WEST BENGAL STATE ELECTRICITY DISTRIBUTION COMPANY LIMITED
(A Govt. of West Bengal Enterprise)
OFFICE OF THE DIVISIONAL MANAGER : BARASAT DIVISION

BARASAT DIVISIONAL OFFICE
4 JESSORE ROAD(E).CHAMPADALI MORE, BARASAT- 700124
Phone No. :8900798058
e-mail : dm.barasat@wbsedcl.in

NOTICE INVITING e-TENDER

NIT No. : DM/BSTD/Tender/2024-25/36 **Date: 23.12.2024**

Tender is invited by the Divisional Manager, Barasat Division, North 24 Parganas, WBSEDCL, 4 Jessore Road(E), Champadali More, Barasat, Kolkata-700124 through electronic tendering (e-tendering) from manufacturers/Distributors for sample approval, supply, delivery and installation of the following item as per schedule detailed below.

DESCRIPTION OF ITEMS TO BE SUPPLIED AND INSTALLED:

Sl No.	Description of Item	Unit	Qty	Estimated Cost	Earnest Money	Completion Time	Name & Address of the Concerned Office
1	DC DISTRIBUTION SW BOARD 30V	Nos	3	Rs. 210000/- (Rupees Two Lacs Ten Thousand Only)	2% (Two Percent) of the Estimated Cost	30 days (From the date of issuance of Purchase Order)	Barasat Division, North 24 Parganas, WBSEDCL, 4 Jessore Road(E), Champadali More, Barasat, Kolkata-700124
2	AC DISTRIBUTION SW BOARD 415/230 V	Nos	3	Rs. 300000/- (Rupees Three Lacs ONLY)	2% (Two Percent) of the Estimated Cost	30 days (From the date of issuance of Purchase Order)	Barasat Division, North 24 Parganas, WBSEDCL, 4 Jessore Road(E), Champadali More, Barasat, Kolkata-700124
Total Financial Involvement						**Rs. 5,10,000.00**	

Scope: - The materials are to be procured for Barasat Division. The supply of the materials will be directly at Barasat Divisional Store. Necessary Challan, E-Way Bills are to be provided at Barasat Divisional Store.

Delivery Address: Barasat Divisional Store, North 24 PGS, WBSEDCL, 4, Jessore Road (E) Champadali More, Kolkata- 700124

For e-filling of tender, intending bidder may download the tender documents from the website https://wbtenders.gov.in directly with the help of Digital Signature Certificate (DSC).

- Both Technical Bid and Financial Bid should be submitted in technical and financial folder concurrently and duly digitally signed by the prospective bidder through the website https://wbtenders.gov.in.

- Technical Document and Financial Bid should be submitted online on or before the 'Date & Time Schedule' stated in Serial Number (13).

- The FINANCIAL OFFER of the prospective bidder will be considered only if the TECHNICAL DOCUMENT is found qualified by the Tender Inviting Authority. The decision of the Tender Inviting Authority will be final and absolute in this respect. The list of Responsive and Non-Responsive Bidders will be displayed in the website.

Terms & conditions of the Tender Notice :

1. Eligibility criteria for participation in the tender:

1.1. Bonafide, experienced & resourceful Original Equipment Manufacturers/ Authorized Distributors who have successfully supplied same or similar nature of Electrical items to Govt., Semi Govt., Govt. undertaking Organizations, Govt. Enterprises etc. and also have satisfying credential criteria as specified in Sl no. 3 of the Table (Submission of Tenders) of Section- A (INSTRUCTION TO BIDDERS). Bidders are required to upload scanned copy of the following documents against the eligibility criteria

   I. Completion Certificate/Payment Certificate of the ordering authority i.f.o. the Bidder /OEM (Mandatory).
   II. Performance Certificate against the above (if any).
   III. Payment Certificate against the above (if any).

1.2. All intending Bidders are required to produce valid copies of current GST Registration certificates, Professional Tax (PT) receipt challan along with PAN Card / IT return & certificate of compliance of statutory obligations (to be documented through e-filing).

2. Successful bidder(s) shall have to mandatorily **create Vendor ID through WBSEDCL Web Portal Vendor Corner**, if not created earlier.

3. The bidder should submit **along with the offer** necessary documents in support of their previous supply. Of the items of the tender to WBSEDCL in earlier. Occasions and financial capabilities to the extent of the estimated financial amount of their offer.

4. a) No agent is allowed to participate in the Tender. Only Manufacturer or authorized distributor is allowed to participate in the bidding process.

b) Bid Specific Authorization certificate from the OEM is to be submitted by the bidder along with credential documents as per attached format.

5. **One Sample of Each Material is to be submitted at Barasat Divisional Store physically strictly as per the 'Date & Time Schedule' stated in Serial Number (13). The tag with the sample should contain the name of the sample along with the Brand name, name of the manufacturing company as well as the name of the vendor/bidder; for a valid tender, sample has to be approved by the Divisional Authority (Sample Approval Committee). The Financial Bid of the bidders, whose samples aren't approved, will not be opened for Financial Evaluation & henceforth they will be deemed disqualified. Rejected Samples can be taken away by the respective vendors. After LOA is awarded, the awardees can adjust the sample with the delivered material lot.**

6. **Validity of Bids**: Bids shall remain valid for a period not less than **120 (One hundred twenty) days** after date of opening of bids of the tender. Bids valid for a shorter period shall be rejected by the Tender Inviting Authority as non-responsive. If the bidder withdraws the bid before the period of bid validity without giving any satisfactory explanation for such withdrawals, the earnest money as deposited will be forfeited forthwith without assigning any reason thereof.

7. **The quoted rates should be inclusive of all taxes & duties (except GST), freight, incidental charges and any other charges up-to delivery of the Goods. The quoted rate should be excluding GST charges. GST will be paid as applicable.**

8. The ordered materials should be delivered within 30 days from the handover of the site; otherwise, penalty may be imposed as per rule of WBSEDCL for delay of delivery of ordered materials.

9. The necessary documents along with bill are to be submitted at Barasat Divisional Office. The SRV will be issued from Barasat Divisional Store, WBSEDCL.

10. At the time of placing purchase order, the quantity mentioned in the Tender Document may vary up to +/- 25%.

11. Other information as well as terms and conditions, which are not covered above, will be available in Instructions to Bidders, General Conditions of Contract of this tender and the Revised Purchase Policy of WBSEDCL.

12. **Delivery of material:** The materials as mentioned in schedule have to be delivered to the location of delivery as mentioned in the scope.

13. **Schedule of Key Dates & Time:**

Sl. No.	Particulars	Date & Time
01.	Date of uploading of N.I.T and Tender Documents (online). [Publishing date]	03.01.2025 after 10:00 hrs
02.	Documents sell / download start date (online).	03.01.2025 after 10.00 hrs
03.	Bid Submission upload start date (online)	03.01.2025 after 10:00 hrs
04.	Bid Submission upload end date (online)	20.01.2025 up to 10:00 hrs
05.	Online submission of Earnest Money Deposit	22.01.2025 up to 10:00 hrs
06.	Date for opening of technical bid (online) for the Bidders	22.01.2025 after 10:00 hrs
07.	Sample submission Start Date	27.01.2025 after 10:00 hrs
08.	Sample submission End date	31.01.2025 upto 10:00 hrs
09.	Date of uploading the Final List of Technically Qualified Bidders after Technical Bid Evaluation (online).	To be intimated later
10.	Date, for opening of Financial Bid (online).	To be intimated later

14. **Earnest Money Deposit (EMD):** The amount of Earnest money @2% of the estimated amount through online by RTGS ICICI payment Gateway. No interest shall be payable by WBSEDCL on the above EMD.

15. **Forfeiture of Earnest Money Deposit (EMD):** Earnest money deposit / bid guarantee shall be forfeited in case of the following situations:
    - If during the period of validity, the bidder withdraws / modifies its bid as a whole or in part.
    - If the bidder deviates from any clarification/confirmation given by him sub-sequent to submission of his bid.
    - In the case of successful bid, if the bidder fails:
        - To accept LOA / Order unconditionally and sign contract.
        - To furnish contract performance bond as per standard proforma.

16. WBSEDCL reserves its right to take decision keeping its financial interest. The Purchase Policy of WBSEDCL along with the provisions of Vendor Rating & Holiday Listing, as effective from 01.09.2012 and the subsequent amendment effective from 18.03.2013 will be applicable.

17. If the offer is submitted without or inadequate Earnest Money, the bid will not be opened. In case of incomplete offer, the tender will be liable for rejection and Earnest Money Deposit will be forfeited.

18. **Right to reject Bids:**

    I) WBSEDCL reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to award of the Order, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders the reason for WBSEDCL's action.

    II) Any evidence of unfair Trade Practices including over charging, price fixing, cartel etc. as defined in various statutes will automatically disqualify the bidders.

    III) Any bidder against whom FIR/Complaint is lodged with Police by WBSEDCL/Other Utility/Govt. Semi Govt. or Govt. undertaking Dept. shall not be eligible to participate in the bidding process.

