outdoor / Indoor, SCADA Compatible Motorized Ring Main Unit with 400Amps Vacuum Circuit Breaker shall be of suitable design to work satisfactorily under these conditions.

4.0 Objective of Work & Tolerances:

It is intended to have

a) Enhanced safety and reliability.
b) Maintenance free Ring Main Units.
c) Reduction in space requirement
d) Integrated remote control and monitoring-SCADA compatible

Tolerances: Tolerances on all the dimensions shall be in accordance with provisions made in the relevant Indian/International standards amended up to date and in this specifications. Otherwise the same will be governed by good engineering practice in conformity with required quality of the product.

5.0 Auxiliary Power Supply:

a) A. C. supply shall be provided for Control & Protective devices, lighting fixtures, space heaters and motors.

b) D.C. supply shall be provided for alarm, control and protective device.

The rating, quality and location of electrical supply system that will be made available by the supplier for operation of the Ring Main units are described below:

i.	A. C. Supply	230 volts with ± 10% variation
ii	D.C. Supply	24 V DC to 30 V DC with +10% to – 15% variation
iii	Frequency	50 Hz with ± 3% variation

6.0 Applicable Standards:

a) The design, manufacture and performance of the Ring Main Units shall comply with all currently applicable statutes, regulations and safety codes.

Nothing in this specification shall be construed to relieve the bidder off his responsibilities.

b) Unless otherwise specified, the Ring Main Units offered shall conform to the latest applicable Indian, IEC, British, U.S.A. or International Standards and in particular, to the following:

Sr. No.	Standards	Particulars
1.	IEC 62271- 200/ IEC 60 298/ IS 12729 : 1988	General requirement for Metal Enclosed Switchgear
2.	IEC 265	Medium Voltage Switches
3.	IEC 60129/ IEC 62271 – 102/ IS 9921	Alternating Current disconnectors (Load Break Isolators) and earthing switch
4.	IEC 62271-100/IEC 60056/ IS 13118 : 1991	Specification for alternating current breakers
5.	IEC 62271 – 1/ IEC 60694	Panel design, SF6/ Vacuum Circuit Breakers
6.	IEC 60044 –1/ IEC 60185/ IS 16227 (Part-1)/(Part-2) /2016	Current Transformers
7.	IEC 60265/IS 9920 : 1981	High voltage switches
8.	IEC 376	Filling of SF6 gas in RMU
9.	IEC 60273/ IS : 2099	Dimension of Indoor & Outdoor post insulators with voltage > 1000 V
10.	IEC 60273/ IS 13947 (Part1)	Degree of protection provided by enclosures for low voltage Switchgear and control gear.
11.	IEC 60694	Common clauses for high voltage switchgear and control gear standards
12.	IEC 62271-103	High voltage switches for rated voltages above 1 KV and less than 52 KV.
13.	IEC 60137	Bushings for alternating voltages above1000 V
14.	IEC 60233	Tests for hollow insulators for use in electrical equipment
15.	IEC 60376	New Sulpher hexafluoride (SF6)
16.	IEC 60480	Guidelines for checking and treatment of Sulphar hexafluoride (SF6)
17.	IEC 61243-5	Voltage detection systems
18.	IEC 60044-2	Potential transformers
19.	IEC 62271-209	Cable connections for gas insulated switch gears
20.	IS:2544/1973	Porcelain Post Insulators / Resin cast insulators
21.	IS 8828/1996	MCB
22.	IS 12063/1987	Degree of protection provided for enclosures for electrical equipment.
23.	IS 5/2005	Colors for ready mixed paints and enamels.
24.	IS 5578/1984	Marking of insulated conductor.
25.	11353/1985	Guide for Uniform System of Marking and Identification of Conductors and Apparatus Terminals
26.	IS 1248/2003	Indicating instruments.
27.	IS 14697/1999 amended up to date & as per updated technical specifications of MSEDCL	HT Static tri vector TOD Energy meters
28.	IS 6875 amended up to date	Control switches.

29.	IS 3231/1986	Electrical Relays for Power System Protection.
30.	IEC 60255 amended up	Numerical protection relays.
31.	IS 8686/1977	Static protective relays.
32.	IS 4794/68 & 86	Push button.
33.	IS 9431/1979	Indoor post insulator of organic material
34.	IEC 60529 / EN 60529	Protection against accidental contact, foreign Objects and water.
35.	IEC 60529	Classification of degrees of protection provided enclosures of electrical equipment
36.	IEC 60298	A.C metal-enclosed switchgear and control gear for rated voltages above 1KV and up to and including 52kV
37.	IEC 1330	High voltage/Low voltage prefabricated substations
38.	IEC 60801	Monitoring and control
39.	BS 159	Bus Bar
40.	CP 1013(British Code of Practice)	Earthing
41.	IEC 60255	Specification for Static Protective Relays
42.	BS 6231	Wires and wiring
43.	IEC 61000	Electromagnetic compatibility
44.	IEC 60129	Alternating current Disconnector (isolators) and earthing switches
45.	IEC 60060-1, BS 923	High Voltage test technique
46.	IEC 60947-4-1	Control Gears

All Indian Electricity Rules/ Bills amended up to date applicable for clearances, safety and operation of the equipment.

The Ring Main Unit meeting with the requirements of any other standards, which ensures equal or better quality than the standard mentioned above shall also be acceptable. If the Ring Main Unit, offered by the bidder conforms to other standards, salient points of difference between the standards adopted and the specific standards shall be clearly brought out in relevant schedule. In case of any difference between provisions of these standards and provisions of this specification, the provisions contained in this specification shall prevail. One copy of such standards with authentic English Translations in Hard Copy shall be furnished along with the offer.

7.0 General Requirement of Ring Main Unit:

The Ring Main Unit shall be installed at 22 kV junction points such as 200kVA, 315kVA, 630kVA distribution transformers centers or feeder branches to isolate faulty section. The Ring Main Unit shall be both Non extensible/Extensible. Two Load break isolators for incoming & outgoing cables and one Circuit breaker for transformer or feeder protection shall be enclosed in the main tank using SF6 gas as insulating and vacuum as arc quenching medium.

7.01 The Inner tank shall be stainless steel sheet of minimum 2mm thickness and robotically welded with a pressure relief arrangement.

7.02 Both the load break switches and circuit breaker shall be suitable for motorization.

The total breaking time for transient fault should not exceed 40-60 ms (CB + Relay+ trip coil).

7.03 The main tank (Inner enclosure of Circuit Breaker & Load break Isolators assembly) and all Switchboard assembly shall be housed in a single compact metal clad suitable for both indoor/outdoor applications.

The design of enclosure for Switchgear, Ring Main Unit & Switchboard housing shall be in accordance with IEC 298. The design of Ring Main Unit shall be in accordance with the Technical Specification.

The switchgear and switchboard shall be designed such that the position of the different devices shall be visible to the operator on the front of switchboard and easy to operate and prevent access to all live parts during operation without the use of tools. There shall be no access to exposed conductors.

7.04 Circuit Breaker supplied with each Ring Main Unit shall be Vacuum Circuit Breaker. Insulating media for Bus Bar, Load Break Isolator, Earth Isolator and other associated equipment in Inner enclosure should be SF6 Gas.

An absorption material such as activated alumina in the tank shall be provided to absorb the moisture from the SF6 gas to regenerate the SF6 gas following arc interruption. A temperature compensating gas pressure indicator offering a simple indication shall constantly monitor the SF6 insulating medium.

7.05 Each Ring Main Unit shall include its own power supply unit (including auxiliary transformer, batteries, and battery charger), which shall provide a stable power source for the Ring Main Unit. The auxiliary transformer of rating 500VA 22 kV/230 Volt shall be provide a stable power source which will supply **230V** AC for Remote Terminal unit (RTU).

The Ring Main Unit shall also provide the necessary space for housing the Remote Terminal unit (RTU). In addition, space must be provided for auxiliary power transformer, which shall serve as the AC power supply 230 V inputs, along with all other Ring Main Unit devices.

7.06 Within this context, the general requirements of the Ring Main Unit shall include, but shall not be limited to provision of the following monitoring and control features:

i) Positions of local/remote switches as used to control local and remote access to circuit breakers and load break switches.
ii) Power supply indications including battery failure and voltage alarms.
iii) Open/Closed position of load break switches, circuit breakers, and earthing switches.
iv) Enclosure door-open indications
v) SF6 gas-pressure low alarm
vi) Circuit breaker spring and load break switch charge (switch readiness) indications
vii) Circuit breaker relay indications
viii) Indications of fault current in the Ring Main Unit main feeder circuit as detected by the Fault Passage Indicator (FPI).
ix) Measurement of 22 kV voltages, current, power, energy, and power factor values as per voltage level.
x) Load break switch and circuit breaker open/close control
xi) Fault Passage Indicator (FPI) reset control
xii) Automatic Water Level Control

xiii) Relay settings control

The acceptance of the RMUs shall not be complete until they have been demonstrated on a point-to-point basis to be fully interopertable with the Remote Terminal unit (RTU).

7.07 The Ring Main Unit shall be provided with necessary take off terminal units for automations and all these units should be shielded in an outdoor metal-body enclosure for making them suitable for Outdoor / Indoor use. The insulation/dielectric media of Inner enclosure stainless steel tank should be SF6 gas. The Ring Main Units shall be extensible on both sides.

7.08 The Ring Main Units should be motorized and suitable to be connected to Field / Feeder Remote Terminal unit (F-RTU) so as to be monitored and controlled through Supervisory Control and data Acquisition (SCADA)/ Distribution Management System (DMS).

7.09 A remote terminal unit (RTU) is a microprocessor-controlled electronic device that interfaces objects in the physical world to a distributed control system or SCADA (Supervisory Control and Data Acquisition) system by transmitting telemetry data to a master system, and by using messages from the master supervisory. The Supervisory Control and Data Acquisition (SCADA) system is the heart of Distribution Management System (DMS).

7.10 The Ring Main Unit shall be equipped with main-line load break switches and a fault passage indicator (FPI). Furthermore, to protect each of its transformer / feeders, it shall be equipped with a corresponding set of circuit breakers and self-powered numerical relays. The Ring Main Unit shall include potential-free contacts and control contacts so as to connect to SCADA/DMS via FRTUs, so as to:

i) Monitor and control the open/closed status of the Ring Main Unit circuit breakers and load break switches.
ii) Monitor the local/remote position of Ring Main Unit motorized (in case if failure of motor) manually-operated switches that can be used to enable and disable remote monitoring.
iii) Monitor the health of the power supply, which will include battery failure and low voltage indications.
iv) Monitor the open/closed status of Ring Main Unit earthing switches.
v) Monitor the open/closed status of RMU enclosure doors in case of Hinge doors.

FRTU, Modem, Power and I/O cable interface between FRTU and Control panel of Ring Main Unit /sectionaliser are excluded in the scope of supply and these items will be provided by MSEDCL.

8.0 Principal Technical Parameters of Ring Main Unit and accessories:

The Ring Main Unit and accessories covered under this specification shall conform to specific parameters given below:

Sr. No.	Description		22 kV Ring Main Unit
A)Ring Main Unit Assembly			
1.	Indoor / Out door		Indoor / Out door
2.	Configurations(Type)		3 Way, M+LLV+ 4 Way, +LLLL+ 4 Way, M+LLLV+ 4 Way, M+LLVV+ 5 Way, M+LLVVV+ 6 Way, +LLVVV+V+ L= Isolator.

			V= VCB. M=Metering
3.	Reference Standard		IEC-62271-100, 200, 103, IEC-62271-1
4.	Rated Voltage in kV		22
5.	Highest System Voltage in kV, Max.		24
6.	Number of Phase		3
7.	Frequency in HZ.		50 Hz ± 3%
8.	Short Circuit rating		
	a) Breaking Symmetrical for 3 Sec. in KA		21
	b) Breaking Asymmetrical for 3 Sec. in KA		21
	c) Short time for 3 Sec. in KA.		21
9.	Insulation Level		
	a) Impulse withstand in KV peak.		125
	b) 1 Minute 50 Hz. Voltage withstand in KV rms		50
10.	Internal arc rating for 1 sec. in kV		21
11.	Construction: Material and Size		
	Inner Enclosure		Main Stainless Steel Tank with 2 mm Thickness
	Outer Enclosure		CRCA Sheet of 2 mm thickness or Galvanized Sheet of 1.6 mm thickness
12.	Degree of protection		
	Inner Enclosure		IP 67
	Outer Enclosure		IP 54 (Main Door close) and IP 41 (Main Door open)
13.	The Ring Main Unit and accessories completely wire and tested at factory		Yes
14.	Paint		Polyurethane based powder paint
15.	Color		Dark Admiralty Grey, Shade No. 632 as per IS: 5, 2007
16.	Thickness of coat, Min.		150 microns for CRCA Sheet and 80 microns for galvanized sheets
B) Bus Bar			
17.	Reference Standard		IS: 1897, 2008
18.	Grade and Material		Electrolytic Grade Copper
19.	Cross sectional area in mm2		400
20.	Size in mm or as per design		40 x 10
21.	Current Density in Amps/mm2, Max.		1.6
22.	Continuous Current in Amps		630
23.	Maximum temperature rise over an ambient temperature 50^0C.		55^0C
24.	Short time current rating for 3 Sec in kA		21

	rms		
25.	Clearance in mm from bare bus bar or as per design		
	Phase to Phase for Isolator or as per design		78
	Phase to Phase for VCB		78
	Phase to Earth for Isolator or as per design		78
	Phase to Earth for VCB or as per design		78
26.	Bus Supports		
	Reference Standard		IEC 60243-1, ASTM D 648
	Voltage Class in kV		22 kV
	Creepage distance in mm or as per design		125 in SF6 gas
	Bus Bar support spacing in mm or as per design		125
27.	Filling SF6 gas pressure (Filling pressure at 20^0C), Min.		1.4 Bar
28.	Operating SF6 gas pressure at 20^0C, Min.		0.5 Bar
29.	Reference Standard		IEC 62271-100
30.	Rated Voltage in kV		22
31.	Highest System Voltage in kV, Max.		24
32.	Type		Vacuum Type
33.	Rated Frequency in Hz.		50 Hz ± 3%
34.	No. of Poles		3
35.	Rated Current		630A
36.	Maximum temperature rise over an ambient temperature 50^0C.		55°C
37.	Rated operating Duty		O-3min-CO-3min-CO
38.	Rupturing capacity at rated voltage in MVA, Min.		As per design
39.	Breaking Capacity at rated voltage & operating duty		
	Symmetrical in kA rms		21
	Asymmetrical in kA rms		21
40.	Rated making current in kA peak		52.5
41.	Short time current for 3 sec in kA rms		21
42.	Transient Recovery Voltage		
	Rate of rise in kV/µs		0.34 kV/µs as per IEC 62271-100
	Peak Voltage in kV		50
43.	Insulation Level		
	Impulse Voltage with stand on 1.2/50 µs full wave in kV		125
	1 minute power frequency voltage withstand in kV		50
44.	Total breaking time for transient fault (CB + Relay+ trip coil) in ms		45-50 ms
45.	Opening time No load condition in ms		45-50 ms
46.	Opening time under SF6 gas low or vacuum loss condition in ms		45-50 ms

47.	Number of breaks per pole		Single
48.	No of breaker operations permissible without requiring inspection replacement of contacts and other Main parts		
	At 100% rated current		2000
	At 100% rated breaking current, Min.		20
49.	Type of contacts		
	Main		Butt Type
	Arcing		Butt Type
50.	Material of contacts		
	Main		Copper
	Arching		Copper
	Chromium / Silver plated		Chromium / Silver plated
51.	Mechanical Endurance Test for Circuit Breaker, Number of operations		2000
52.	Spring charging mechanism		Motor Operated
53.	Operating mechanism for closing of Circuit Breaker		
	Type		Spring operated Mechanism
	No of breaker operations stored		One
	Trip free or fixed trip		Trip Free
	Earthing for operating mechanism and metal parts		Solidly Earthed
	Earth terminal size and material, Min.		Electrolytic grade Copper 25 x 3mm
54.	Operating mechanism for tripping of Circuit Breaker		
	Type		Spring Operated Mechanism
	No of breaker operations stored		One
	Trip free or fixed trip (V)		Trip Free
	Earthing for operating mechanism and metal parts		Solidly Earthed
	Earth terminal size and material		Electrolytic grade Copper 25 x 3mm
55.	Breaker Accessories		
	Mechanical safety Interlock		Provided
	Automatic safety Interlock		Provided
	Operational Interlock		Provided
	Emergency manual trip		Provided
	Operation counter		Provided
	Spring charge / discharge indicator		Provided
	Manual spring charging facility		Provided
c) Isolators			

56.	Reference standard		IEC-62271-102 / IEC-62271-103
57.	Nominal Voltage in KV		22
58.	Highest System Voltage in kV, Max.		24
59.	Rated Frequency in HZ		50 Hz ± 3%
60.	No. Of poles		3
61.	Rated Current in Amps		630
62.	Maximum temperature rise over an ambient temperature 50^0C.		60°C
63.	Operation		Close-Open-Earth
64.	Rupturing Capacity at rated voltage		630 Amps at 33kV
65.	Maximum over voltage factor when switching off Loaded feeder cable in kA		52.5
66.	No. of isolator operation permissible without requiring inspection, replacement of contacts and other main parts		
	Mechanical Endurance in Number of operations		1000
	At 100% rated making current in Number of operations		100
	At 100% rated breaking current in Number of operations		100
67.	Isolator provided with the following Mechanical safety		
	Mechanical ON and OFF Indication		Provided
	Cable Earth Indication		Provided
	Operational Counter		Provided
	Manual Spring Charging facility		Provided
D) Current Transformer			
68.	Reference standard		IS:16227, I & II
69.	Type		Ring Type, Resin Cast/Tape wound
70.	Nominal Voltage in KV		22
71.	Highest System Voltage in kV, Max.		24
72.	Rated Frequency in HZ		50 Hz ± 3%
73.	Current Transformer Ratio		400-200/1Amps
74.	Short circuit withstand		
	Short time current for 1 sec. in kA rms		5
	Dynamic current in kA peak, Min.		7.5
75.	Class of insulation		Class B
76.	Basic insulation level in kV rms		3
77.	Maximum temperature rise over an ambient temperature 50^0C.		60^0C
78.	Class of Accuracy		
	Metering Core		0.5
	Protection Core		5P10
79.	Rated Burden		5 VA
80.	Over Current Rating in %		120
81.	Continuous Over Load in %		120
E) Metering Voltage(Potential) Transformer			

82.	Reference standard		IS:16227, I & III
83.	Type		Resin Cast/Tape wound
84.	Nominal Voltage in KV		22
85.	Highest System Voltage in kV, Max.		24
86.	Rated Frequency in HZ		50 Hz ± 3%
87.	Voltage Transformer Ratio		22 kV/√3 /110V/√3
88.	Rated Primary Voltage in kV		22 kV/√3
89.	Rated Secondary Voltage in V		110V/√3
90.	Rated Burden in VA		50
91.	Accuracy Class		0.5
92.	Insulation Class		B
93.	Voltage Factor		1.2 Continuous and 1.9 for 8 hrs.
94.	One Minute Power Frequency Dry Withstand Voltage Rating		
	Primary Winding Induced Test in kV rms		50
	Secondary Winding in kV rms		3
	Rated Impulse Voltage in kV peak		125
F) Auxiliary Voltage(Potential) Transformer			
95.	Reference standard		IS:16227, I & III
96.	Type		Resin Cast/Tape wound
97.	Nominal Voltage in KV		22
98.	Highest System Voltage in kV, Max.		24
99.	Rated Frequency in HZ		50 Hz ± 3%
100.	Voltage Transformer Ratio		22 kV / 230V
101.	Rated Primary Voltage in kV		22 kV
102.	Rated Secondary Voltage in V		230V
103.	Rated Burden in VA		500 VA
104.	Voltage Regulation in %		5
105.	Insulation Class		B
106.	Voltage Factor		1.2
107.	Application & Construction Type		Indoor, Single Phase/Two Pole
108.	One Minute Power Frequency Dry Withstand Voltage Rating		
	Primary Winding Induced Test in kV rms		50
	Secondary Winding in kV rms		3
	Rated Impulse Voltage in kV peak		125
G) Numerical Protection Relay			
109.	Reference Standard		IEC 60255
110.	Type and Model		3 Over Current(O/C) and 1 Earth fault(E/F)
111.	Current Transformer Secondary Input to Relay		1 A
112.	Operating Curve Type		Inverse Definite Minimum Time (IDMT)Relay
113.	Auxiliary Supply		Self Powered relay for Protection
114.	Rated Frequency in HZ		50 Hz ± 3%
115.	Over Current Protection		