19. **Cancellation of Tender:** WBSEDCL reserves the right to cancel the tender at any time under unavoidable circumstances in interest of WBSEDCL, without owing any explanation to the Bidders.

20. The company reserves the right to accept or reject any or all the tenders without assigning any reason whatsoever.

21. Any bidder against whom FIR/Complaint is lodged with Police by WBSEDCL/Other Utility/Govt. Semi Govt. or Govt. undertaking Dept. shall not be eligible to participate in the bidding process.

22. **WARRANTY PERIOD:** Warranty Period of supplied material should be one year from the date of delivery of the said materials. In case of any adverse report from store or defect found in site, materials have to be replaced or it would affect the vendor rating.

23. **Additional Performance Security which shall be equal to 10% of the tendered amount must be furnished by the successful bidder if the accepted bid value is 80% or less of the estimate put to tender (L1 bid in the range of -20% to -80%). The additional Performance Security shall be submitted in the form of Bank Guarantee from any scheduled bank valid for a period of 1 (one) year, as per specific format which will be provided by the Tendering Authority, before issuance of the Work Order. This is in compliance of the terms of Memorandum No. 4608-F(Y) dated 18.07.2018 of the Finance department, Government of West Bengal.**

24. **Terms of Payment:**

a) 90% payment of bill will be made within 45 (Forty-Five) days from the date of submission of bill against: Original receipted Challan/Invoice signed by an officer in the rank Sr. SAE/Jr. Manager (Stores) attached to the respective stores. And

b) Balance 10% payment will be made within 45 (Forty-Five) days of submission of bills along with SRV after expiry of warranty period.

c) Work Order & Payment of work will depend on availability of fund. Intending bidders may consider this criterion while submission of tender and quoting their rate through online.

25. **PAYING AUTHORITY**: The Manager (F&A), Barasat Division, WBSEDCL, will be the Paying Authority.

26. **CONSIGNEE:** The JE(E) Gr-I & Store In Charge, Barasat Divisional Store, WBSEDCL will be the consignee.

27. **LIQUIDATED DAMAGE FOR DELAY IN DELIVERY:** The time of delivery (successful offer for inspection) of the equipment/materials are to be treated as an essence of the contract and the WBSEDCL reserves the right to repudiate the contract, if the equipment / materials are not physically delivered within stipulated period as per physical delivery clause. But WBSEDCL may at its discretion waive this condition and accept the material with imposition of liquidated damage @ 1/2%of the Value of the materials beyond the schedule delivery period for each week of delay Subject to **maximum of 5%of the particular lot and accept the goods beyond the stipulated period**.

28. Any further information along with WBSEDCL's Revised Purchase Policy may be had from the Website**:** **www.wbsedcl.in** and the following office:

Office of the Chief Engineer (Procurement & Contracts),
West Bengal State Electricity Distribution Company Limited,
Vidyut Bhavan, 4th Floor,
Bidhannagar,Kolkata - 700091.
Phone No. 033-2319-7563

29. Documents to be submitted in Technical bid- Please refer Sl no. 4.1 of Section A of "Instruction to Bidders" of NIT.

30. **Bid evaluation will be conducted only on the basis of final documents uploaded by the bidders within last date and time of online submission. Under no circumstances the bidder will be given any further chance to upload any document (online) after opening of technical bid.**

31. **Technically qualified bidders must submit sample at Barasat Divisional Store(Anantapur) within the specified dates as mentioned in the "Schedule of key dates and time". If any bidder fails to submit sample within the specified date, the bidder will be rejected although found qualified in technical round. The sample material has to conform to the technical specification & quality assurance form. Annexure-II along with quality assurance form is mandatory.**

Instructions to Bidders

A. *General guidance for e-Tendering*

Instructions / Guidelines for tenders for electronic submission of the tenders online have been annexed for assisting the contractors to participate in e-Tendering.

1. **Registration of Vendors:**
   Any contractor willing to take part in the process of e-Tendering will have to be enrolled & registered with the Government e-Procurement system, through logging on to https://wbtenders.gov.in (the web portal). The contractor is to click on the link for e-Tendering site as given on the web portal.

2. **Digital Signature certificate (DSC):**
   Each contractor is required to obtain a class-II or Class-III Digital Signature Certificate (DSC) for submission of tenders, from the approved service provider of the National Information's Centre (NIC) on payment of requisite amount. Details are available at the Web Site stated in Clause-2 of Guideline to Bidder DSC is given as a USB e-Token.

3. The vendors can search & download NIT & Tender Documents electronically from computer once he logs on to the website mentioned in Clause 2 using the Digital Signature Certificate. This is the only mode of collection of Tender Documents.

4. **Submission of Tenders:**
   Tenders are to be submitted through online to the website in two folders at a time for each work, one in Technical Proposal & the other in Financial Proposal before the prescribed date & time using the Digital Signature Certificate (DSC) The documents are to be uploaded (virus scanned copy) duly Digitally Signed. The documents will get encrypted (transformed into non readable formats).

4.1. ***Technical proposal****:*

The Technical proposal should contain scanned copies of the following in two covers (folders).

4.1.1. Non-Statutory / Technical Document Cover File Containing:

a) Copy of Audit Reports / IT return for last 3 (three) financial years,
b) PAN.
c) GST registration certificate.
d) Professional Tax Clearance Certificate / Professional Tax (PT) deposit receipt challan for the last month.
e) Requisite Credential Certificate for delivery of One no. similar nature of item(s) in any Govt. department having a magnitude of at least 50 % (Fifty percent) of the estimated amount of the work put to tender within last 7 (Seven) years.
f) Requisite Credential Certificate for delivery of at least Two nos. similar nature of item(s) in any Govt. department having a magnitude of at least 40 % (Forty percent) of the estimated amount of the work put to tender within last 7 (Seven) years.
g) Requisite Credential Certificate for delivery of at least Three nos. similar nature of item(s) in any Govt. department having a magnitude of at least 30% (Thirty percent) of the estimated amount of the work put to tender within last 7 (Seven) years.

Note: Failure of submission of any of the above mentioned documents will render the tender liable to be rejected for both statutory & non statutory cover.

THE ABOVE STATED NON-STATUTORY / TECHNICAL DOCUMENTS SHOULD BE ARRANGED IN THE FOLLOWING MANNER

Click the check boxes beside the necessary documents in the My Document list and then click the tab "**Submit None Statutory Documents**" to send the selected documents to Non Statutory folder. Next Click the tab "**Click to Encrypt and upload**" and then click the "**Technical**" Folder to upload the Technical Documents.

	Category Name	**Sub-category Description**	**Details**
01.	Certificates	Certificates	a) PAN Card. b) Current Professional Tax (PT) submission Challan cleared up to last month. Application for such addressed to the competent authority may also be considered. c) GST Registration Certificate.
02.	Company Detail(s)	Company Detail	(a) Trade Licence (b) Certificate of incorporation of company (if applicable).
03.	Credentials	Credential	a) Documents in support of supply of the similar items to WBSEDCL/Govt./Semi Govt./PSU, in earlier occasions within last 7(Seven) financial years as mentioned below: 1. 1 No PO & Delivery Challan or Payment Certificate of the similar Materials having financial involvement of not less than 50% of the estimated value of the said item**(s).** OR 2. 2 Nos PO & Delivery Challan or Payment Certificate of the similar Materials having financial involvement of not less than 40% of the estimated value of the said item/item(s). OR 3. 3 Nos PO & Delivery Challan or Payment Certificate of the similar Materials having financial involvement of not less than 30% of the estimated value of the said item/item(s). b) Documents in support of credential: Delivery Challan(System generated) or payment Certificate must be submitted.
04.	Financial Information	Financial Information	a) Annual Audited Financial Report for last 3 (three) years to be submitted for verification in respect of bidders for whom Audit of Accounts is mandatory. For whom Audit of Accounts is not mandatory, they shall submit copy of Income Tax Returns along with related enclosures (Form 3CA and Form 3CB) for last 3 years. [Non-statutory documents] b) Average annual turnover during last 3 years shall not be less than 30% of the estimated cost. c) Working capital in the year, proceeding the year of bid submission shall not be less than 30% of the estimated cost.

			d) In case documents certifying credit facility from a scheduled bank is submitted, the requirement given in clause above (c) shall be judged by adding available credit facility and working capital taken together.
05.	Earnest Money	Earnest Money	Online payment gateway only. Payment acknowledgment receipt should be uploaded with other requisite documents.

4.2 Financial proposal:

The financial proposal should contain the following documents in one cover (folder) i.e. Bill of quantities (BOQ). The vendor is to quote the rate (Offering above / below / at par) online through Computer in the space marked for quoting rate in the BOQ.

Only downloaded copies of the above documents are to be uploaded virus scanned & Digitally Signed by the

5. Conditional and incomplete tender:

Conditional and incomplete tenders are liable to summary rejection.

6. Validity of Tender and Offer:

The offer against tender should remain valid for a minimum period of 120 days from the next day of opening of the tender. However, WBSEDCL may, on the merit of case, request for extension of validity of the offer for a further suitable period without any change in terms & conditions of the Offer.