	Low set Over Current protection		20-200% of CT secondary rated current with increment/decrement by 1 %
	High set Over Current protection		100-2000% of CT secondary rated current with increment/decrement by 50%
116.	Earth Fault Protection		
	Low set Earth Fault protection		5% to 80% of the CT rated current in steps of 1%
	High set Earth Fault protection		100-1000% of the CT rated current in steps of 50%
117.	Mounting		Flush Mounted
118.	Operational Indicator		LCD display and LED annunciation lamps
119.	Contact Details		4 Binary Input(BI) and 6 Binary Output(BO)
120.	Self-diagnosis feature		Yes
121.	Password protection		Yes
122.	Communication Protocol		RS 232 or RS 485 Port for IEC 103, Communication Protocol
123.	Event / fault record, Min.		10 Event and 5 Fault Records available
124.	Setting groups		2 Groups available
125.	Circuit Breaker control available		Yes, Only Trip
H) Tripping Coil			
126.	DC Voltage in Volt		24
127.	Maximum Tripping Current at rated voltage in Amps.		5
	Minimum Permissible voltage variation in %		85 to 110
I) HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter			
128.	Reference Standard		Only Provision for Meter is to be made
129.	Make		
130.	Auxiliary supply Voltage		
131.	Class of Accuracy		
132.	Type of Display		
133.	Measuring Parameters as per MSEDCL Specification		

J)Fault Passage Indicator (FPI) on Short Circuit and Earth fault			
134.	Operating point/Current short circuit in Amp		Adjustable 100/200/300 /400/500 /600/700 /800/900/1000 /1100/1200A (±15%)
135.	Operating point/Current earth fault in Amp		Adjustable 10/20/30/40 /60/80/100A (±15%)
136.	Response Time in ms		For Short Circuit Adjustable 40/60/80/100/120 /160/200/240 ms Sec(±100m Sec) For Earth Fault Adjustable 40/60/80/160 ms (±100m Sec)
137.	Auto Reset Time in Hrs		1/2/4/8 hrs (+ / - 1%) after fault
K) Battery Charger			
138.	Input AC Voltage in V		230
139.	Rated Frequency in Hz		50 Hz ± 3%
140.	Output DC Voltage in V		24
141.	Current Rating in Amps		10
142.	Output DC Voltage for charger		
	Boost Mode in V		27 to 28
	Float Mode in V		27 to 28
143.	Operating Temperature in ^{0}C		-25 to 60
144.	Temperature Compensation		Junction temperature of SMPS crosses 142^{0}C, thermal shutdown occurs.
145.	Short Circuit and Overload Protection		Provided
146.	High Voltage Isolation		2 kV for 1 minute
147.	Efficiency		Above 85 %
L) Battery			
148.	Type		Dry Type
149.	Ah Efficiency		> 95%
150.	Self-Discharge		Self-Discharge
151.	Operating Temperature		Normal : +20^{0}C to +30^{0}C & Limits : -20^{0}C to +50^{0}C

152.	Voltage (V)		24V (2 x 12V)
153.	Ah Capacity		7Ah / 12 Ah / 26 Ah
M) Manometer with Non Return Valve			
154.	Type		Analogue
155.	Material		Stainless Steel
156.	Accuracy of calibration pressure		+/-1% at 20^0C
157.	Pressure Element		Stainless Steel Welded
158.	Dial		2''
159.	Pointer		Dark
160.	Window		Round
161.	Gas pressure low signal		Indicated by Red Color Zone
162.	Non Return Valve(NRV) Material		Stainless Steel
N) Indoor cable terminations kits			
163.	Type		33 kV touch proof screened termination kit
164.	Materials		Epoxy / EPDM / Silicon Rubber
165.	Size		Up to 3 x 400 sq. mm 33 kV HT cables
166.	Height of Bus bar / transformer / feeder Cable box from ground level		As per Manufacture design
167.	Arrangement for mounting an extra cable at incoming and outgoing side box of Bus bar.		As per Manufacture design
168.	Arrangement for mounting an extra cable at outgoing side box of transformer / feeder.		As per Manufacture design
O) Automatic Water Level Controller			
172.	Position of Automatic Water Level Controller		200 mm below live contacts
173.	Auxiliary contacts		4 NO + 4 NC
174.	Breaker Tripping and Load break Isolator opening due to water level increases signals to Control room		Yes
P) Name Plate			
175.	Material		Anodized Aluminum / Stainless Steel
176.	Thickness		18 swg / 1.00 mm
177.	Size		145 mm x 116 mm
Q) Painting			
178.	Inside		Powder Coated

179.	Outside		Polyurethane based powder paint. Dark Admiralty Grey, Shade No. 632 as per IS: 5, 2007.

9.0 Principle Requirement of Ring Main Unit:

9.1 Enclosure:

i) The Ring Main Unit enclosure (Outer) shall be made up of CRCA Sheet of 2 mm thickness or galvanized Sheet of 1.6 mm thickness. The rating of enclosure shall be suitable for operation on three phases, three wire, 22 kV, 50 cycles, A.C. System with short-time current rating of 21kA for 3 seconds for 22kV with Panels. The complete Ring Main Unit Outer enclosure shall be of degree of protection IP 54 (Main Door close) and IP 41 (Main Door open).

ii) The enclosure shall provide full insulation, making the Switchgear insensitive to the environment like temporary flooding, high humidity etc. The active parts of the Switchgear shall be maintenance-free and the unit shall be minimum -maintenance.

iii) The Ring Main Unit Outer enclosure shall be painted with Polyurethane based powder paint. The color of Ring Main Unit Outer enclosure shall be Dark Admiralty Grey, Shade No. 632 as per IS: 5, 2007.

iv) Each switchboard shall be identified by an appropriately sized label which clearly indicates the functional units and their electrical characteristics.

v) The Ring Main Unit metal parts shall be made of high thickness high tensile steel which must be grit/short blasted, thermally sprayed with Zinc alloy (not galvanized), phosphate and subsequently painted with Polyurethane based powder paint, the overall (Including outer and inner paint layer), the thickness of paint layer shall be not less than 150 microns for CRCA Sheet and 80 microns for galvanized Sheet.

9.2 Inner enclosure (Main tank):

i) The tank shall be robotically welded stainless steel sheet of minimum 2 mm thickness. The tank shall be sealed and no handling of gas is required throughout the 25 years of service life. However, the SF6 gas pressure inside the tank shall be constantly monitored by a temperature compensating gas pressure indicator offering a simple go, no-go indication. The gas pressure indicator shall be provided with green pressure and red pressure zones. There shall be one Non – return valve to fill up the gas. The manufacturer shall give guarantee for maximum leakage rate of SF6 gas will be lower than 0.1 % per year. An absorption material such as activated alumina in the tank shall be provided to absorb the moisture from the SF6 gas to regenerate the SF6 gas following arc interruption. The degree of protection of the inner enclosure shall be IP 67.

ii) Oil or Air filled Switchgear will not be considered. The temperature rise test shall be carried out on complete Ring Main Unit and test reports shall be submitted with the offer.

iii) The compact Ring Main Unit shall be provided with a pedestal made up of M.S. Angle to mount the unit on plain surface. The height of the bottom of cable box shall be 310 mm to provide the turning radius for the HT cable termination.

9.3 Configurations recommended:

The following configurations of Ring Main Units are recommended:

i) Non Extensible:

Non extensible Ring Main Unit with one number of 400A circuit breaker for transformer protection up to 630 kVA and two number of Load Break Isolators for network sectionalizing with earth isolator.

ii) Extensible:

Extensible Ring Main Unit with one number of 400A circuit breaker and two Load break isolators with earth isolator arrangement having provision for adding one number of 400A circuit breaker for one extensible and two 400 A circuit breakers for two extensible Ring Main Unit.

9.4 Bus bars:

The three numbers of continuous Bus bars made up of EC grade tinned copper of rating current 630A shall be provided. The Short time rating current shall be 21 kA for 3 seconds for 22 kV. The Bus bar connections shall Anti- oxide greased.

9.5 Sulphur Hexa Fluoride Gas (SF6 Gas):

The SF6 gas shall comply with IEC 376,376A and 376B and shall be suitable in all respects for use in Ring Main Units under the stipulated service conditions. The SF6 gas shall be tested for purity, dew point air hydrolysable fluorides and water content as per IEC 376,376A and 376B and test certificate shall be furnished to the bidder indicating all the tests as per IEC 376 for each lot of SF6 Gas.

9.6 Load Break Switches (Load Break Isolators):

i) The Load Break Isolators for Incoming and Outgoing supply must be provided and the load break isolators are fully insulated by SF6 gas.

ii) The operating mechanism shall be spring assisted mechanism with operating handle for ON /OFF. Earth positions with arrangement for padlocking in each position. Also independent manual operations with mechanically operated indicator. The earth switch shall be naturally interlocked to prevent the main and earth switch being switched "ON" at the same time. The selection of the main and earth switch is made by a lever on the fascia, which is allowed to move only if the main or earth switch is in the off position.

iii) The load break isolators shall be remotely operated. Each load break switch shall be of the triple pole, simultaneously operated, automatic type with quick break contacts and with integral earthing arrangement.

iv) The rated current of Isolator shall be 630 Amps continuous at maximum ambient temperatures. No Derating shall be allowed. For the isolator at an Ambient temperature of 50 °C, which means that Isolator rating should be 630 Amps maximum ambient temperature of 50 °C. The temperature rise of Isolator shall be 55^0C maximum. The relevant type test report to prove the temperature rise below 55 °C shall be submitted by the bidder with the offer.

9.7 Current Transformer:

i) The Current Transformers being prone to failure due to various reasons, the quality and reliability of the Current Transformers are of vital importance.

Current Transformer's insulation used shall be of very high quality, details of which shall be furnished in the technical offer.

ii) The Current Transformers shall be single wound double ratio, one Current Transformers for metering and one Current Transformers for protection.

iii) The instrument security factor for metering Current Transformers shall be low enough but not greater than 5 at lower ratio. This shall be demonstrated on metering Current Transformers in accordance with the procedure specified in IS: 16227, I & II and relevant IEC.

iv) The Current Transformers shall be ring type (Tape wound / resin cast). Contact tips of terminals shall be silver plated.

v) Correct polarity shall be invariably marked on each terminal.

vi) A panel shall be provided in each Ring Main Unit enclosure to mount a single wound double ratio, Current Transformers for metering and protection purposes. Current Transformers access for maintenance or any other purpose shall be from the back of these panels.

vii) Secondary terminals of Current Transformers shall be brought out suitably to a terminal block, which will be easily accessible for testing and terminal connections.

viii) Further characteristics and features of Current Transformers used for metering and protection are listed as follows:

Metering Current Transformers:

a) Type: Ring Type
b) Material:, Resin Cast
c) Burden: 5VA
d) Ratio: 400-200/1 Amps
e) Accuracy Class for metering: 0.5

Protection Current Transformers:

a) Type: Ring Type
b) Material:, Resin Cast
c) Burden: 5VA
d) Ratio: 200-100/1 Amps
e) Accuracy Class for protection: 5P10.

9.8 Metering Voltage (Potential) Transformer:

i) The Potential Transformers shall be of Resin Cast and they shall conform to IS : 16227,I & III. Their design and construction, in particular, shall be sufficiently robust to withstand the thermal and dynamic stresses during short circuits.

ii) A panel shall be provided in each Ring Main Unit enclosure to mount Potential Transformers. The primary and secondary contacts (moving & fixed type) shall have firm grip while in service. Service position locking mechanism shall be provided and indicated by bidder in relevant drawing. Rigidity of primary stud point with earth bus in service position shall be confirmed.

iii) Contact tips of primary/secondary contacts shall be silver plated. Correct polarity shall be distinctly marked on primary and secondary terminal.

iv) Secondary terminal studs shall be provided with at least three nuts, two plain and two spring washers for fixing leads. The stud nut and washer shall be of brass, duly nickel plated. The minimum outside diameter of the studs shall be 6 mm. The length of at least 15 mm shall be available on the studs for inserting the leads. The space clearance between nuts on adjacent studs when fitted shall be at least 10 mm.

v) Each secondary core will be protected by suitable MCB.

vi) HRC fuses shall be provided on the HV side.

vii) Further characteristics and features of Potential Transformers used for metering are listed as follows:

a) Type: Ring Type

b) Material:, Resin Cast

c) Burden: 50 VA

d) Ratio: 22 kV/$\sqrt{3}$ /110V/$\sqrt{3}$

e) Accuracy Class for metering: 0.5

9.9 Auxiliary Voltage (Potential) Transformer:

i) The Auxiliary Potential Transformers shall be of Resin Cast and they shall conform to IS:16227, I & III. Their design and construction, in particular, shall be sufficiently robust to withstand the thermal and dynamic stresses during short circuits.

ii) A panel shall be provided in each Ring Main Unit enclosure to mount Auxiliary Potential Transformers. The primary and secondary contacts (moving & fixed type) shall have firm grip while in service. Service position locking mechanism shall be provided and indicated by bidder in relevant drawing. Rigidity of primary stud point with earth bus in service position shall be confirmed.

iii) Contact tips of primary/secondary contacts shall be silver plated. Correct polarity shall be distinctly marked on primary and secondary terminal.

iv) Further characteristics and features of Potential Transformers used for metering are listed as follows:

a) Type: Ring Type

b) Material:, Resin Cast

c) Burden: 500 VA

d) Ratio: 22 kV/$\sqrt{3}$ / 230V

e) Voltage Regulation: 5 %

Note: Instrument transformers shall be suitable for continuous operation at the ambient temperature prevailing inside the Ring Main Unit enclosure, when the Ring Main Unit is operating at its rated load and the outside ambient temperature is 50^0C. The class of insulation shall be E or better.

All instrument transformers shall withstand the power frequency and impulse test voltage specified for the Ring Main Unit assembly. The current transformer shall further have the dynamic and short time ratings at least equal to those specified for the associated Ring Main Unit and shall safely withstand the thermal and mechanical stress

produced by maximum fault currents specified when mounted inside the Ring Main Unit enclosure.

The parameters of instrument transformers specified in this specification are indicative and shall be finalized by the Employer during detailed engineering, considering the actual burden of various relays and other devices finally selected. In case the Bidder finds that the specified ratings are not adequate for the relays and other devices offered by him, he shall offer instrument transformer of adequate ratings without any cost implication.

All instrument transformers shall have clear indelible polarity markings. All secondary terminals shall be wired to separate terminals on an accessible terminal block.

9.10 Earthing of Bus bars (Earth Switch):

i) The unit shall consist of a 630 Amp Tee Off spring assisted three position rotating arc type SF6 circuit breaker unit, with integral fault making/dead breaking earth switch, the function shall be naturally interlocked to prevent the main and earth switch from being switched `ON` at the same time and the CB not allowed to close in `Earth On` position. The selection of the main/earth switch lever on the fascia, which is allowed to move only if the main or earth switches in the off position. The lever may be padlocked in either the main or earth position.
ii) The cables shall be earthed by an integral earthing switch with short-circuit making capacity, in compliance with IEC 129 standard. The earthing switch shall be operable through the main circuit mechanism and manual closing shall be driven by a fast-acting mechanism, independent of operator action.

9.11 Circuit Breaker (Vacuum media for arc quenching):

i) The 3 pole circuit breaker for the protection of Distribution transformers or feeder shall be enclosed in the main tank. The rated breaking and making current at rated voltage shall be as follows:

For 22 kV System: Rated breaking capacity shall be 21 kA for 3 second.
Rated making current shall be 52.5 kA for 3second.

ii) The manual operation of the circuit breaker shall not have an effect on the spring charging mechanism.
iii) The circuit breaker shall be fitted with a mechanical flag, which shall operate in the event of fault occurrences. The breaker indications ON and OFF positions shall be indicated by suitable flag. For ON position indication by Red flag and OFF position indication by Green flag shall be provided.
iv) The circuit breaker shall be operated by the same unidirectional handle or switch. The rated operating sequence shall be O-3min-CO-3 min- CO.

9.12 Bushings:

All the bushings shall be of same height, parallel, on equal distances from the ground and protected by a cable cover. It is preferable to have bushings accessible from the front / rear side of the Ring Main Unit.

9.13 Cable Boxes:

All cable boxes shall be air insulated suitable for dry type cable terminations. The cable boxes at each of the two ring switches suitable HV cables of size 3C x 300 sq.mm and circuit breaker cable suitable up to 3C x 300 sq.mm. Necessary Right angle Boot should be supplied to the cable terminations. Compound filled cable boxes are not acceptable. The cable box shall be arc resistant as per IEC 62271-200 amended up to date.

The internal arc fault test on cable box shall be carried out for 22 kV systems at 21 kA for 1 second.

The clearance between phase to phase and phase to earth shall be as per IEC 61243 – 5 amended up to date. The cable termination and gland arrangements shall be appropriate for the type and style of cables used at the time.

The cable boxes for an isolator in its standard design should have sufficient space for connecting two cables per phase. Necessary Right angle Boot should be supplied to the cable terminations .The type of the Right angle Boot should be cold applied insulating Boot.

9.14 Voltage Indicator Lamps and Phase Comparators:

The Ring Main Unit shall be equipped with a voltage indication. There should be a facility to check the synchronization of phases with the use of external device. It shall be possible for the each of the function of the Ring Main Unit to be equipped with a permanent voltage indication as per IEC 61958 to indicate whether or not there is voltage on the cables.

The capacitive dividers will supply low voltage power to sockets at the front of the unit, an external lamp must be used to indicate live cables.

Three outlets can be used to check the synchronization of phases with the use of an external device.

9.15 Extensible:

Each combination of Ring Main Unit shall have the provision for extension by load break isolators / breakers in future, with suitable trenching chamber, accessories and necessary Bus bars. Extensible isolators and circuit breakers shall be individually housed in separate SF6 gas enclosures. Multiple devices inside single gas tank / enclosure will not be acceptable. In case of extensible circuit breakers, the Breaker should be capable of necessary short circuit operations as per IEC standard i.e 21 kA for 1 second for 22 kV system. The Breaker should have a rated current carrying capacity of 400 A for Distribution Transformers and Feeders.

9.16 Wiring and Terminals:

a) The wiring should be of high standard and should be able to withstand the tropical weather conditions. All the wiring and terminals (including take off terminals wiring for automation, DC, Control wiring), Spare terminals shall be provided by the bidder. The wiring cable must be standard single-core multi stranded, non-sheathed, Core marking (ferrules), stripped with non-notching tools and fitted with end sleeves, marked in accordance with the circuit diagram with printed adhesive marking strips.
b) The wiring shall be carried out using single core multi-strand copper conductor super flexible PVC insulated and shall be flame retardant low smoke type wires of 1.1 KV Grade for AC Power,DC Control and CT circuits. Suitable colored wires shall be used for phase identification and interlocking type ferrules shall be

provided at both ends of the wires for wire identification. Terminal should be suitably protected to eliminate sulphating.