7. Opening and evaluation of tender:

7.1 Opening of Technical Proposal

i. Technical proposals will be opened by the Tender Inviting Authority or his authorized Representative electronically from the website stated above, using their Digital Signature Certificate only for those bidders whose sample check is validated.

ii. Intending bidders may remain present if they so desire.

7.2 Techno-commercial Evaluation of Tender

i. While evaluation, the Tender Inviting Authority or his authorized representative may summon the bidders and seek clarification / information or additional documents or original hard copy of any of the documents already submitted and if these cannot be produced within the stipulated timeframe, their proposals will be liable for rejection.

ii. The summary list of bidders, whose bids will be found techno-commercially eligible, will be uploaded in the web portals. Date of opening of financial bid will be intimated to the Techno-commercially qualified bidders.

7.3 Opening and evaluation of Financial Proposal

i. Financial proposals of the bidders declared techno-commercially eligible, will be opened electronically by the Tender Inviting Authority from the web portal stated above on the prescribed date.

ii. After opening of the financial proposal the preliminary summary result containing interlaid, name of bidders and the rates quoted by them will be uploaded.

iii. The Tender Accepting Authority may ask any of the bidders to submit analysis to justify the rate quoted by that bidders.

8. Revision/withdrawal of Financial Proposal by the bidder after opening of Technical Proposal of the tender will not be allowed if it is not sought by the Tender Inviting Authority.

9. Acceptance of Tender

Lowest valid rate should normally be accepted. However, the Tender Accepting Authority does not bind himself to do so and reserves the right to reject any or all the tenders, for valid reasons.

10. Purchase Order

WBSEDCL will communicate acceptance of tender to the successful bidder by a Purchase Order. The successful bidder shall communicate the acceptance of the purchase order.

11. Concession

No price preference will be allowed to any bidder based on the size of the industry or its geographic location. Co-operative Society, will not be considered with separate status.

12. Holiday Listing and Vendor Rating

Holiday Listing & Vendor Rating will be applicable according to the "Holiday Listing & Vendor Rating" policies of the Revised Purchase Policy, which is posted in website of WBSEDCL(www,wbsedcl.in).Performance of the bidders, who supplied materials/equipment to WBSEDCL previously, will be evaluated for their Vendor Rating according to the said Vendor Rating policy and their Vender Rating will be taken into consideration at the time of evaluation of Technical and Financial Proposals of the tender.

13. Return of Earnest Money of the unsuccessful bidder(s)

The Earnest Money of all tenderers other than the successful tenderer(s) may be refunded automatically from Tender Portal after issuance of Purchase Order to the successful tenderer(s).

14. **Bid evaluation will be conducted only on the basis of final documents uploaded by the bidders within last date and time of online submission. Under no circumstances the bidder will be given any further chance to upload any document (online) after opening of technical bid.**

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Annexure 1

Self Declaration

I/We on behalf of …… (Name of bidder agency) do hereby declare that I/We have quoted rate for supply of the mentioned materials for the e-tender id **DM/BSTD/Tender/2024-25/36 dt: 23.12.2024**

I/We also declare that I/We shall successfully complete the work in scheduled time maintaining the terms & conditions of Warranty of NIT Clause no. 22 if ranked as L1 bidder of the tender.

Yours faithfully,

Signature of authorized
Representative of the bidder agency
with official seal

Format for bid specification authorization

(Authorization should be submitted on the Letter head of OEM)

To,
The Divisional Manager
Barasat Division
WBSEDCL
ADMINISTRATIVE BUILDING,
04 JESSORE ROAD, CHAMPADALI MORE,
BARASAT - 700124

Subject: Bid specification authorization.

This is to certify that M/S_____ Address of _____ is authorized to quote the tender with NIT NO. _____ on behalf of the _____(OEM).

They are authorized to carry out the order for the _____ product, and we assure you to extend full support if an order is placed with them.

Thanking You.

Annexure-II

Technical Specifications and Quality Assurance - Compliance

(To be submitted as part of Technical bid)
(on Company Letter-head)
Tender Document No. **DM/BSTD/Tender/2024-25/36** **Dated: 23.12.2024** Title: GOODS
Bidder's Name_____
[Address and Contact Details]
Bidder's Reference No._____ Date…….

Note to Bidders: Highlight in this form deviations, if any, from Section VII: Technical Specifications and Quality Assurance, maintaining the same numbering and structure. Submit copies of original test certificates for standards/ specification tests on the Goods and other relevant documents like technical data, literature, drawings, etc. Add additional details not covered elsewhere in your bid in this regard.

Excel Sheet format for technical specification and quality assurance compliance:

Sl No.	PARAMETER NAME	COMPLIED (YES/NO)

N.B. All the participating bidders are instructed to fill up the attached excel sheet as per the format shown above for technical specification and quality assurance compliance, failing which leads to disqualification of the bid of the concerned bidder.

We shall comply with, abide by, and accept without variation, deviation, or reservation all Technical Specifications, Quality Assurance and Warranty requirements in the Tender Document, except those mentioned above. If mentioned elsewhere in our bid, contrary terms and conditions shall not be recognised and shall be null and void.

……..
(Signature with date)
……..
(Name and designation)
Duly authorized to sign bid for and on behalf of
…….
[name & address of Bidder and seal of company]
DA: Relevant documents like technical data, literature, drawings, and other documents

Title of Item	DC DISTRIBUTION BOARD TECHNICAL SPECIFICATION

Sl No	PARAMETER NAME	COMPLIED (YES/NO)
1	Enclosure fabricated from M.S sheet of 2.0 mm thickness	
2	All sheet metal work has undergone 7 tank chemical processing and powder coating	
3	Colour of enclosure from inside is white	
4	Colour of enclosure from outside is as per our specification	
5	Busbar is of electrolytic tinned copper of size 1.6 sq. mm with 200 A rating and without joints.	
6	Make and type of switch Fuse Disconnector Unit	
7	No. of 1 ph 36 A DP MCBs provided	
8	Make and type of 1 Ph 36 A DP MCBs	
9	No. of 1ph 16 A DP MCBs provided	
10	Make and type of 1 Ph 16 A DP MCBs	
11	All MCBs are type tested and having short circuit rating of Min. 6 KA at 0.7 pf lag	
12	Ammeter is having range of 0-15 A and accuracy class 1.0	
13	Make and type of Ammeter	
14	Voltmeter is having range of 0-40V and accuracy class 1.0	
15	Make and type of voltmeter	
16	Indicating lamps are of LED type with 22.5 mm dia.	
17	Wiring between MCBs and terminal connectors is with specified stranded copper wire as per specification	
18	Terminal connectors are of bolted type provided as per specification	
19	Detachable gland plate is provided with knockout type arrangement for providing cable glands at the bottom	
20	Cable glands as per requirements provided separately	

Title of Item	AC DISTRIBUTION BOARD TECHNICAL SPECIFICATION	
Sl No	**PARAMETER NAME**	**COMPLIED (YES/NO)**
1	Enclosure fabricated from M.S sheet of 2.0 mm thickness	
2	All sheet metal work has undergone 7 tank chemical processing and powder coating	
3	Colour of enclosure from inside is white	
4	Colour of enclosure from outside is as per our specification	
5	Busbar is of electrolytic tinned copper of size ----- sq. mm with 200 A rating and without joints	
6	Make and type of switch Fuse Disconnector Unit	
7	Resin cast LT CTs are of ratio 200/5/1 with burden 10 VA and accuracy class 1	
8	No. of 3 ph 32 A TPN MCBs provided	
9	Make and type of 3 Ph 32 A TPN MCBs	
10	No. of 1 ph 32 A DP MCBs provided	
11	Make and type of 1 Ph 32 A DPMCBs	
12	No. of 1ph 16 A DP MCBs provided	
13	Make and type of 1 Ph 16 A DP MCBs	
14	No. of 1ph 10A DP MCBs provided	
15	Make and type of 1 Ph 10 A DP MCBs	
16	All MCBs are type tested and having short circuit rating of Min. 6 KA at 0.7 pf lag	
17	Ammeter is having range of 0-200 A with auxiliary current rating of 200/5 A and accuracy class 0.5	
18	Make and type of Ammeter	
19	Voltmeter is having range of 0-600 V and accuracy class 0.5	
20	Make and type of voltmeter	
21	Make, type and rating of Ammeter selector switch	
22	Make, type and rating of Voltmeter selector switch	
23	Indicating lamps are of LED type with 22.5 mm dia.	
24	Wiring between MCBs and terminal connectors is with specified stranded copper wire as per specification	
25	Terminal connectors are of bolted type provided as per specification	
26	Detachable gland plate is provided with knockout type arrangement for providing	

	cable glands at the bottom	
27	Cable glands as per requirements provided separately	

West Bengal State Electricity Distribution Co. Ltd.

TECHNICAL SPECIFICATIONS

FOR

415 V A. C. DISTRIBUTION BOARD

(FOR 33 KV SUB STATIONS)

1.0 SCOPE:

This specification covers the design, manufacturing, testing at works and supply of Indoor type A.C. Distribution Boards for power supply to yard lighting, Battery charger, 33 kV substation equipments, compressors etc. The system shall be AC 3 Phase, 4 Wire, 433 Volts, 50 HZ with effectively grounded neutral.