Connections and terminal should be able to withstand vibrations. The terminal blocks should be stud type for controls and disconnecting link type terminals for CT leads with suitable spring washer and lock nuts.

c) Flexible wires shall be used for wiring of devices on moving parts such as swinging Panels (Switch Gear) or panel doors. Panel wiring shall be securely supported, neatly arranged readily accessible and connected to equipment terminals, terminal blocks and wiring gutters. The cables shall be uniformly bunched and tied by means of PVC belts and carried in a PVC carrying trough.

d) The position of PVC carrying trough and wires should not give any hindrance for fixing or removing relay casing, switches etc., Wire termination shall be made with solder less crimping type of tinned copper lugs. Core identification plastic ferrules marked to correspond with panel wiring diagram shall be fitted with both ends of each wire. Ferrules shall fit tightly on the wire when disconnected. The wire number shown on the wiring shall be in accordance with the IS.375.

e) All wires directly connected to trip circuits of breaker or devices shall be distinguished by addition of a red color unlettered ferrule.

f) Inter-connections to adjacent Panels (Switch Gear) shall be brought out to a separate set of Terminal blocks located near the slots or holes to be provided at the top portion of the panel. Arrangements shall be made for easy connections to adjacent Panels (Switch Gear) at site and wires for this purpose shall be provided and bunched inside the panel. The bus wire shall run at the top of the panel. Terminal block with isolating links should be provided for bus wire. At least 10% of total terminals shall be provided as spare for further connections. Wiring shall be done for all the contacts available in the relay and other equipment and brought out to the terminal blocks for spare contacts. Color code for wiring is preferable in the following colors:

Voltage supply: Red, Yellow, Blue for phases, Black for Neutral
CT circuits: Red, Yellow, Blue for phases, Black for Neutral
230V AC circuits: Black for both phases and neutral
Earthing: Green

The wiring shall be in accordance to the wiring diagram for proper functioning of the connected equipment. Terminal blocks shall not be less than 650V grade and shall be piece-moulded type with insulation barriers.

The terminal shall hold the wires in the tight position by bolts and nuts with lock washers. The terminal blocks shall be arranged in vertical formation at an inclined angle with sufficient space between terminal blocks for easy wiring.

The terminals are to be marked with the terminal number in accordance with the circuit diagram and terminal diagram. The terminals should not have any function designation and are of the tension spring and plug-in type.

9.17 Earthings:

The Ring Main Unit outdoor metal clad, Switch Gear, Earth contact of Load break isolators, Neutral and body of Distribution Transformer, M.S. Channels / M.S. Angles etc, shall be equipped with an earth bus securely fixed along the base of the Ring Main Unit.

When several units of the Ring Main Unit (Extra Isolators / Breakers) are mounted adjoining to each other, the earth bus shall be made continuous and necessary connectors and clamps for this purpose shall be included in the scope of supply. The size of earth bus bar of tinned copper flat shall be as per IEC/IS standards and shall be fixed with the Ring Main Unit. Provision shall be made on

end of Ring Main Unit for connecting the earth bus to the earth grid by erecting suitable 2 earth pipes of 40mm diameter MS rod of 3 meters in pits. Both the earth pipes are also to be connected in a grid formation. Necessary terminal clamps and connectors shall be included in the scope of supply.

9.18 Motorization :

All the functions within the Ring Main Unit i.e Isolators / Breakers should be fitted with motor mechanism and closing coil making it suitable to make it ON from remote.

Control Supply and Auxiliaries following has to considered:

(i) Shunt trip coil – 24VDC for Isolators and Breakers
(ii) Closing Coil – 24VDC
(iii) Motor Mechanism – 24VDC
(iv) 6NO+6NC – Potential free auxiliary contacts for breakers / isolator
(v) Auxiliary supply should be – 24VDC
(vi) Battery/ Battery charger with battery backup of at least 1hours
(vii) Local / Remote switch for breaker and Isolators.

9.19 Metering:

The Ring Main Unit should be provided with separate Metering Module Consisting of Bus connected Potential Transformer and metering cum protection Current Transformer to be provided for VCB function i.e. for Distribution Transformer / Feeder along with provision of installing Tri-vector Meter (TVM). The Potential Transformer with PT Fuse and Ring Core type Current Transformer provided shall be made up of Epoxy Cast Resin. The CT ratio shall as per transformer rating.

9.20 Take OFF Terminal Units for Automation:

The Ring Main Unit should be provided with necessary take off terminal units for automations. Remote operation of the Ring Main Units line switches must be possible using motors fitted to the operating mechanism.

It shall be possible to fit the motors either directly in manufacturing plant or on site as and when required. Installation on site shall be possible with the Ring Main Unit fully energized and manufacturer should provide detailed instructions for installation to the control mechanism.

The fitting of the motors to the mechanism must not in any way impede or interfere with the manual operation of the switches or circuit breaker.

The bidder may wish to advice of options and cost for remote supervisory control units of the Ring Main Unit and MV network supervisory control system.

Complete Ring Main Unit shall be capable of withstanding 630A current without any damage being caused, in accordance with the recommendations IEC 694 and IEC 298.

Control and Interlocks:

The circuit breaker shall normally be controlled remotely from SCADA system closing through Motor and tripping through spring.

The isolators and earth isolator shall normally be controlled remotely from SCADA system closing and opening through Motor.

However, it shall also be designed to control locally from Ring Main Unit panel. Suitable mimic on Panel shall be provided.

Facilities shall be provided for mechanical tripping of the breaker in an emergency. Facility shall also be provided for manual charging of the stored energy mechanism for a complete duty cycle.
Necessary mechanical & Electrical interlocks shall be provided between CB, Isolator & Earth switches for safe operation.
Each CB, Isolator & earth switch shall have 8 NO + 6 NC Auxiliary spare of good quality (corrosion free and easy for making connection) for future use by owner. It should be located at accessible position in panel.
All the binary inputs/outputs shall be wired to the terminals & kept ready for SCADA connectivity.

9.21 Fault Passage Indicators (FPI) on Short Circuit and Earth fault:

These shall facilitate quick detection of faulty section of line. The fault indication may be on the basis of monitoring fault current flow through the device. The unit should be self-contained requiring no auxiliary power supply. The Fault Passage Indicators (FPI) shall be integral part of Ring Main Unit.
The Fault Passage Indicators (FPI) shall facilitate for detection of short circuit fault and earth fault through Current Transformer inbuilt in Fault Passage Indicators.

9.22 Tropicalisation:

Due regard should be given to the climatic conditions under which the equipment is to work. Ambient temperature normally varies between 20 °C and 32 °C, although direct sun temperature may reach 45 °C. The climate is very humid and rapid variations occur, relative humidity between 90% and 100% being frequently recorded, but these values generally correspond to the lower ambient temperatures. The equipment should also be designed to prevent ingress of vermin, accidental contact with live parts and to minimize the ingress of dust and dirt. The use of materials, which may be liable to attack by termites and other insects, should be avoided.

9.23 Safety of people:

Any accidental overpressure inside the sealed chamber will be limited by the opening of a pressure limiting device in the enclosure. Gas will be released to the rear of the unit away from the operator. Manufacturer shall provide type test report to prove compliance with IEC 298 appendix AA 'Internal fault'.

9.24 Automatic Water Level Controller Using Mercury Float Switch:

The float switch shall be provided in Ring Main Unit at 200 mm below live contacts to avoid flash over due to water.
The float switch is a device used to detect the level of water within the Ring Main Unit. The float switch shall be used in the Ring Main Unit as an indicator, an alarm (at Control Room), tripping of Vacuum Circuit Breaker and opening of Load Break switch.
A mercury switch is a switch whose purpose is to allow the flow of electric current in an electrical circuit in a manner that is dependent on the switch's physical position.
Mercury switches shall have 4 NO + 4 NC Auxiliary contacts in a sealed glass envelope which contains a bead of mercury. The envelope may also contain air, an inert gas, or a vacuum. Gravity is constantly pulling the drop of mercury to the lowest point in the envelope. When the switch is tilted in the appropriate direction,

the mercury touches a set of contacts, thus completing the electrical circuit through those contacts. 'Normally Open' contact becomes 'Normally Close' contact, hence signals to breaker and motor for tripping of Vacuum Circuit Breaker and opening of Load Break switch. These signals shall be goes to Sub Station Control Room / SCADA Control Room via RTU with opening reason for further action.

9.25 Operating lever:

An anti-reflex mechanism on the operating lever shall prevent any attempts to re-open immediately after closing of the switch or earthing switch.

All manual operations will be carried out on the front of the switchboard.

The effort exerted on the lever by the operator should not be more than 250 N for the switch and circuit breaker.

The overall dimensions of the Ring Main Unit shall not be increased due to the use of the operating handle. The operating handle should have two workable positions 180° apart.

9.26 Front plate:

The front shall include a clear mimic diagram which indicates different functions.
The position indicators shall give a true reflection of the position of the main contacts.
They shall be clearly visible to the operator.

The lever operating direction shall be clearly indicated in the mimic diagram.

The manufacturer's plate shall include the switchboard's main electrical characteristics.

9.27 Danger Board:

The danger Board plate as per relevant IS: 2551, 1982 shall be riveted on the front plate of the Ring Main Unit.

9.28 Internal arc rating:

The Ring Main Unit shall have a design such that in the event of an internal arc fault, the operator shall be safe. This should be in accordance with IEC 298 and relevant Test certificates shall be submitted with the Tender.
The Ring Main Unit shall be tested for an internal arc rating of 25 kA for 1 Sec for 22 kV.
Suitable temperature rise test on the Ring Main Unit shall be carried out & test reports shall be submitted with tender for technical bid evaluation.

9.29 Specific Requirement for Automation:

The Ring Main Units should be provided with provision of following minimum signals available at separate SCADA terminal box.

Minimum signals for SCADA/DMS - to be wired to separate TBs

Sr. No.	Particulars	Contacts
1.	CB Close / Open	Potential free contacts

2.	LBS Close / Open	Potential free contacts
3.	LBS & CB Earth Switch Close / Open	Potential free contacts
4.	CB Test/Service Position	Potential free contacts
5.	Spring charge Status indication	Potential free contacts
6.	SF6 gas pressure low	Potential free contacts
7.	O/C Operated	Potential free contacts
8.	E/F Operated	Potential free contacts
9.	Local/Remote	Potential free contacts
10.	Common Power Supply Healthy	Potential free contacts
11.	Motor MCB Healthy Status	Potential free contacts
12.	Battery charger Fail	Potential free contacts
13.	RMU Door Open	Potential free contacts
14.	CB Trip Coil Healthy	Potential free contacts
15.	Current Transformer Status	Potential free contacts
16.	Potential Transformer Status	Potential free contacts
17.	FPI Control	Potential free contacts
18.	CB control	Potential free contacts
19.	LBS Control	Potential free contacts
20.	Water Level Alarm	Potential free contacts
21.	CB Open	Potential free contacts
22.	LBS Open	Potential free contacts

A) Specific requirement for SCADA Connectivity:

i) Fault Passage Indicator shall be provided per isolator
ii) DC control supply system should be 24V DC.
iii) Battery charger to cater load of minimum 10 motorized operation cycles (Close-Open) in absence of battery.
iv) Battery to cater load of minimum 10 motorized operation cycles (Close-Open) in absence of battery charger. The battery backup should be minimum of 6 Hrs.
v) Miniature Circuit Breakers (MCB) shall be provided for battery charger supply, RMU Motor supply & FRTU supply (Minimum 2 Amp circuit for future use of FRTU).

vi) Individual control circuit of Isolator/Circuit Breaker to have point of isolation/protection.

vii) Individual motor circuit of Isolator/Circuit Breaker to have point of isolation/protection.

viii) The Ring Main Unit shall have minimum protection of IP54 for Outer Enclosure with gland plate & knock outs. Provision for control cable entry should preferably be from Right/ Left top through LV cable box & shall be independent of HV Isolator/Circuit Breaker status. It should be vermin proof.

ix) Control cable gland plate shall be independent of power cable gland plate.

x) A point of earthing for control cables shall be electrically isolated from power cable earthing.

xi) Ambient temperature of 50^0C max. Allowable temperature rise of battery & battery charger above ambient 40^0C.

xii) Local / Remote switch shall be provided on all the isolator & breaker panels for selection of controls.

xiii) Current Transformer & Potential Transformer terminals for all the circuit breakers for Distribution Transformers / Feeders only.

B) Following is the list of I/O requirements for Ring Main Unit modules. Please note that all DI & DO should be potential free contacts.

i) List of potential free contacts for Isolator (Terminals shall be provided):

a) Digital Indications:

1. Isolator ON --02 No. & 2 NC
2. Isolator OFF --02 No. & 2 NC
3. Isolator Earth switch Status (ON/OFF)
4. FPI Operated
5. LOCAL/REMOTE switch position

b) List of commands:

1. Isolator Close
2. Isolator Open
3. FPI reset

ii) List of potential free Contacts for Circuit Breakers (Terminals shall be provided):

a) Digital Indications:

1. Circuit Breaker ON
2. Circuit Breaker OFF
3. Auto Trip
4. LOCAL/REMOTE switch position

b) List of commands:

1. Circuit Breaker Close
2. Circuit Breaker Open

iii) Requirement of Tri-Vector Meter (TVM):

a) The terminals shall be provided for CT and PT Connections

b) Space shall be provided for Tri-Vector Meter (TVM) mounting on Outer Enclosure panel

9.30 Distribution Automation System Interface:

The Ring Main Unit shall be equipped so that it can be monitored and controlled via the SCADA. In this respect, it shall interoperate with the RTU that will be housed in the Ring Main Unit Control Cabinet. The RTU in turn will interoperate with the SCADA via the remote communications system.
The Ring Main Unit shall have provisions for opening and closing its switches / breakers using output from the RTU. The Ring Main Unit shall also supply analog and status signals to the RTU for monitoring the condition of the Ring Main Unit's distribution network circuits as well as the components of the Ring Main Unit.

10.0 Tests:

a. Type tests:

The Ring Main Unit and accessories offered in the tender should have been successfully type tested at NABL laboratories in India or equivalent International Laboratories in line with the relevant standard and technical specification, within the last 10 (Ten) years from the date of offer. The bidder shall be required to submit complete set of the type test reports in physical format along with the offer. The bidder must provide the original copies of type test reports for verification purpose or produce authentic documents to confirm the type tests are authentic in case of tests carried out at equivalent International Laboratories

In case these type tests are conducted earlier than five years, all the type tests as per the relevant standard shall be carried out by the successful bidder at NABL in presence of purchaser's representative free of cost before commencement of supply. The undertaking to this effect should be furnished along with the offer without which the offer shall be liable for rejection.

Type tests:

i) Short time current withstand test and peak current withstand test.
ii) Lightening Impulse voltage with-stand test
iii) Temperature rise test.
iv) Short Circuit current making and breaking tests.
v) Power frequency voltage withstand test (dry).
vi) Capacitive current switching test confirming to IEC.

vii) Mechanical operation test.
viii) Measurement of the resistance of the main circuit.
ix) Degree of protection of Inner enclosure and outer enclosure
x) Switch, circuit breaker, earthing switch making capacity.
xi) Switch, circuit breaker breaking capacity.
xii) Internal arc withstand Test for Inner Enclosure and Cable Chamber.
xiii) Checking of partial discharge on complete unit.

The details of type test certificate according to the composition of the Switchboard shall be submitted with the offer.
In addition, for switches, test reports on rated breaking and making capacity shall be supplied.
For earthing switches, test reports on making capacity, short-time withstand current and peak short-circuit current shall be supplied.

In addition to that, Test report of Vacuum Interrupter along with Catalogues & Literatures to be submitted along with the Offer.

b. Acceptance and Routine Tests:

All acceptance and routine tests as stipulated in the respective applicable standards amended up-to-date for all the equipment shall be carried out by the supplier in the presence of purchaser's representative without any extra cost to the purchaser before dispatch.

The bidder shall have full facilities to carry out all the acceptance and routine test as per the applicable standards.

After finalization of the program of acceptance/routine testing, the supplier shall give 15 days' advance intimation to the purchaser, to enable him to depute his representatives for witnessing the tests.

The routine tests should be carried out by the manufacturer at his works in presence of EE (Testing) MSEDCL and EE (IW) , MMC, MSEDCL.

All the Ring Main Units must be routine tested for the following:

1. Conformity with drawings and diagrams,
2. Measurement of closing and opening speeds,
3. Measurement of operating torque,
4. Checking of filling pressure,
5. Checking of gas-tightness / SF6 gas leak test.
6. Dielectric testing and main circuit resistance measurement.
7. Power frequency voltage
8. Resistance test for the circuit
9. Mechanical operation tests.
10. Micro-ohm test for the assembly inside the tank.
11. Circuit breaker analyzer test so as to ensure the simultaneous closing of all poles for VCB.

12. Partial Discharge test on the complete gas tank so as to be assure of the properinsulation level and high product life.
13. High voltage withstands.
14. Secondary test to ensure the proper functioning of the live line indicators, fault passage indicators and relays.

All major type tests shall have been certified at an independent authority with the tests carried outside country of manufacture shall be translated in English and submitted in hard copy.

The supplier in the presence of MSEDCL‟s representative shall carry out all above acceptance and routine tests. The supplier shall give at least 15 days advance intimation to the MSEDCL to enable them to depute their representative for witnessing the tests. The cost towards transport, stay and other expenses shall be borne by the supplier.

The MSEDCL reserves the right for carrying out any other tests of a reasonable nature at the works of the supplier/laboratory or at any other recognized laboratory/research institute in addition to the above mentioned type, acceptance and routine tests at the cost of the MSEDCL to satisfy that the material complies with the intent of this specification.

11.0 Inspection:

The inspection may be carried out by the purchaser at any stage of manufacture. The successful bidder shall grant free access to the purchaser's representative/s at a reasonable notice when the work is in progress. Inspection and acceptance of any equipment under this specification by the purchaser shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found to be defective.

The supplier shall keep the purchaser informed, in advance, about the manufacturing program so that arrangement can be made for stage inspection.

The purchaser reserves the right to insist for witnessing the acceptance/routine testing of the bought out items. The supplier shall keep the purchaser informed, in advance, about such testing program.

12.0 Qualifying Requirement:

As per Tender Clause

13.0 Prototype Sample:

The successful bidders should manufacture 3 Nos. of prototype Ring Main Units as per the specification and keep ready at their works for the purpose of sample inspection and testing. The MSEDCL at their option may send a team of Engineers to the works. Prior intimation of this inspection may not be given to the Bidder.

14.0 Manufacturing Facilities:

As Ring Main Units are having sealed pressure system in compliance with IEC 298, manufacturer shall have complete facility with state of the art equipments for ensuring the quality of product delivered strictly adhering to IEC 298 Guidelines. Following are the work station at manufacturer place to ensure the adherence: -

1. Robotic welding station for stainless steel main tank ensuring the leak rate less than 0.1% per annum.
2. Work stations with adjustable work benches and torque wrenches, giving flexibility to workmen for proper tightness of internal components of sealed tank.
3. State of the Gas leak testing system ensuring the quality of sealing and have precision to measure leak rate less than 0.1% per annum.
4. High voltage testing station to have high voltage power frequency test and partial discharge measurement.
5. Computerized system to measure time travel characteristic of breaker before sealing the tank.
6. Computerized SF6 filling and testing facility.
7. Partial Discharge Lab for conducting the partial discharge test.