2.0 SERVICE CONDITIONS:

Equipment to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

2.1	Maximum ambient temperature (Degree C)	50
2.2	Maximum temperature in shade (Degree C)	45
2.3	Minimum temperature of Air in shade (Degree C)	3.5
2.4	Relative Humidity (Percent)	10-100
2.5	Maximum annual rain fall (mm)	1450
2.6	Maximum wind pressure (Kg/ sq.mm)	150
2.7	Maximum altitude above mean sea level (metre)	1000
2.8	Isokeraunic level (Days per year)	50
2.9	Seismic level (Horizontal Acceleration)	0.3g
2.10	Moderately Hot and Humid tropical climate conducive to rust and fungus growth	-

3.0 STANDARDS:

3.1 Components mounted on the ACDB shall confirm to the latest revisions of the following standards:

A	IS: 13947	**Degree of protection provided for enclosure for low voltage control gear and switchgear & MCCB**
B	IS 5	Painting
C	IS: 13947/1993 Part-III amended up to date	Switch Fuse Disconnector unit
D	IS 2705 amended up to date	CTs
E	IS 8828/1996 amended upto date	MCB
F	IS 1248	Indicating instruments
G	IS 375	Wiring
H	IS: 13703/1993 Part-I & II	HRC Fuses

4.0 GENERAL TECHNICAL PARTICULARS:

These A C Distribution Boards shall be supplied as per this specification.

4.1 Rated Voltage:

Rated voltage for the Distribution Board and its constituent items like Switch Fuse Disconnector unit, MCBs, busways etc. shall be 3 phase 4 wire A.C. 433 volts, 50 Hz with solidly grounded neutral. The supply voltage may vary by ± 10% of rated voltage. All the equipments used in the Board shall operate satisfactorily at this voltage variation.

4.2 General Requirements:

4.2.1 Each Distribution Board shall be free standing floor mounted or wall mounted having compact design. The Board shall be closed, dust protected, weather proof and shall be made vermin proof with a special type lining e.g. Neoprene gasket, around the edges of the doors. The distribution board shall comply degree of protection IP 43. MCBs shall be operating vertically upward for ON/OFF operation. The entire distribution board shall have uniform finish and shall be sturdy. The distribution boards shall be of modular construction with provision for complete compartmentalisation of all feeders. In case of floor mounted type, it shall be free-standing, dead front type comprising dust-tight and vermin proof sheet steel cabinets suitable for indoor installation. The doors of cabinets shall be lockable. Handle shall be made of reputed make. The DB shall be provided with single door in front having 2 nos. hinges which should be suitable for movement of 120 degree and 2 no. knobs to be provided on the door corners. All instruments and control devices shall be mounted on the front of cabinets and fully wired to the terminal blocks. All switches provided on the distribution board shall be on front side of the cabinets, operable from outside.

4.2.2 Each Distribution Board shall be made out of at least 2.0 mm thick cold rolled steel sheet, suitably reinforced to provide flat level surface. Size as per attached diagram(1800mmX1700mmX500mm). Gland plate shall be 3.0mm thick. No welds, rivets, hinges or bolts shall be visible from outside. The doors shall be fitted with double leaf neoprene rubber gaskets.

4.2.3 All cables shall enter and leave from bottom. Suitable cable terminal blocks with cable lugs shall be provided inside each cabinet for the incoming and outgoing cables. The terminals shall be serially numbered to

facilitate installation and maintenance. Main busbars shall be accommodated in busbar chambers and cable alleys arranged by their side. Compression type cable glands shall be provided to hold the cables to avoid any pressure or tension on the terminal block connections. The terminal blocks shall be easily accessible for inspection and checking. Panels shall have cable supports and metallic clips for supporting power and control cables for internal wiring of the panels.

4.2.4 The busbars shall consist of tinned electrolytic copper of ample cross-sectional area, suitable for carrying their rated continuous current without their temperature exceeding 85 deg C. The busbars shall be continuous throughout each section. The busbars shall have current rating to suit the requirements corresponding to the loads incident thereon under the various operating conditions and shall withstand the applicable voltage and maximum short circuit stress. The busbars shall be insulated from supporting structure by means of durable non-hygroscopic, non-combustible and non-tracking polyester fibreglass material or porcelain. Busbars shall be encased in heat-shrunk sleeves of insulating material which shall be suitable for the operating temperature of busbars during normal service. The busbar joints shall be provided with removable thermosetting plastic shrouds.

The busbars shall be housed in totally enclosed busbar chambers. The incoming connections from the busbar to the various feeders shall be so designed as not to disturb cable connections and to ensure safety to the operating and maintenance personnel and to facilitate working outside any outgoing module without the need for switching off in-feed to the adjacent modules, as far as possible. The phase and neutral busbar shall be of high conductivity, adequate uniform cross section and current density shall not be more than 1.6 Amp/sq. mm.

A cable alley preferably 230 mm wide shall be provided in each vertical section for taking cables into the compartments.

4.2.5 All doors shall be provided with mechanical interlocking arrangements along with keys. The distribution board shall have no door on rear side.

4.2.6 Danger board (Caution Plate) shall be fitted suitably on inner door of the DB. Danger board shall be of 100x100 mm size with details as per WBSEDCL standard format.

4.2.7 The AC boards shall be provided with the following equipments wherever applicable:

i. Busbars of adequate rating.

ii. Terminal arrangement with necessary equipment for connecting the incoming supply.

iii. Voltage and current measurement in the incomer feeder.

iv. Outgoing modules with switch / MCB units of adequate capacity for the outgoing feeders and 20% spare feeder units of each rating.

v. Necessary cable glands and terminal blocks.

v. Adequate number of spare terminals on terminal blocks for external connections.

vi. The number of outgoing feeders from AC boards shall be such that each substation equipment is fed by separate feeder with 20% as spare.

4.2.8 The ventilating louvers should be covered from inside by a perforated sheet or wire mesh.

4.2.9 All sheet metal used for DB shall undergo seven tank mechanical/ chemical cleaning process & painting shall be done using powder coating process. Colour of the Paint shall be admiral gray as per shade no. 632 of IS 5 on exterior and white from interior sides.

5.0 **MAJOR COMPONENTS**:

5.1 Incoming cable for ACDB shall be terminated on terminal connectors provided at the bottom. Connection between incomer terminals and Switch Fuse Disconnector unit shall be with 50 sq. mm copper cable. Outgoing of Switch Fuse Disconnector unit shall be connected with MCBs with 35 square mm copper cable.

For all 32 A rated MCBs, 16 sq.mm. stranded cable shall be used. For all 16A rated MCBs, 10 sq.mm. copper cable shall be used.

All MCBs, cable used in the DB shall be of reputed make and ISI marked.

5.2 Incoming circuit:

Incoming circuit shall have one no. 3 phase, 433 volt Switch Fuse Disconnector unit of nominal current rating of 200Amps conforming to IS: 13947/1993 ammended up to date and fitted with HRC fuses and 3 No. LT resin cast CTs having CT ratio of 200/5/1A with burden 10VA & accuracy class 1. Switch Fuse Disconnector unit shall be of reputed make.

To receive incoming cable, one no. 4 way bolted type connector of suitable

size shall be provided. Provision for one kWH meter (3 ph,4 wire) of flush mounted type with complete wiring and connected CTs shall be made in the panel.

Incoming cable for incomer LT XLPE, 3 ½ C, 120 sq. mm shall be provided by WBSEDCL.

5.3 Outgoing circuits:

Sr. No.	Feeder Rating	Cable size	Purpose
1	TPN 32 A MCB	4 core 16 sq. mm LT PVC cable	a. Water supply b. Outdoor lights c. Yard light d. spare(2 nos.)
2	DP 32 A MCBs	4 core 16 sq. mm LT PVC cable	a. Indoor lights and indicating lamps b. Battery Charger1 c. battery Charger 2 d. spare
3	DP 16 A MCBs	4 core 10 sq. mm LT PVC cable	a. 33 kV Panel AC supply (2 nos.) b. 11 kV panel AC supply (2 nos.) c. Supply for RTU d. Supply for UPS e. spare(2 nos.)

5.3.1 Total 17 Nos. Outgoing circuits shall be provided as per the details given below.

MCBs shall comply following specifications as per IS 8828/1996.

a) Rated voltage & freq. shall be 240V & 50 Hz respectively for DP MCBs.
b) Rated current shall be 32A/16 A as mentioned above.

c) Rated short circuit capacity shall be min. 6 KA at 0.7 p.f. lag

d) Service short circuit capacity shall be 6KA as per table 15 of IS: 8828 /1996.
e) MCBs shall have fixed un adjustable time / current characteristics.
f) Under voltage release and shunt-trip release coils are not required. Only overload release and short circuit release shall be provided.
g) Tripping time shall be as per (clause No. 8.6.1) table 6 of IS: 8828 /1996. Tripping mechanism thermal magnetic type.
h) MCBs having precision moulded case and cover of flame retardant high strength thermo plastic material with high melting point, low water absorption, high dielectric strength and temperature with stand capacity shall be capable of carrying out given no. of operation cycles as per clause No. 9.11 of IS: 8828 /1996.
i) Limits of temperature rise shall be as per (clause No. 9.8) table 5 of IS: 8828/1996.
j) Standard range of instantaneous tripping shall be type 'B' as per (clause No.5.3.5) table 2 of IS: 8828 /1996.