15.0 Quality Assurance Plan:

The bidder shall invariably furnish following information along with his offer.

1) Statement giving list of important raw materials including but not limited to

   (a) Contact material
   (b) Insulation
   (c) Sealing material
   (d) Contactor, limit switches, etc. in control cabinet.

Name of sub-suppliers for the raw materials, list of standards according to which the raw materials are tested, list of test normally carried out on raw materials in presence of bidder's representative, copies of test certificates.

2) Information and copies of test certificates as in (1) above in respect of bought out accessories.

3) List of areas in manufacturing process, where stage inspections are normally carried out for quality control and details of such tests and inspections.

4) Special features provided in the equipment to make it maintenance free.

5) List of testing equipment available with the Bidder for final testing of Ring Main Unit and associated combinations vis-à-vis, the type, special, acceptance and routine tests specified in the relevant standards. The supplier shall, within 15 days from the date of receipt of Purchase Order submit following information to the MSEDCL.

   1. List of raw materials as well bought out accessories and the names of sub- suppliers selected from those furnished along with offer.

   2. Necessary test certificates of the raw material and bought out accessories.

   3. Quality Assurance Plan (QAP) with hold points for MSEDCL's inspection. The quality assurance plan and hold points shall be discussed between the MSEDCL and supplier before the QAP is finalized.

   The supplier shall submit the routine test certificates of bought out items and raw material, at the time of routine testing of the fully assembled breaker.

16.0 Drawings and Documentations:

ll drawings shall conform to relevant IEC Standards Specification. All drawings shall be in clear and visible.

The Bidder shall submit following drawings for approval:

i) General Arrangement Drawing.

ii) General Arrangement Drawing with Door Open.

iii) Name Plate Drawing.

iv) Foundation Drawing.

v) Single Line Diagram Drawing.

vi) MIMIC Diagram Drawing.

vii) Control Schematic Wiring Diagram of Load Break Switch.

viii) Control Schematic Wiring Diagram of Circuit Breaker.

ix) Control Schematic Wiring Diagram of Earth Switch.

x) Control Schematic Wiring Diagram of Automatic Water Level Controller.

xi) Control Schematic Wiring Diagram of Voltage Indicator Lamps.

xii) Control Schematic Wiring Diagram of Fault Passage Indicators (FPI).

xiii) Terminal Block Drawing.

xiv) Mechanical Interlock Drawing.

xv) Electrical Interlock Drawing.

xvi) SF6 Monitoring Pressure Switch and Indication Schematic Drawing

xvii) Schematic Wiring Diagram of Metering Unit.

xviii) Vacuum Interrupter Drawing.

xix) Danger Plate Drawing.

xx) Two Cable Arrangement Drawing.

xxi) Technical Detail Sheet

xxii) Drawing. xxii) Bill of Material.

xxiii) Packing List.

1. After issue of letter of acceptance, the successful bidders shall submit 3 identical sets of complete drawings along with detailed bill of materials for approval, to the Chief Engineer (Testing), 5th floor, Prakashgad, MSEDCL, Bandra (E),Mumbai-

400 051. If any modifications are required on these, the same will be conveyed to the supplier who shall modify the drawings accordingly and furnish final drawings for approval. In no case delivery extension will be granted for any delay in drawing approval.

2. The manufacturing of the Ring Main Units shall be strictly in accordance with the approved drawings and no deviation will be permitted without the written approval of MSEDCL. All manufacturing and fabrication work in connection with the Ring Main Units prior to the approval of the drawings shall be at the supplier's risk and cost.
3. Approval of drawings by the purchaser shall not relieve the supplier of any of his responsibility and liability for ensuring correctness and correct interpretation of the drawings for meeting the requirements of the latest revisions of applicable standards, rules and codes of practices.
4. After approval of the drawings detailed packing lists and bills of materials, the suppliers shall be forwarded to the respective consignees. Copies of packing lists shall also be submitted to the Chief Accounts Officer (SB), MSEDCL, Prakashgad, Bandra(East) along with the bills for payment.
5. Before dispatch of Ring Main Units to various consignees, the suppliers shall furnish sets of final drawings, including bills of materials and wiring schedules and also sets of technical literature and commissioning manuals. These shall be in Five sets and shall be furnished to the office of CE (MMD), Ist floor, Prakashgad, Bandra(E), Mumbai positively before the dispatch of Ring Main Units. All drawings shall preferably be of A3 size. No drawing of width more than 35 cm will be acceptable. One set each of the final drawings; bill of materials, wiring schedules and commissioning manuals shall invariably be forwarded to the consignee along with each Ring Main Units consignment and shall be listed out in the packing list, when submitted for approval.
6. In case the supplier fails to furnish contractual drawings and manuals even at the time of supply of Ring Main Units, the date of furnishing of drawings/manuals will be considered as the date of supply of Ring Main Units for the purpose of computing penalties for late delivery.
7. The successful bidder shall furnish in the form of nicely bound volumes, the manuals covering erection, commissioning, operation and maintenance instructions and all relevant information and drawings pertaining to the Ring Main Unit as well as auxiliary devices. Marked erection drawings shall identify the component parts of the Ring Main Unit as shipped to enable Engineer/Purchaser to carry out erection with his own personnel. Each manual shall also contain one set of all the approved drawings type test reports as well as acceptance test reports to corresponding consignment dispatched. The total quantity of the operating manuals/approved drawings sets to be supplied by the supplier shall be equal to the number of Ring Main Units ordered.

b. The Bidder shall submit along with his tender illustrative and descriptive literature in triplicate for various items in the Ring Main Units, which are all essentially required for automation.

The Bidder shall submit following documents along with the tender:

i) Instruction manuals.
ii) Catalogues of spares recommended with drawing to indicate each items of spares.
iii) List of spares and special tools recommended by the supplier.
iv) Copies of Type Test Certificates as per latest IS/IEC.

v) Dimensional drawings of each material used for item.
vi) Actual single line diagram of Ring Main Unit with or without extra combinations shall be made displayed on the front portion of the Ring Main Unit so as to carry out the operations easily.

Operation, Maintenance and erection instruction manual in English language shall be also supplied along with each Ring Main Unit to the respective consignee as per the dispatch instructions given from Material Management Cell under CE (MMD), Corporate Office, Mumbai. The successful bidder shall submit the drawings, bill of materials, packing lists, etc. in time and get these approved from the office of Chief Engineer (Testing), 5th floor, Prakashgad, MSEDCL, Mumbai.

17.0 Name Plate:

Each Ring Main Unit and its associated equipments shall be provided with a nameplate legible and indelibly marked with at least the following information.

b. Name of manufacturer.
c. Type.
d. Serial number.
e. Voltage.
f. Current.
g. Frequency.
h. Symmetrical breaking capacity.
i. Making capacity.
j. Short time current and its duration.
k. Purchase Order number and date.
l. Month and Year of supply.
m. Rated lighting impulse withstands voltage.

18.0 Packing and Forwarding :

The equipment shall be packed in crates suitable for vertical/horizontal transport as the case may be and the packing shall be suitable to withstand handling during the transport and outdoor storage during transit. The supplier shall be responsible for any damage to the equipment during transit, due to improper and inadequate packing. The easily damageable materials shall be carefully packed and marked with the appropriate caution symbols. Wherever necessary, proper arrangement for lifting, such as lifting hooks etc. shall be provided. Any material found short inside the packing cases shall be supplied by the supplier without any extra cost.
Each consignment shall be accompanied by a detailed packing list containing the following information:

a. Name of the consignee.
b. Details of consignment
c. Destination.
d. Total weight of consignment.
e. Sign showing upper/lower side of the crate.
f. Handling and unpacking instructions.
g. Bill of material indicating contents of each package.

All the equipment covered in this specification shall be delivered to the various stores centers of the MSEDCL as will be intimated to the successful bidders. The equipment shall be delivered to these stores centers only by road transport and shall be suitably packed to avoid damages during transit in the case of indigenous supplies.

The bidder shall quote delivery periods for various equipment and shall stick to the committed delivery. The delivery period will be counted from the date of receipt of letter of award of the contract. It is therefore, the responsibility of the successful bidder to submit the drawings, bill of materials, packing lists, etc. in time and get these approved from the office of Chief Engineer (Quality Control and Testing), 5th floor, Prakashgad, MSEDCL, Mumbai.

It may clearly be noted that the delivery period will under no circumstances be linked up with other formalities like drawing approval, etc.

19.0 Training:

All successful bidders for Ring Main Units shall provide training facilities for the MSEDCL's Engineers. The training shall be for not less than 8 man weeks. Syllabus and other details of the training shall be finalized in consultation with the MSEDCL. Boarding, lodging and traveling expenses for the deputed trainees will be borne by the MSEDCL. Charges for training shall be quoted in the offer separately. These will not be considered for evaluation of the offer.

20.0 Performance Guarantee:

All Ring Main Units and accessories supplied against this specification shall be guaranteed for a period of 66 months from the date of receipt at the consignee's Stores Center or 60 months from the date of commissioning, whichever is earlier. However, any engineering error, omission, wrong provision, etc. which do not have any effect on the time period, shall be attended to as and when observed/pointed out without any price implication.

21.0 Annexure:

The bidder shall fill in the following Annexure 'A' which forms part of the Tender Specification and offer. If the Annexure 'A' is not submitted duly filled in with the offer, the offer shall be liable for rejection.
Annexure 'A' - Principal Technical Parameters of Ring Main Units.

22.0 Schedules:

The bidder shall fill in the following Schedule which forms part of the Tender Specification and offer. If the schedules are not submitted duly filled in with the offer, the offer shall be liable for rejection.

Schedule – 'A-1' - Guaranteed Technical Particulars of 22 kV Ring Main Units.
Schedule – 'A-2' - Guaranteed Technical Particulars of 22 kV Ring Main Units.
Schedule – 'B ' - List of Type Test Reports to be enclosed with the offer
Schedule – 'C ' - Schedule of Deviations from Specification
Schedule – 'D ' - Schedule of Bidder's Experience
Schedule – 'E ' - Schedule of Deviations from Specified Standards
Schedule – 'F' - Deviations from specified Test requirements specified in Relevant Standards and Present Specification

Schedule – 'G ' - Proforma of Undertaking

The Bidder shall submit the list of orders for supply of Ring Main Units executed or under execution during last three years, with full details, in the schedule of Bidders experience (Schedule 'D') to enable the purchaser to evaluate the tender.

Any additional information may be furnished separately by the bidder, if felt necessary by him.

23.0 Guaranteed Technical Particulars:

The bidder should fill up the details in schedule A – "Guaranteed Technical Particulars" and the statement such as "as per drawing enclosed", "as per MSEDCL requirement", "as per IS", "as per specification" etc. shall be considered as details not furnished and such offers will be rejected.

Annexure 'A'

Principal Technical Parameters of Ring Main Unit and accessories:.

Sr. No.	Description		22 kV Ring Main Unit
A)Ring Main Unit Assembly			
1.	Indoor / Out door		Indoor / Out door
2.	Configurations(Type)		3 Way, M+LLV+ 4 Way, +LLLL+ 4 Way, M+LLLV+ 4 Way, M+LLVV+ 5 Way, M+LLVVV+ 6 Way, +LLVVV+V+ L= Isolator. V= VCB. M=Metering
3.	Reference Standard		IEC-62271-100, 200, 103, IEC-62271-1
4.	Rated Voltage in kV		22
5.	Highest System Voltage in kV, Max.		24
6.	Number of Phase		3
7.	Frequency in HZ.		50 Hz ± 3%
8.	Short Circuit rating		
	a) Breaking Symmetrical for 3 Sec. in KA		21
	b) Breaking Asymmetrical for 3 Sec. in KA		21
	c) Short time for 3 Sec. in KA.		21
9.	Insulation Level		
	a) Impulse withstand in KV peak.		125
	b) 1 Minute 50 Hz. Voltage withstand in KV rms		50
10.	Internal arc rating for 1 sec. in kV		21
11.	Construction: Material and Size		
	Inner Enclosure		Main Stainless Steel Tank with 2 mm Thickness
	Outer Enclosure		CRCA Sheet of 2 mm thickness or Galvanized Sheet of 1.6 mm thickness
12.	Degree of protection		
	Inner Enclosure		IP 67
	Outer Enclosure		IP 54 (Main Door close) and IP 41 (Main Door open)
13.	The Ring Main Unit and accessories completely wire and tested at factory		Yes
14.	Paint		Polyurethane based powder paint
15.	Color		Dark Admiralty Grey,

			Shade No. 632 as per IS: 5, 2007
16.	Thickness of coat, Min.		150 microns for CRCA Sheet and 80 microns for galvanized sheets
B) Bus Bar			
17.	Reference Standard		IS: 1897, 2008
18.	Grade and Material		Electrolytic Grade Copper
19.	Cross sectional area in mm2		400
20.	Size in mm or as per design		40 x 10
21.	Current Density in Amps/mm2, Max.		1.6
22.	Continuous Current in Amps		630
23.	Maximum temperature rise over an ambient temperature 50^0C.		55^0C
24.	Short time current rating for 3 Sec in kA rms		21
25.	Clearance in mm from bare bus bar or as per design		
	Phase to Phase for Isolator or as per design		78
	Phase to Phase for VCB		78
	Phase to Earth for Isolator or as per design		78
	Phase to Earth for VCB or as per design		78
26.	Bus Supports		
	Reference Standard		IEC 60243-1, ASTM D 648
	Voltage Class in kV		22 kV
	Creepage distance in mm or as per design		125 in SF6 gas
	Bus Bar support spacing in mm or as per design		125
27.	Filling SF6 gas pressure (Filling pressure at 20^0C), Min.		1.4 Bar
28.	Operating SF6 gas pressure at 20^0C, Min.		0.5 Bar
29.	Reference Standard		IEC 62271-100
30.	Rated Voltage in kV		22
31.	Highest System Voltage in kV, Max.		24
32.	Type		Vacuum Type
33.	Rated Frequency in Hz.		50 Hz $\pm$ 3%
34.	No. of Poles		3
35.	Rated Current		630A
36.	Maximum temperature rise over an ambient temperature 50^0C.		55°C
37.	Rated operating Duty		O-3min-CO-3min-CO
38.	Rupturing capacity at rated voltage in MVA, Min.		As per design
39.	Breaking Capacity at rated voltage & operating duty		

	Symmetrical in kA rms		21
	Asymmetrical in kA rms		21
40.	Rated making current in kA peak		52.5
41.	Short time current for 3 sec in kA rms		21
42.	Transient Recovery Voltage		
	Rate of rise in kV/µs		0.34 kV/µs as per IEC 62271-100
	Peak Voltage in kV		50
43.	Insulation Level		
	Impulse Voltage with stand on 1.2/50 µs full wave in kV		125
	1 minute power frequency voltage withstand in kV		50
44.	Total breaking time for transient fault (CB + Relay+ trip coil) in ms		45-50 ms
45.	Opening time No load condition in ms		45-50 ms
46.	Opening time under SF6 gas low or vacuum loss condition in ms		45-50 ms
47.	Number of breaks per pole		Single
48.	No of breaker operations permissible without requiring inspection replacement of contacts and other Main parts		
	At 100% rated current		2000
	At 100% rated breaking current, Min.		20
49.	Type of contacts		
	Main		Butt Type
	Arcing		Butt Type
50.	Material of contacts		
	Main		Copper
	Arching		Copper
	Chromium / Silver plated		Chromium / Silver plated
51.	Mechanical Endurance Test for Circuit Breaker, Number of operations		2000
52.	Spring charging mechanism		Motor Operated
53.	Operating mechanism for closing of Circuit Breaker		
	Type		Spring operated Mechanism
	No of breaker operations stored		One
	Trip free or fixed trip		Trip Free
	Earthing for operating mechanism and metal parts		Solidly Earthed
	Earth terminal size and material, Min.		Electrolytic grade Copper 25 x 3mm
54.	Operating mechanism for tripping of		

	Circuit Breaker		
	Type		Spring Operated Mechanism
	No of breaker operations stored		One
	Trip free or fixed trip (V)		Trip Free
	Earthing for operating mechanism and metal parts		Solidly Earthed
	Earth terminal size and material		Electrolytic grade Copper 25 x 3mm
55.	Breaker Accessories		
	Mechanical safety Interlock		Provided
	Automatic safety Interlock		Provided
	Operational Interlock		Provided
	Emergency manual trip		Provided
	Operation counter		Provided
	Spring charge / discharge indicator		Provided
	Manual spring charging facility		Provided
c) Isolators			
56.	Reference standard		IEC-62271-102 / IEC-62271-103
57.	Nominal Voltage in KV		22
58.	Highest System Voltage in kV, Max.		24
59.	Rated Frequency in HZ		50 Hz $\pm$ 3%
60.	No. Of poles		3
61.	Rated Current in Amps		630
62.	Maximum temperature rise over an ambient temperature 50^0C.		60°C
63.	Operation		Close-Open-Earth
64.	Rupturing Capacity at rated voltage		630 Amps at 22kV
65.	Maximum over voltage factor when switching off Loaded feeder cable in kA		52.5
66.	No. of isolator operation permissible without requiring inspection, replacement of contacts and other main parts		
	Mechanical Endurance in Number of operations		1000
	At 100% rated making current in Number of operations		100
	At 100% rated breaking current in Number of operations		100
67.	Isolator provided with the following Mechanical safety		
	Mechanical ON and OFF Indication		Provided
	Cable Earth Indication		Provided
	Operational Counter		Provided
	Manual Spring Charging facility		Provided
D) Current Transformer			
68.	Reference standard		IS:16227, I & II
69.	Type		Ring Type, Resin Cast/Tape wound

70.	Nominal Voltage in KV		22
71.	Highest System Voltage in kV, Max.		24
72.	Rated Frequency in HZ		50 Hz ± 3%
73.	Current Transformer Ratio		400-200/1Amps
74.	Short circuit withstand		
	Short time current for 1 sec. in kA rms		5
	Dynamic current in kA peak, Min.		7.5
75.	Class of insulation		Class B
76.	Basic insulation level in kV rms		3
77.	Maximum temperature rise over an ambient temperature 50^{0}C.		60^{0}C
78.	Class of Accuracy		
	Metering Core		0.5
	Protection Core		5P10
79.	Rated Burden		5 VA
80.	Over Current Rating in %		120
81.	Continuous Over Load in %		120
E) Metering Voltage(Potential) Transformer			
82.	Reference standard		IS:16227, I & III
83.	Type		Resin Cast/Tape wound
84.	Nominal Voltage in KV		22
85.	Highest System Voltage in kV, Max.		24
86.	Rated Frequency in HZ		50 Hz ± 3%
87.	Voltage Transformer Ratio		22 kV/√3 /110V/√3
88.	Rated Primary Voltage in kV		22 kV/√3
89.	Rated Secondary Voltage in V		110V/√3
90.	Rated Burden in VA		50
91.	Accuracy Class		0.5
92.	Insulation Class		B
93.	Voltage Factor		1.2 Continuous and 1.9 for 8 hrs.
94.	One Minute Power Frequency Dry Withstand Voltage Rating		
	Primary Winding Induced Test in kV rms		50
	Secondary Winding in kV rms		3
	Rated Impulse Voltage in kV peak		125
F) Auxiliary Voltage(Potential) Transformer			
95.	Reference standard		IS:16227, I & III
96.	Type		Resin Cast/Tape wound
97.	Nominal Voltage in KV		22
98.	Highest System Voltage in kV, Max.		24
99.	Rated Frequency in HZ		50 Hz ± 3%
100.	Voltage Transformer Ratio		22 kV / 230V
101.	Rated Primary Voltage in kV		22 kV
102.	Rated Secondary Voltage in V		230V
103.	Rated Burden in VA		500 VA
104.	Voltage Regulation in %		5
105.	Insulation Class		B
106.	Voltage Factor		1.2
107.	Application & Construction Type		Indoor, Single Phase/Two Pole

108.	One Minute Power Frequency Dry Withstand Voltage Rating		
	Primary Winding Induced Test in kV rms		50
	Secondary Winding in kV rms		3
	Rated Impulse Voltage in kV peak		125
G) Numerical Protection Relay			
109.	Reference Standard		IEC 60255
110.	Type and Model		3 Over Current(O/C) and 1 Earth fault(E/F)
111.	Current Transformer Secondary Input to Relay		1 A
112.	Operating Curve Type		Inverse Definite Minimum Time (IDMT)Relay
113.	Auxiliary Supply		Self Powered relay for Protection
114.	Rated Frequency in HZ		50 Hz ± 3%
115.	Over Current Protection		
	Low set Over Current protection		20-200% of CT secondary rated current with increment/decrement by 1 %
	High set Over Current protection		100-2000% of CT secondary rated current with increment/decrement by 50%
116.	Earth Fault Protection		
	Low set Earth Fault protection		5% to 80% of the CT rated current in steps of 1%
	High set Earth Fault protection		100-1000% of the CT rated current in steps of 50%
117.	Mounting		Flush Mounted
118.	Operational Indicator		LCD display and LED annunciation lamps
119.	Contact Details		4 Binary Input(BI) and 6 Binary Output(BO)
120.	Self-diagnosis feature		Yes
121.	Password protection		Yes
122.	Communication Protocol		RS 232 or RS 485 Port for IEC 103, Communication Protocol
123.	Event / fault record, Min.		10 Event and 5 Fault Records available
124.	Setting groups		2 Groups available
125.	Circuit Breaker control available		Yes, Only Trip
H) Tripping Coil			
126.	DC Voltage in Volt		24
127.	Maximum Tripping Current at rated voltage in Amps.		5
	Minimum Permissible voltage variation in		85 to 110

	%		
I) HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter			
128.	Reference Standard		IS: 14697, 1999 IS: 15959, 2011
129.	Make		Only Provision for Space to be provided
130.	Auxiliary supply Voltage		
131.	Class of Accuracy		
132.	Type of Display		
133.	Measuring Parameters as per MSEDCL Specification		
J)Fault Passage Indicator (FPI) on Short Circuit and Earth fault			
134.	Operating point/Current short circuit in Amp		Adjustable 100/200/300 /400/500 /600/700 /800/900/1000 /1100/1200A (±15%)
135.	Operating point/Current earth fault in Amp		Adjustable 10/20/30/40 /60/80/100A (±15%)
136.	Response Time in ms		For Short Circuit Adjustable 40/60/80/100/120 /160/200/240 ms Sec(±100m Sec) For Earth Fault Adjustable 40/60/80/160 ms (±100m Sec)
137.	Auto Reset Time in Hrs		1/2/4/8 hrs (+ / - 1%) after fault
K) Battery Charger			
138.	Input AC Voltage in V		230
139.	Rated Frequency in Hz		50 Hz ± 3%
140.	Output DC Voltage in V		24
141.	Current Rating in Amps		10
142.	Output DC Voltage for charger		

	Boost Mode in V		27 to 28
	Float Mode in V		27 to 28
143.	Operating Temperature in ^{0}C		-25 to 60
144.	Temperature Compensation		Junction temperature of SMPS crosses 142^{0}C, thermal shutdown occurs.
145.	Short Circuit and Overload Protection		Provided
146.	High Voltage Isolation		2 kV for 1 minute
147.	Efficiency		Above 85 %
L) Battery			
148.	Type		Dry Type
149.	Ah Efficiency		> 95%
150.	Self-Discharge		Self-Discharge
151.	Operating Temperature		Normal : +20^{0}C to +30^{0}C & Limits : -20^{0}C to +50^{0}C
152.	Voltage (V)		24V (2 x 12V)
153.	Ah Capacity		7Ah / 12 Ah / 26 Ah
M) Manometer with Non Return Valve			
154.	Type		Analogue
155.	Material		Stainless Steel
156.	Accuracy of calibration pressure		+/-1% at 20^{0}C
157.	Pressure Element		Stainless Steel Welded
158.	Dial		2''
159.	Pointer		Dark
160.	Window		Round
161.	Gas pressure low signal		Indicated by Red Color Zone
162.	Non Return Valve(NRV) Material		Stainless Steel
N) Indoor cable terminations kits			
163.	Type		22 kV touch proof screened termination kit
164.	Materials		Epoxy / EPDM / Silicon Rubber
165.	Size		Up to 3 x 400 sq. mm 22 kV HT cables
166.	Height of Bus bar / transformer / feeder Cable box from ground level		As per Manufacture design
167.	Arrangement for mounting an extra cable at incoming and outgoing side box of Bus bar.		As per Manufacture design
168.	Arrangement for mounting an extra cable at outgoing side box of transformer /		As per Manufacture design

	feeder.		
O) Automatic Water Level Controller			
172.	Position of Automatic Water Level Controller		200 mm below live contacts
173.	Auxiliary contacts		4 NO + 4 NC
174.	Breaker Tripping and Load break Isolator opening due to water level increases signals to Control room		Yes
P) Name Plate			
175.	Material		Anodized Aluminum / Stainless Steel
176.	Thickness		18 swg / 1.00 mm
177.	Size		145 mm x 116 mm
Q) Painting			
178.	Inside		Powder Coated
179.	Outside		Polyurethane based powder paint. Dark Admiralty Grey, Shade No. 632 as per IS: 5, 2007.

Schedule 'B'

Guaranteed Technical Parameters of 22 KV, 630 Amps with, Extensible / Non extensible type, Outdoor / Indoor, SCADA Compatible Motorized Ring Main Unit with 400Amps Vacuum Circuit Breaker

Sr. No.	Description	22 kV Ring Main Unit	Parameters to be filled by Bidder
A)Ring Main Unit Assembly			
1.	Indoor / Out door	Indoor / Out door	
2.	Manufacturer's Name & address		
3.	Manufacturer's Type Designation		
4.	Model		
5.	Configurations(Type)	L= Isolator. V= VCB. M=Metering	
	i) Configurations	3 Way, M+LLV+	
	ii) Configurations	4 Way, +LLLL+	
	iii)Configurations	4 Way, M+LLLV+	
	iv)Configurations	4 Way, M+LLVV+	
	v) Configurations	5 Way, M+LLVVV+	
	vi) Configurations	6 Way, +LLVVV+V+	
6.	Reference Standard	IEC-62271-100, 200, 103 and IEC-60694	
7.	Rated Voltage in kV	22	
8.	Highest System Voltage in kV, Max.	24	
9.	Number of Phase	3	
10.	Frequency in HZ.	50 Hz $\pm$ 3%	
11.	Short Circuit rating		
	a) Breaking Symmetrical for 3 Sec. in KA	21	
	b) Breaking Asymmetrical for 3 Sec. in KA	21	
	c) Short time for 3 Sec. in KA.	21	
12.	Insulation Level		
	a) Impulse withstand in KV peak.	125	
	b) 1 Minute 50 Hz. Voltage withstand in KV rms	50	
13.	Internal arc rating for 1 sec. in kV	25	
14.	Construction: Material and Size		

	a) Inner Enclosure	Main Stainless Steel Tank with 2 mm Thickness	
	b) Outer Enclosure	CRCA Sheet of 2 mm thickness or Galvanized Sheet of 1.6 mm thickness	
15.	Degree of protection		
	a) Inner Enclosure	IP 67	
	b)Outer Enclosure	IP 54 (Main Door close) and IP 41 (Main Door open)	
16.	The Ring Main Unit and accessories completely wire and tested at factory	Yes	
17.	Paint	Polyurethane based powder paint	
18.	Color	Dark Admiralty Grey, Shade No. 632 as per IS: 5, 2007	
19.	Thickness of coat, Min.	150 microns for CRCA Sheet and 80 microns for	
Overall Dimensions and Weight			
20.	Tolerance to Overall Dimensions	+ 5 %	
	1.Extensible 3 Way RMU(3 Way, M+LLV+)	As per Manufacture Design	
	W x D x H, in mm	As per Manufacture Design	
	Weight in kg	As per Manufacture Design	
	2. Extensible 4 Way RMU(4 Way, +LLLL+)	As per Manufacture Design	
	W x D x H, in mm	As per Manufacture Design	
	Weight in kg	As per Manufacture Design	
	3. Extensible 4 Way RMU(4 Way, M+LLLV+)	As per Manufacture Design	
	W x D x H, in mm	As per Manufacture Design	
	Weight in kg	As per Manufacture Design	
	4. Extensible 4 Way RMU(4 Way, M+LLVV+)	As per Manufacture Design	
	W x D x H, in mm	As per Manufacture Design	
	Weight in kg	As per Manufacture Design	
	5. Extensible 5 Way RMU(5 Way, M+LLVVV+)	As per Manufacture Design	
	W x D x H, in mm	As per Manufacture Design	
	Weight in kg	As per Manufacture Design	
	6. Extensible 6 Way RMU(6 Way, +LLVVV+V+)	As per Manufacture Design	
	W x D x H, in mm	As per Manufacture Design	
	Weight in kg	As per Manufacture Design	
B) Bus Bar			

21.	Make	As per Manufacture Design	
22.	Reference Standard	IS: 1897, 2008	
23.	Grade and Material	Electrolytic Grade Copper	
24.	Cross sectional area in mm2	400	
25.	Size in mm	40 x 10 or as per Manufacture design	
26.	Current Density in Amps/mm2, Max.	1.6	
27.	Continuous Current in Amps	630	
28.	Maximum temperature rise over an ambient temperature 50^0C.	55^0C	
29.	Short time current rating for 3 Sec in kA rms	21	
30.	Clearance in mm from bare bus bar		
	a) Phase to Phase for Isolator or as per design	78	
	b)Phase to Phase for VCB or as per design	78	
	c)Phase to Earth for Isolator or as per design	78	
	d)Phase to Earth for VCB or as per design	78	
31.	Bus Supports		
	i)Make	As per Manufacture Design	
	ii)Type	As per Manufacture Design	
	iii)Reference Standard	IEC 60243-1, ASTM D 648	
	iv)Voltage Class in kV	22 kV	
	v) Creepage distance in mm or as per design	125 in SF6 gas	
	vi)Bus Bar support spacing in mm or as per design	125	
32.	Filling SF6 gas pressure (Filling pressure at 20^0C), Min.	1.4 Bar	
33.	Operating SF6 gas pressure at 20^0C, Min.	0.5 Bar	
C)Vacuum Circuit Breaker			
34.	Make	As per Manufacture Design	
35.	Type	As per Manufacture Design	
36.	Reference Standard	IEC 62271-100	
37.	Rated Voltage in kV	22	
38.	Highest System Voltage in kV, Max.	24	
39.	Type	Vacuum Type	
40.	Rated Frequency in Hz.	50 Hz $\pm$ 3%	
41.	No. of Poles	3	
42.	Rated Current	630A	
43.	Maximum temperature rise over an ambient	55°C	

	temperature 50^{0}C.		
44.	Rated operating Duty	O-3min-CO-3min-CO	
45.	Rupturing capacity at rated voltage in MVA, Min.	As per Design	
46.	Breaking Capacity at rated voltage & operating duty		
	i)Symmetrical in kA rms	21	
	ii)Asymmetrical in kA rms	21	
	iii)Rated making current in kA peak	52.5	
47.	Short time current for 3 sec in kA rms	21	
48.	Transient Recovery Voltage		
	i)Rate of rise in kV/µs	0.34 kV/µs as per IEC 62271-100	
	ii)Peak Voltage in kV	50	
49.	Insulation Level		
	a)Impulse Voltage with stand on 1.2/50 µs full wave in kV	125	
	b)1 minute power frequency voltage withstand in kV	50	
50.	Vacuum Bottle		
	i)Make	As per Manufacture Design	
	ii)Type	As per Manufacture Design	
	iii)Rated Voltage in kV	As per Manufacture Design	
	iv)Rated Current in Amps.	As per Manufacture Design	
51.	Total breaking time for transient fault (CB + Relay+ trip coil) in ms	45-50 ms	
52.	Opening time No load condition in ms	45-50 ms	
53.	Opening time under SF6 gas low or vacuum loss condition in ms	45-50 ms	
	i)At 100% Breaking capacity		
	a) Opening time (ms)	As per Manufacture Design	
	b) Arcing time (ms)	As per Manufacture Design	
	c) Total break time (ms)	As per Manufacture Design	
	ii)At 60% Breaking capacity		
	a) Opening time (ms)	As per Manufacture Design	
	b) Arcing time (ms)	As per Manufacture Design	
	c) Total break time (ms)	As per Manufacture Design	
	iii)At 30% Breaking capacity		
	a) Opening time (ms)	As per Manufacture Design	
	b) Arcing time (ms)	As per Manufacture Design	
	c) Total break time (ms)	As per Manufacture Design	
	iv)At 10% Breaking capacity		
	a) Opening time (ms)	As per Manufacture Design	
	b) Arcing time (ms)	As per Manufacture Design	
	c) Total break time (ms)	As per Manufacture Design	
54.	Number of breaks per pole	Single	

55.	No of breaker operations permissible without requiring inspection replacement of contacts and other Main parts		
	a)At 100% rated current	2000	
	b)At 100% rated breaking current, Min.	20	
56.	Type of contacts		
	i)Main	Butt Type	
	ii)Arcing	Butt Type	
57.	Material of contacts		
	i)Main	Copper	
	ii)Arching	Copper	
	iii)Chromium / Silver plated	Chromium / Silver plated	
58.	Mechanical Endurance Test for Circuit Breaker, Number of operations	2000	
59.	Spring charging mechanism	Motor Operated	
60.	Operating mechanism for closing of Circuit Breaker		
	i)Type	Spring operated Mechanism	
	ii)No of breaker operations stored	One	
	iii)Trip free or fixed trip	Trip Free	
	iv)Earthing for operating mechanism and metal parts	Solidly Earthed	
	v)Earth terminal size and material, Min.	Electrolytic grade Copper 25 x 3mm	
61.	Operating mechanism for tripping of Circuit Breaker		
	i)Type	Spring Operated Mechanism	
	ii)No of breaker operations stored	One	
	iii)Trip free or fixed trip (V)	Trip Free	
	iv)Earthing for operating mechanism and metal parts	Solidly Earthed	
	v)Earth terminal size and material	Electrolytic grade Copper 25 x 3mm	
	vi)Spring charging mechanism		
	a)Make	As per Manufacture Design	
	b)Type	As per Manufacture Design	
	c)Motor, Voltage and Watts	As per Manufacture Design	
62.	Breaker Accessories		
	i)Mechanical safety Interlock	To be Provided	
	ii)Automatic safety Interlock	To be Provided	
	iii)Operational Interlock	To be Provided	
	iv)Emergency manual trip	To be Provided	
	v)Operation counter	To be Provided	
	vi)Spring charge / discharge indicator	To be Provided	
	vii)Manual spring charging	To be Provided	

	facility		
63.	Impact load on foundation design (to include dead load plus impact value on Closing at maximum interrupting rating)in kg		
	i)Extensible 3 Way RMU(3 Way, M+LLV+)	As per Manufacture Design	
	ii)Extensible 4 Way RMU(4 Way, +LLLL+)	As per Manufacture Design	
	iii)Extensible 4 Way RMU(4 Way, M+LLLV+)	As per Manufacture Design	
	iv)Extensible 4 Way RMU(4 Way, M+LLVV+)	As per Manufacture Design	
	v)Extensible 5 Way RMU(5 Way, M+LLVVV+)	As per Manufacture Design	
	vi)Extensible 6 Way RMU(6 Way, +LLVVV+V+)	As per Manufacture Design	
D)Isolators			
64.	Make	As per Manufacture Design	
65.	Type	As per Manufacture Design	
66.	Reference standard	IEC-62271-102 / IEC-62271-103	
67.	Nominal Voltage in KV	22	
68.	Highest System Voltage in kV, Max.	24	
69.	Rated Frequency in HZ	50 Hz ± 3%	
70.	No. Of poles	3	
71.	Rated Current in Amps	630	
72.	Maximum temperature rise over an ambient temperature 50^0C.	60°C	
73.	Operation	Close-Open-Earth	
74.	Rupturing Capacity at rated voltage	630Amps at 22 kV	
75.	Maximum over voltage factor when switching off Loaded feeder cable in kA	52.5	
76.	No. of isolator operation permissible without requiring inspection, replacement of contacts and other main parts		
	i)Mechanical Endurance in Number of operations	1000	
	ii)At 100% rated making current in Number of operations	100	
	iii)At 100% rated breaking current in Number of operations	100	
77.	Isolator provided with the following Mechanical safety		

	a)Mechanical ON and OFF Indication	To be Provided	
	b)Cable Earth Indication	To be Provided	
	c)Operational Counter	To be Provided	
	d)Manual Spring Charging facility	To be Provided	
E) Current Transformer			
78.	Make	As per Manufacture Design	
79.	Reference standard	IS:16227, I & II	
80.	Type	Ring Type, Resin Cast/Tape wound	
81.	Nominal Voltage in KV	22	
82.	Highest System Voltage in kV, Max.	24	
83.	Rated Frequency in HZ	50 Hz ± 3%	
84.	Current Transformer Ratio	400-200/1Amps	
85.	Short circuit withstand		
	i)Short time current for 3 sec. in kA rms	5	
	ii)Dynamic current in kA peak, Min.	7.5	
86.	Class of insulation	Class B	
87.	Basic insulation level in kV	3	
88.	Maximum temperature rise over an ambient temperature 50^0C.	60^0C	
89.	Class of Accuracy		
90.	Metering Core	0.5	
91.	Protection Core	5P10	
92.	Rated Burden	5 VA	
93.	Over Current Rating in %	120	
94.	Continuous Over Load in %	120	
F) Metering Voltage(Potential) Transformer			
95.	Make	As per Manufacture Design	
96.	Reference standard	IS:16227, I & III	
97.	Type	Resin Cast/Tape wound	
98.	Nominal Voltage in KV	22	
99.	Highest System Voltage in kV, Max.	24	
100.	Rated Frequency in HZ	50 Hz ± 3%	
101.	Voltage Transformer Ratio	22 kV/$\sqrt{3}$ /110V/$\sqrt{3}$	
102.	Rated Primary Voltage in kV	22 kV/$\sqrt{3}$	
103.	Rated Secondary Voltage in V	110V/$\sqrt{3}$	
104.	Rated Burden in VA	50	
105.	Accuracy Class	0.5	
106.	Insulation Class	B	
107.	Voltage Factor	1.2 Continuous and 1.9 for 8 hrs.	
108.	One Minute Power Frequency Dry Withstand Voltage Rating		
	a) Primary Winding Induced	50	