5.3.2 All MCB outgoing terminals shall be terminated on terminal connectors provided at the bottom with suitable size of cable.

5.3.3 The enclosure shall be provided with proper earthing arrangement. Earthing arrangement shall consist of 2 G.I. Bolts of 12 mmX50mm (min.) with 2 spring/ plain washers and 2 check nuts.

5.3.4 PVC cable glands of adequate size shall be provided for all incoming and out going cables.

5.3.5 The moving contacts of all poles of multipole circuit breaker shall be so mechanically coupled that all poles, except the switched neutral, if any, make and break substantially together. Whether operated manually or automatically even if an overload occurs on one protected pole only.

A switched neutral pole shall open after and close before the protected pole(s). The mechanism should be quick make, quick break with trip free mechanism.

Both side terminal should be suitable for direct cabling as well as bus bar connection and should take wire up to cross section area of 25 sq.mm.

Detailed specification is tabulated below:-

Standard	IS:8828:96 & IEC:60898:2002
Type/Series	B&C
Rated Current(AC)	20A for SPN, 36A for TPN
Rated Voltage(AC) Volt	240/415
Rated short circuit breaking capacity kA	10
Ambient temperature(deg C)	-5 to +55

Protection class	IP-20

5.4 Indicating Instruments:

Principal requirements of indicating instruments are as follows:

5.4.1 Ammeter:

Ammeter shall comply the following requirements

Class of accuracy	1.0
Range	0-100 Amps
Mounting	Flush type
Size	96 x 96mm
Type	Analog
Operating Current	5/1 A from CT Secondary

5.4.2 Ammeter selector switch:

Ammeter Selector switch shall be a four-position rotary type with R, Y, B and 'OFF' positions marked clearly on 48 x 48 mm brushed aluminum plate with black handle. The Switch should be screw mounting type with finger touch proof terminals. Terminal wire should be inserted from the side of the switch terminal. Terminal screw must be captive to avoid misplace during maintenance. The switch shall be of 12 A rating with insulation level of 1100 V.

5.4.3 Volt Meter:

Voltmeter shall comply the following requirements

Class of accuracy	1.0
Mounting	Flush type
Size	96x 96 mm
Range	0-600 volts
Type	Analog

5.4.4 Volt Meter selector switch:

Voltmeter Selector switch shall be a seven-position rotary type (6 way & off) with 3 phase to phase & 3 phase to neutral position marked clearly on 48 x 48 mm brushed aluminium plate with black handle. The Switch should be screw mounting type with finger touch proof terminals. Terminal wire should be

inserted from the side of the switch terminal. Terminal screw must be captive to avoid misplace during maintenance. The switch shall be of 12 A rating with insulation level of 1100 V.

5.4.5 Indicating Lamps:

Indicating lamps shall be panel mounting type 23 mm with rear terminal connections having low wattage LEDs cluster type. Lamps shall have translucent lamp covers to diffuse lights, coloured red, yellow, green or blue as specified. The lamp cover shall be preferably of screw-on type, unbreakable and moulded from heat resisting fast coloured material. Conventional bulbs are not acceptable. The intensity of light should be minimum 100 milli cd at 20 mA. Indication lamp should be suitable to operate on 230 V AC.
Necessary wiring shall be provided accordingly.

5.4.6 MARKING

Each compartment shall be provided with legible and indelibly marked/ engraved name plate.
Name plates shall be white with black engraved letters. On top of each module, name plates with bold letters shall be provided for feeder designation. Each device shall also suitably marked for identification inside the panels. Name-plates with full and clear inscriptions shall be provided inside the panels for all isolating switches, links, fuse blocks, test blocks and cable terminals. Every switch shall be provided with a nameplate giving its function clearly. Switches shall also have clear inscriptions for each position indication e.g. 'ON' 'OFF' etc.

5.4.7 Earthing Arrangements:

Two nos. Earthing studs of galvanized M.S. 25 X 6 mm shall be provided for external earth connections at the bottom. These should be complete with plain washer, spring washer, nuts etc. Earthing Bolts must be welded to prevent removal of the same from the cabinet.

Flexible stranded copper connector (braided conductor) should be connected of copper equivalent 10 sq. Mm size between door and box enclosure. This flexible braided cable should be terminated using gland and proper size nut/bolts at both ends.

5.4.8 Mounting Clamps:

The CTs box, ACDB box are to manufacture with suitable mounting arrangement on wall/steel support by means of 4 nos. 25X6 mm size clamps having hole dia. 14mm, fixed over the body as per drawing.

5.4.9 Gland Plate:

The removable gland plate should be provided in the lower portion of the box to accommodate all brass glands(according to requirement) for incoming and outgoing cables.

5.4.10 Name Plate:

Aluminium sheet 2 mm engraved with details should be provided duly refitted over front door.

a. ACDB
b. P.O No.
c. 'Property of WBSEDCL'

6.0 CONTROL WIRING

Each ACDB shall be furnished completely factory wired upto terminal blocks ready for external connections.
All wires shall consist of 1100V grade PVC insulated flexible stranded copper wires with a cross-section of 2.5 sq. mm suitable for switchboard wiring and complying with the requirement of relevant IS. Each wire shall bear an identifying ferrule or tag at each end or connecting point.

Control cables for external connections shall consist of stranded copper wire with 1.5, 2.5, 4.0 sq. mm or higher cross-sectional areas and shall enter from the bottom.

All interconnecting/outgoing control wiring shall terminate on stud type terminals on terminal blocks. The terminals shall be marked with identification numbers to facilitate connections.

The terminal blocks shall be made of moulded, non-inflammable, plastic material and arranged to provided maximum accessibility for inspection and maintenance. All terminal block shall have transparent plastic cover.

The terminals shall be made of hard brass and diameter of not less than 6 mm. The studs shall be securely locked within the mounting base to prevent turning. The terminal blocks shall be provided with twenty(20) percent spare terminals. The terminals shall be suitable for connections through tinned copper crimped lugs.

Wiring shall be complete in all respect to ensure proper functioning of the control, protection and monitoring scheme.
Each wire shall be identified at both ends with permanent markers bearing wire numbers as per wiring diagram.

7.0 TYPE TEST CERTIFICATES:

MCBs & other components used in ACDB shall be fully type tested as per relevant IS and this specification. The successful Bidder shall furnish detailed type test reports before commencement of supply.

All the Type Tests shall be carried out from laboratories which are accredited by the National Board of Testing and Calibration Laboratories (NABL) of

Government of India such as CPRI Bangalore/ Bhopal, ERDA Baroda, to prove that the MCBs & other components used in ACDB meet requirements of the specification.

8.0 DRAWINGS:

Successful bidder shall submit the detailed drawings along with component details/makes etc. for necessary approval.

9.0 INSPECTION:

All tests and inspection shall be made at the place of manufacturer. The manufacturer shall provide reasonable testing and inspection facilities and co-operation without any charge to satisfy him that the material is being supplied is in accordance with this specification. The proto of ACDB shall be inspected & checked by Ordering Authority or his representative for approval before commencement of supply.

10.0 Preferred Make and Bill of Material:

Sl. No.	Ref.	Description	Make	Qty
01	200A, SFU	200A TPN switch Fuse Unit with 200A HRC Fuse link	Havell	01 No.
02	S1	32A TPN MCB	Havell	04 nos.
03	S2	32A DP MCB	Havell	04 nos.
04	S2	16A DP MCB	Havell	08 nos.
05	A	0-200A 96 sq. mm Ammeter, CTR-200/5A	AE	01 No.
06	V	0-600V 96 sq.mm Voltmeter	AE	01 No.
07	ASS	Voltmeter selector switch,10 A	KAYCEE	01 No.
08	VSS	Ammeter selector switch, 10A	KAYCEE	01 No.
09	CT	200/5A,5VA, Tape insulated Current Transformer	KAPPA	04 No.
10	R,Y,B	Indicating LED 230V AC(Red-01,Yellow-01 and Blue-01 no.)	VAISHNO	03 Nos.
11	CF1 & CF2	4A HRC Fuse link with base	GE	06 nos.
12	NL	Neutral Link.	GE	02 nos.

11.0 SCHEDULES:

The tenderer shall fill in the following schedules, which form part of the tender specification and order. If the schedules are not submitted duly filled in with the offer, the offer shall be liable for rejection.

Schedule 'A' - Guaranteed Technical Particulars.

Schedule 'B' - Tenderer's Experience

12.0 Deviations

Deviation from this specification, if any, shall be clearly bought out in the offer. Unless owner explicitly accepts such deviations, it shall be constructed that the offer fully complies with the specification.