	Test in kV rms		
	b)Secondary Winding in kV rms	3	
	c)Rated Impulse Voltage in kV peak	125	
G) Auxiliary Voltage(Potential) Transformer			
109.	Make	As per Manufacture Design	
110.	Reference standard	IS:16227, I & III	
111.	Type	Resin Cast/Tape wound	
112.	Nominal Voltage in KV	22	
113.	Highest System Voltage in kV, Max.	24	
114.	Rated Frequency in HZ	50 Hz ± 3%	
115.	Voltage Transformer Ratio	22 kV/√3 / 230V	
116.	Rated Primary Voltage in kV	22 kV/√3	
117.	Rated Secondary Voltage in V	230 V	
118.	Rated Burden in VA	500 VA	
119.	Voltage Regulation in %	5	
120.	Insulation Class	B	
121.	Voltage Factor	1.2	
122.	Application & Construction Type	Indoor, Single Phase/Two Pole	
123.	One Minute Power Frequency Dry Withstand Voltage Rating		
	a)Primary Winding Induced Test in kV rms	50	
	b)Secondary Winding in kV rms	3	
	c)Rated Impulse Voltage in kV peak	125	
H) Numerical Protection Relay			
124.	Make	As per Manufacture Design	
125.	Type and Model	As per Manufacture Design	
126.	Reference Standard	IEC 60255	
127.	Type and Model	3 Over Current(O/C) and 1 Earth fault(E/F)	
128.	Current Transformer Secondary Input to Relay	1 A	
129.	Operating Curve Type	Inverse Definite Minimum Time (IDMT)Relay	
130.	Auxiliary Supply	Self Powered relay for Protection	
131.	Rated Frequency in HZ	50 Hz ± 3%	
132.	Over Current Protection		
	a)Low set Over Current protection	20-200% of CT secondary rated current with increment/decrement by 1 %	
	b)High set Over Current protection	100-2000% of CT secondary rated current with increment/decrement by 50%	
133.	Earth Fault Protection		

	a)Low set Earth Fault protection	5% to 80% of the CT rated current in steps of 1%	
	b)High set Earth Fault protection	100-1000% of the CT rated current in steps of 50%	
134.	a)Mounting	Flush Mounted	
	b)Mounting Dimensions, W X L x H in mm	As per Manufacture Design	
135.	Operational Indicator	LCD display and LED annunciation lamps	
136.	Contact Details	4 Binary Input(BI) and 6 Binary output(BO)	
137.	Self-diagnosis feature	To be Provided	
138.	Password protection	To be Provided	
139.	Communication Protocol	RS 232 or RS 485 Port for IEC 103 Communication Protocol	
140.	Event / fault record, Min.	10 Event and 5 Fault Records available	
141.	Setting groups	2 Groups available	
142.	Circuit Breaker control available	Yes, Only Trip	
I) Tripping Coil			
143.	Make	As per Manufacture Design	
144.	Type	As per Manufacture Design	
145.	DC Voltage in Volt	24, Pulse operated	
146.	Maximum Tripping Current at rated voltage in Amps.	5	
147.	Minimum Permissible voltage variation in %	85 to 110	
148.	Power at Voltage in Watts	As per Manufacture Design	
J) HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter			
149.	Reference Standard	IS: 14697, 1999 IS: 15959, 2011	
150.	Make	Secure / L&T / other MSEDCL approved make	
151.	Auxiliary supply Voltage	110V/√3	
152.	Class of Accuracy	0.5S	
153.	Type of Display	Customized backlite liquid crystal display	
154.	Measuring Parameters as per MSEDCL Specification		
	i)Instantaneous parameters	To be Provided	
	ii)Block Load Profile parameters	To be Provided	
	iii)Billing Profile Parameters	To be Provided	
	iv)Name Plate details Programmable Parameters	To be Provided	
	v)Event Conditions	To be Provided	
	vi)All logging parameters for each of the event condition for 3	To be Provided	

	Φ / 4W		
K)Fault Passage Indicator (FPI) on Short Circuit and Earth fault			
155.	Make	As per Manufacture Design	
156.	Type and Model	As per Manufacture Design	
157.	Operating point/Current short circuit in Amp	Adjustable 100/200/300 /400/500 /600/700 /800/900/1000 /1100/1200A (±15%)	
158.	Operating point/Current earth fault in Amp	Adjustable 10/20/30/40 /60/80/100A (±15%)	
159.	Response Time in ms	For Short Circuit Adjustable 40/60/80/100/120 /160/200/240 ms Sec(±100m Sec) For Earth Fault Adjustable 40/60/80/160 ms (±100m Sec)	
160.	Auto Reset Time in Hrs	1/2/4/8 hrs (+ / - 1%) after fault	
L) Battery Charger			
161.	Make	As per Manufacture Design	
162.	Type and Model	As per Manufacture Design	
163.	Input AC Voltage in V	230	
164.	Rated Frequency in Hz	50 Hz ± 3%	
165.	Output DC Voltage in V	24	
166.	Current Rating in Amps	10	
167.	Output DC Voltage for charger		
	i)Boost Mode in V	27 to 28	
	ii)Float Mode in V	27 to 28	
168.	Operating Temperature in ^{0}C	-25 to 60	
169.	Temperature Compensation	Junction temperature of SMPS crosses 142^{0}C, thermal shutdown occurs.	
170.	Short Circuit and Overload Protection	To be Provided	
171.	High Voltage Isolation	2 kV for 1 minute	
172.	Efficiency	Above 85 %	
173.	Mounting Arrangement	As per Manufacture Design	
174.	Dimensions, W x D x H in mm	As per Manufacture Design	
N) Battery			
175.	Make	As per Manufacture Design	
176.	Type	Dry Type	

177.	Ah Efficiency	> 95%	
178.	Self-Discharge	Self-Discharge	
179.	Operating Temperature	Normal : +20^{0}C to +30^{0}C & Limits : -20^{0}C to +50^{0}C	
180.	Voltage (V)	24V (2 x 12V)	
181.	Ah Capacity	7Ah / 12 Ah / 26 Ah	
O) Manometer with Non Return Valve			
182.	Make	As per Manufacture Design	
183.	Type and Model	Analogue, ---	
184.	Material	Stainless Steel	
185.	Accuracy of calibration pressure	+/-1% at 20^{0}C	
186.	Pressure Element	Stainless Steel Welded	
187.	Dial	2''	
188.	Pointer	Dark	
189.	Window	Round	
190.	Gas pressure low signal	Indicated by Red Color Zone	
191.	Non Return Valve(NRV) Material	Stainless Steel	
P) Indoor cable terminations kits			
192.	Make	As per Manufacture Design	
193.	Type	22 kV touch proof screened termination kit	
194.	Materials	Epoxy / EPDM / Silicon Rubber	
195.	Cable Size	Up to 3 x 400 sq. mm 22 kV HT cables	
196.	Height of each Cable box from ground level	As per Manufacture Design	
197.	Arrangement for mounting an extra cable at incoming and outgoing side box of Bus bar.	As per Manufacture Design	
198.	Arrangement for mounting an extra cable at outgoing side box of transformer / feeder.	As per Manufacture Design	
Q) Automatic Water Level Controller			
199.	Make	As per Manufacture Design	
200.	Type and Model	As per Manufacture Design	
201.	Position of Automatic Water Level Controller	200 mm below live contacts	
202.	Auxiliary contacts	4 NO + 4 NC	
203.	Breaker Tripping and Load break Isolator opening due to water level increases; signals to Control room	To be Provided	

R) Name Plate			
204.	Material	Anodized Aluminum / Stainless Steel	
205.	Thickness	18 swg / 1.00 mm	
206.	Size	145 mm x 116 mm	
S) Painting			
207.	Inside	Powder Coated	
208.	Outside	Polyurethane based powder paint. Dark Admiralty Grey, Shade No. 632 as per IS: 5, 2007.	
T) Danger Board			
209.	Reference Standard	IS: 2551, 1982	
210.	Material	Mild Steel	
211.	Thickness in mm, Min.	1.6	
212.	Size H x L in mm	200 x 250	
U) Type Test			
213.	Following Type Test carried out within 5 years at NABL laboratories in India or equivalent International Laboratories, Yes / No		
214.	Short time Current withstand test and peak current withstand test.	Yes	
215.	Lightening Impulse voltage with-stand test	Yes	
216.	Temperature rise test.	Yes	
217.	Short Circuit current making and breaking tests.	Yes	
218.	Power frequency voltage withstand test (dry).	Yes	
219.	Capacitive current switching test confirming to IEC.	Yes	
220.	Mechanical operation test.	Yes	
221.	Measurement of the resistance of the main circuit.	Yes	
222.	Degree of protection of	Yes	

	Inner enclosure and outer enclosure		
223.	Switch, circuit breaker, earthing switch making capacity.	Yes	
224.	Switch, circuit breaker breaking capacity.	Yes	
225.	Internal arc withstand Test for Inner Enclosure and Cable Chamber.	Yes	
226.	Checking of partial discharge on complete unit.	Yes	
227.	Guarantee of Ring Main Units and accessories supplied against this specification	66 months from the date of receipt at the consignee's Stores Center or 60 months from the date of commissioning	

Schedule 'C '
List of Type Test Reports to be enclosed with the offer

Sr. No.	Description of Type Test	Type & Make of Ring Main Unit & its rating	IS/IEC Clause No.	Testing Lab. & Date of Testing	Type test report No., dt & pages	Whether certificate of compliance with IS/IEC is enclosed with T.R.
1.						
2.						
3.						
4.						

Name of the firm_____
Signature of the bidder_____
Designation_____
Date_____

Schedule 'D '
Schedule of Deviations from Specification

Sr. No.	Clause No.	Details of Deviations
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Name of the firm_____
Signature of the bidder_____
Designation_____

Date_____

Schedule 'E'
Schedule of Bidder's Experience

Bidder shall furnish here a list of similar orders executed/under execution by him to whom a reference may be made by Purchaser in case he considers such a reference necessary.

Sr. No.	Name of Client & Description order	Value of order along with size & qty	Period of supply and commissioning	Name & Address to whom reference may be made
1.				
2.				
3.				
4.				
5.				
6.				
7.				

Name of the firm_____
Signature of the bidder_____
Designation_____
Date_____

Schedule 'F'

Deviations from specified Test requirements specified in Relevant Standards and Present Specification

Sr. No.	Name of Test	Standard No. & Clause No.	Requirement of standards	Proposed deviation	Reasons for deviation.
1.	Type Test				
2	Additional Test				
3	Acceptance Test				

Name of the firm_____

Signature of the bidder_____

Designation_____

Date_____

Schedule'G'

Proforma Of Undertaking

We hereby confirm that --- Rating Ring Main Units offered by us against this tender are of the same design and type as have been supplied to M.S.E.D.C.L. against earlier order No._____dtd._____and all the Type Test Reports thereof were approved by C.E. (Quality Control and Testing) vide letter No._____dtd. (copy enclosed.)

We further confirm that the said Type Test have been carried out at within five years prior to the date of opening of present tender.

Seal and signature of Bidder

Technical Specification Cont	
Item	Technical Specification
22 kV SF6, Motorized, SCADA Compatible RING MAIN UNIT 2 Isolator + 4 Breaker(86999885114)	Refer To The Following Item Specification: 22 kV SF6, Motorized, SCADA Compatible RING MAIN UNIT 2 Isolator + 2 Breaker(86999884904)

22 kV SF6, Motorized, SCADA Compatible RING MAIN UNIT 2 Isolator + 2 Breaker

GTP Order Sequence	GTP Parameters	Date Type
1	Ring Main Unit Assembly- Out door	TEXT
2	Ring Main Unit Assembly- Manufacturer’s Name & address	TEXT
3	Ring Main Unit Assembly- Manufacturer’s Type Designation	TEXT
4	Ring Main Unit Assembly- Model	TEXT
5	Ring Main Unit Assembly- Configurations(Type)	TEXT
6	Ring Main Unit Assembly- Configurations	TEXT
7	Ring Main Unit Assembly- Reference Standard	TEXT
8	Ring Main Unit Assembly- Rated Voltage in kV	TEXT
9	Ring Main Unit Assembly- Highest System Voltage in kV, Max.	TEXT
10	Ring Main Unit Assembly- Number of Phase	TEXT
11	Ring Main Unit Assembly- Frequency in HZ.	TEXT
12	Ring Main Unit Assembly- Short Circuit rating	TEXT
13	Ring Main Unit Assembly- Short Circuit rating Breaking Symmetrical for 3 Sec. in	TEXT
14	Ring Main Unit Assembly- Short Circuit rating Breaking Asymmetrical for 3 Sec. in KA	TEXT
15	Ring Main Unit Assembly- Short Circuit rating Short time for 3 Sec. in KA.	TEXT
16	Ring Main Unit Assembly- Insulation Level	TEXT
17	Ring Main Unit Assembly- Insulation Level Impulse withstand in KV peak	TEXT
18	Ring Main Unit Assembly- Insulation Level 1 Minute 50 Hz. Voltage withstand in KV rms	TEXT
19	Ring Main Unit Assembly- Internal arc rating for 1 sec. in kV	TEXT
20	Ring Main Unit Assembly- Internal arc rating for 1 sec. in kV	TEXT
21	Ring Main Unit Assembly- Construction : Material and Size of Inner Enclosure	TEXT
22	Ring Main Unit Assembly- Construction : Material and Size of Outer Enclosure	TEXT
23	Ring Main Unit Assembly- Degree of protection	TEXT
24	Ring Main Unit Assembly- Degree of protection Inner Enclosure	TEXT
25	Ring Main Unit Assembly- Degree of protection Outer Enclosure	TEXT
26	Ring Main Unit Assembly- The Ring Main Unit and accessories completely wire and tested at factory	TEXT
27	Ring Main Unit Assembly- Paint	TEXT
28	Ring Main Unit Assembly- Color	TEXT
29	Ring Main Unit Assembly- Thickness of coat, Min.	TEXT
30	Overall Dimensions and Weight Tolerance to Overall Dimension	TEXT

31	Overall Dimensions and Weight W x D x H, in mm	TEXT
32	Overall Dimensions and Weight Weight in kg	TEXT
33	Bus Bar Make	TEXT
34	Bus Bar Reference Standard	TEXT
35	Bus Bar Grade and Material	TEXT
36	Bus Bar Cross sectional area in sq. mm	TEXT
37	Bus Bar Size in mm	TEXT
38	Bus Bar Current Density in Amps/mm2, Max.	TEXT
39	Bus Bar Continuous Current in Amps	TEXT
40	Bus Bar Maximum temperature rise over an ambient temperature 50 degree	TEXT
41	Bus Bar Short time current rating for 3 Sec in kA rms	TEXT
42	Bus Bar Clearance in mm from bare bus bar- Phase to Phase for Isolator or as per design	TEXT
43	Bus Bar Clearance in mm from bare bus bar- Phase to Phase for VCB or as per design	TEXT
44	Bus Bar Clearance in mm from bare bus bar- Phase to Earth for Isolator or as per design	TEXT
45	Bus Bar Clearance in mm from bare bus bar- Phase to Earth for VCB or as per design	TEXT
46	Bus Supports Make	TEXT
47	Bus Supports Type	TEXT
48	Bus Supports Reference Standard	TEXT
49	Bus Supports Voltage Class in kV	TEXT
50	Bus Supports Creepage distance in mm or as per design	TEXT
51	Bus Supports Bus Bar support spacing in mm or as per design	TEXT
52	Filling SF6 gas pressure (Filling pressure at 20 degree Celsius), Min.	TEXT
53	Operating SF6 gas pressure at 20 degree Celsius, Min.	TEXT
54	VCB- Make	TEXT
55	VCB- Type	TEXT
56	VCB- Reference Standard	TEXT
57	VCB- Rated Voltage in kV	TEXT
58	VCB- Highest System Voltage in kV, Max.	TEXT
59	VCB- Type (Vacuum)	TEXT
60	VCB- Rated Frequency in Hz.	TEXT
61	VCB- No. of Poles	TEXT
62	VCB- Rated Current	TEXT
63	VCB- Maximum temperature rise over an ambient temperature 50 degree Celsius	TEXT
64	VCB- Maximum temperature rise over an ambient temperature 50 degree Celsius	TEXT

65	VCB- Rated operating Duty	TEXT
66	VCB- Rupturing capacity at rated voltage in MVA, Min.	TEXT
67	VCB- Breaking Capacity at rated voltage & operating duty- Symmetrical in kA rms	TEXT
68	VCB- Breaking Capacity at rated voltage & operating duty- Asymmetrical in kA rms	TEXT
69	VCB- Breaking Capacity at rated voltage & operating duty- Rated making current in kA peak	TEXT
70	VCB- Short time current for 3 sec in kA rms	TEXT
71	VCB- Transient Recovery Voltage- Rate of rise in kV/µs	TEXT
72	VCB- Transient Recovery Voltage- Peak Voltage in kV	TEXT
73	VCB- Insulation Level- Impulse Voltage with stand on 1.2/50 µs full wave in kV	TEXT
74	VCB- Insulation Level- 1 minute power frequency voltage withstand in kV	TEXT
75	VCB- Vacuum Bottle- Make	TEXT
76	VCB- Vacuum Bottle- Type	TEXT
77	VCB- Vacuum Bottle- Rated Voltage in kV	TEXT
78	VCB- Vacuum Bottle- Rated Current in Amps.	TEXT
79	VCB- Total breaking time for transient fault (CB + Relay+ trip coil) in ms	TEXT
80	VCB- Opening time No load condition in ms	TEXT
81	VCB- Opening time under SF6 gas low or vacuum loss condition in ms-	TEXT
82	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 100% Breaking capacity- Opening time (ms	TEXT
83	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 100% Breaking capacity- Arcing time (ms	TEXT
84	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 100% Breaking capacity- Total break time (ms	TEXT
85	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 60% Breaking capacity- Opening time (ms	TEXT
86	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 60% Breaking capacity- Arcing time (ms	TEXT
87	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 60% Breaking capacity- Total break time (ms	TEXT
88	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 30% Breaking capacity- Opening time (ms	TEXT
89	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 30% Breaking capacity- Arcing time (ms	TEXT
90	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 30% Breaking capacity- Total break time (ms	TEXT
91	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 10% Breaking capacity- Opening time (ms	TEXT
92	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 10% Breaking capacity- Arcing time (ms	TEXT
93	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 10% Breaking capacity- Total break time (ms	TEXT
94	VCB- Number of breaks per pole	TEXT

95	VCB- No of breaker operations permissible without requiring inspection replacement of contacts and other Main parts- At 100% rated current	TEXT
96	VCB- No of breaker operations permissible without requiring inspection replacement of contacts and other Main parts- At 100% rated breaking current,	TEXT
97	VCB- Type of contacts- Main	TEXT
98	VCB- Type of contacts- Arcing	TEXT
99	VCB- Material of contacts- Main	TEXT
100	VCB- Material of contacts- Arching	TEXT
101	VCB- Material of contacts- Chromium / Silver plated	TEXT
102	VCB- Mechanical Endurance Test for Circuit Breaker, Number of operations	TEXT
103	VCB- Spring charging mechanism	TEXT
104	VCB- Operating mechanism for closing of Circuit Breaker- Type	TEXT
105	VCB- Operating mechanism for closing of Circuit Breaker- No of breaker	TEXT
106	VCB- Operating mechanism for closing of Circuit Breaker- Trip free or fixed trip	TEXT
107	VCB- Operating mechanism for closing of Circuit Breaker- Earthing for operating mechanism and metal parts	TEXT
108	VCB- Operating mechanism for closing of Circuit Breaker- Earth terminal size and material, Min.	TEXT
109	VCB- Operating mechanism for tripping of Circuit Breaker- Type	TEXT
110	VCB- Operating mechanism for tripping of Circuit Breaker- No of breaker operations stored	TEXT
111	VCB- Operating mechanism for tripping of Circuit Breaker- Trip free or fixed trip (V)	TEXT
112	VCB- Operating mechanism for tripping of Circuit Breaker- Earthing for operating mechanism and metal parts	TEXT
113	VCB- Operating mechanism for tripping of Circuit Breaker- Earth terminal size and material	TEXT
114	VCB- Operating mechanism for tripping of Circuit Breaker- Spring charging mechanism	TEXT
115	VCB- Operating mechanism for tripping of Circuit Breaker- Make	TEXT
116	VCB- Operating mechanism for tripping of Circuit Breaker- Type	TEXT
117	VCB- Operating mechanism for tripping of Circuit Breaker- Motor, Voltage and Watts	TEXT
118	VCB- Breaker Accessories- Mechanical safety Interlock	TEXT
119	VCB- Breaker Accessories- Automatic safety Interlock	TEXT
120	VCB- Breaker Accessories- Operational Interlock	TEXT
121	VCB- Breaker Accessories- Emergency manual trip	TEXT
122	VCB- Breaker Accessories- Operation counter	TEXT
123	VCB- Breaker Accessories- Spring charge / discharge indicator	TEXT
124	VCB- Breaker Accessories- Manual spring charging facility	TEXT
125	Impact load on foundation design (to include dead load plus impact value on Closing at maximum interrupting rating) in kg	TEXT
126	Isolator- Make	TEXT

127	Isolator- Type	TEXT
128	Isolator- Reference standard	TEXT
129	Isolator- Nominal Voltage in KV	TEXT
130	Isolator- Highest System Voltage in kV, Max.	TEXT
131	Isolator- Rated Frequency in HZ	TEXT
132	Isolator- No. Of poles	TEXT
133	Isolator- Rated Current in Amps	TEXT
134	Isolator- Maximum temperature rise over an ambient temperature 50 degree	TEXT
135	Isolator- Operation	TEXT
136	Isolator- Rupturing Capacity at rated voltage	TEXT
137	Isolator- Maximum over voltage factor when switching off Loaded feeder cable in kA	TEXT
138	Isolator- No. of isolator operation permissible without requiring inspection, replacement of contacts and other main parts- Mechanical Endurance in Number of operations	TEXT
139	Isolator- No. of isolator operation permissible without requiring inspection, replacement of contacts and other main parts- At 100% rated making current in Number of operations	TEXT
140	Isolator- No. of isolator operation permissible without requiring inspection, replacement of contacts and other main parts- At 100% rated making current in Number of operations	TEXT
141	Isolator- Isolator provided with the Mechanical safety- Mechanical ON and OFF Indication	TEXT
142	Isolator- Isolator provided with the Mechanical safety- Cable Earth Indication	TEXT
143	Isolator- Isolator provided with the Mechanical safety- Operational Counter	TEXT
144	Isolator- Isolator provided with the Mechanical safety- Manual Spring Charging facility	TEXT
145	Current Transformer- Make	TEXT
146	Current Transformer- Reference standard	TEXT
147	Current Transformer- Type	TEXT
148	Current Transformer- Nominal Voltage in KV	TEXT
149	Current Transformer- Highest System Voltage in kV, Max.	TEXT
150	Current Transformer- Rated Frequency in HZ	TEXT
151	Current Transformer Ratio	TEXT
152	Current Transformer- Short circuit withstand- Short time current for 3 sec. in kA rms	TEXT
153	Current Transformer- Short circuit withstand- Dynamic current in kA peak, Min.	TEXT
154	Current Transformer- Class of insulation	TEXT
155	Current Transformer- Basic insulation level in kV	TEXT
156	Current Transformer- Maximum temperature rise over an ambient temperature 50 degree Celsius.	TEXT
157	Current Transformer- Class of Accuracy	TEXT

158	Current Transformer- Metering Core	TEXT
159	Current Transformer- Protection Core	TEXT
160	Current Transformer- Rated Burden	TEXT
161	Current Transformer- Over Current Rating in %	TEXT
162	Current Transformer- Continuous Over Load in %	TEXT
163	Metering Voltage(Potential) Transformer- Make	TEXT
164	Metering Voltage(Potential) Transformer- Reference standard	TEXT
165	Metering Voltage(Potential) Transformer- Type	TEXT
166	Metering Voltage(Potential) Transformer- Nominal Voltage in KV	TEXT
167	Metering Voltage(Potential) Transformer- Highest System Voltage in kV, Max.	TEXT
168	Metering Voltage(Potential) Transformer- Rated Frequency in HZ	TEXT
169	Metering Voltage(Potential) Transformer- Voltage Transformer Ratio	TEXT
170	Metering Voltage(Potential) Transformer- Rated Primary Voltage in kV	TEXT
171	Metering Voltage(Potential) Transformer- Rated Secondary Voltage in V	TEXT
172	Metering Voltage(Potential) Transformer- Rated Burden in VA	TEXT
173	Metering Voltage(Potential) Transformer- Accuracy Class	TEXT
174	Metering Voltage(Potential) Transformer- Insulation Class	TEXT
175	Metering Voltage(Potential) Transformer- Voltage Factor	TEXT
176	Metering Voltage(Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Primary Winding Induced Test in kV rms	TEXT
177	Metering Voltage(Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Secondary Winding in kV rms	TEXT
178	Metering Voltage(Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Rated Impulse Voltage in kV peak	TEXT
179	Auxiliary Voltage (Potential) Transformer- Make	TEXT
180	Auxiliary Voltage (Potential) Transformer- Reference standard	TEXT
181	Auxiliary Voltage (Potential) Transformer- Type	TEXT
182	Auxiliary Voltage (Potential) Transformer- Nominal Voltage in KV	TEXT
183	Auxiliary Voltage (Potential) Transformer- Highest System Voltage in kV, Max.	TEXT
184	Auxiliary Voltage (Potential) Transformer- Rated Frequency in HZ	TEXT
185	Auxiliary Voltage (Potential) Transformer- Voltage Transformer Ratio	TEXT
186	Auxiliary Voltage (Potential) Transformer- Rated Primary Voltage in kV	TEXT
187	Auxiliary Voltage (Potential) Transformer- Rated Secondary Voltage in V	TEXT
188	Auxiliary Voltage (Potential) Transformer- Rated Burden in VA	TEXT
189	Auxiliary Voltage (Potential) Transformer- Voltage Regulation in %	TEXT
190	Auxiliary Voltage (Potential) Transformer- Insulation Class	TEXT
191	Auxiliary Voltage (Potential) Transformer- Voltage Factor	TEXT

192	Auxiliary Voltage (Potential) Transformer- Application & Construction Type	TEXT
193	Auxiliary Voltage (Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Primary Winding Induced Test in kV rms	TEXT
194	Auxiliary Voltage (Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Secondary Winding in kV	TEXT
195	Auxiliary Voltage (Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Rated Impulse Voltage in kV peak	TEXT
196	Numerical Protection Relay- Make	TEXT
197	Numerical Protection Relay- Type and Model	TEXT
198	Numerical Protection Relay- Reference Standard	TEXT
199	Numerical Protection Relay- Type and Model	TEXT
200	Numerical Protection Relay- Current Transformer Secondary Input to Relay	TEXT
201	Numerical Protection Relay- Operating Curve Type	TEXT
202	Numerical Protection Relay- Auxiliary Supply	TEXT
203	Numerical Protection Relay- Rated Frequency in HZ	TEXT
204	Numerical Protection Relay- Over Current Protection- Low set Over Current protection	TEXT
205	Numerical Protection Relay- Over Current Protection- High set Over Current protection	TEXT
206	Numerical Protection Relay- Earth Fault Protection- Low set Earth Fault	TEXT
207	Numerical Protection Relay- Earth Fault Protection- High set Earth Fault protection	TEXT
208	Numerical Protection Relay- Mounting	TEXT
209	Numerical Protection Relay- Mounting Dimensions, W X L X H in mm	TEXT
210	Numerical Protection Relay- Operational Indicator	TEXT
211	Numerical Protection Relay- Contact Details	TEXT
212	Numerical Protection Relay- Self-diagnosis feature	TEXT
213	Numerical Protection Relay- Password protection	TEXT
214	Numerical Protection Relay- Communication Protocol	TEXT
215	Numerical Protection Relay- Event / fault record, Min.	TEXT
216	Numerical Protection Relay- Setting groups	TEXT
217	Numerical Protection Relay- Circuit Breaker control available	TEXT
218	Tripping Coil- Make	TEXT
219	Tripping Coil- Type	TEXT
220	Tripping Coil- DC Voltage in Volt	TEXT
221	Tripping Coil- Maximum Tripping Current at rated voltage in Amps.	TEXT
222	Tripping Coil- Minimum Permissible voltage variation in %	TEXT
223	Tripping Coil- Power at Voltage in Watts	TEXT
224	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Reference Standard	TEXT

225	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Make	TEXT
226	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Auxiliary supply Voltage	TEXT
227	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Class of Accuracy	TEXT
228	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Type of Display	TEXT
229	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - Instantaneous parameters	TEXT
230	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - Block Load Profile parameters	TEXT
231	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - Billing Profile Parameters	TEXT
232	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - Name Plate details programmable Parameters	TEXT
233	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - Event Conditions	TEXT
234	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - All logging parameters for each of the event condition for 3 / 4W	TEXT
235	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Make	TEXT
236	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Type and Model	TEXT
237	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Operating point/Current short circuit in Amp	TEXT
238	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Operating point/Current earth fault in Amp	TEXT
239	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Response Time in	TEXT
240	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Auto Reset Time in Hrs	TEXT
241	Battery Charger- Make	TEXT
242	Battery Charger- Type and Model	TEXT
243	Battery Charger- Input AC Voltage in V	TEXT
244	Battery Charger- Rated Frequency in Hz	TEXT
245	Battery Charger- Output DC Voltage in V	TEXT
246	Battery Charger- Current Rating in Amps	TEXT
247	Battery Charger- Output DC Voltage for charger- Boost Mode in V	TEXT
248	Battery Charger- Output DC Voltage for charger- Float Mode in V	TEXT
249	Battery Charger- Operating Temperature in degree Celsius	TEXT
250	Battery Charger- Temperature Compensation	TEXT
251	Battery Charger- Short Circuit and Overload Protection	TEXT

252	Battery Charger- High Voltage Isolation	TEXT
253	Battery Charger- Efficiency	TEXT
254	Battery Charger- Mounting Arrangement	TEXT
255	Battery Charger- Dimensions, W x D x H in mm	TEXT
256	Battery- Make	TEXT
257	Battery- Type	TEXT
258	Battery- Ah Efficiency	TEXT
259	Battery- Self-Discharge	TEXT
260	Battery- Operating Temperature	TEXT
261	Battery- Voltage (V)	TEXT
262	Battery- Ah Capacity	TEXT
263	Manometer with Non Return Valve- Make	TEXT
264	Manometer with Non Return Valve- Type and Model	TEXT
265	Manometer with Non Return Valve- Material	TEXT
266	Manometer with Non Return Valve- Accuracy of calibration pressure	TEXT
267	Manometer with Non Return Valve- Pressure Element	TEXT
268	Manometer with Non Return Valve- Dial	TEXT
269	Manometer with Non Return Valve- Pointer	TEXT
270	Manometer with Non Return Valve- Window	TEXT
271	Manometer with Non Return Valve- Gas pressure low signal	TEXT
272	Manometer with Non Return Valve- Non Return Valve(NRV) Material	TEXT
273	Indoor cable terminations kits- Make	TEXT
274	Indoor cable terminations kits- Type	TEXT
275	Indoor cable terminations kits- Materials	TEXT
276	Indoor cable terminations kits- Cable Size	TEXT
277	Indoor cable terminations kits- Height of each Cable box from ground level	TEXT
278	Indoor cable terminations kits- Arrangement for mounting an extra cable at incoming and outgoing side box of Bus bar	TEXT
279	Indoor cable terminations kits- Arrangement for mounting an extra cable at outgoing side box of transformer / feeder	TEXT
280	Automatic Water Level Controller- Make	TEXT
281	Automatic Water Level Controller- Type and Model	TEXT
282	Automatic Water Level Controller- Position of Automatic Water Level Controller	TEXT
283	Automatic Water Level Controller- Auxiliary contacts	TEXT
284	Breaker Tripping and Load break Isolator opening due to water level increases; signals to Control room	TEXT
285	Name Plate- Material	TEXT

286	Name Plate- Thickness	TEXT
287	Name Plate- Size	TEXT
288	Painting- Inside	TEXT
289	Painting- Outside	TEXT
290	Danger Board- Reference Standard	TEXT
291	Danger Board- Material	TEXT
292	Danger Board- Thickness in mm, Min.	TEXT
293	Danger Board- Size H x L in mm	TEXT
294	Type Test- Following Type Test carried out within 5 years at NABL laboratories in India or equivalent International Laboratories, Yes / No	TEXT
295	Type Test- Short time Current withstand test and peak current withstand test.	TEXT
296	Type Test- Lightening Impulse voltage with-stand test	TEXT
297	Type Test- Temperature rise test.	TEXT
298	Type Test- Short Circuit current making and breaking tests.	TEXT
299	Type Test- Power frequency voltage withstand test (dry).	TEXT
300	Type Test- Capacitive current switching test confirming to IEC.	TEXT
301	Type Test- Mechanical operation test.	TEXT
302	Type Test- Measurement of the resistance of the main circuit.	TEXT
303	Type Test- Degree of protection of Inner enclosure and outer enclosure	TEXT
304	Type Test- Switch, circuit breaker, earthing switch making capacity	TEXT
305	Type Test- Switch, circuit breaker breaking capacity.	TEXT
306	Type Test- Internal arc withstand Test for Inner Enclosure and Cable Chamber.	TEXT
307	Type Test- Checking of partial discharge on complete unit.	TEXT
308	Type Test- Guarantee of Ring Main Units and accessories supplied against this specification (66 months from the date of receipt at the consignee's Stores Center or 60 months from the date of commissioning)	TEXT

22 kV SF6, Motorized, SCADA Compatible RING MAIN UNIT 2 Isolator + 4 Breaker

GTP Order Sequence	GTP Parameters	Date Type
1	Ring Main Unit Assembly- Out door	TEXT
2	Ring Main Unit Assembly- Manufacturer’s Name & address	TEXT
3	Ring Main Unit Assembly- Manufacturer’s Type Designation	TEXT
4	Ring Main Unit Assembly- Model	TEXT
5	Ring Main Unit Assembly- Configurations(Type)	TEXT
6	Ring Main Unit Assembly- Configurations	TEXT
7	Ring Main Unit Assembly- Reference Standard	TEXT

8	Ring Main Unit Assembly- Rated Voltage in kV	TEXT
9	Ring Main Unit Assembly- Highest System Voltage in kV, Max.	TEXT
10	Ring Main Unit Assembly- Number of Phase	TEXT
11	Ring Main Unit Assembly- Frequency in HZ.	TEXT
12	Ring Main Unit Assembly- Short Circuit rating	TEXT
13	Ring Main Unit Assembly- Short Circuit rating Breaking Symmetrical for 3 Sec. in	TEXT
14	Ring Main Unit Assembly- Short Circuit rating Breaking Asymmetrical for 3 Sec. in KA	TEXT
15	Ring Main Unit Assembly- Short Circuit rating Short time for 3 Sec. in KA.	TEXT
16	Ring Main Unit Assembly- Insulation Level	TEXT
17	Ring Main Unit Assembly- Insulation Level Impulse withstand in KV peak	TEXT
18	Ring Main Unit Assembly- Insulation Level 1 Minute 50 Hz. Voltage withstand in KV rms	TEXT
19	Ring Main Unit Assembly- Internal arc rating for 1 sec. in kV	TEXT
20	Ring Main Unit Assembly- Internal arc rating for 1 sec. in kV	TEXT
21	Ring Main Unit Assembly- Construction : Material and Size of Inner Enclosure	TEXT
22	Ring Main Unit Assembly- Construction : Material and Size of Outer Enclosure	TEXT
23	Ring Main Unit Assembly- Degree of protection	TEXT
24	Ring Main Unit Assembly- Degree of protection Inner Enclosure	TEXT
25	Ring Main Unit Assembly- Degree of protection Outer Enclosure	TEXT
26	Ring Main Unit Assembly- The Ring Main Unit and accessories completely wire and tested at factory	TEXT
27	Ring Main Unit Assembly- Paint	TEXT
28	Ring Main Unit Assembly- Color	TEXT
29	Ring Main Unit Assembly- Thickness of coat, Min.	TEXT
30	Overall Dimensions and Weight Tolerance to Overall Dimension	TEXT
31	Overall Dimensions and Weight W x D x H, in mm	TEXT
32	Overall Dimensions and Weight Weight in kg	TEXT
33	Bus Bar Make	TEXT
34	Bus Bar Reference Standard	TEXT
35	Bus Bar Grade and Material	TEXT
36	Bus Bar Cross sectional area in sq. mm	TEXT
37	Bus Bar Size in mm	TEXT
38	Bus Bar Current Density in Amps/mm2, Max.	TEXT
39	Bus Bar Continuous Current in Amps	TEXT
40	Bus Bar Maximum temperature rise over an ambient temperature 50 degree	TEXT
41	Bus Bar Short time current rating for 3 Sec in kA rms	TEXT

42	Bus Bar Clearance in mm from bare bus bar- Phase to Phase for Isolator or as per design	TEXT
43	Bus Bar Clearance in mm from bare bus bar- Phase to Phase for VCB or as per design	TEXT
44	Bus Bar Clearance in mm from bare bus bar- Phase to Earth for Isolator or as per design	TEXT
45	Bus Bar Clearance in mm from bare bus bar- Phase to Earth for VCB or as per design	TEXT
46	Bus Supports Make	TEXT
47	Bus Supports Type	TEXT
48	Bus Supports Reference Standard	TEXT
49	Bus Supports Voltage Class in kV	TEXT
50	Bus Supports Creepage distance in mm or as per design	TEXT
51	Bus Supports Bus Bar support spacing in mm or as per design	TEXT
52	Filling SF6 gas pressure (Filling pressure at 20 degree Celsius), Min.	TEXT
53	Operating SF6 gas pressure at 20 degree Celsius, Min.	TEXT
54	VCB- Make	TEXT
55	VCB- Type	TEXT
56	VCB- Reference Standard	TEXT
57	VCB- Rated Voltage in kV	TEXT
58	VCB- Highest System Voltage in kV, Max.	TEXT
59	VCB- Type (Vacuum)	TEXT
60	VCB- Rated Frequency in Hz.	TEXT
61	VCB- No. of Poles	TEXT
62	VCB- Rated Current	TEXT
63	VCB- Maximum temperature rise over an ambient temperature 50 degree Celsius	TEXT
64	VCB- Maximum temperature rise over an ambient temperature 50 degree Celsius	TEXT
65	VCB- Rated operating Duty	TEXT
66	VCB- Rupturing capacity at rated voltage in MVA, Min.	TEXT
67	VCB- Breaking Capacity at rated voltage & operating duty- Symmetrical in kA rms	TEXT
68	VCB- Breaking Capacity at rated voltage & operating duty- Asymmetrical in kA rms	TEXT
69	VCB- Breaking Capacity at rated voltage & operating duty- Rated making current in kA peak	TEXT
70	VCB- Short time current for 3 sec in kA rms	TEXT
71	VCB- Transient Recovery Voltage- Rate of rise in kV/µs	TEXT
72	VCB- Transient Recovery Voltage- Peak Voltage in kV	TEXT
73	VCB- Insulation Level- Impulse Voltage with stand on 1.2/50 µs full wave in kV	TEXT
74	VCB- Insulation Level- 1 minute power frequency voltage withstand in kV	TEXT