SCHEDULE 'A'

GUARANTEED TECHNICAL PARTICULARS OF ACDB

Sr. No.	Parameter Name	
1.	Enclosure fabricated from M.S sheet of 2.0 mm thickness	Y/N
2.	All sheet metal work has undergone 7 tank chemical processing and powder coating	Y/N
3.	Colour of enclosure from inside is white	Y/N
4.	Colour of enclosure from outside is as per our specification	Y/N
5.	Busbar is of electrolytic tinned copper of size ----- sq. mm with 200 A rating and without joints	Y/N
6.	Make and type of switch Fuse Disconnector Unit	Y/N
7.	Resin cast LT CTs are of ratio 200/5/1 with burden 10 VA and accuracy class 1	Y/N
8.	No. of 3 ph 32 A TPN MCBs provided	Y/N
9.	Make and type of 3 Ph 32 A TPN MCBs	Y/N

10.	No. of 1 ph 32 A DP MCBs provided	Y/N
11.	Make and type of 1 Ph 32 A DPMCBs	Y/N
12.	No. of 1ph 16 A DP MCBs provided	Y/N
13.	Make and type of 1 Ph 16 A DP MCBs	Y/N
14.	No. of 1ph 10A DP MCBs provided	Y/N
15.	Make and type of 1 Ph 10 A DP MCBs	Y/N
16.	All MCBs are type tested and having short circuit rating of Min. 6 KA at 0.7 pf lag	Y/N
17.	Ammeter is having range of 0-200 A with auxiliary current rating of 200/5 A and accuracy class 0.5	Y/N
18.	Make and type of Ammeter	Y/N
19.	Voltmeter is having range of 0-600 V and accuracy class 0.5	Y/N
20.	Make and type of voltmeter	Y/N
21.	Make, type and rating of Ammeter selector switch	Y/N
22.	Make, type and rating of Voltmeter selector switch	Y/N
23.	Indicating lamps are of LED type with 22.5 mm dia.	Y/N
24.	Wiring between MCBs and terminal connectors is with specified stranded copper wire as per specification	Y/N
25.	Terminal connectors are of bolted type provided as per specification	Y/N
26.	Detachable gland plate is provided with knockout type arrangement for providing cable glands at the bottom	Y/N
27.	Cable glands as per requirements provided separately	Y/N

SCHEDULE 'B'

SCHEDULE OF TENDERER's EXPERIENCE

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

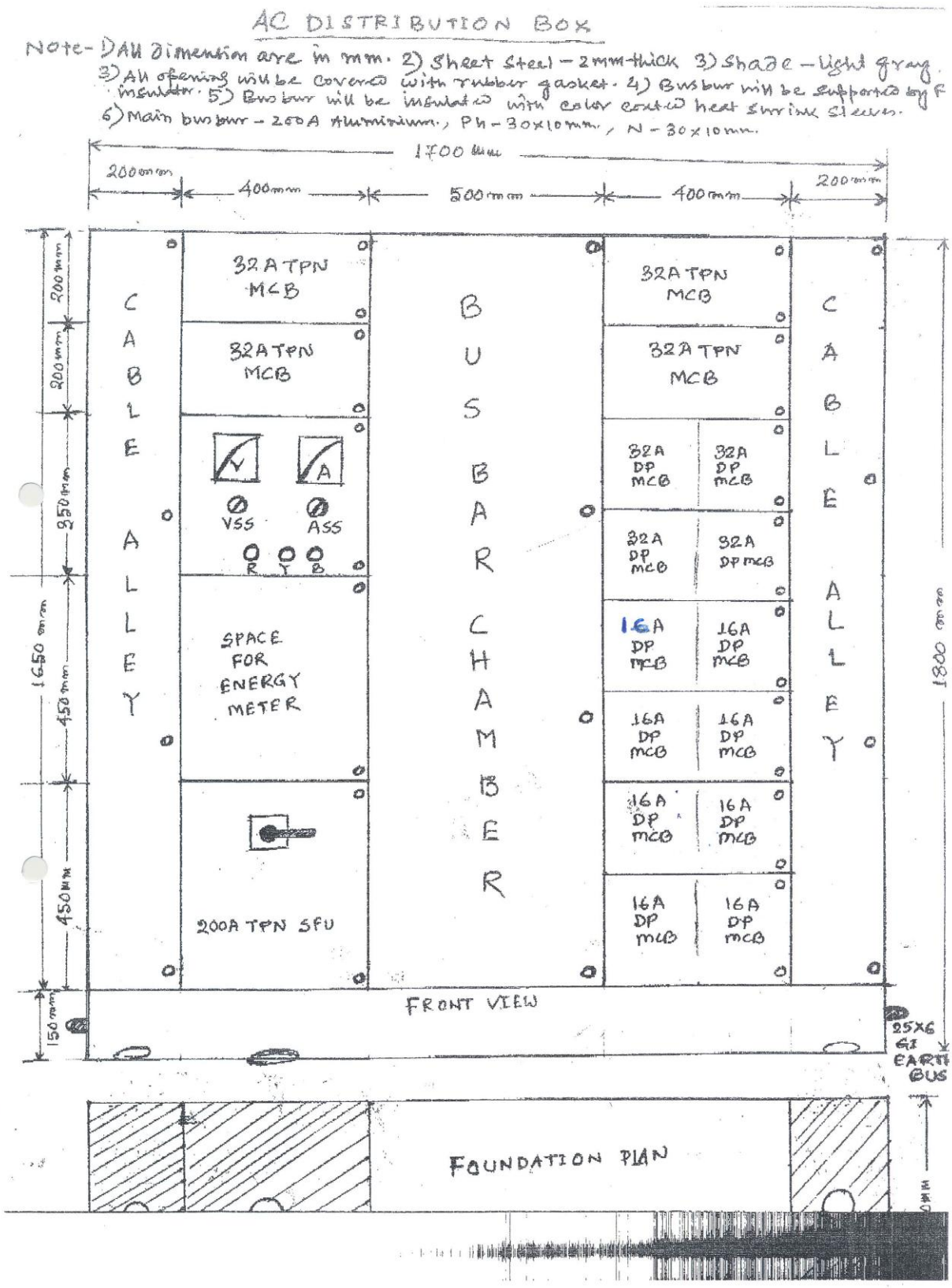
Sr. No.	Name of the client & description of the order	Value of order	Period supply & commissioning	Name and address to whom ref can be made

NAME OF THE FIRM----------

NAME & SIGNATURE OF THE TENDERER----------

DESIGNATION----------

DATE----------


AC DISTRIBUTION BOX
Note- 1) All dimention are in mm. 2) Sheet steel – 2mm thick 3) Shade – Light grey. 3) All opening will be covered with rubber gasket. 4) Busbar will be supported by F insulator. 5) Busbar will be insulated with color coated heat shrink sleeves. 6) Main busbar – 200A Aluminium., PH – 30x10mm, N – 30x10mm.
1700 mm
200 mm
400 mm
500 mm
400 mm
200 mm
200 mm
200 mm
250 mm
1650 mm
450 mm
450 mm
150 mm
1800 mm
CABLE ALLEY
32A TPN MCB
32A TPN MCB
V
A
VSS
ASS
R Y B
SPACE FOR ENERGY METER
200A TPN SFU
BUSBAR CHAMBER
32A TPN MCB
32A TPN MCB
32A DP MCB
32A DP MCB
32A DP MCB
32A DP MCB
16A DP MCB
16A DP MCB
16A DP MCB
16A DP MCB
16A DP MCB
16A DP MCB
16A DP MCB
16A DP MCB
CABLE ALLEY
FRONT VIEW
25X6 GI EARTH BUS
FOUNDATION PLAN

West Bengal State Electricity Distribution Co. Ltd.

TECHNICAL SPECIFICATIONS

FOR

D. C. DISTRIBUTION BOARD

(FOR 33 KV SUB STATIONS)

1.0 SCOPE:

This specification covers the design, manufacturing, testing at works and supply of Indoor type D.C. Distribution Boards for protection system of the 33 kV substation. The system shall be DC, 30 V.

2.0 SERVICE CONDITIONS:

Equipment to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

2.1	Maximum ambient temperature (Degree C)	50
2.2	Maximum temperature in shade (Degree C)	45
2.3	Minimum temperature of Air in shade (Degree C)	3.5
2.4	Relative Humidity (Percent)	10-100
2.5	Maximum annual rain fall (mm)	1450
2.6	Maximum wind pressure (Kg/ sq.mm)	150
2.7	Maximum altitude above mean sea level (metre)	1000
2.8	Isokeraunic level (Days per year)	50
2.9	Seismic level (Horizontal Acceleration)	0.3g
2.10	Moderately Hot and Humid tropical climate conducive to rust and fungus growth	-

3.0 STANDARDS:

3.1 Components mounted on the ACDB shall confirm to the latest revisions of the following standards:

A	IS: 13947	**Degree of protection provided for enclosure for low voltage control gear and switchgear & MCCB**
B	IS 5	Painting
C	IS: 13947/1993 Part-III amended up to date	Switch Fuse Disconnector unit
D	IS 2705 amended up to date	CTs
E	IS 8828/1996 amended upto date	MCB
F	IS 1248	Indicating instruments
G	IS 375	Wiring
H	IS: 13703/1993 Part-I & II	HRC Fuses

4.0 GENERAL TECHNICAL PARTICULARS:

These D C Distribution Boards shall be supplied as per this specification.

4.1 Rated Voltage:

Rated voltage for the Distribution Board and its constituent items like Switch Fuse Disconnector unit, MCBs, busways etc. shall be single phase 2 wire D.C. 30 volts. The supply voltage may vary by ± 10% of rated voltage. All the equipments used in the Board shall operate satisfactorily at this voltage variation.

4.2 General Requirements:

4.2.1 Each Distribution Board shall be wall mounted/floor mounted having compact design. The Board shall be closed, dust protected, weather proof and shall be made vermin proof with a special type lining e.g. Neoprene gasket, around the edges of the doors. The distribution board shall comply degree of protection IP 43. MCBs shall be operating vertically upward for ON/OFF operation. The entire distribution board shall have uniform finish and shall be sturdy. The distribution boards shall be of modular construction with provision for complete compartmentalisation of all feeders. It shall be free-standing, dead front type comprising dust-tight and vermin proof sheet steel cabinets suitable for indoor installation. The doors of cabinets shall be lockable. Handle shall be made of reputed make. The DB shall be provided with single door in front having 2 nos. hinges which should be suitable for movement of 120 degree and 2 no. knobs to be provided on the door corners. All instruments and control devices shall be mounted on the front of cabinets and fully wired to the terminal blocks. All switches provided on the distribution board shall be on front side of the cabinets, operable from outside.

4.2.2 Each Distribution Board shall be made out of at least 2.0 mm thick cold rolled steel sheet, suitably reinforced to provide flat level surface. Size 1400X1200X500 mm. Gland plate shall be 3.0mm thick. No welds, rivets, hinges or bolts shall be visible from outside. The doors shall be fitted with double leaf neoprene rubber gaskets.

4.2.3 All cables shall enter and leave from bottom. Suitable cable terminal blocks with cable lugs shall be provided inside each cabinet for the incoming and outgoing cables. The terminals shall be serially numbered to facilitate installation and maintenance. Main busbars shall be accommodated in busbar chambers and cable alleys arranged by their side. Compression type cable glands shall be provided to hold the cables to avoid any pressure or tension on the terminal block connections. The terminal

blocks shall be easily accessible for inspection and checking. Panels shall have cable supports and metallic clips for supporting power and control cables for internal wiring of the panels.

4.2.4 The busbars shall consist of tinned electrolytic copper of ample cross-sectional area, suitable for carrying their rated continuous current without their temperature exceeding 85 deg C. The busbars shall be continuous throughout each section. The busbars shall have current rating to suit the requirements corresponding to the loads incident thereon under the various operating conditions and shall withstand the applicable voltage and maximum short circuit stress. The busbars shall be insulated from supporting structure by means of durable non-hygroscopic, non-combustible and non-tracking polyester fibreglass material or porcelain. Busbars shall be encased in heat-shrunk sleeves of insulating material which shall be suitable for the operating temperature of busbars during normal service. The busbar joints shall be provided with removable thermosetting plastic shrouds.

The busbars shall be housed in totally enclosed busbar chambers. The incoming connections from the busbar to the various feeders shall be so designed as not to disturb cable connections and to ensure safety to the operating and maintenance personnel and to facilitate working outside any outgoing module without the need for switching off in-feed to the adjacent modules, as far as possible. The phase and neutral busbar shall be of high conductivity, adequate uniform cross section and current density shall not be more than 1.6 Amp/sq. Mm.

A cable alley preferably 230 mm wide shall be provided in each vertical section for taking cables into the compartments.

4.2.5 All doors shall be provided with mechanical interlocking arrangements along with keys. The distribution board shall have no door on rear side.

4.2.6 Danger board (Caution Plate) shall be fitted suitably on inner door of the DB. Danger board shall be of 100x100 mm size with details as per WBSEDCL standard format.

4.2.7 The DC boards shall be provided with the following equipments wherever applicable:

i. Busbars of adequate rating.

ii. Terminal arrangement with necessary equipment for connecting the incoming supply.

iii. Voltage and current measurement in the incomer feeder.

iv. Outgoing modules with switch / MCB units of adequate

capacity for the outgoing feeders and 20% spare feeder units of each rating.

v. Necessary cable glands and terminal blocks.

v. Adequate number of spare terminals on terminal blocks for receiving connections for external connections.

vi. The number of outgoing feeders from DC boards shall be such that each substation equipment is fed by separate feeder with 20% as spare.

4.2.8 The ventilating louvers should be covered from inside by a perforated sheet.

4.2.9 All sheet metal used for DB shall undergo seven tank mechanical/ chemical cleaning process & painting shall be done using powder coating process. Colour of the Paint shall be admiral gray as per shade no. 632 of IS 5 on exterior and white from interior sides.

5.0 **MAJOR COMPONENTS**:

5.1 Incoming cable for DCDB shall be terminated on terminal connectors provided at the bottom. Connection between incomer terminals and Switch Fuse Disconnector unit shall be with 50 sq. mm copper cable. Outgoing of Switch Fuse Disconnector unit shall be connected with MCBs with 35 square mm copper cable.

For all 32 A rated MCBs, 16 sq. mm. stranded cable shall be used. For all 16A rated MCBs, 10 sq. mm. copper cable shall be used.

All MCBs, cable used in the DB shall be of reputed make and ISI marked.

DCDB should have 2 sets of Bus Bars in Two separate compartments to facilitate termination of Incomers from two sets of Battery and Chargers. One Change over switch should be provided to facilitate DC supply to outgoing load circuit in the event of failure of anyone of the battery / Charger.

5.2 Incoming circuit:

Two double pole Air-break Circuit Breaker of 100 Amps capacity with thermal overload tripping arrangement shall act as Incoming breaker of load bus.

Incoming cable for incomer **LT XLPE, 2 C, 120 sq. mm** shall be provided by WBSEDCL.

5.3 Outgoing Circuits:

Sr. No.	Feeder Rating	Cable size	Purpose
1.	Double pole DC MCCB 100A,250 V with overload trip	2 core 16 sq. mm LT PVC cable	a. Incomer (04 nos.)
2.	DP 16 A MCBs, 250 V	2 core 10 sq. mm LT PVC cable	a. 11 KV (04 nos.) b. 33 kV (04 nos.) c. Supply for SCADA equipment d. Control Room Emergency Illumination d. Spare (06 nos.)

5.3.1 Total 16 Nos. Outgoing circuits shall be provided as per the details given below.

MCBs shall comply following specifications as per IS 8828/1996.

a) Rated voltage & freq. shall be 240V & 50 Hz respectively for DP MCBs.
b) Rated current shall be 32A/16 A as mentioned above.

c) Rated short circuit capacity shall be min. 6 KA at 0.7 p.f. lag
d) Service short circuit capacity shall be 6KA as per table 15 of IS: 8828 /1996.
e) MCBs shall have fixed un adjustable time / current characteristics.
f) Under voltage release and shunt-trip release coils are not required. Only overload release and short circuit release shall be provided.
g) Tripping time shall be as per (clause No. 8.6.1) table 6 of IS: 8828 /1996. Tripping mechanism thermal magnetic type.
h) MCBs having precision moulded case and cover of flame retardant high strength thermo plastic material with high melting point, low water absorption, high dielectric strength and temperature with stand capacity shall be capable of carrying out given no. of operation cycles as per clause No. 9.11 of IS: 8828 /1996.
i) Limits of temperature rise shall be as per (clause No. 9.8) table 5 of IS: 8828/1996.

j) Standard range of instantaneous tripping shall be type 'B' as per (clause No.5.3.5) table 2 of IS: 8828 /1996.

5.3.2 All MCB outgoing terminals shall be terminated on terminal connectors provided at the bottom with suitable size of cable.

5.3.3 The enclosure shall be provided with proper earthing arrangement. Earthing arrangement shall consist of 2 G.I. Bolts of 12 mmX50mm (min.) with 2 spring/ plain washers and 2 check nuts.

5.3.4 PVC cable glands of adequate size shall be provided for all incoming and out going cables.

5.3.5 The moving contacts of all poles of multi-pole circuit breaker shall be so mechanically coupled that all poles, except the switched neutral, if any, make and break substantially together. Whether operated manually or automatically even if an overload occurs on one protected pole only.

Both side terminal should be suitable for direct cabling as well as bus bar connection and should take wire up to cross section area of 25 sq.mm.

Detailed specification is tabulated below:-

Standard	IS:8828:96 & IEC:60898:2002
Type/Series	B&C
Rated Current(DC)	20A for SPN, 36A for DP
Rated Voltage(DC) Volt	30
Rated short circuit breaking capacity kA	10
Ambient temperature(deg C)	-5 to +55
Protection class	IP-20

5.3.6

i. One Mains failure Alarm relay.
ii. One Earth Fault alarm relay
iii. One 30 Volt DC Bell to be operated by the Mains failure alarm relay.
iv. One 30 volt DC Buzzer to be operated by the earth fault alarm relay.