75	VCB- Vacuum Bottle- Make	TEXT
76	VCB- Vacuum Bottle- Type	TEXT
77	VCB- Vacuum Bottle- Rated Voltage in kV	TEXT
78	VCB- Vacuum Bottle- Rated Current in Amps.	TEXT
79	VCB- Total breaking time for transient fault (CB + Relay+ trip coil) in ms	TEXT
80	VCB- Opening time No load condition in ms	TEXT
81	VCB- Opening time under SF6 gas low or vacuum loss condition in ms-	TEXT
82	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 100% Breaking capacity- Opening time (ms	TEXT
83	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 100% Breaking capacity- Arcing time (ms	TEXT
84	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 100% Breaking capacity- Total break time (ms	TEXT
85	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 60% Breaking capacity- Opening time (ms	TEXT
86	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 60% Breaking capacity- Arcing time (ms	TEXT
87	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 60% Breaking capacity- Total break time (ms	TEXT
88	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 30% Breaking capacity- Opening time (ms	TEXT
89	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 30% Breaking capacity- Arcing time (ms	TEXT
90	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 30% Breaking capacity- Total break time (ms	TEXT
91	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 10% Breaking capacity- Opening time (ms	TEXT
92	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 10% Breaking capacity- Arcing time (ms	TEXT
93	VCB- Opening time under SF6 gas low or vacuum loss condition in ms At 10% Breaking capacity- Total break time (ms	TEXT
94	VCB- Number of breaks per pole	TEXT
95	VCB- No of breaker operations permissible without requiring inspection replacement of contacts and other Main parts- At 100% rated current	TEXT
96	VCB- No of breaker operations permissible without requiring inspection replacement of contacts and other Main parts- At 100% rated breaking current,	TEXT
97	VCB- Type of contacts- Main	TEXT
98	VCB- Type of contacts- Arcing	TEXT
99	VCB- Material of contacts- Main	TEXT
100	VCB- Material of contacts- Arching	TEXT
101	VCB- Material of contacts- Chromium / Silver plated	TEXT
102	VCB- Mechanical Endurance Test for Circuit Breaker, Number of operations	TEXT
103	VCB- Spring charging mechanism	TEXT
104	VCB- Operating mechanism for closing of Circuit Breaker- Type	TEXT

105	VCB- Operating mechanism for closing of Circuit Breaker- No of breaker	TEXT
106	VCB- Operating mechanism for closing of Circuit Breaker- Trip free or fixed trip	TEXT
107	VCB- Operating mechanism for closing of Circuit Breaker- Earthing for operating mechanism and metal parts	TEXT
108	VCB- Operating mechanism for closing of Circuit Breaker- Earth terminal size and material, Min.	TEXT
109	VCB- Operating mechanism for tripping of Circuit Breaker- Type	TEXT
110	VCB- Operating mechanism for tripping of Circuit Breaker- No of breaker operations stored	TEXT
111	VCB- Operating mechanism for tripping of Circuit Breaker- Trip free or fixed trip (V)	TEXT
112	VCB- Operating mechanism for tripping of Circuit Breaker- Earthing for operating mechanism and metal parts	TEXT
113	VCB- Operating mechanism for tripping of Circuit Breaker- Earth terminal size and material	TEXT
114	VCB- Operating mechanism for tripping of Circuit Breaker- Spring charging mechanism	TEXT
115	VCB- Operating mechanism for tripping of Circuit Breaker- Make	TEXT
116	VCB- Operating mechanism for tripping of Circuit Breaker- Type	TEXT
117	VCB- Operating mechanism for tripping of Circuit Breaker- Motor, Voltage and Watts	TEXT
118	VCB- Breaker Accessories- Mechanical safety Interlock	TEXT
119	VCB- Breaker Accessories- Automatic safety Interlock	TEXT
120	VCB- Breaker Accessories- Operational Interlock	TEXT
121	VCB- Breaker Accessories- Emergency manual trip	TEXT
122	VCB- Breaker Accessories- Operation counter	TEXT
123	VCB- Breaker Accessories- Spring charge / discharge indicator	TEXT
124	VCB- Breaker Accessories- Manual spring charging facility	TEXT
125	Impact load on foundation design (to include dead load plus impact value on Closing at maximum interrupting rating) in kg	TEXT
126	Isolator- Make	TEXT
127	Isolator- Type	TEXT
128	Isolator- Reference standard	TEXT
129	Isolator- Nominal Voltage in KV	TEXT
130	Isolator- Highest System Voltage in kV, Max.	TEXT
131	Isolator- Rated Frequency in HZ	TEXT
132	Isolator- No. Of poles	TEXT
133	Isolator- Rated Current in Amps	TEXT
134	Isolator- Maximum temperature rise over an ambient temperature 50 degree	TEXT
135	Isolator- Operation	TEXT
136	Isolator- Rupturing Capacity at rated voltage	TEXT

137	Isolator- Maximum over voltage factor when switching off Loaded feeder cable in kA	TEXT
138	Isolator- No. of isolator operation permissible without requiring inspection, replacement of contacts and other main parts- Mechanical Endurance in Number of operations	TEXT
139	Isolator- No. of isolator operation permissible without requiring inspection, replacement of contacts and other main parts- At 100% rated making current in Number of operations	TEXT
140	Isolator- No. of isolator operation permissible without requiring inspection, replacement of contacts and other main parts- At 100% rated making current in Number of operations	TEXT
141	Isolator- Isolator provided with the Mechanical safety- Mechanical ON and OFF Indication	TEXT
142	Isolator- Isolator provided with the Mechanical safety- Cable Earth Indication	TEXT
143	Isolator- Isolator provided with the Mechanical safety- Operational Counter	TEXT
144	Isolator- Isolator provided with the Mechanical safety- Manual Spring Charging facility	TEXT
145	Current Transformer- Make	TEXT
146	Current Transformer- Reference standard	TEXT
147	Current Transformer- Type	TEXT
148	Current Transformer- Nominal Voltage in KV	TEXT
149	Current Transformer- Highest System Voltage in kV, Max.	TEXT
150	Current Transformer- Rated Frequency in HZ	TEXT
151	Current Transformer Ratio	TEXT
152	Current Transformer- Short circuit withstand- Short time current for 3 sec. in kA rms	TEXT
153	Current Transformer- Short circuit withstand- Dynamic current in kA peak, Min.	TEXT
154	Current Transformer- Class of insulation	TEXT
155	Current Transformer- Basic insulation level in kV	TEXT
156	Current Transformer- Maximum temperature rise over an ambient temperature 50 degree Celsius.	TEXT
157	Current Transformer- Class of Accuracy	TEXT
158	Current Transformer- Metering Core	TEXT
159	Current Transformer- Protection Core	TEXT
160	Current Transformer- Rated Burden	TEXT
161	Current Transformer- Over Current Rating in %	TEXT
162	Current Transformer- Continuous Over Load in %	TEXT
163	Metering Voltage(Potential) Transformer- Make	TEXT
164	Metering Voltage(Potential) Transformer- Reference standard	TEXT
165	Metering Voltage(Potential) Transformer- Type	TEXT
166	Metering Voltage(Potential) Transformer- Nominal Voltage in KV	TEXT
167	Metering Voltage(Potential) Transformer- Highest System Voltage in kV, Max.	TEXT

168	Metering Voltage(Potential) Transformer- Rated Frequency in HZ	TEXT
169	Metering Voltage(Potential) Transformer- Voltage Transformer Ratio	TEXT
170	Metering Voltage(Potential) Transformer- Rated Primary Voltage in kV	TEXT
171	Metering Voltage(Potential) Transformer- Rated Secondary Voltage in V	TEXT
172	Metering Voltage(Potential) Transformer- Rated Burden in VA	TEXT
173	Metering Voltage(Potential) Transformer- Accuracy Class	TEXT
174	Metering Voltage(Potential) Transformer- Insulation Class	TEXT
175	Metering Voltage(Potential) Transformer- Voltage Factor	TEXT
176	Metering Voltage(Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Primary Winding Induced Test in kV rms	TEXT
177	Metering Voltage(Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Secondary Winding in kV rms	TEXT
178	Metering Voltage(Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Rated Impulse Voltage in kV peak	TEXT
179	Auxiliary Voltage (Potential) Transformer- Make	TEXT
180	Auxiliary Voltage (Potential) Transformer- Reference standard	TEXT
181	Auxiliary Voltage (Potential) Transformer- Type	TEXT
182	Auxiliary Voltage (Potential) Transformer- Nominal Voltage in KV	TEXT
183	Auxiliary Voltage (Potential) Transformer- Highest System Voltage in kV, Max.	TEXT
184	Auxiliary Voltage (Potential) Transformer- Rated Frequency in HZ	TEXT
185	Auxiliary Voltage (Potential) Transformer- Voltage Transformer Ratio	TEXT
186	Auxiliary Voltage (Potential) Transformer- Rated Primary Voltage in kV	TEXT
187	Auxiliary Voltage (Potential) Transformer- Rated Secondary Voltage in V	TEXT
188	Auxiliary Voltage (Potential) Transformer- Rated Burden in VA	TEXT
189	Auxiliary Voltage (Potential) Transformer- Voltage Regulation in %	TEXT
190	Auxiliary Voltage (Potential) Transformer- Insulation Class	TEXT
191	Auxiliary Voltage (Potential) Transformer- Voltage Factor	TEXT
192	Auxiliary Voltage (Potential) Transformer- Application & Construction Type	TEXT
193	Auxiliary Voltage (Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Primary Winding Induced Test in kV rms	TEXT
194	Auxiliary Voltage (Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Secondary Winding in kV	TEXT
195	Auxiliary Voltage (Potential) Transformer- One Minute Power Frequency Dry Withstand Voltage Rating- Rated Impulse Voltage in kV peak	TEXT
196	Numerical Protection Relay- Make	TEXT
197	Numerical Protection Relay- Type and Model	TEXT
198	Numerical Protection Relay- Reference Standard	TEXT
199	Numerical Protection Relay- Type and Model	TEXT
200	Numerical Protection Relay- Current Transformer Secondary Input to Relay	TEXT

201	Numerical Protection Relay- Operating Curve Type	TEXT
202	Numerical Protection Relay- Auxiliary Supply	TEXT
203	Numerical Protection Relay- Rated Frequency in HZ	TEXT
204	Numerical Protection Relay- Over Current Protection- Low set Over Current protection	TEXT
205	Numerical Protection Relay- Over Current Protection- High set Over Current protection	TEXT
206	Numerical Protection Relay- Earth Fault Protection- Low set Earth Fault	TEXT
207	Numerical Protection Relay- Earth Fault Protection- High set Earth Fault protection	TEXT
208	Numerical Protection Relay- Mounting	TEXT
209	Numerical Protection Relay- Mounting Dimensions, W X L X H in mm	TEXT
210	Numerical Protection Relay- Operational Indicator	TEXT
211	Numerical Protection Relay- Contact Details	TEXT
212	Numerical Protection Relay- Self-diagnosis feature	TEXT
213	Numerical Protection Relay- Password protection	TEXT
214	Numerical Protection Relay- Communication Protocol	TEXT
215	Numerical Protection Relay- Event / fault record, Min.	TEXT
216	Numerical Protection Relay- Setting groups	TEXT
217	Numerical Protection Relay- Circuit Breaker control available	TEXT
218	Tripping Coil- Make	TEXT
219	Tripping Coil- Type	TEXT
220	Tripping Coil- DC Voltage in Volt	TEXT
221	Tripping Coil- Maximum Tripping Current at rated voltage in Amps.	TEXT
222	Tripping Coil- Minimum Permissible voltage variation in %	TEXT
223	Tripping Coil- Power at Voltage in Watts	TEXT
224	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Reference Standard	TEXT
225	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Make	TEXT
226	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Auxiliary supply Voltage	TEXT
227	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Class of Accuracy	TEXT
228	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Type of Display	TEXT
229	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - Instantaneous parameters	TEXT
230	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - Block Load Profile parameters	TEXT
231	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - Billing Profile Parameters	TEXT

232	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - Name Plate details programmable Parameters	TEXT
233	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - Event Conditions	TEXT
234	HT three phase four wire CT / PT operated 1 Amps fully Static & AMR compatible TOD Tri - vector Energy Meter- Measuring Parameters as per MSEDCL Specification - All logging parameters for each of the event condition for 3 / 4W	TEXT
235	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Make	TEXT
236	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Type and Model	TEXT
237	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Operating point/Current short circuit in Amp	TEXT
238	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Operating point/Current earth fault in Amp	TEXT
239	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Response Time in	TEXT
240	Fault Passage Indicator (FPI) on Short Circuit and Earth fault- Auto Reset Time in Hrs	TEXT
241	Battery Charger- Make	TEXT
242	Battery Charger- Type and Model	TEXT
243	Battery Charger- Input AC Voltage in V	TEXT
244	Battery Charger- Rated Frequency in Hz	TEXT
245	Battery Charger- Output DC Voltage in V	TEXT
246	Battery Charger- Current Rating in Amps	TEXT
247	Battery Charger- Output DC Voltage for charger- Boost Mode in V	TEXT
248	Battery Charger- Output DC Voltage for charger- Float Mode in V	TEXT
249	Battery Charger- Operating Temperature in degree Celsius	TEXT
250	Battery Charger- Temperature Compensation	TEXT
251	Battery Charger- Short Circuit and Overload Protection	TEXT
252	Battery Charger- High Voltage Isolation	TEXT
253	Battery Charger- Efficiency	TEXT
254	Battery Charger- Mounting Arrangement	TEXT
255	Battery Charger- Dimensions, W x D x H in mm	TEXT
256	Battery- Make	TEXT
257	Battery- Type	TEXT
258	Battery- Ah Efficiency	TEXT
259	Battery- Self-Discharge	TEXT
260	Battery- Operating Temperature	TEXT
261	Battery- Voltage (V)	TEXT
262	Battery- Ah Capacity	TEXT

263	Manometer with Non Return Valve- Make	TEXT
264	Manometer with Non Return Valve- Type and Model	TEXT
265	Manometer with Non Return Valve- Material	TEXT
266	Manometer with Non Return Valve- Accuracy of calibration pressure	TEXT
267	Manometer with Non Return Valve- Pressure Element	TEXT
268	Manometer with Non Return Valve- Dial	TEXT
269	Manometer with Non Return Valve- Pointer	TEXT
270	Manometer with Non Return Valve- Window	TEXT
271	Manometer with Non Return Valve- Gas pressure low signal	TEXT
272	Manometer with Non Return Valve- Non Return Valve(NRV) Material	TEXT
273	Indoor cable terminations kits- Make	TEXT
274	Indoor cable terminations kits- Type	TEXT
275	Indoor cable terminations kits- Materials	TEXT
276	Indoor cable terminations kits- Cable Size	TEXT
277	Indoor cable terminations kits- Height of each Cable box from ground level	TEXT
278	Indoor cable terminations kits- Arrangement for mounting an extra cable at incoming and outgoing side box of Bus bar	TEXT
279	Indoor cable terminations kits- Arrangement for mounting an extra cable at outgoing side box of transformer / feeder	TEXT
280	Automatic Water Level Controller- Make	TEXT
281	Automatic Water Level Controller- Type and Model	TEXT
282	Automatic Water Level Controller- Position of Automatic Water Level Controller	TEXT
283	Automatic Water Level Controller- Auxiliary contacts	TEXT
284	Breaker Tripping and Load break Isolator opening due to water level increases; signals to Control room	TEXT
285	Name Plate- Material	TEXT
286	Name Plate- Thickness	TEXT
287	Name Plate- Size	TEXT
288	Painting- Inside	TEXT
289	Painting- Outside	TEXT
290	Danger Board- Reference Standard	TEXT
291	Danger Board- Material	TEXT
292	Danger Board- Thickness in mm, Min.	TEXT
293	Danger Board- Size H x L in mm	TEXT
294	Type Test- Following Type Test carried out within 5 years at NABL laboratories in India or equivalent International Laboratories, Yes / No	TEXT
295	Type Test- Short time Current withstand test and peak current withstand test.	TEXT
296	Type Test- Lightening Impulse voltage with-stand test	TEXT

297	Type Test- Temperature rise test.	TEXT
298	Type Test- Short Circuit current making and breaking tests.	TEXT
299	Type Test- Power frequency voltage withstand test (dry).	TEXT
300	Type Test- Capacitive current switching test confirming to IEC.	TEXT
301	Type Test- Mechanical operation test.	TEXT
302	Type Test- Measurement of the resistance of the main circuit.	TEXT
303	Type Test- Degree of protection of Inner enclosure and outer enclosure	TEXT
304	Type Test- Switch, circuit breaker, earthing switch making capacity	TEXT
305	Type Test- Switch, circuit breaker breaking capacity.	TEXT
306	Type Test- Internal arc withstand Test for Inner Enclosure and Cable Chamber.	TEXT
307	Type Test- Checking of partial discharge on complete unit.	TEXT
308	Type Test- Guarantee of Ring Main Units and accessories supplied against this specification (66 months from the date of receipt at the consignee's Stores Center or 60 months from the date of commissioning)	TEXT

Required Documents (To be uploaded online)				
Sr. No.	NAME	SECTION	ITEM	DESCRIPTION
1	Valid Type test certificates from NABL accredited lab such as CPRI / ERDA	Technical Section	22 kV SF6, Motorized,	Valid Type test certificates from NABL accredited lab such as CPRI / ERDA
2	Valid Type test certificates from NABL accredited lab such as CPRI / ERDA	Technical Section	22 kV SF6, Motorized,	Valid Type test certificates from NABL accredited lab such as CPRI / ERDA
3	ISO certification for quantity management system & environmental management system.	Commercial Section		ISO certification for quantity management system & environmental management system.
4	Documentary evidence in respect of classification of your unit as per Micro, Small and Medium	Commercial Section		UDYAM Certificate
5	Certificate from Charted Accountant for not having controlling stake in more than one entity as p	Commercial Section		Certificate from Charted Accountant for not having controlling stake in more than one entity as per attached Format-3.
6	Annexure-F regarding declaration of legal litigations.	Commercial Section		Annexure-F regarding declaration of legal litigations.
7	Annexure-I regarding declaration along with the bid that bidder is not blacklisted/ debarred	Commercial Section		Annexure-I regarding declaration along with the bid that bidder is not blacklisted/ debarred
8	Self-undertaking on bidders letter head for not approaching any one for undue influence as per at	Commercial Section		Self-undertaking on bidders letter head for not approaching any one for undue influence as per attached Format-2.
9	GST registration certificate.	Commercial Section		GST registration certificate.
10	EMD receipt / E Bank Guarantee only	Commercial Section		EMD receipt / E Bank Guarantee only
11	Power of attorney.	Commercial Section		Power of attorney.
12	Certificate for No Deviation as per attached Format-5	Commercial Section		Certificate for No Deviation as per attached Format-5
13	Profit & Loss satement and Balance sheet for last 3 FYs	Commercial Section		Profit & Loss satement and Balance sheet for last 3 FYs.
14	Copies of orders executed by the bidder and the Certificate from the purchaser / Electricity Distrib	Commercial Section		Copies of orders executed by the bidder and the Certificate from the purchaser / Electricity Distribution Utility, Electricity Distribution Franchisee, Public Sector Undertaking for supply of quant
15	Order Completion certificate from Electricity Distribution Utility,	Commercial Section		Order Completion certificate from Electricity Distribution Utility, Electricity Distribution Franchisee, Public Sector Undertaking or

Sr. No.	NAME	SECTION	ITEM	DESCRIPTION
	Electricity Distribution Franchi			Documentary evidence for supply of material to Electricity Dist
16	Offered quantity and delivery schedule on bidders letter head.	Commercial Section		Offered quantity and delivery schedule on bidders letter head.
17	List of in house manufacturing and testing facilities as well as quality control set up	Commercial Section		List of in house manufacturing and testing facilities as well as quality control set up.
18	List of orders in hand certified by Chartered Engineer/accountant	Commercial Section		List of orders in hand
19	Turnover certificate	Commercial Section		Documentary evidence showing annual turnover of last 3 years, certified by Chartered Accountant for preceding three financial years. (As per attached Format-4)