5.3.7 AC/DC Change Over Contacts

Emergency lighting circuit shall be provided by the Bidder such that the lights normally burn on AC 240 Volts, 50 Hz but in case of failure of AC supply, these come up on DC supply with the help of automatic change over contactors and again change over to AC supply with the restoration of AC

supply. There shall be two number double pole ON/OFF switches with HRC fuses one each for AC and DC supply. Auto Change Over scheme shall be provided by the Bidder.

5.4 Indicating Instruments:

Principal requirements of indicating instruments are as follows:

5.4.1 D.C Ammeter:

Ammeter shall comply the following requirements

Class of accuracy	1.0
Range	30 Amps
Mounting	Flush type
Size	96 x 96mm
Type	Analog

5.4.3 D.C Volt Meter:

Voltmeter shall comply the following requirements

Class of accuracy	1.0
Mounting	Flush type
Size	96x 96 mm
Range	0-40 volts
Type	DC moving coil

5.4.5 Indicating Lamps:

Indicating lamps shall be panel mounting type 23 mm with rear terminal connections having low wattage LEDs cluster type. Lamps shall have translucent lamp covers to diffuse lights, coloured red for 'DC ON' condition. The lamp cover shall be preferably of screw-on type, unbreakable and moulded from heat resisting fast coloured material. Conventional bulbs are not acceptable. The intensity of light should be minimum 100 milli cd at 20 mA. Indication lamp should be suitable to operate on 30 V DC.
Necessary wiring shall be provided accordingly.

5.4.6 MARKING

Each compartment shall be provided with legible and indelibly marked/ engraved name plate.
Name plates shall be white with black engraved letters. On top of each module, name plates with bold letters shall be provided for feeder designation. Each device shall also suitably marked for identification inside the panels. Name-plates with full and clear inscriptions shall be provided inside the panels for all isolating switches, links, fuse blocks, test blocks and cable terminals. Every switch shall be provided with a nameplate giving its function clearly. Switches shall also have clear inscriptions for each position indication e.g. 'ON' 'OFF' etc.

5.4.7 Earthing Arrangements:

Two nos. Earthing studs of galvanized M.S. 25 X 6 mm shall be provided for external earth connections at the bottom. These should be complete with plain washer, spring washer, nuts etc. Earthing Bolts must be welded to prevent removal of the same from the cabinet.

Flexible stranded copper connector (braided conductor) should be connected of copper equivalent 10 sq. Mm size between door and box enclosure. This flexible braided cable should be terminated using gland and proper size nut/bolts at both ends.

5.4.8 Mounting Clamps:

The DCDB box are to manufacture with suitable mounting arrangement on wall/steel support by means of 4 nos. 25X6 mm size clamps having hole dia. 14mm, fixed over the body as per drawing.

5.4.9 Gland Plate:

The removable gland plate should be provided in the lower portion of the box to accommodate all brass glands (according to requirement) for incoming and outgoing cables.

5.4.10 Name Plate:

Aluminium sheet 2 mm engraved with details should be provided duly refitted over front door.

a. DC Distribution Box
b. P.O No.
c. 'Property of WBSEDCL'

6.0 CONTROL WIRING

Each DCDB shall be furnished completely factory wired upto terminal blocks ready for external connections.
All wires shall consist of 1100V grade PVC insulated flexible stranded copper wires with a cross-section of 2.5 sq. Mm suitable for switchboard wiring and complying with the requirement of relevant IS. Each wire shall bear an identifying ferrule or tag at each end or connecting point.

Control cables for external connections shall consist of stranded copper wire with 1.5, 2.5, 4.0 sq. Mm or higher cross-sectional areas and shall enter the bottom.

All interconnecting/outgoing control wiring shall terminate on stud type terminals on terminal blocks. The terminals shall be marked with identification numbers to facilitate connections.

The terminal blocks shall be made of moulded, non-inflammable, plastic material and arranged to provided maximum accessibility for inspection and maintenance. All terminal block shall have transparent plastic cover.

The terminals shall be made of hard brass and diameter of not less than 6 mm. The studs shall be securely locked within the mounting base to prevent turning. The terminal blocks shall be provided with twenty(20) percent spare terminals. The terminals shall be suitable for connections through tinned copper crimped lugs.

Wiring shall be complete in all respect to ensure proper functioning of the control, protection and monitoring scheme.
Each wire shall be identified at both ends with permanent markers bearing wire numbers as per wiring diagram.

7.0 TYPE TEST CERTIFICATES:

MCBs & other components used in DCDB shall be fully type tested as per relevant IS and this specification. The successful Bidder shall furnish detailed type test reports before commencement of supply.

All the Type Tests shall be carried out from laboratories which are accredited by the National Board of Testing and Calibration Laboratories (NABL) of Government of India such as CPRI Bangalore/ Bhopal, ERDA Baroda, to prove that the MCBs & other components used in DCDB meet requirements of the specification.

8.0 DRAWINGS:

Successful bidder shall submit the detailed drawings along with component details/makes etc. for necessary approval.

9.0 INSPECTION:

All tests and inspection shall be made at the place of manufacturer. The

manufacturer shall provide reasonable testing and inspection facilities and co-operation without any charge to satisfy him that the material is being supplied is in accordance with this specification. The proto of DCDB shall be inspected & checked by Ordering Authority or his representative for approval before commencement of supply.

10.0 SCHEDULES:

The tenderer shall fill in the following schedules, which form part of the tender specification and order. If the schedules are not submitted duly filled in with the offer, the offer shall be liable for rejection.

Schedule 'A' - Guaranteed Technical Particulars.

Schedule 'B' - Tenderer's Experience

11.0 Deviations

Deviation from this specification, if any, shall be clearly bought out in the offer. Unless owner explicitly accepts such deviations, it shall be constructed that the offer fully complies with the specification.

Bill of Material :-

Sl. No.	Reference	Description	Make	Qty
1	e1	100A DP DC MCCB with Thermal Over Load Trip	Havell's	01 no.
2	S1 to S16	16A DC MCB	Havell's	16 nos.
3	V	0-40V, 96X96 sq. mm. DC Volt Meter	AE	01 no.
4	E/F	Earth fault Alarm Relay 30V DC	SIEMENS	01 no.
5	Mains	Mains fail Alarm Relay	SIEMENS	01 no.
5	B1,B2	30V DC Buzzer	Reputed	02 no.
6	h1& h2	Indicating Lamp LED 30V DC RED	VAISHNO	02 nos.
7	PB1 & PB2	Push Button(Yellow & Blue)	VAISHNO	02 nos.
8	CF1& CF2	2A HRC Fuse link with Base	GE	02 nos.
9	CF3, CF4 &	16A HRC Fuse link with	GE	32 nos.

	…. CF18	Base		
10	AR1, AR2 , AR3, AR4	30V DC Auxilliary Contactor with 2NO + 2 NC	GE	4 nos.

SCHEDULE 'A'

GUARANTEED TECHNICAL PARTICULARS OF DCDB

Sr. No.	Parameter Name	
1.	Enclosure fabricated from M.S sheet of 2.0 mm thickness	Y/N
2.	All sheet metal work has undergone 7 tank chemical processing and powder coating	Y/N
3.	Colour of enclosure from inside is white	Y/N
4.	Colour of enclosure from outside is as per our specification	Y/N
5.	Busbar is of electrolytic tinned copper of size 1.6 sq. mm with 200 A rating and without joints.	Y/N
6.	Make and type of switch Fuse Disconnector Unit	Y/N
7.	No. of 1 ph 36 A DP MCBs provided	Y/N
8.	Make and type of 1 Ph 36 A DP MCBs	Y/N
9.	No. of 1ph 16 A DP MCBs provided	Y/N
10.	Make and type of 1 Ph 16 A DP MCBs	Y/N
11.	All MCBs are type tested and having short circuit rating of Min. 6 KA at 0.7 pf lag	Y/N
12.	Ammeter is having range of 0-15 A and accuracy class 1.0	Y/N

13.	Make and type of Ammeter	Y/N
14.	Voltmeter is having range of 0-40V and accuracy class 1.0	Y/N
15.	Make and type of voltmeter	Y/N
16.	Indicating lamps are of LED type with 22.5 mm dia.	Y/N
17.	Wiring between MCBs and terminal connectors is with specified stranded copper wire as per specification	Y/N
18.	Terminal connectors are of bolted type provided as per specification	Y/N
19.	Detachable gland plate is provided with knockout type arrangement for providing cable glands at the bottom	Y/N
20.	Cable glands as per requirements provided separately	Y/N

SCHEDULE 'B'

SCHEDULE OF TENDERER's EXPERIENCE

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

Sr. No.	Name of the client & description of the order	Value of order	Period supply & commissioning	Name and address to whom ref can be made

NAME OF THE FIRM----------

NAME & SIGNATURE OF THE TENDERER----------

DESIGNATION----------

DATE----------

Annexure-X